Linking agriculture, food systems and nutrition: what’s your perspective?

Collection of contributions received

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Introduction to the topic

Dear Forum Members,

Agriculture and food systems face the challenge of meeting the growing demand for more and higher quality food, but also of doing so in a way that is sustainable, equitable and meets the nutritional needs and preferences of consumers. Agricultural production is important not only for ensuring sufficient food is available for consumption, it also constitutes a major source of livelihood for many people around the world.

Given the persistence of nutrition problems and the co-existence of problems related to under- and over-nourishment, there is need to review our food system(s) through a nutrition lens to identify bottlenecks as well as opportunities for action. To this end, we need to better understand how consumers’ nutritional needs and demands are currently addressed by the various players in the food system. It is important to look at all the key players, starting with the consumers (the poor as well as the affluent) and working our way back to those involved in marketing and distribution of food, processing and storage, production, and natural resources management. It is equally important to review the roles played by key players in the institutional environment, e.g. civil society and the private sector, policy makers, legislators, investors. This online discussion will focus on exploring ways to work together to leverage agriculture and food systems for improving nutrition.

The topic of nutrition-sensitive food systems is of high priority and is gaining international attention through initiatives such as the Scaling-Up Nutrition movement (SUN), Renewed Efforts Against Child Hunger (REACH), the UN Standing Committee on Nutrition and the updated comprehensive framework for action of the High Level Task Force on the Global Food Security Crisis. In November 2010, FAO and AED held a live forum on "Agriculture and nutrition collaborations for enhancing food security” that looked at the possible programmatic linkages between agriculture and nutrition. FAO’s flagship publication “The State of Food and Agriculture 2013” will focus on mainstreaming nutrition throughout the food system and will discuss food- and agriculture-based approaches to nutrition within a framework of nutrition/health outcomes.

The purpose of this online discussion is to take the debate a step further and review how agriculture and food systems can be leveraged to improve nutrition in a more sustainable and equitable manner.

The questions:

1. Agriculture is often looked upon as a tool to generate nutritional outcomes. What is the value added of looking at how agriculture could contribute not just to improved nutritional outcomes, but food systems more broadly? What are the risks and benefits of taking a food systems perspective?

2. What / where/ who are the key entry points within agriculture and food systems to incorporate nutritional objectives? Why? And how can they best be leveraged?

3. Do you have experience in agricultural/food systems projects and programmes that have resulted in improved nutritional outcomes? If yes, please share the success factors, constraints faced, lessons learned: why you consider it as a success, how you measured the impact and whether a nutritional objective was explicitly built into the programme.
If you have experience of an agricultural/food systems project or programme with a nutritional objective but that failed to achieve it, what were the factors that led to the failure and what would you recommend to others to overcome the barriers to success?

4. What are the key gaps in knowledge or good practices that limit the ability of agriculture and food systems to improve nutritional outcomes?

Please feel free to share relevant publications on this topic.

We hope this discussion will facilitate knowledge sharing, communication and effective learning from your experiences on linking Agriculture, Food systems and Nutrition.

**The facilitators:**

Karel Callens is a Senior Food Security Officer and Coordinator of the Monitoring & Evaluation Team in Integrated Food Security Support Service at FAO, Italy; Corinna Hawkes is a specialist in food policy and public health and a visiting fellow at the Centre for Food Policy, City University, London.
Contributions received

This discussion was cross posted with the Food and Nutrition Security Community of Solution Exchange India

1. Syed Md.Zainul Abedin Abedin, Department of Agricultural Extension, Bangladesh

Dear All,

I appreciate FSN Forum for organizing an important debate. I think the questions raised here in this debate are quite pertinent for linking Agriculture, Food systems and Nutrition. However, it may not be easy to address all the questions from a practical point of view. Nevertheless, I would like to contribute from my experience and understanding.

1. Agriculture provides food, feed, fuel, fibre and fodder for the survival and maintenance of humanity and domestic animals. Human nutrition is one of the many outcomes of agriculture. Food systems comes naturally in the production, processing, storage and distribution of edible produces. I personally feel that taking food systems perspective is more beneficial than being more risky. The reason behind my point of view is that the food systems comprise a systematic approach rather than a disorganized one. Hence it is more planned and thus more productive in terms of its outcomes.

I would like to address the other points later subjecting this initial submission to criticism of the learned participants.

2. Jogeir Toppe, FAO, Italy

Dear members,

I would like to share the report from the Expert Consultation on the Risks and Benefits of Fish Consumption highlights the important role fish has in food security and nutrition. FAO and WHO held the Expert Consultation on the Risks and Benefits of Fish Consumption 25 to 29 January 2010. The tasks of the experts were to assess the health benefits and risks associated with consumption of fish. The Consultation recommended a series of steps that member states should take to better assess and manage the risks and benefits of fish consumption and more effectively communicate with their citizens:

- Acknowledge fish consumption as an important food source of energy, protein, and a range of essential nutrients and part of the cultural traditions of many peoples.
- Emphasize the benefits of fish consumption on reducing CHD mortality (and CHD mortality risks of not eating fish) for the general adult population.
- Emphasize the neurodevelopment benefits to offspring of fish consumption by women of childbearing age, particularly pregnant women and nursing mothers, and the neurodevelopment risks to offspring of such women not consuming fish.
- Develop, maintain, and improve existing databases on specific nutrients and contaminants, particularly MeHg and DLCs, in fish consumed in their region.
- Develop and evaluate risk management and communication strategies that both minimize risks and maximize benefits from eating fish.

The full report is available at: [http://www.fao.org/docrep/014/ba0136e/ba0136e00.pdf](http://www.fao.org/docrep/014/ba0136e/ba0136e00.pdf)
Jogeir Toppe,
Fishery Industry officer,
FAO, Rome, Italy

3. W. José Kirby, Fundación Luciérnaga, Argentina

Introduction to an Argentinian company producing dried apple snacks, following a fairtrade production model, involving local producers and cooperatives:

4. Gabriel Laizer, FAO, USA

Greetings from LOWA,

I wanted to share a report that we produced in collaboration with Academy for Education Development (AED). The report is called, “Deepening the Dialogue: Agriculture and Nutrition Collaboration to Enhance Global Food Security.” The report was from an open forum held on November 1, 2010.

Objectives:

The main objective of the 1-day open forum, held on November 1, 2010, was to provide an opportunity for technical experts to explore ways to coordinate their work on agriculture and nutrition in new and powerful ways. The specific objectives included:

- Sharing new approaches, research, and tools for improving food security outcomes by linking nutrition and agriculture
- Identifying gaps in knowledge or practice and suggesting ways to close these gaps
- Holding topic-specific conversations about best practices, innovations, challenges, and constraints in coordination between sectors
- Identifying next steps for enhancing coordination and building a community united by a common purpose
- Documenting lessons learned for sharing with a wider audience

Participants:

Over 100 people from more than 45 different organizations participated in the event. The participants represented food security, nutrition, and agricultural experts from nongovernmental organizations, government agencies, international organizations, think tanks, universities, and the private sector. A complete list of participants is included in the annex.

Hope others will find this report useful.

Regards,

Gabriel Laizer
FAO Liaison Office for North America
5. Saleh Alshanfari, Asaffa Food, Oman

In the case of Gulf Cooperation Council (GCC) countries, Food Based Dietary Guidelines were developed. Recommendations were clearly defined after necessary surveys were made. A major source of nutrition is natural food intake. Although most GCC countries do not produce major food list such as grains, processed dairy products, cooking oil and meat, fortification programs seems to be working very well. Specialized agencies are working towards awareness creation regarding the importance of a balanced dietary intake. A large volume of vegetables, a major source of natural transmissions, is produced locally. Most governments are involved in encouraging farmers to produce vegetables more efficiently through more intensive technology, especially hydroponics, leading to wider spread of locally grown produce.

Saleh Alshanfari

6. Claudio Schuftan, People’s Health Movement, Viet Nam

In your Linking Agriculture, Food Systems and Nutrition: What’s your perspective? you ask: If you have experience of an agricultural/food systems project or programme with a nutritional objective but that failed to achieve it, what were the factors that led to the failure and what would you recommend to others to overcome the barriers to success?

My comment here is not addressed of the past tense of the request for inputs. I am rather prospectively worried.

I mean the ongoing implementation of the multi UN agencies cum INGOs SUN (Scaling Up Nutrition) Initiative. I have written a blog about what I see as fallacies in and dangers of the Initiative. Schuftan C. Let us hope that the SUN Initiative can really put nutrition at the centre of development. [Column]. Website of the World Public Health Nutrition Association, January 2012. Obtainable at http://wp.me/plAxa-1xK

Cordially,
Claudio

7. Key note message by Jethro Greene, Caribbean Farmers’ Network (CaFAN), Saint Vincent and the Grenadines

What is the role of farmers in improving nutrition along the food system? What support they need from other players (of the food system) in order to accomplish this task?

One of the most critical public health problems in the Caribbean is related to food and nutrition. According to the Caribbean Food and Nutrition Institute (CFNI), almost 60% of all deaths are in the form of chronic non-communicable diseases (NCDs). Over the past three decades there has been a dramatic rise in heart disease, cancer, stroke, and diabetes, often directly related to obesity and poor eating patterns. But it is not only our physical health that is suffering, the economic burden of treating these NCDs alone accounts for over 66% of current expenditures on Public Health in the region.
This in part can be attributed to the deficit in the availability of regional food “staples” – specifically roots and tubers, vegetables, and legumes. These indigenous crops have excellent nutritional value and health benefits, yet the Caribbean diet is dominated by highly processed and refined imported foods. It is largely an issue of accessibility and attitude, and the Caribbean Farmers Network believes the solution lies in our ability to link agriculture to health and nutrition.

The vital role of farmers

The Caribbean Farmers Network (CaFAN) is a regional NGO comprised of farmers’ organizations that collectively represent over 500,000 smallholder farmers across 15 Caribbean countries. Since 2002 with the support of the Technical Centre for Agricultural and Rural Cooperation (CTA), CaFAN has been working to enhance Caribbean food and nutrition security, improve the quality of life for small farm communities, and assist these farmers to gain economic empowerment by repositioning agriculture through capacity building and the institutional strengthening of farmers’ organizations.

Our extensive network, in collaboration with regional and international partners, is focused on producing nutritious indigenous foods not only to generate wealth for farmers, but also to contribute toward food availability and stabilizing food security systems.

With support from the Food and Agriculture Organisation of the United Nations (FAO) under the EU’s All ACP Commodities Programme, over the past few years CaFAN has implemented a project that successfully boosted the production of roots and tubers in four member countries. This was achieved through training and capacity building initiatives, sharing experiences and best practices, and identifying new market opportunities. Moreover, this project aimed to promote the consumption and integration of these crops into local diets and contribute to import substitution.

CaFAN has adopted an approach that encourages farmers to work in clusters. This cooperation will significantly increase farmers’ ability to produce high quality, healthy, and nutritious food consistently, efficiently, and in the right volumes for the right cost. The benefits of this approach are evident in greater economies of scale in production, marketing, and value addition. Cross-border coordination within the network also allows smallholder agricultural producers to fill gaps in supply and demand in order to fulfill national and regional food requirements.

It is obvious that farmers have an irreplaceable role in the sustainability of our food systems. As a result, the needs of farmers are particularly vital in any attempt to achieve food and nutrition security across the region. CaFAN is committed to mobilizing financial, social, technological, and infrastructural resources to enable sustained public access to locally-produced, safe, high quality, and nutritious food commodities, but we also recognize that there is need for greater synergies and support from Ministries of Agriculture, other government sectors, and private institutions to accomplish this feat.

Support from the Regional Food and Nutrition Security Policy

One such effort to affect change has been the collaboration between CaFAN and the CARICOM Secretariat to draft the CARICOM Common Agricultural Policy (CCAPS), which features regional food and nutrition security as one of its key pillars.

This Regional Food and Nutrition Security Policy is based around a vision of domestic and regional agriculture as a foundation from which sustained national and regional development can be launched and maintained. It incorporates a fundamental understanding of the
interconnected relationship that exists between food and nutrition, with the promotion of basic health, poverty reduction, environmental conservation and infrastructure development in the rural sector. By exploring risk mitigation strategies, it also takes into consideration the diverse economic and environmental realities increasing the vulnerability of the Caribbean small farm sector.

On a local level, small initiatives also have a big impact - getting youth involved in backyard gardening and supporting local farmers by shopping at community markets are examples of ways CaFAN aims to link agriculture to health and nutrition. Ultimately, we need to cooperatively address this critical issue with creative and innovative solutions that bridge the gap between how and where we get our food.

The benefits of linking agriculture to health and nutrition

Shortening the distance between farmer and consumer and shifting consumption from processed imported foods to local, nutritious indigenous crops has endless health benefits. Enhancing production and creating new market opportunities will improve the livelihoods of farmers, and the financial position of national economies in countries heavily dependent on agricultural production will see a recovery. The environment will benefit from the creation of a local, seasonal food system less reliant on extensive industrial distribution channels responsible for harmful emissions. And by influencing the eating patterns of local populations from a young age, together we will encourage a widespread adoption of healthy, nutritious eating habits, thus reducing the prevalence of diet-related illness and non-communicable diseases.

Farmers play the most fundamental role in securing global access to affordable food, yet without properly responding to their needs in this volatile economic, social, and environmental landscape, we risk losing our source of indigenous crops. This is why policymakers, development institutions, and governments must prioritize support for smallholder agriculture. CaFAN’s farmers have proven themselves to be resourceful, capable, and innovative in their field; they are not asking for a handout, just a cooperative effort to create a sustainable local food system.

8. Lina Mahy, UNSCN Secretariat, Switzerland

Dear FSN Forum Members,

Given your interest in linking agriculture and nutrition, you might be pleased to find a systematic review published in BMJ (2012) by E. Masset, L. Haddad, A. Cornelius, J. Isaza-Castro that assesses the effectiveness of agricultural interventions aimed at improving child nutrition. The review included 23 studies. Very little evidence was found of positive effect on the prevalence of stunting, wasting, and underweight among children under five. It advocates for the need to have rigorous and better study designs to demonstrate nutritional benefits of agricultural interventions.

To read the paper, please go to: http://www.bmj.com/content/344/bmj.d8222

Best wishes
UNSCN Secretariat
9. Bob Rabatsky, Fintrac, USA

Fintrac is implementing a four year program for USAID in Honduras, with targets for both agriculture and nutrition outcomes. We are new to the nutrition activity as we have been working primarily as an agriculture development company. The project is one year old and has had success in incorporating nutrition messaging and outcomes using our agriculture extensionists to reinforce the message. I am attaching a short description of our nutrition efforts and look forward to the discussion. 


Bob Rabatsky
Fintrac, Inc.
www.Fintrac.com
Food Security Solutions

10. Farming First coalition

Traditionally, nutrition security has been viewed as the realm of health professionals. Yet the nutrition challenge cannot be solved solely by the health sector: farmers are the first nutrient providers and the entire agri-food chain has a vital role to play. Continued focus on improving agricultural productivity is an important prerequisite to realising food security goals, including nutrition security.

Recommendations for policymakers

Farming First supports the Scaling Up Nutrition (SUN) Initiative and its Thousand Days programme to improve maternal and child nutrition from pregnancy to the age of two. Farming First encourages policy makers to support the SUN initiative and encourage the adoption and implementation of relevant nutrition strategies at country levels.

Specifically, Farming First calls for nutrition strategies to:

1. Include agricultural activities in national nutrition strategies and promote the role of farmers as nutrient providers.

2. Train farmers in using appropriate agricultural inputs and techniques that can encourage the production of abundant and nutritious crops and mixed diets, including fruits and vegetables.

3. Highlight the importance of increasing productivity and diversity as an essential component of ensuring access to nutritious foods. Fighting undernutrition is the first step to securing nutrition security.

4. In addition, micronutrient deficiency affects not only people but also plants, livestock and soils. By addressing all forms of micronutrient deficiency, productivity gains can be made and people’s nutrition can be improved.

5. Target farmers, especially women farmers in developing countries, as key partners in improving household nutrition and delivering nutritional interventions, such as dietary supplements.

In addition, to ensure nutrition policies are effective and comprehensive, it is important to:
1. Scale up support for market development and infrastructure investment cost-effective interventions, especially cross-sector collaborations

2. Improve access to markets and encourage healthier food through diversification, market incentives, and consumer education. That includes raising awareness of nutritional challenges throughout the food chain, using marketing and information campaigns.

3. Reduce waste by focusing on harvest losses and consumer waste. In many countries, the lack of agricultural infrastructure and market information does not allow the efficient distribution of agricultural outputs.

4. Conduct further research on nutritional needs in the population, encourage cross-disciplinary research among agricultural, horticultural, nutritional, and medical scientists, and expand biofortification, plant breeding, and micronutrient solutions.

11. Internation Agri-Food Network

From increasing the availability of total calories, to specific measures on nutrient deficiencies, agriculture can play an important role in addressing nutrition security.

**Biofortified foods** are bred to have higher amounts of micronutrients and can help provide essential vitamins and minerals. One example is Golden Rice which contains higher amounts of beta-carotene and iron, with potential benefits for 250 million children who risk blindness due to vitamin A deficiency and 1.4 billion women who suffer from anaemia due to iron deficiency.

**Micronutrient-enriched fertilizers** improve soil fertility, helping to support higher yields of more nutritious food. Poor soil quality is a significant factor that leads to micronutrient deficiencies in humans – if the soil is not rich in all the necessary nutrients, food products will not contain the necessary nutritional balance. A program in Turkey has used this technique to successfully address zinc deficiencies in their population.

**Improved agronomic practices** can also help. Crop rotation is a good practice to improve productivity but it also encourages food diversity. A rotation of legume, cereal, and oilseed crops has benefits to populations in terms of range of nutrients. Conservation tillage can halt and even reverse the process of soil degradation, helping to prevent nutrient depletion of soils and protect yields.

Once food is produced, though, there are still many challenges to get it into people's hands. In 2010, FAO estimated that poorly developed systems for handling, storage, packaging, transportation, and marketing of agricultural products in developing countries results in post-harvest losses ranging from 15% to a staggering 50%. Investment in food infrastructure and handling could reduce losses and improve food safety. Developed countries also face losses due to food waste from harvest, through delivery to food services, and in households. Waste is worst in fresh fruits and vegetables which deliver vital nutrients to humans around the globe.

Nutrition is the foundation for health and development, upon which all the Millennium Development Goals (MDGs) depend. Yet whilst the cost-effectiveness and efficacy of malnutrition interventions through agriculture have been clearly demonstrated, these activities have yet to be deployed at scale and in tandem with each other.
12. D Raghunatha Rao, ICMR, India [received through Solution Exchange India]

In general, rapid economic growth of the country need not influence the nutritional status of the population. Economic growth of the country is dependent on various policies of the Government to improve industrial growth in various sectors. In India, double burden of malnutrition is seen - undernutrition on one side in the rural and tribal areas and overnutrition on the other in urban and semi-urban areas. To combat undernutrition in rural areas if one can implement the following with a commitment, to certain extent undernutrition problems can be tackled:

1. Distribution of agricultural land to the landless poor in rural areas;
2. Creation of societies with such poor land owners;
3. Providing inputs and agricultural technology for production of grains/vegetables;
4. Provision of subsidy/loans for agriculture through societies;
5. Training to the farm women on developing low cost nutritious recipes;
6. Creation of nutrition awareness on the importance of nutrition in different stages of life;
7. Continuous monitoring and evaluation of the programmes from time to time so as to carry out mid course corrections if any during the implementation of the programmes.

Proper coordination between the departments of agriculture, health and civil supplies to certain extent would help to solve the problem.

This is in continuation of my earlier contribution. I wish to add some more points for members to ponder upon. The first priority is to provide food for the poor that's how food security is important and then it is equally important for us to provide nutrition security, that is how food and nutrition security is important at the community level.

The landless poor when provided with one hectare of land, they will become small or marginal farmers. All such farmers should be provided with proper farming layout that means - in one hectare of land the farmer may follow this design –

- 1/4th of land may be used for growing rice or wheat or millets that provides carbohydrates for energy.
- 1/4th of land may be used for cultivation of pulses that provides proteins for growth, body building and defense mechanism (antibodies to fight against various infections).
- 1/4th of land may be used for growing different vegetables including green leafy vegetables, fruity vegetables, root vegetables, cucurbitous vegetables etc. This provides micronutrients such as iron and other micronutrients required by our body for various metabolic activities.
- A part of land for breeding poultry and milch animals for egg, meat and milk respectively which provides protein and calcium.
- Rest of the land can be used for living and also to grow papaya trees for fruits - provides vitamin A. Along the bund or the boundary of the land coconut trees also can be grown. Before implementing this it is important to have soil test done for its soil nutrient status.
- Organization of weekly market for farmers to sell the produce after keeping adequate produce for their use.
- Encouraging microfinance schemes among them in order to improve their economic status.

All the above aspects if implemented at the community level with a political will and commitment; I am sure our efforts towards achieving food and nutrition security would be accomplished.

D Raghunatha Rao
National Institute of Nutrition (ICMR)
Hyderabad, Andhra Pradesh
13. Emile Frison, Bioversity International, Italy

The world faces an enormous challenge of ensuring that the global community has access to a safe and nutritious diet, while simultaneously combating the rising number of health problems related to malnutrition such as obesity and diabetes. Agriculture and the global food system are capable of playing a key role in addressing this challenge, yet agriculture needs to be designed with nutrition in mind. The recent food price volatility crisis, climate change and the rise in cost of petroleum-based inputs shine a light on factors that contribute to the unsustainable nature of our agricultural system. But within these challenges lie opportunities to change the way we do business at the same time as making an important contribution to better nutrition security for the future. There is also a clear recognition that the agriculture, health and nutrition sectors will make considerable advances in nutritional security when working together. The time to act is now, building upon the momentum to improve nutrition around the world with examples such as the 1000 Days and Scaling Up Nutrition movements.

Bioversity International is the leading research organization dedicated to the use and conservation of agricultural biodiversity and is part of the CGIAR Consortium of International Research Centres. During the 40 years of the CGIAR’s existence, the organization has provided innovative research and impacts that have helped to change lives on a large scale. The CGIAR, we expect, will be even more efficient in providing crucial solutions to the problems faced by smallholder farmers globally. The CGIAR has developed a new strategy that includes one important outcome and a research programme that focuses on nutrition and health. In that context Bioversity has developed a nutrition strategy that defines a ten-year road map for a comprehensive research programme that will provide increased understanding and evidence of how a wider use of agricultural biodiversity can contribute to improved nutrition in more sustainable agricultural systems for smallholder farmers and their beneficiaries. We aim to show that agricultural biodiversity, underutilized crops and local and traditional foods can be powerful tools to combat poverty and malnutrition while preserving healthy ecosystems. As in the past, we will work with a broad range of partners and we invite all interested stakeholders to join forces with us to forge a new model of agriculture that does not just produce more food, but provides diverse healthy diets in a sustainable way.

For the full Nutrition Strategy of Bioversity International please follow the link:

Emile Frison
Director General
Bioversity International

14. Reimond Kube, Nascent Solutions, USA

Dear colleagues,

the Feed the Future Program of USAID is integrating food and nutrition in a systems approach. It admits that there is no proof for a direct positive relationship of improved nutrition as a result of improved agricultural productivity. I even think that with the evidence we have so far, we have to assume that there is no direct positive relationship, as people's decision's about food consumption are guided by many largely irrational factors like habit and taste, but also by concrete ones like "what is available that I can afford?"

There is no alternative to awareness raising and educational programs that start in school to bring down the number of people who prefer rice and chocolate or eat cassava, but no fish.
There are differences between rural and urban habits and opportunities, and certainly is there no silver bullet as solution. In Papua New Guinea and elsewhere, I found populations that produced good and healthy foods, but nevertheless were suffering from malnutrition, as they preferred to sell it and buy canned food and alcohol instead. Hence the need for behavioural changes which the best place to start with is in school, including the establishment of gardens with organically grown fruits, vegetables and legumes.

Reimund Kube
Advisor, Sustainable Agriculture and NRM

15. Comment by Corinna Hawkes, facilitator

How interesting to see the first keynote post comes from an agricultural practitioner concerned with unhealthy diets and non-communicable diseases. It’s a clear example of an agricultural community – in this case a network – that has seen an opportunity in health: a market. Markets are imperative for the agricultural sector. It indicates, yet again, that the nutrition and health sectors need to focus on markets too.

The example of CaFAN shows real vision. That said, as ever with agriculture and nutrition issues, there are issues for debate. For many in the development community “import substitution” is a dirty word. Are building better links between agriculture and nutrition just about bucking global macroeconomic trends and going local again? Much as there is huge potential in local approaches - and I for one would welcome more of them, especially for fruits and vegetables - it’s not the only way to work, and may alienate large numbers of potential allies. That’s where the food systems approach comes in: it’s a systematic approach – as pointed out by another contributor – to coherently link together the opportunities at the local, national, regional and global level.

This is also relevant to the comment made about the paper published in the BMJ that found “very little evidence” of the nutritional benefits of agricultural benefits. Is this to suggest that over the millennia, there is no proof that agriculture has made any contribution to nutrition? Clearly not! Sure, I would agree with the conclusion that we need to better evaluate these types of specific interventions - and I very much hope that CaFAN are doing that in the Caribbean. But let’s start thinking more broadly about the nature of the contribution agriculture makes to nutrition outcomes - through the food system and the marketplace.

16. Key note message by Jessica Franzo, REACH Partnership

What is the role of a nutritionist in improving nutrition along the food system? What support they need from other players of the food system in order to accomplish this task?

Food and nutrition security depends on underlying social, economic and institutional factors, which ultimately affect the quantity, quality and affordability of food as well as nutrition, health and wellbeing. This can be thought of a dynamic food system – that is dependent on agriculture, food, eating and health – that involves people, as consumers as the central focus. This is where nutritionists come in.

Nutritionists, with training on nutrition and food through a human lens, can provide technical expertise to other disciplines and sectors that could strive to have more nutrition outcomes, such as agriculture, ecology, and business enterprise for example. There is a need for technical expertise in nutrition to be part of the dialogue not only to advocate for more “nutrition sensitive” programming but to ensure interventions do no harm and provide benefits to consumers. If we want to think about scaling multi-sectoral approaches in addressing both
under and overnutrition that combine child care and disease control interventions with food system and livelihood-based approaches, nutritionists must be included to provide technical knowledge and expertise for appropriate programming and strategies. Areas of technical work include dietary diversity, care practices, nutrition surveillance, infectious disease burden, food composition and nutrient/health properties of foods.

However to work in systems, nutritionists need to be part of a larger team that involves not only agronomists, ecologists, anthropologists and ethnobotanists, but also those working in other sectors including health, education and social protection. Although many nutritionists understand the underlying determinants of malnutrition, many working in development are less aware. Combining sustainable agriculture with an aim to improve dietary diversity for example is often not considered in food-agriculture systems. Thus, nutritionists should not only serve as technical experts but advocates to ensure that nutrition is central for development but development is also central for nutrition.

17. Gina Kennedy, FAO, Italy

I would like to provide an example of an agriculture-nutrition success story from the Pacific Island of Pohnpei, Federated States of Micronesia where production and consumption of local, nutrient dense indigenous foods has been reinvigorated. Historical records indicate that people inhabiting Pohnpei were healthy and did not suffer from malnutrition. The traditional diet provided adequate amounts of nutrients. Recent dietary assessments showed a remarkable shift away from traditional diets toward diets heavily reliant on imported, highly refined processed foods which are typically high in added fats, sugar and sodium. Recent nutrition assessments indicated increasing prevalence of vitamin A deficiency and diet-related chronic disease (obesity, type II diabetes, and cancers). Food composition research on the nutrient composition of traditional cultivars of bananas, breadfruit, swamp taro and pandanus revealed that many traditional cultivars contained significant amounts of provitamin A carotenoids. These foods were all part of traditional dietary patterns which had become lost in the modern food system. The Island Food Community of Pohnpei was established in 2003 with a mission to promote the production, consumption, local marketing, and if feasible export of locally grown island foods in order to regain the dignity of relying on home food production, attain a greater degree of food security for the state, rescue cultural values, and improved health of the people. Pohnpeian community participation and empowerment is the cornerstone of their work. The approach and success stories can be found at http://www.islandfood.org/index.htm.

Through a strong commitment to working with local communities it has been possible to document measurable achievements in both increased production and consumption of forgotten and disregarded yet highly nutritious traditional crops. This example could serve as a model for similar initiatives. The concept is also aligned with the recent message of the Director General of FAO during his mission to Berlin to discuss food production and food waste in which he expressed as reported by Bloomberg press, “Consumers in rich countries have lost “grandmother’s knowledge on how to cook things,” as they buy more and more processed foods, according to Graziano da Silva. He said there’s a need to educate people about eating. "We teach people everything including how to drive, why not teach people what and how to eat?" the FAO chief said. "We need to urgently put in place food and nutrition education programs, to help families eat better.”
18. Masresha Yimer, consultant, Ethiopia [first contribution]

The issue of food systems and nutrition is central to our global development as every thing depends on how people are fed and cared now. From the highly experienced participants in this forum and their views it is easy to observe that there no one way to achieve the goal of good nutrition to people. We must use a combination of approaches especially in this time of high level of globalization where even in poor economies, in their export promotion drive, are having even traditional staple foods being massively exported, and in uncommon fashion the agri commodities disappear from the market or become very expensive to majority of people to buy. Again, rising market price of agri-products may also create income that can be used to raise cash income that could be used to improve farm family nutrition. There could also be imports as an important factor here, e.g cooking oil, cheap palm imported from south east Asia countries, used in almost every farm household these days in my country, though still quality and import regulatory issues remain to be considered seriously. Thus, I see studying the agro ecology and recommending and teaching farm households to produce and use specific fruits and vegetables and livestock and livestock products is crucial, and market linkage for creating markets for marketable surplus need to be part of this consideration. Here, mention of HIV and Agriculture is also important. Consideration of less farm labour consuming but nutritious food production and use is also critical these days especially in areas with high HIV/AIDS prevalence rates. So, the food and nutrition issues in agriculture need to be properly designed and be initially part and parcel of the strategy and project approach for production, productivity, market linkage, income generation of agri devleopiment projects.

Masresha Yimer
Addis Ababa, Ethiopia

19. Mahtab S. Bamji, Dangoria Charitable Trust, India [received through Solution Exchange India]

Dear all,

For nutrition security there has to be awareness (at all levels) and access at affordable cost to ensure –

1. adequate food and balanced diet (food security);
2. disease free environment and clean drinking water for better absorption and assimilation of nutrients;
3. primary health care outreach; and
4. physical activity to prevent obesity and associated diseases.

Agriculture can play a vital role for food security. Indian diets are qualitatively deficient in micronutrients due to inadequate intake of income elastic foods like legumes (pulses), vegetables, fruits and animal products. Production and consumption of millets which are rich source of B- vitamins and minerals is decreasing for a variety of reasons including support price given to cereals in preference to millets, and highly subsidised rice distribution like Rs 2/- per kg. Even dry land areas are growing water intensive crops like paddy and sugarcane as long as ground water is available.

To answer these problems, the Dangoria Charitable Trust is promoting nutritionally and environmentally promotive agriculture in dry land areas of Andhra Pradesh (Medal district) by
advocating crop diversification from water guzzling crops to horticulture, millets, and fodder grass. In horticulture emphasis is on nutrient-dense varieties like greens, beans (which also enrich the soil through nitrogen fixation) etc. Women raise back-yard nurseries of plants like drumstick, papaya, curry leaves and creeper spinach, which becomes income generation for them. We are also promoting backyard poultry using high egg yielding strains of birds, developed by local farm universities. Despite inadequate home consumption of vegetables, 25-50% is sold due to economic compulsion. Yet home production shields against price rise and helps nutrition security and should be promoted even among small and marginal farmers. We are also promoting organic methods such as vermi composting and botanical pesticides which can be made by the farmer. For more details see our publication: "Diversification from agriculture to nutritionally and environmentally promotive horticulture in a dry land area" in Sight and Life 25(1) 38-42 (2011) at:


Urban agriculture is yet another method for augmenting food. Awareness through multimedia, school education and orientation training of farm scientists, bureaucrats, etc is also required.

Mahtab S. Bamji
Dangoria Charitable Trust
Hyderabad, Andhra Pradesh

20. Peter Kingori, Food Security and Nutrition Consultant, Nairobi

The current debate could not be timelier coming just after the global food and fuel crisis which have dented seriously the ability of the poorest to acquire food. I would like to approach this debate from the angle of the different systems and categories through which food is acquired (largely) and how this affects nutrition with a specific focus to under nutrition in Kenya.

More than 70% of Kenya's land mass is unsuitable for rain fed agriculture that can guarantee sufficient food production for households. Kenya is also a largely rural economy with just about a third of the population living in urban. This means about 70% of the population reside in rural areas and heavily rely on own production as the main source of food. For the remainig third of the population in urban areas, markets provide the main source of food to a large extent.

The highest level of malnutrition in Kenya is found in areas with least amount of agricultural activity in terms of land cultivation for food. This persuades me that the argument that agricultural productivity does not have a connection with nutrition requires further investigation. What I would agree is that increased commercialisation of agricultural (e.g. from subsistence maize, sorghum, cassava, millet) to high value commercial crops like tea, coffee and pyrethrum, sugarcane or cotton) may have a strong bearing on nutrition situation of rural communities. For this category of people the way forward is continued nutrition education so that they can take advantage of variety provided by the rain fed garden in own production which is not available for the market dependent counterparts in urban areas. Most important is use of locally available foods in the right mix for optimal complementary feeding of children over 6 months, pregnant and lactating mothers. Moreover exclusive breastfeeding must of course be supported in the first six months.

For the urban population and for the case of Kenya the pastoral communities who depend mainly on markets as the main source of food, two critical issues will need to be considered. The infrastructure to deliver food to these areas will definitely affect the price of the food or even availability when road networks are non-existent as in the case of Northern Kenya. Secondly...
government intervention in stabilisation of prices to ensure that those with least ability to purchase food can be able to purchase it at reasonable prices.

In summary to me improved agriculture productivity must go hand in hand with streamlining of food delivery systems to enhance nutrition.

Peter Kingori
Food Security and Nutrition Consultant
Nairobi

21. Jethro Greene, Caribbean Farmers’ Network (CaFAN), Saint Vincent and the Grenadines

Very interesting on line discussion so far on food security and nutrition. A few points I would like to rise in addition to what I presented.

1. The problems of agriculture because of its very nature will always be numerous and to the weak hearted look insurmountable. What we in CaFAN do, is to network and share our best practices and successes thus reinforcing each other and creating an environment for more creative solutions on a collective basis.

2. The problems of food security and nutrition is a national problem. In fact, the agriculture as a one of the main pillars in ensuring food and nutrition security cannot just be the responsibility of farmers but of the whole nation. The importance of this subject matter, of food security and nutrition should be appreciated from Kindergarten. Policies need to encourage householders to be involved in their own food and nutrition security. In the case of the Caribbean, it should be an instrumental part of the school curriculum. If we are to calculate the health cost of bad nutrition, we would immediately begin to see the economic viability of a proper food and nutrition system.

3. Food and Nutrition Security must not be based primarily on the importation of food like some planners are promoting. While the theory of so called cheap food looks good on paper, in practice it destroys the sustainability of food production systems, especially if the foundation of your production system is dependent on commercial companies outside of your regional control. That is why CaFAN put a lot of emphasis on the promotion of our local nutritional food, vegetables and stables that are within reasonable control of our regional scientist and farmers. We know that when countries decide to impose embargoes what happens.

4. For every agreement, you can always find someone for and against, the importance of small farmers for us in the Caribbean, is not only an employment issue but also a security issue. To stem the rural urban migration, one must encourage policies that modernise and develop rural communities thus supporting a sustainable vibrant agricultural system. That is what we are hoping that our Caribbean Common Agriculture policy which is now in its final stage of drafting would create that kind of enabling policy environment.

5. We in the Caribbean still have a work to do to bridge the gap between academia in agriculture and farmers. There is an arrogance which create negative energy that must be curtailed. In the common agriculture policy, we are hoping to bring our agriculture institution to the people, thereby creating better partnerships for growth and development.

6. Finally, the key to all of this is that all parties, farmers organisations, institutions, ministries of agriculture, health, trade, education, private sector, etc. must work together and not against each other. CaFAN continue to play that facilitation g role in the region and have seen the positive
results of togetherness. CaFAN hopes that the international experience and sharing will enrich the Caribbean experience and knowledge base.

22. Andrew Reynolds, FAO, Italy

When considering the second question posted for debate:

**What / where/ who are the key entry points within agriculture and food systems to incorporate nutritional objectives? Why? And how can they best be leveraged?**

The end consumer stands as a vital ‘who’ for the incorporation of nutritional objectives into food systems. It is often pointed out that supply can be driven by demand, with the end consumer having some control over what is produced, and available for consumption.

Effective nutrition education programs enable consumers to make informed choices on what to consume, in time shaping the food system by their demands. Previous posters Dr Reimund Kube, Dr Masresha Yimer and Dr Gina Kennedy have all mentioned the importance of nutritional education in progressing the global nutrition status. It is no surprise that nutrition education and consumer awareness is one of the four primary foci of the ICN+21 (International Conference on Nutrition, to be held in 2013, 21 years after the original in 1992).

An integrated, multi dimensional approach is required in effective linking between agriculture, food systems and nutrition for consumer benefit, with high profile events such as the ICN+21 providing much needed attention to our cause.

23. Anne W. Kepple, State University of Campinas, Brazil [first contribution]

It is heartening to read the thoughtful reflections posted in the forum and the reports on successful efforts to bring nutrition and agriculture together.

I would like to inform people about another such success; a government initiative in Brazil called the Family Farming Food Procurement Program (Programa de Aquisição de Alimentos, or PAA) which I, as a nutritionist, am very excited about. The federal government purchases food directly from smallholder farmers for a fair price, up to an established annual limit, which is then donated to low-cost popular restaurants, food banks, nongovernmental social assistance organizations serving vulnerable populations, or the federal government’s emergency food stocks. The program, begun in 2004, is expanding rapidly and includes actions to promote agroecological farming practices.

In 2009, the National School Meals Program adopted a policy of requiring public schools to allocate at least 30 percent of food expenditures to purchasing food directly from local smallholder farmers. Thus, these programs simultaneously support family farmers and local development and contribute to feeding populations at risk of hunger and food insecurity. They also induce interaction between local farmers and nutritionists working in the food programs to which the food is donated. In the mid-sized city where I live, in the state of São Paulo, the nutritionist in charge of the school meals program has had to establish a direct relationship with local smallholder farmers, helping them to form an association and establishing a dialogue regarding foods needed to prepare school meals and the food local farmers are able to provide. There is evidence that this has contributed to diversify agricultural production and, consequently, food consumption among the farmers.

I am currently conducting a study in partnership with PAA program managers in the municipal government, and we have been able to incorporate some indicators from the field of nutrition into their program monitoring actions. Through this study and other interdisciplinary,
collaborative studies, my own nutrition background has been enriched by new knowledge regarding farming systems, land reform, and government policies to support smallholder farmers – themes that we should advocate to be included in university-level nutrition programs.

Anne W. Kepple
Collaborating Researcher
State University of Campinas, São Paulo, Brazil

24. Priscilla Nzamalu, Network for Ecofarming in Africa, Kenya

Dear Moderator,

It is amazing how over 1 billion people suffer hunger while 150 million persons around the world are over nourished. Uneven distribution of produced food and food wastage contribute to this anomaly.

Good agricultural systems will contribute to food security which in turn may contribute to nutrition security if good care and support practices are put in place. If states will invest in nutrition like nutrition education, awareness creation and proper monitoring of population nutrition, food security may contribute to nutrition security.

Let us teach people healthy eating habits!

Kind regards,
Priscilla

25. BP Gangadhara Swamy, Nunhems India Pvt Limited, India [received through Solution Exchange India]

Dear all,

Agriculture is mainly dependent on availability of land, water, labour and inputs. As we all know agriculture is classified as dry land and irrigated agriculture. Most of the pulse crops are grown under rainfed areas, which is very diversified, while cash crops like sugarcane, paddy is grown under assured irrigation conditions, which are exclusively mono crops. Due to various factors like increase in cost of inputs, labour shortage, drought like situations, low yield, no guarantee of returns/profit; farmers are forced to neglect the dry land agriculture. Hence, nowadays the prices of pulses/oil are increasing exorbitantly which in turn is affecting purchasing power of marginalized people. Even in PDS system we are providing only wheat/rice, which is not to enough to fulfill nutritional requirements of any individual.

Government and policy makers should adopt following multiple approaches to address these issues -

1. Support dry land agriculture and crop insurance should reach to more and more farmers;
2. In agriculture extension programs attention should be given to diversified crops;
3. Attention must also be given to include rural women, who are not only caretakers for family but also decide the cropping pattern for family needs;
4. Reviving the traditional cropping pattern and food practices;
5. Reintroducing minor millets in dry land agriculture;
6. PDS should include millets and pulses;
7. Promotion of backyard gardens and terrace gardening through TV and radio programs.

Child Fund India, is an INGO working on child development issues. They are training the community through a month long program called PD-Hearth (Positive deviant hearth) (Hearth means kitchen). Under this programme, in a particular rural community members are asked to identify healthy families. Then community members will observe the food they are using and also the cooking practices. Everyday all the members will gather at a place and they commonly cook different dishes together using local food materials and share with each other. After a month they observe the health benefits and share the learning. Then each member will continue the best practices.

BP Gangadhara Swamy
Nunhems India Pvt Limited
Ranebennur, Karnataka

26. Masresha Yimer, consultant, Ethiopia [second contribution]

Hello Dear Forum organizers and participants!

An interesting and educative and informative forum so far with people deep into the issue of agriculture and nutrition awaring us of a number of vital issues. Thanks a lot for all of you.

Following my thoughts of last time and on issue of current posting for discussion I want to raise couple of issues:

1. On nutrition education:

Nutrition education a must to focus on by nutrition strategists and policy makers, why? because we consumers need to be clearly informed what to eat and what combination and volume and at what frequency is a good nutrition for us; of course, this dietary guide and, above all, the teaching, be by age category, what is nutritious for a baby, young, elder, old.

By the way in some projects, we see nutritionists by training not by formal education; do not you see need to open up nutrition departments in universities in countries where there are no such departments. At time some of the reason forward for this is 'there is no qualified lecturer to open the department', etc ...

And as part of the 2013 conference, why not the issue of listing nutrition professionals across the world be done and they serve in providing postgraduate and related trainings through sort of "nutrition scholars network" to serve our world better? I think it is such big measures that we should take to make a u turn from current piecemeal moves.

2. On local production to support nutrition:

Yes, focus be on local production stimulation. Why?

We need to work on domestic value chain improvement and development that would result in either production of nutritious foods for home use by farm households or for marketable surplus that support nutritious food supply for the national consumers. Income earned from sales would also help farm households by food additives to improve their nutrition.

Here again, all depends on teaching of farmer households on what is nutritious food. May I say, as what we are used to saying farm extension, technology extension, health extension, should not we develop and launch nutrition extension programmes as part of different countries national agricultural development package or programmes? and start pushing this agenda through FAO and other UN agencies work with national governments?
In very affected communities in East Africa, for example, raising such issues is considered by some as a luxury, as people are starving to death. But, I see that even in relief food aid, are not we providing energy food and food supplements to make the affected communities to be stronger and get back to normal farm activities, etc...? So, nutrition in normal times and nutrition in emergency situation, and thus there should be no times without nutrition considerations.

Other reason why focus on local production?

This is because nutrition is not just about food type and composition it is also about its quality and safety. With weak cold chain and other food preservation systems, standard storages, ..., weak quality inspection and overall quality infrastructure, testing and ensuring safety of food items traveling long distances is a major challenge.
Import of substandard edible oil and other food snakes, juices has created problems affecting confidence of consumers, for example, in East Africa. Also remember the importance of cross border illegal trade, sale of food products with no shelf life printed in packages/labels, ...
Of course, whenever there is demand and no local supply, import should continue as an important alternative while also building national quality inspection and certification capacities and efficiency.

Thanks a lot and bye for now!

Have a good time!
Masresha Yimer,
From Ethiopia/Horn of Africa.

27. Ilse Köhler-Rollefson, League for Pastoral Peoples, India

I would like to use this opportunity to draw attention to the vastly underestimated role of pastoralists and other small-scale livestock keepers in contributing to food security - not only in terms of absolute amounts of meat and milk products that is generated in marginal areas without any use of petroleum, but especially in terms of the nutritional quality of these foods. The composition and nutritional contents of livestock products produced by animals that graze on natural vegetation are starkly different from those produced in intensive or industrial systems and by feeding (GM) soy beans and corn.

We are currently undertaking a research project to analyse the quality of livestock products from pastoralist communities in India, Pakistan and Kenya (http://www.pastoralpeoples.org/projects/current-projects/). While we are just at the beginning of this project, we have already learnt a lot from the local people about nutrition and wholesome diets. For instance, goats and camels in Rajasthan (India) are said to consume “36 types of plants” according to local beliefs. After identifying these plants, we realised that almost all of them have medicinal quality and are used in local ethno-(veterinary) medicine. They are full of minerals and other essential dietary ingredients which are chronically lacking in industrially produced fast food. It is not surprising that the rich biodiversity that the animals consume is also reflected in their products and that they are known for their health benefits. There is demand now all over the world for camel milk to treat autistic children with enormous success apparently.

In Western countries, there is of course copious literature about the benefits of pasture grown beef and other meats, and it is proven to contain a much higher rate of essential Omega 3 fatty acids which are mostly absent from modern diets. However, such information seems to be absent for the products produced by traditional pastoralists (at least according to our knowledge - we would be very grateful for any hints to the contrary). The FAO’s INFOODS database contains
some information about the composition of milk and meat from different livestock breeds, but it does not provide information on what kind of production/feeding system the products originate from - it would be very important to add this information.

While the official mantra for the future of livestock production is "sustainable intensification", i.e. trying to increase the efficiency of stall-feeding, we believe a much more promising (healthy and sustainable) approach is to strengthen local and pastoralist production system with the appropriate inputs, such as reliable animal health care and creating market linkages. The scope for this is still there in many places; but it requires a certain paradigm change and setting the necessary policy frameworks. The nutritional quality of the products would certainly be infinitely superior to industrially produced ones - which are increasingly implicated in over- and malnutrition. A great source on this is the book by Michael Pollan entitled "In Defense of Food" which I can highly recommend.

Ilse

28. Kwesi Atta-Krah, Bioversity International, Italy

It is commonly recognized that agriculture needs to change in a number of ways to make it more responsive in an integrated and sustainable manner to the needs of people and environment. One of the areas in which change is required is the linkage of agriculture to nutrition. It can be said that agriculture for the most part has forgotten about nutrition. Production and productivity is increasingly based on yield per acre, with little consideration to the nutritional value of what is produced.

The link between agriculture and nutrition is driven primarily by the types of crops grown. While it is recognized that the world has over 50 000 edible plants, 30 crops provide 95% of calories in human diet; 3 crops (wheat, rice and maize) provide about 60% of plant derived calories eaten by man. It is known that these mega cereals are high in carbohydrates so they do provide energy; but they have low to moderate protein and are low in micronutrients. They are also often poor quality and over processed.

There needs to be increased effort to broaden the range of crops that are used in agriculture (agricultural biodiversity) and their link and contribution to nutrition. The key to this is dietary diversification and the promotion of local crops and minor species known to have greater nutritive value and market potential. Merely having greater diversity of crops on farm however, does not automatically result in better nutrition. People have to understand the value of eating diverse and eating right; they also need to understand the direct cost and associated externalities to their health, of eating over-simplified and refined foods based principally on carbohydrates. Policy makers also need to understand the implications on national budgets and on national development. People, generally, need to decide to change eating habits and promote eating diverse and nutritious foods.

Agricultural biodiversity has been the basis of diets throughout human history, and a number of studies have shown high correlation between dietary diversity and nutritional health outcomes, esp. in women and children. Many traditional food systems have healthy elements based on local species of high nutritional value; these species are referred to variously as minor species, neglected and underutilized species, orphan crops, or more recently called "development opportunity crops" (by GFAR).

A real mindset change is required to influence eating habits. Education and public awareness programs are essential to broaden the base of knowledge and lead to behavioral change in eating habits and food systems. Policies are required that drive these efforts towards a new
“food system revolution” that is based on eating diverse diets, eating balanced meals. Research must go beyond focusing on the mega staples to include work on the broader diversity of species and varieties.

The change needed will not happen overnight, but the determination to initiate the process can and must start immediately. Agriculture indeed needs to be linked to food systems and to nutrition. Proper use of agricultural biodiversity will be an essential step in this direction.

Kwesi Atta-Krah
Deputy Director General
Bioversity International

29. Comment by Corinna Hawkes and Karel Callens, facilitators

This has been a fascinating discussion so far which has raised questions about how agricultural productivity, crop diversity, biodiversity, agronomic practices, fertilizers etc can better contribute to improved nutrition outcomes. From all of this comes a whole range of potential (and real) solutions to the food-related aspects of poor nutrition. There is real richness here. But ultimately, solutions must be tailored to the problem: why aren’t consumers eating enough of the right kind of foods? Is this anything to do with agricultural productivity, diversity etc? If so, what do the agricultural sector and other actors in the food system need to do to enable and facilitate consumers to eat enough of the right kinds of foods? The examples given here – in the Caribbean, the Federated States of Micronesia, Honduras, and India – suggest we have to stay focused on these questions to ensure that the role of agriculture and food systems are going to be a real part of the solution to poor nutrition.

30. Eutropía S. Mwasha, Ministry of Livestock Development, Grenada

My perspective on the subject is that agriculture is everyone’s business regardless their background or profession. I am saying this because there is no one on earth who does not eat. As long as one eats they are doing agriculture! What one eats is based on the food system and the nutrition that comes with it. A lively healthy life depends on the quality nutrition derived from the food eaten. To me, culture, youths, researchers, farmers, media, political will and global cooperation exert influence on this issue.

**Culture:** What is eaten is closely linked to the culture and the existing food systems in the circumscribed setting. Hence the quality of nutrition results from the food produced and consumed in a particular area. Thus understanding the significance of food and nutrition on the welfare of humans notwithstanding their contextual stance, food systems need to be protected and enhanced to ensure adequate food and quality nutrition. Foods from all cultures need to be enhanced and respected.

**Youths:** There is the tendency mainly by youths especially in developing countries to ignore, neglect or even abuse indigenous foods in preference to fast foods. The health consequences on this attitude are well known. Youth influence on society is monumental. They influence their contemporaries even the spatially placed and sooner or later their off springs. They need to be involved in the processes of linking agriculture, food systems and nutrition in terms of change of mind sets, education in the homes, community, school systems and continuously by well-informed media as situations change.

**Farmers:** Farmers have are key in the production of food and influence the nutritional level through the cultural practices. They have rich knowledge on the local conditions that affect
The knowledge they possess is invaluable to agricultural experts hence should be listened to.

**Media:** Popular media concentrates on such foods without educating on the quality of such foods nor providing information on the good nutritional benefits of local foods!!

By the way are they equipped on the subject? They need to be educated and accountable.

**Agricultural research:** I am a recently retired Tanzanian agricultural professional currently living in Grenada West Indies. I cannot recall any research project that focused on the numerous indigenous foods resources in my country. Diversity of food resources is key to good nutrition and a formidable weapon to fight hunger. The research agenda on food systems was not participatory. It excluded the key stakeholders (farmers) and was often donor driven. Visiting the rural markets today one hardly sees the type of local foods such as yams, aerial yams (Discorea spp), and many local vegetables etc. that were so popular twenty to thirty years ago. Most farmers have neglected them because they do not see any importance attached to them by the so called agricultural think tanks.

**Political will:** My conviction is that each individual country has the obligation to take inclusive stock of the food resources that exist, have in place programs and plans to harness them. Identification of key sectors other than the agricultural sector is crucial. Linking agriculture, food systems and nutrition is fundamental in addressing hunger and malnutrition. For the multi-sectorial approach to be engaged effectively, political will is requisite at national and local levels.

**Global Cooperation:** However, as individual countries engage in the process, a genuine global outlook on the overall process is necessary in fighting global hunger and enhancing nutrition.

Ms. Eutropia S. Mwasha
St. Georges, Grenada, West Indies

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**31. Samir Chaudhuri, Child in Need Institute (CINI) and NAAHM, India [received through Solution Exchange India]**

Dear FSN Forum,

I would like to take up the 4th question:

What are the key gaps in knowledge or good practices that limit the ability of agriculture and food systems to improve nutritional outcomes?

With our work at Child in Need Institute (CINI), Kolkata, India, we observe that although there may be an adequate supply of food at home, mothers often fail to provide the right amount, the right quality and in right frequencies, food required by infants and children from six month onwards. This has contributed to almost half of Indian children being undernourished during the critical period of growth when their mental and physical growth takes place during infancy and early childhood. Malnutrition in children is not visible to their mothers, despite the fact that most of them are issued growth charts by health workers. As most families in developing countries eat twice a day the children are also fed the same number of times, small amounts considering that their small stomachs cannot take large servings. This results in almost 25% families where food supply is adequate, having undernourished children.

Through our community based interventions, CINI trained women members of local self help groups take responsibility of their neighbourhood families to build up knowledge on correct
feeding practices to change behaviour of mothers on a one to one basis. We will be happy to share more information on request. Thanks,

Dr. Samir Chaudhuri
Director CINI
National Alliance Against Hunger and Malnutrition, India

32. Suneetha Kadiyala, International Food Policy Research Institute (IFPRI), India [received through Solution Exchange India]

Dear members,

This is an interesting discussion and I would like to share few papers addressing the issue of strengthening the agri-nutri linkages.

1. **Strengthening the Role of Agriculture for a Nutrition Secure India**

It mentions some policy approaches as the starting point to make agriculture sector more "pro-poor" and "pro-nutrition," based on the principles espoused in the Twelfth Five-Year Plan Approach Paper and by the Prime Minister’s National Council on India’s Nutrition Challenges in October 2010.

- Leveraging existing platforms - A minimum of 15 percent of all RKVY and NHM funds should be channeled to plans that integrate nutrition security concerns into their planning, implementation, and monitoring.

- Improving economic and physical access to high-quality, nutrient rich diets – It includes improving access to nutrient rich foods and biofortification of staple crops.

- Leveraging agriculture to empower women and strengthen their capacity to care for themselves and young children - Accelerating undernutrition reduction in India requires realign-ing agriculture and rural development policy to empower women in agriculture. Resources targeted to women and women’s groups significantly improve agricultural productivity, women’s control of resources or assets, and health and nutrition outcomes.


2. **Pro-nutrition Agriculture in India: Entry Points and Policy Options**

The paper lists some key-policy recommendations for pro-nutrition agriculture:

- Agriculture for inclusive growth – Achieve the target agriculture growth and productivity rates; Increase productivity in rain-fed and resource poor areas and Refocus on small and marginal farmers to strengthen farm and non-farm rural livelihood base.

- Agriculture and food policy for improving diet quality – Support systems relating to credit, technology, water and marketing for development of bio-fortified crops, pulses, fruits, vegetables, livestock, dairy and fisheries; Policy reforms in marketing (Amendment of APMC Act) and price stabilization and Group approach for marketing.
Agriculture policy and program implementation to empower women – Ensure land and property rights for women; Correct the gender bias in the functioning of institutions and support systems; Promote platforms aimed at empowering women to enable access to agriculture, health and nutrition related resources; Maternal entitlements and child care facilities, following optimal standards, at work sites for women and Linking MNREGS to strengthen women’s capacity to care.

For full paper, please visit  

3. Agriculture’s Role in the Indian Enigma

- India’s undernutrition problems are ultimately characterized by a number of disconnects — including those related to nutrition, health, education, and infrastructure policies — some of which may be significantly more important than the disconnect with agriculture.

- While there has been some dietary diversification in India, there is still a policy bias that works in favor of rice and wheat and against arguably more nutritious foods such as coarse grains, pulses, and fruits and vegetables.

- Future research and programmatic thinking about the role of agriculture in improving nutrition should explore linkages between the composition of agricultural production and the composition of diets.

- Agricultural policies need better coordination with policies in other nutrition-relevant sectors, and vice versa. As a multidimensional problem with strong interactions between dimensions (such as health and diets), undernutrition needs multidimensional solutions. Indian policymakers therefore need to learn important lessons from their own country as well as their peers.

To read more, please visit  

Hope these papers would be useful.

Suneetha Kadiyala  
International Food Policy Research Institute (IFPRI)  
New Delhi

33. Shahid Zia, Islamic Relief Worldwide, United Kingdom

Local Food Production and Food Security

Local food production, sharing, exchange, and marketing is important for the local food security. Food produced at local level is directly linked to the level of food security in that community. Farmers and many other people associated with food production, harvesting and management benefit to improve availability of food for their families or get income to buy the food stuff that other farmers produce. In addition to the food that framers produce, uncultivated biodiversity in the area also offers substantial food and nutrition to the communities. One research in South Asia shows that uncultivated food provides up to 30 percent of the food requirements of many landless families. So it is not just food production that is important but it is more important that how that food is produced. Any food production system that reduces biodiversity or access to
uncultivated food in fact have a direct negative impact on the food and nutrition security of the local communities.

Dr. Shahid Zia
Senior Policy Advisor
Food Security and Climate Change

34. Mahmood Bill, Ghana Muslim Mission, Ghana [first contribution]

In my humble opinion, the long term health of a community's food system is an important indicator of its vitality and sustainability. A logical way of vitalizing a community is by developing a local food economy. This entails the designing and implementing of sustainable local food systems that are aimed to be economical viable for farmers and consumers, use ecologically sound and production practices and enhance social equity and democracy for all members of the community.

Meanwhile in order to improve food security at the lower levels of a state, it is advisable that states improve their transportation systems and also encourage local people to buy these products. More so, mechanisms need to be in place to help process perishable food stuff that take a longer time to reach market destination.

This is because studies have shown that residents in local communities can get their diet nutrients from local sources especially if they change their diet to seasonally available foods it therefore calls for technical and financial assistance backed by a political will to help sustain this process of ensuring food security and promote the health status in our communities by helping the local farmers and creating or encouraging local patronage of their produces. Again it calls for sustainable education in a form of advocacy to drum home of the nutritional efficacy of local food crops.

35. Adewale Adeleke, Van Hall Larenstein University of Applied Sciences, the Netherlands

My field experience was in the area of incorporating soya beans in the weaning diet of children in rural areas of Nigeria. The diet of these rural dwellers is carbohydrate based because it is the major source available. Farmers were trained on different methods of preparation. Though most of these demonstrations were successful the people hardly continue it due to poverty.

36. Shambhu Ghatak, Inclusive Media for Change, India

Dear all,

I am attaching here an article by Philip McMichael titled: A food regime genealogy (2009), for the benefit of discussants (-Linking Agriculture, Food Systems and Nutrition).

This article can be distributed as it is a free access one and is available at this link: http://typo3.fao.org/fileadmin/user_upload/fsn/docs/Agriculture_nutrition/food_regime_genealogy.pdf

Regards,
Shambhu Ghatak
http://www.im4change.org/
What is the role of an economist in improving nutrition along the food system? What support they need from other players of the food system in order to accomplish this task?

Economists can play several roles in helping us to 1) understand the food system, 2) measure whether nutrition related interventions are having their intended effect, and 3) understand the costs of an intervention in relation to its measurable benefits. Economists can draw on secondary data as well as help generate primary data to understand the demand and supply of different foods in the existing system. Through working with nutritionists and accessing appropriate food composition databases, the demand and supply of specific nutrients of interest can be generated.

Within our current effort to transform the role of pro-vitamin A rich orange-fleshed sweet potatoes within the food systems of sub-Saharan Africa, the economist has led the design of standardized baseline modules in our projects that seek to build the evidence base for how to best deliver sweet potato to the end user. In this effort, the economist works directly with nutritionists and agronomists to construct and test these modules in addition to constructing additional modules specific to each project. In designing these modules, the economist works closely with statisticians and nutritionists to ensure that a sufficient sample size is obtained so that changes in the key quantifiable indicators can be detected after conducting the endline survey.

The economist has also been engaged in conducting rapid appraisals of the market situation given settings for our project seeking to develop viable markets for sweet potato-based processed products. By understanding the relative prices of sweet potato versus other sources of energy and other sources of vitamin A rich foods and learning how the current value chain for sweet potato is operating, the research team (consisting of agronomists, food processors, and extension personnel) can better design the intervention understanding where price or other barriers may exist that could influence adoption. Testing potential products requires understanding the cost of making the product and conducting consumer acceptance tests, which the economist has been assisting to design.

Core to our work is developing sustainable approaches for ensuring that resource-poor farmers have access to sweet potato vines, the “seed” of this crop. We have been testing different models to ensure this access and economists have been heavily involved in collecting data to measure the costs of the different approaches relative to their benefits. They have also been conducting studies to determine the willingness of farmers to pay for vines of new varieties with specific traits, or disease free planting material compared to local material of mixed quality. In these efforts, they work closely with agronomists and extension personnel. Economists also have assessed the trade-offs farmers face in producing the introduced crop compared to other dominant crops in the system. This helps the entire team understand the factors driving adoption of the introduced varieties.

Economists also have been involved in setting up monitoring and evaluation systems for the project, drawing on their knowledge of database management and understanding of how to identify and collect key indicator data. This involves close interaction with all disciplines (breeding, agronomy, nutrition, gender specialist) to ensure that a cost-effective data collection system is set up that is not overly burdensome, yet enables the team to capture the key information required for managing the project as well as for reporting outputs and outcomes.
Small farmers and subsistence food producers are being overwhelmed by industrial food production and governments promoting industrialized food production. Such policies from business and government risk over-centralizing food production and undermining the highly nutritious food production based in small farmers and subsistence food producers. An example of this circumstance and an alternative approach may be possible in countries like México.

México’s indigenous knowledge systems supported an agriculture system that successfully weathered environmental and climatic changes (volcanoes, droughts, frosts for example) that provided sufficient nutrition for a growing population for more than 2000 years. That system built on and elaborated a food production system that saw population growth of more than 7% per year.

México’s food domestication and transformation heritage, indeed its very capacity to continue as a nursery of human foods is in jeopardy of being destroyed. The loss of human generated food security produced by small farmers and subsistence farmers will endanger not only the availability of nutrition dense foods for the Mexican people, but for peoples on virtually every continent who depend on México’s continuing food diversification.

México’s ancient food generating system is not being jeopardized by changing climate, but by human created policies and practices intent on eliminating what some consider a backward and inefficient food production system. Just as the original food support system of México is so needed when the world experiences dramatic climatic changes that threatens food security worldwide, spending and subsidies in support of small farms and subsistence farmers have been cut or completely curtailed. These and other policies such as privatizing ejidos combine to create a risk of collapsing México’s fundamental food system.

This need not happen, and indeed, it should not be allowed to happen. Government and business sectors depend on healthy people to maintain a stable social and economic system. Redefining policy to recognize small farmers and subsistence, as an essential part of a modern and economically secure México will be necessary to ensure its continuity. Civil Society organizations dedicated to enhancing the ancient food producing systems of México providing economic, political and social support to small farmers and subsistence farms will significantly change the present trajectory of decline. México’s government and business sectors should recognize the more than 50 thousand small and subsistence farmers as a part of the non-profit sector where they will be allowed to receive public support, business support and government support without taxation. They should be considered part of civil society due to their centrality to the food security system.

There is an alternative to commercialization or elimination of small farm and subsistence farming: Extend civil society policies to small farms and subsistence farms as a matter of national security. Non-profit organization is an existing mechanism that can preserve México’s ancient food generation capability.

Removing the stigmas associated with small farming and subsistence farming and indigenous knowledge systems is essential, and recognizing the small farming sector that produces 40% of the foods consumed in Mexico as a part of civil society may be the most reasonable approach to ensuring the economic and social stability of México itself. The pattern of stigmatizing and undermining small farms and subsistence food production must be seen as a net negative for governments and business. The government, business and civil society sectors will all benefit. Both business and government extend financial and technical support to small farmers and subsistence food producers so they can do what they do best-grow food.
39. Comment by Corinna Hawkes and Karel Callens, facilitators

Two main themes emerge from the most recent posts: policy and education. Better synergies between agriculture and nutrition are only going to happen if policy frameworks are in place to facilitate them; the nutritious foods produced by agriculture are more likely to improve nutrition if people understand the benefits of (and enjoy) eating them – and producers understand why it is important to produce them.

It should be noted, then, that policies targeting agricultural production are not necessarily separate from those targeting education. The case given from Brazil is one such example: a government policy requiring the country’s school meal program to purchase food directly from family farmers. This policy did not have improved nutrition as its primary goal - nor education - but it is resulting in a mutually beneficial educative process for both the farmers and nutritionists involved, with an outcome that, one hopes, should yield nutritional benefits for both Brazilian school children and family farmers.

It would also appear that the linkage between nutrition and agriculture is a lot about how the “consumer” can play a greater and more meaningful role in shaping the food system. One of the questions here is how government policies, regulation and consumer education programmes can help (re-)shape consumer demand in a way that forces agriculture and food systems to become more sensitive to issues of good nutrition, environmental sustainability and poverty. While we have had so far much discussion about the role of the public sector, there are also questions that need to be asked about the roles of retailers and the food industry in shaping consumer demand (both in terms of nutrition and sustainability) through marketing and in meeting the nutritional needs of the poor through more efficient, less wasteful and therefore lower-cost food systems.

Apart from the Brazil school meal programme, are there other positive experience of successfully engaging with the private sector in resolving the above issues and in what way can government and civil society help bring about such changes in the private sector?

40. Esin Mete, Toros Agri, Turkey

Zinc fertilizer boosts yields and public health in Central Anatolia, Turkey

Zinc deficiencies were identified in the early 1990s as reducing wheat yields in Central Anatolia. A research project was started in 1993 which showed that Zn applications led to significant increases in grain yield. In certain areas (DTPA-Zn ≤ 0.1 mg/kg soil), where cereal production was not previously economical, and yield was extremely low (0.25 ton/ha), grain yield increase went up 6- to 8-fold.

The effects of Zn fertilizers on plant growth and yield became more pronounced under rainfed conditions. Plants grown on Zn-treated soils or derived from seeds with very high Zn concentrations showed much better seedling establishment and higher tolerance to environmental stress factors (“winter killing”). Soil or foliar Zn application also improved grain quality by increasing grain Zn concentration and reducing phytic acid, a compound involved in the impairment of Zn bioavailability in humans.

The results were so positive that fertilizer industries in Turkey, particularly TOROS Fertilizer and Chemical Industry, produced increasing amounts of NP and NPK fertilizers containing 1 % Zn, at the same price as those containing just the three main plant nutrients.

Convinced by the results in their fields, Turkish farmers significantly increased the use of the Zn-fortified fertilizer within a few short years, despite the repricing of the products to reflect the added-value of the content.
Today, nearly 10 years after the identification of Zn deficiency problem, the total amount of Zn-containing compound fertilizers produced and applied in Turkey reached a record level of 300 000 tonnes per annum. It is estimated that economic benefits associated with the application of Zn-fertilizers on Zn deficient soils in Turkey is around US$ 100 million per year.

For more information on the role of fertilization strategies in fighting micronutrient deficiencies: [http://www.fertilizer.org/ifa/HomePage/SUSTAINABILITY/Nutrition](http://www.fertilizer.org/ifa/HomePage/SUSTAINABILITY/Nutrition)

For more information

**CIMMYT Solving the Zinc Problem from Field to Food**

**Enriching Grain with Micronutrients: Benefits for Crop Plants and Human Health**, by Cakmak, I., Sabanci University, Turkey

**Identification and correction of widespread zinc deficiency problem in Central Anatolia**, Turkey by Cakmak, I., Sabanci University, Turkey

**Toros Agri Industry**

Best Regards,

Ms Esin Mete,
CEO of Toros Agri

**41. Erasto Shemu Mlyuka, Jiangnan University, China**

Dear facilitators & Forum members,

For real agriculture is often looked upon as a tool to generate nutritional outcomes especially in developing countries. There many factors we need to consider boosting agriculture in order to achieve the nutrition aspects. To my knowledge most developing countries their priority is food security which in most cases is linked with cereals crops or any stable crops in a particular country leaving alone vegetables and fruits. I have been trained in Agriculture and majored in Horticulture, no doubt you will agree with me, most nutritious and functional foods are from horticultural crops such fruits, vegetables, spices, roots, stems, edible flowers to mention a few. If one think of safe balanced diet cannot achieve easily in other stages other than from agriculture aspects which involve cultivation up harvesting, transport and storage (i.e from farm to table). To lower unnecessary cost in the subsequent stage of the food supply chain some few elements to motivate farmers to produce safe and nutritious agricultural produces should be emphasized from this stage.

**Motivation**

For local markets - Farmers can be motivated by ensuring sustainable and reliable markets for their agricultural products in every production season/year. Also farmers should be facilitated with sophisticated storage facilities especially for fresh horticultural produces. In addition to that farmers should be facilitated to access cold chain trucks when transporting their fresh agricultural produces for storage or marketing in cities far from the area of their production.

**Training /Advising**

There is a great need to prepare a suitable training package for peasant/farmers so that they can produce nutritious and safe agricultural produces. At international market level we have Global Good Agricultural Practices with an element of traceability but at local market I doubt to have that package in place especially for most developing countries. Based on researches, agronomic practices have a great influence on the nutrition attributes of an agricultural produce. Also considering the concern of food safety it is at this stage it is possible to manage maximum
residual effects in a fresh produces, to know whether the site is free from heavy metals, whether irrigation water is safe from microbial and chemical contaminations.

**Financing**

To achieve the above clear financing plan and means to achieve the plan should be clearly addressed at country level.

**Monitoring and supervision system**

In order to achieve nutritious agricultural produces there must be monitoring and supervision mechanism meet the intended target.

The above motivation is for local market, for a global market the system is in place however is so complex, to access international farmers need to acquire certification of many standards including global GAP, HACCP for processor and other many standards depending on the destination markets.

I believe having used good agriculture practices and having the system of traceability of agricultural raw materials in place, to monitor key players in the supply chain and processors, the risks of food systems nutrition perspectives will be taken care both at national and international level. Therefore every soul in this universe will be in the position to enjoy safe and nutritious food.

Best regards!
E.Mlyuka
(PhD Scholar in Agricultural Products Processing and Storage Engineering).
Jiangnan University

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42. Ángel Leyva Galán, Instituto Nacional de Ciencias Agrícolas (INCA), Cuba

**English translation**

I have spent many years investigating Food and Agriculture related topics and I have managed to produce indicators and agrobiodiversity indexes which I have provided to the local governments of my country, targeting equilibrium between production and human food needs according to consumption patterns but without altering the latter with the crops nutritional contents.

From a scientific and technical point of view, I believe we have reached a consensus. Therefore extending these discussions would be impractical whilst those responsible of solving the problem remain aside of the debate. In my opinion, government involvement is missing. Please find below my explanations.

1. Food needs vary according to the age, gender and type of work. However, when eating, most people forget these factors and prioritize their food preferences (almost like a drug) over an improvement of our quality of life. We must help to solve this problem at government level.

2. Food regional preferences are not motivated by genetic inheritance but by cultural traditions, passed down from generation to generation, including food habits that lead to obesity (for example in the United States of America) or starvation (for example, in certain areas of Africa). The gradual shift in consumption patterns can be achieved, although better results shall be obtained with governmental aid.

3. Many cultures around the world eat insects, seeds and roots. This diversity is not accepted by other cultures, although life expectancy is similar. This means that food options worldwide are abundant and diverse, although governmental action and divulgation are necessary.
4. According to specialized literature, many staple food consumption patterns are deteriorating agricultural ecosystems (rice, wheat, beef, potatoes and corn amongst others). Without these, entire populations would die "psychologically" due to the rejection of other food with higher quality nutrients. We keep discussing and producing every day more and more spoiling products and we are happy if the FAO says that these have increased from year to year. However the reality is that there is still poverty and food shortage for the hungry and the erosion of the agricultural ecosystems continues increasing. I cannot withstand more global meetings to increase rice, wheat, beef or corn production ... Food must be diversified with alternatives that are less aggressive to ecosystems and of greater benefit to the human body. Governments can help.

5. I have never heard that scientists or groups of specialists involved in these problems have been invited to the G8 meetings to discuss these issues and suggest proposals for the future. Nor do other world leaders seem to be working in this field.

6. We have spent many years explaining what to do, without much success

In my humble opinion, world leaders and their advisers should receive these messages and discuss them as a top priority in their meetings

As a recommendation for government leaders, I will try to offer my solutions to each of the points (1 to 6) detailed before.

1. Markets are full of food sold individually. However a family ignores what food and how much quantity should be cooked. Like drugs, they buy the food and amounts they prefer. Markets should offer household food rations: on one hand, food diversity (combo) for all human needs in portions per day and per family. On the other hand, diverse needs within the household (per age and per gender). In both cases, as diverse as possible, according to the dietary habits of each region but including new options in all cultures after a study of the proper food quantities. Those "big eaters" may damage their health by ingesting two, three or four portions more than recommended, but they will know they are digging their own grave.

2. Government leaders, the global organizations and the international agencies should devote one year of work to this idea on a trial basis, proposing it as "Year of Responsible Food" with the media dedicating in an early stage 50% of their advertising to these problems.

3. If fashion trends are capable of reaching the poorest and these are able to renounce to their food to buy something fashionable, then "responsible food" should be converted into a fashion trend in the media: TV, Cinema and Radio. If a famous artist or sportsman reports in the media eating roots ingested by indigenous people (healthy for the human body), after one week all the children will eat these and this indigenous product will be available worldwide.

4. The government leaders should use the media to inform the world about the harmful side effects for human health and agricultural ecosystems of the over nutrition by 5 or 6 crops that represent nearly 80% of the global consumption of calories and proteins (such as rice, wheat, beef, potatoes and corn). The repetitive consumption of these should be reduced at least by 50%.

5. Suggest the G8 and other world leaders establishing 2013 as the “Year of Responsible Food”, creating a global responsibility strategy and allocating funds for the gradual diversification by cutting funding for food with restriction proposals. I have the experience of Cuba, where, back in 1960, the majority of Cubans despised spaghetti and pizza because they were new products in the market. Nowadays, Cubans cannot live without pizza and spaghetti.
6. The G8 leaders could invite us or the most important scientists and specialists of the world to their meetings for the 2013 proposal, don’t you think so?

Do not worry about the farmers as they are going to produce in their ecosystems the food that consumers request.

Note: I have nothing against G8 but they are the world economy leaders.

Thank you
Dr. LEYVA

Spanish original

He pasado muchos años investigando en la temática Agricultura vs Alimentación y he logrado determinar indicadores e Índices de agrobiodiversidad, que he puesto en mano de los gobiernos locales de mi país, tratando de equilibrar la producción, con las necesidades alimentarias humanas, según los hábitos de consumo; pero, sin alterar el patrón de necesidades alimentarias humanas con los aportes nutricionales de los cultivos.

Piensa que en términos de debate científico y técnico, hemos llegado al punto de consenso, de modo que continuar estos debates sería “cocinarnos en nuestra propia salsa”, mientras que los encargados de resolver el problema, se encuentran por fuera de este debate. Porque en mi opinión, falta la participación gubernamental.

Explico.

1. Las necesidades alimenticias varían por edad, sexo y tipo de trabajo que se realiza, pero la mayoría no se acuerda de eso cuando se trata de comer, todos pensamos en lo que nos gusta (casi como una droga) y no en lo que más nos ayuda en nuestra calidad de vida. Hay que ayudar a resolver ese problema gubernamentalmente.

2. Lo que nos gusta comer a la mayoría de los seres humanos por región, no es por herencia genética, sino por tradición cultural, que pasó de generación en generación. Incluyendo los hábitos alimenticios que conducen a la obesidad (por ejemplo en los EE.UU.) o que conducen al hambre (por ejemplo, en algunas partes de África). El cambio paulatino de hábitos de consumo se logra, pero mejor, con ayuda gubernamental.

3. Muchas culturas de todo el mundo se alimentan de insectos raíces y semillas y esa diversidad no es aceptada por otras culturas; sin embargo, la esperanza de vida no difieren entre una y otra cultura. Esto significa, que las opciones alimenticias en el mundo son abundantes y diversas, pero, es necesario divulgar y accionar gubernamentalmente.

4. Muchos hábitos de consumo de algunos alimentos esenciales (de acuerdo con la literatura) están deteriorando los ecosistemas agrícolas (arroz, trigo, carne de res, papas, maíz entre otros) alimentos sin los cuales, poblaciones enteras morirían “psicológicamente” por no poder aceptar otros, con aportes alimenticios de mayor calidad y seguimos discutiendo y produciendo cada día más y más de estos productos deterioradores y somos felices si la FAO dice que estos productos han aumentado de un año a otro, pero la realidad es que la pobreza y la falta de comida en el plato del hambriento, continúa (tal vez nadie usa ese incremento), y si se continúa incrementando la erosión de los ecosistemas agrícolas. No soporto mas reuniones mundiales para incrementar la producción de arroz o trigo o carne vacuna o maíz .... Hay que diversificar la alimentación con opciones alimentarias menos agresivas a los agroecosistemas y de mayor provecho para el cuerpo humano. Los gobiernos, pueden ayudar.
5. Nunca he oído que los científicos o grupos de especialistas, que debaten estos problemas han sido invitados a las reuniones del “grupo de los 8 con sus invitados de otros países, para discutir estos problemas y hacer propuestas para el futuro. Tampoco otros líderes mundiales hacen mucho en esta dirección.

6. Hemos pasado años diciendo que es lo que hay que hacer y no se escucha mucho.

De acuerdo con mi humilde opinión, son los líderes mundiales y sus asesores, los que deben recibir estos mensajes y discutirlos en sus reuniones como punto de primer orden.

Ahora trataré de proponer que hacer, para la solución de cada punto (del 1 al 6) como recomendación a los líderes gubernamentales.

1. Los mercados están llenos de alimentos que se venden individualmente, sin embargo una familia no sabe cuanto debiera cocinar, cuales alimentos y compra lo que le gusta en las cantidades que le gusta (como la droga); pienso que se debiera comenzar a ofertar en los mercados, raciones alimentarias familiares en un conjunto la diversidad de los alimentos (combo) para todas las necesidades humanas en porciones por día por familia y la diversidad de necesidades dentro de la familia (por edad y sexo) pero con tanta diversidad posible, como productos hay, acorde con los hábitos alimenticios de cada región pero incluyendo en todas las culturas, nuevas opciones para diversificar (después de un estudio de la correcta proporciones), así, “los comilones” (que le gusta comer mucho o comen en exceso) podrán afectar su salud, consumiendo dos (2), tres (3) o cuatro (4) porciones superiores a las recomendadas, (esa será su droga mortal) pero así ellos saben que están cavando su propia tumba.

2. Los gobernantes, las organizaciones mundiales, los organismos internacionales deberían dedicar un año de trabajo dirigido a esta propuesta a modo de prueba y proponerlo como "Año de la Alimentación responsable" y los medios de comunicación deberían dedicar en una etapa temprana, el 50% de su propaganda de estos problemas.

3. Si las modas son capaces de llegar a los más pobres y estos son capaces de dejar de comer, para comprar algo que está de moda, lo que queda es, hacer de “la alimentación responsables”, una moda, en los medios de comunicación como Televisión, Cine, Radio. Si un artista famoso o un deportista famoso informan en los medios de divulgación que están comiendo las raíces que consumen los indígenas (que son saludables para el cuerpo) después de una semana, todas las chicas y chicos comerán estas raíces y las raíces de los pueblos indígenas llegaran a cualquier parte del mundo en el "combo”

4. Los gobernantes tienen que decirle al mundo a través de los medios de comunicación, cuáles son los efectos secundarios perjudiciales para la salud humana y los agroecosistemas por alimentación excesivo, de los 5 o 6 cultivos que representan casi el 80% del consumo mundial de calorías y proteínas (como el arroz, el trigo, la carne de res, papas y el maíz). Debemos reducir en al menos 50% del consumo repetitivo de estos alimentos.

5. Proponer al “grupo de los 8 y sus invitados” y otros líderes mundiales para nombrar el año 2013 "Año de la Alimentación responsable” para la creación de la estrategia global de la responsabilidad y gastar los fondos de dinero para la diversificación (gradualmente), que se retira de los dineros que se utilizan en los alimentos que se proponen restringir.

Tengo la experiencia de Cuba, que en 1960 la mayoría de los cubanos despreciaban los espaguettis y las pizzas, porque eran nuevos en el mercado. Hoy los cubanos no pueden vivir sin pizzas y espaguettis.

6. Los líderes del "Grupo de los 8” podría invitar a nosotros o a los científicos y estudiosos más importantes del mundo a sus reuniones, para la propuesta del año 2013 ¿no creen?.
Y No preocuparse por los agricultores, ellos van a producir en sus agroecosistemas, lo que los consumidores desean consumir.

Nota: No tengo nada contra “el grupo de los 8”, pero ellos son los líderes de la economía mundial.

Gracias.
El Dr. LEYVA

43. Harriet Kuhnlein, McGill University, Canada

Greetings Forum Readers,

As an academic who has worked with Indigenous Peoples in several regions of the world, it is important to me that everyone recognizes the holistic nature of Food Security and Nutrition. Everything is connected, and many things must be addressed at the same time. At the top of the list is that our air, water and food must be protected from pollution and climate change threats. If our food is safe to eat, we must guarantee food security that provides adequate and healthy diets to everyone. This is the human rights perspective for adequate food, nutrition and care. Agriculture is obviously linked to human food systems, but agriculture is not only field agriculture to grow crops; it is also wild foods, fish and forest products that can derive healthy food biodiversity and provide livelihoods that alleviate “poverty” (in the broad sense of the word). Good food must be available, accessible, acceptable (as defined by culture) and sustainable for everyone. For provisioning wholesome and healthy food to families, the cultures and ecosystems in which people live need to be healthy and protected.

Governments need to ensure the cultural, technological, economic and institutional support to provide healthy food to all of its citizens. “Business” operations that provide food need to be held to ethical principles that respect government rules to support human food, nutrition and well-being.

Behaviour change to improve food security and nutrition with food supplied by agricultural endeavours is necessarily multi-sectoral in approach. It involves both the public and private sectors. It involves ministries not only of agriculture and health, but also education, transport, food and drug safety, culture, commerce, foreign affairs and trade, and environment. It is all connected and inter-dependent within food systems. Behaviour change is needed in governments and with citizens. People need to understand and value their food, and learn how to use it for their good health and well-being. All sectors should help this to happen in a coordinated way.

There are many people in the world today who do not know where their food comes from, or how to cook it once it is put in front of them. In some urban areas it is easier to buy a gun than a fresh tomato. It is easier to get a granola bar than to prepare and cook oatmeal. To link agriculture, food systems and nutrition it is urgent to get down to brass tacks, to focus on the people directly involved, the people who need their human rights and food security guaranteed. Everything is connected.

Harriet Kuhnlein
Centre for Indigenous Peoples Nutrition and Environment (CINE)
McGill University
44. Mahmood Bill, Ghana Muslim Mission, Ghana [second contribution]

Improving nutrition outcome is a decidedly multi-sectoral goal and requires the involvement of several players, including households and public and private sector agents. It also requires the involvement of government institutions that formulate policy and that, in so doing, influence the settings in which agriculture-nutrition pathways are or are not operationalized. It is worth noting that responsibilities of nutritional issues are generally assigned to health ministries. However, they have no administrative jurisdiction or influence over agriculture or trade, the most important ministries addressing food supply and availability.

45. Biplab Nandi, Society for Nutrition, Education and Health Advancement, India [received through Solution Exchange India]

Dear All,

I fully agree with the comments made by Dr. Chaudhuri [previous contributor, Ed.]. The crucial issue is how to strengthen the linkages between agriculture and nutrition? In India, there is still no sincere effort to provide nutrition orientation to food production. We feel comfortable with the calorie requirements rather than nutrition derived from complete food basket. Then the issue of food and nutrition security which encompasses physical and economic access to food coupled with a steady flow of supply. Furthermore, the foods consumed need to be fully utilized. I am not certain as to when are we going to address all these critical issues for complete and balanced food system. I understand many NGOs, such as CINI are working to attend to all such needs of the most disadvantaged people of the society. But in my opinion the effort is grossly inadequate.

Best regards,

Biplab Nandi
Society for Nutrition, Education and Health Advancement (SNEHA)
Kolkata, West Bengal

46. Masresha Yimer, consultant, Ethiopia [third contribution]

Dear Course Organizers and Participants,

It is interesting to spell out responsibilities of different professional in dealing with the massive issues of agriculture and nutrition development.

As Ms Eutrophia indicated at the beginning of her discussion, it is everyone’s responsibility because the multidimensional nature of the problem calls for a multidimensional approach to deal with it.

I work on the Economics and Marketing and trade field. So, we may say on Economics disciple professionals to do a lot of work on the market side, both on demand for inputs and raw materials and on the supply of the final agricultural crops and agri processed products.

However, even here an Economist/s effort can be called a success if and only if the from the demand side the inputs and raw materials being recommended are found to be those conducive to the local agro ecology, having good yield, specific seed variety to use, etc..., which certainly
needs the major effort and role of other discipline professionals such as agronomy, nutrition, agricultural research, ...

On the supply side, the final product can hit the goal of nutrition, if the final agricultural crop produced is of the required good and balanced content composition for the baby, young, and old. ..

On the agro processed side, again the combination of the different crops to contribute to good household nutrition needs the heavy hand of the nutritionists and related professionals. Yes, it is about costs and returns, but including achieving nutritions content/basket of goods so to achieve the goal of using agriculture to enhance nutrition among society.

In my view, a project approach where consultants or professionals from different discipline in the pre planning, planning, work in progress and actual implementation is what is actually needed right now.

I should say the course coordinators and also participants with wide expertise or leading relevant projects in this area should come up with a project sort of guideline/manual on how this should be done to serve as a resource for countries and regions working in this area. This should show how to strike a balance in a given condition of agro ecology, population, poverty level, sanitation, etc .. variables.

In fact, I think lack of such a project approach may be one reason why we are not doing the best thing in nutrition and agriculture - as some key decision variables or discipline areas may be missing in our ongoing activities in this area.

Masresha
from Ethiopia.

47. Paul von Hartmann, USA

Thank you friends, for highlighting this critical component of the process. I trust this forum will continue to evolve into the uncensored discussion that it needs to be.

I write and make films with an eye toward the realm of alternative values. Study of the science, art, spirituality and ecology of value is known as "axiology." In a world that isn't working, it has occurred to me that perhaps all that's required, to make the critical difference, is a simple shift in values.

Consider that agricultural values have diverged from respect for the sacred, sensitive forces that make the sprouting of a seed possible. Spiritual relationship with food sustained our species for thousands of years. Respect for Nature dominated human agricultural endeavor.

As it is now, there is no trace of respect for Nature in anything we do, not even farming. We casually insult the Natural Order and yet we continue to expect it to keep working. Chemical ag, GMOs and political industrial prejudice expressed in a so-called "drug war" have crippled organic agriculture and home gardening.

The inevitable wars, economic upheavals and environmental degradation we are in the middle-end of are about to achieve synergistic collapse unless we shift the values of our entire species. No exceptions.

Evolution toward "Gaiatherapeutic" (Earth-healing) industrial development begins with considering all possible solutions to the most fundamental problems first. It does absolutely no
good to treat the compounding symptoms of imbalance without immediately addressing the foundations of human values. Our diversion from Gaia-therapeutic values has favored "Gaia-cidal" (Earth-killing") industries and political corruption serving extinctionistic values.

What's most important? What's the first step toward achieving our ultimate objective? How bad do things have to get before all solutions are objectively considered?

The scientific references I have offered to this forum have been disallowed by the moderators of this "holistic" discussion, simply because controversy surrounds my area of expertise, for the past twenty years (of 56). Other professions that have led to my present occupation yield an holistic vision linking agriculture, food systems, and nutrition through a broader set of interdependent relationships, generally referred to as "ecology," but it is not so easy to

It feels arrogant to say that I feel I have solutions to offer, when so many who have tried for so long have failed; until I remind myself that it is the miraculous within everyone that is needed to end world scarcity that is engendering never-ending world violence.

Namaste,

Paul von Hartmann
California Cannabis Ministry
Sebastopol, California Republic
USA

48. Anshuman Das, Development Research Communication & Services Centre, India [received through Solution Exchange India]

Dear friends,

The food habit of a particular community depends on the ecological setup of the location - people are used to the food which is grown locally. But now, we are in a globalised monoculturised era, and we are used to have same food everywhere. Food in India, was never only rice or wheat - but when we thought of green revolution, we tried to increase the production of rice and wheat only forgetting the fact that we Indians have minor millets, legumes, pulses and vegetables also. We forgot that we consume number food which are gathered from the common property resources. Now we understood that input driven westernised agriculture is good only for rich areas - rich in ground water, soil quality and rich farmers. And our Indian ecology, which is 60 percent rainfed and comprises on 75 percent small and marginal farmers, is not suitable for high toxic input driven monoculturised production practice - which ultimately resulted into disappearance of local food/genetic resources.

There were many traditional crops, wild herbs which is high in nutrition - but not mainstreamed (and not mentioned in text books), which grow and provide nutrition even in adversities and stresses. When we are thinking of iron rich rice or fortified food - why do not we accept these as remedies, rather than pumping in fund in exotic researches. Incorporate school garden or involve the community to donate vegetables in the ICDS or midday meal can improve the nutrition situation to some extent. The school garden also can be used as demonstration to mothers to start garden in their backyard. PDS also can think more on local food.

A villager, 60 years back, was dependent in the market only for spices and some cereals, rest of the things (major part of cereals, pulses, oil, tuber, fish, meat, egg, firewood) were either produced or gathered. Now, as we have a monoculturised practice they have to sell their produce in the market and buy food. So, the food becomes commodity and which is transformed
to money number of times - which increases the price of it and reduces the nutrition quality. Sixty percent of Indians are farmers, and their food security can be created by self sustained diversified family need based production system based on agroforestry principles. For the rest, if the ‘produce locally-consume locally’ idea is repromoted - maybe we will have less amount of extra price added to food over the cost of production. This can be tried out in block level by mapping food demand and available production space and creating consumer-producer alliance. Let us not shift the debate from the food and nutrition sovereignty domain to the domain of access to food only which creates dependency on a system (read schemes/donations/subsidies) which is not really in control of the commoners.

Anshuman Das
Development Research Communication & Services Centre (DRCSC)
Kolkata, West Bengal

49. Violet Mugalavai, Moi University, Kenya

Dear all,

We have recently started a fruit and vegetable gardening project on our campus of Chepkoilel University College in Kenya - and the Theme of the project is “Greening the College for Community Nutrition Education”, out of my initiative. Amazingly, the project has attracted volunteers who connect with it and work on it pleasurably. At the end of the day, they are able to take home some green leafy vegetables, both conventional and traditional. I have also introduced some indigenous fruits I used to eat when I was young (which are known to be disappearing from their original ecology) and bear fruit very quickly - such as wild berries, gooseberries and guavas and both children and grown-ups are seen surrounding the bushes and eating from them. This is the pleasure of using available resources in a community such as this one. It attracts curiosity and in the event, feeds the population, and gives livelihoods to the unemployed, gives a chance to those who would like to exchange or practice their knowledge. My students have had a wonderful chance of educating the community and themselves on the nutrition and health benefits of all the fruits and vegetables that we grow. They also do product development and demonstrations for better diffusion of nutrition knowledge.

It is a known fact that some fruits and vegetables that are sold in supermarkets are not known to the consumer whom they are intended for and therefore a lot of losses are incurred as they get spoilt on the shelves. Nutritionists have an obligation to use creative innovations and engage people at different levels of learning, starting from kindergarten to convey nutrition information to consumers of food agricultural products for a better agriculture-food system nexus from seed to table, so as to enable consumers to maximize their potential of achieving their own right to food and nutrition security.

It is my hope that this project, which is fast-taking up the idle college land, and remains green throughout the year, even during drought, such as now, will continue to provide for the community and gain further momentum as we look for partners to work with for better sustainability of the livelihoods it has created and food and nutrition security of the college community.

Thank you
50. Stacia Nordin, Malawi

I'm happy to see that improved agronomic practices were included in this post - and I'd also broaden that to say improved systems as a whole. Our food and nutrition systems are connected to so many different practices, including what we each choose (or are forced) to eat every day, and what we choose to support or not.

re: biofortification - it isn't the plants that need to change it is the people and their systems. Nature gave us a wide variety of plants and animals for a reason, changing species to have what other species already have avoids solving the problem. We don't want people to continue growing and eating so much rice (or wheat, or maize, etc.). Eat and grow less rice and instead eat and grow more other food groups.

re: micro-nutrient fertilizers - I can only think of one nutrient, iodine, that is difficult to replenish, even that can probably be addressed naturally. Once again it comes back to restoring what we / our parents have destroyed and getting back on track with healthy systems.

re: handling, packaging, transport - I appreciated that this is needed in today's world, but I do hope that our systems get closer and closer to the people that consume the foods; that more and more people get involved with their own food systems in any way they can, even if it be choosing more foods from farmers-type markets; and that packaging and transporting gets more and more 'green' / environmentally friendly.

51. National Alliance Against Hunger and Malnutrition, Senegal

English translation

My name is Jacques and I am the Coordinator of the very recently formed Alliance of Senegal. I would like to participate in the discussion and contribute with my opinion with regards to this problem.

In Sub-Saharan Africa, where I live, the food system operates with millet, sorghum, maize, rice and fonio.

Faced with new issues, such as: climate change, greenhouse gases, desertification, floods, degradation of soil, ecosystems and farming, the socio-economic environment and mechanization, what strategies, methodology programs and projects should be adopted in order to increase agricultural productivity and improve food and nutritional systems?

Intensive agriculture has become the wonder of the world. It has undoubtedly allowed an increase in agricultural production while improving food security and having an impact on nutrition; however this form of farming is more and more criticized for its occasional degradation of the environment, its dependence on oil, and for the recent appearances of food crises which have worried world opinion, FAO's in particular.

Indeed, intensive agriculture has opened the way for dreams. It has allowed a great increase of foodstuffs and a clear improvement in nutrition. However, the criticism aimed at it has given us pause for thought because there are reasonable grounds for questioning its durability. Its mainsprings, which put much pressure on the environment, the mechanization of the forms of production, and agronomy, raise problems of access to satisfying, varied, sufficient and durable food.
Nutrition is still inadequate in this world: a child dies every six minutes due to hunger and malnutrition.

It is also responsible for between 70 to 90% of deforestation worldwide. Intensive agriculture contributes to between 11 to 15% of the total amount of emissions of greenhouse gases.

That is to say, an approach like this could not rise to the challenge of reasonably feeding the world population, which has just passed the 7 thousand million mark.

If we want to reduce the collateral effects that this will create, especially among developing countries, we have to adapt to the climate changes which threaten family use of land.

In this context, we advocate the strategy of organic agriculture among families. This form of farming respects the environment and has a positive impact on nutrition/health by the quality of its products.

Organic farming is up-to-date. Farmers are trained and recognize the increased yields and quality of harvests. Markets are opening up to them and they are encouraged by the experience.

Actually, organic farming will be on the list of solutions to problems related to food and nutrition systems.

Land management programs would bring a sound use of the available areas in each country.

Alternatives to chemical fertilizers and pesticides will reduce the secondary effects of these heavily used agricultural inputs.

Irrigation programs in low lying areas and around water courses could liberate space and concentrate a large labor force trained in new rational farming techniques.

The restoration of degraded lands and their follow-up will allow its strength and beauty to be restored to the Environment.

The Land will be able to provide nutrition to men offering quantity and quality products.

In Sub-Saharan Africa the food systems are threatened by climate warming.

Inevitably people have to adapt to changeable weather: farming methods, local knowledge and involvement of the grass roots population will be the pillars of the initiatives to be taken.

We hope that this is well received and we reiterate our commitment with AAHM.

Regards.

French original

Je m’appelle Jacques et je suis le Coordonnateur de la très jeune Alliance du Sénégal.
je voudrais participer à la discussion et apporter mon point de vue sur cette problématique.
En Afrique subsaharienne, là ou je vis , le système alimentaire fonctionne avec le mil, le sorgho,le maïs ,le riz , le fonio.

Face aux nouveaux enjeux qui sont : les changements climatiques, les gaz à effet de serre, la désertification, les inondations, la dégradation des sols, des écosystèmes, l’agronomie l’environnement socio économique, la mécanisation, quels stratégies, méthodologies programmes et projets faudrait il adopter pour accroître la productivité agricole et améliorer les systèmes alimentaires et nutritionnels?

L’Agriculture intensive a d’abord émerveillé le monde .Elle a indéniablement permis d’augmenter la production agricole tout en améliorant la sécurité alimentaire et a impacté la nutrition; mais cette manière de cultiver est de plus en plus critiquée en raison de la dégradation de l’ environnement dont- elle est parfois responsable , de sa dépendance au pétrole, de la survenue récentes des crises alimentaires qui ont inquiété l’opinion mondial. et en particulier la FAO.
En fait l’Agriculture intensive a permis de rêver. Elle a permis une forte croissance des denrées alimentaires et une nette amélioration de la Nutrition.
Les critiques faites à son égard nous ont permis de déchanter car sa durabilité pose des incertitudes presque vérifiables.
Ses bras armés qui sont une forte pression sur l’environnement, la mécanisation des moyens de production, l’agronomie, posent des problèmes d’accès à une alimentation riches, variée, suffisante et durable.

La nutrition reste en position de faiblesse dans le monde: chaque six minutes un enfant meurt de faim pour cause de malnutrition.

Elle est aussi responsable de 70% à 90% de la déforestation dans le monde. L’Agriculture intensive contribue entre 11% et 15% du montant total des émissions de gaz à effet de serre. C’est dire qu’une telle approche ne pourra pas lever le défi de nourrir de manière qualitative une population mondial qui vient de dépasser le cap de 7 milliards de personnes.
Si nous voulons réduire les effets collatéraux que cela va engendrer surtout dans les pays en voie de développement il nous faut nécessairement nous adapter aux changements climatiques qui menacent les exploitations familiales.
C’est dans ce sens que nous préconisons la stratégie de l’agriculture bio dans les familles. Elle est respectueuse de l’environnement et impacte positivement la Nutrition / Santé par la qualité de ses produits.
En fait l’Agriculture biologique fera partie de la liste des solutions des problèmes liés aux systèmes alimentaires et à la Nutrition.
Des programmes d’aménagements des terroirs apporteront une utilisation judicieuse des espaces disponibles dans chaque pays.
Des alternatives aux engrais chimiques et aux pesticides réduiraient les effets secondaires de ces intrants à forte usage agricole.
Des programme d’irrigation dans les bas-fonds et les abords des cours d’eaux pourraient libérer des espaces et concentrer une forte main d’œuvre formée aux nouvelles techniques de l’agriculture raisonnée.
La restauration des sites dégradés et leur suivi permettraient de restituer à l’Environnement ses forces et son charme.
Elle allait mieux nourrir son homme en lui offrant des produits en quantité et de qualité.

En Afrique au sud du Sahara les systèmes alimentaires sont menacés par le réchauffement climatique.
Nécessairement les populations doivent s’adapter aux caprices du climat : les modes de cultures, les savoirs locaux et la vulgarisation seront les bras armés des initiatives à prendre.

Bonne réception et réitérons notre engagement à AAHM.

Amitiés

Jaques Diouf
NAAHM
52. Etali Sarmah, FMC Corporation, India [received through Solution Exchange India]

Dear Members

Importance of nutrient intake rather than calorie intake is well known as world agriculture produces 17 percent more calories per person today than it did 30 years ago, despite a 70 percent population increase. One important step in facilitating the linkages between agriculture, food systems and nutrition is to identify right actors/value chain players who have the power to drive sustainability and bring to the consumer's table the right kind of food.

The answer to the question "What aren't consumers eating enough of the right kind of food?" is that consumers need right education on nutrition and the actors who are the interfaces between consumers and food system and beyond i.e. retailers, food processors, policy makers have an important role to play. These value chain players can be the driving force backed by the consumer demand. Let me illustrate how value chain players can play a pivotal role in driving sustainable consumption:

- Regulators: Consumption of rich and processed foods can lead to many diseases of affluence, particularly diabetes. The solutions are a) Public policy can be used to change unhealthy eating habits b) Sustainable consumption has to be promoted. For example. In 2004, France passed legislation requiring advertisements for processed food and drink containing added sugar, salt or artificial sweeteners to include health information.

- Food Processors: Excessive salt intake causes a number of cardiovascular diseases, such as strokes and hypertension. This is a burden on the individual as well as on society, because these diseases are fatal and costly to treat and live with. Much of the salt comes from processed meat such as sausages, ham, and bacon and has, so far, been hard to avoid because of consumer taste preference as well as the technological benefits. Meat protein extract (MPE) is a broth of hydrolyzed protein which can reduce the salt in processed meat by more than one third without compromising on taste and functionality. Now there comes the need for food processors as strong value chain players to promote sustainable consumption of salt.

In fact reshaping of consumption patterns; influencing population to shift to wider types of food, and a responsive farming community at the production end is all that will help to build up the resilience of the food system, as well as general nutrition and thus the much needed linkage between agriculture, food system and nutrition.

Etali Sarmah
FMC Corporation
India

53. Key note message by Susan Sarandon, FAO Goodwill Ambassador

Over the last decades, there has been significant progress in growing more food but this progress has not directly transformed into better health and wellbeing of the people. Problems of widespread under and over nourishment still exist in poor as well rich countries. In many parts of the world there is a major shift in consumption patterns away from locally produced foods to ready to eat, heavily processed foods of low nutritional value. What is going wrong? In order to find the answer, I believe that we need to look at the whole food system, from farm to fork. Producers grow the crops they can sell the best, traders seek profit and consumers want quality food at an affordable price. Working together and ensuring there is adequate demand and supply of nutritious food will lead to more and healthier, well nourished people in this world.
Alternative food systems, such as growing organic foods and focusing on locally produced foods show us that there is the possibility to change. Examples shared during this online discussion demonstrate that by working with local communities it has been possible to change consumption and production patterns and achieve measurable gains in the nutrition by increasing the production of highly nutritious indigenous food which had been long forgotten and substituted by highly processed foods of low/no nutritional value.

But to make sure that examples like this won’t remain a drop in the ocean we need the participation of all, producers, the state, the private sector and consumers to achieve our aims. I hope that the examples given and the experiences shared in the course of this discussion help shed more light on the linkages of agricultural food systems and nutrition and that this topic, so vital for the future of humanity, will be on the top of the agenda of all involved in the fight against hunger. Along with the support of technical experts, celebrity activists can be instrumental in focusing global attention on the need to establish essential, I would even say organic, linkages among different sectors involved in the food chain for improved nutritional well being of the global population.

Let me now add a personal note, coming from the heart. When we talk about food, we talk about something complex which goes beyond simplistic clichés: hunger, malnutrition, obesity, eating disorders such as anorexia and bulimia, touch the very essence of the human condition. There is no panacea but the solutions exist if people are treated with dignity.

I am an actress, but above all, I am a person who believes in the dignity of each and every human being. And when people who suffer are not given the assistance and support needed, all of us should be ashamed.

That is why when I accepted the title of FAO Goodwill Ambassador, in October 2010, I accepted it as a call to action. I was proud to join the United Nations family to help draw everyone’s attention to the very real and dramatic problems of hunger, malnutrition, food insecurity and extreme poverty, as well as the concrete challenges and activities that FAO works on every day.

Today, almost one in every six people on earth wakes up not knowing whether they will have enough to eat. These are the most vulnerable and voiceless people in the world – poor, hungry families suffering from the prolonged impact of high food prices, the global financial crisis, and the increased frequency of climate-related disasters such as drought and hurricanes. Food security is not only a matter of humanitarian assistance and agricultural development, it is a matter of national security, peace and stability. Without food, people riot, migrate or die. This is the hidden development issue of our generation. At this moment in time we must galvanize all nations, all people and marshal all resources to defeat hunger. Almost one billion people go hungry. Even if the latest FAO reports have shown some improvements, the number of hungry today still amounts to 925 million. That is 925 million TOO MANY. The world can and must secure food for all hungry people in the world.

Now, and more than ever, we need to work together. Together we can make sure that the hungry eat today – and are able to feed themselves tomorrow. It’s time to act.

Citizens, and governments, must move forward to make food security for all not only a distant dream but a reality within our lifetime. I wish you a challenging, concrete follow up to this Forum discussion, which I am proud to address.

Susan Sarandon, FAO Goodwill Ambassador
Dear friends,

Here is a question-based response to the topic on agriculture, nutrition and food systems.

Q1. Agriculture is often looked upon as a tool to generate nutritional outcomes. What is the value added of looking at how agriculture could contribute not just to improved nutritional outcomes, but food systems more broadly? What are the risks and benefits of taking a food systems perspective?

A1. This is a bit of a leading question in the first part. For a family in the South with one or two acres of land that can be used for cultivation, agriculture is a way to earn income for the family. For such a cultivator - it is not a tool for nutritional outcomes, it is not a basis for food security. In 2010 in central India, I had once been told categorically by a district agriculture department official that "food security" is a concept used by ministers and planners and development specialists, "but the farmer wants income". That was a most useful lesson.

By the same token, if a food products company engages 100 farmers of a district in a contract to grow specified potatoes under prescribed conditions using only certain inputs, this practice and arrangement turns agriculture into "a tool to generate nutritional outcomes". When those outcomes take the form of packaged potato chips, is that the sort of outcome we should have? No it is not, especially when scarce money is used to buy a packet of those potato chips instead of to buy or prepare a fresh hot meal.

As for the second part, to what can we compare this link - agriculture and improved nutritional outcomes? If we look at a period of say late 19th century until before the Green Revolution took hold, food crop monocultures in the South were less common - although there were plantation crops, entire districts of them which shaped country economics (rubber, indigo, jute). What lay outside the dominant large cultivation systems of 1890-1950 and what lies now is where we need to look for gauging "value added" - what value and to who are the sub-questions.

By food systems I will prefer to understand low external input, community-oriented if not supported cultivation that is neither commercial nor aimed at the retail food markets and chains. I will also understand this to mean an extension of the cultural heritage of the growing community, for then all-round good nutrition is built in. There are no risks there, other than those defined by the accountants of industrial agriculture.

Q2. What / where/ who are the key entry points within agriculture and food systems to incorporate nutritional objectives? Why? And how can they best be leveraged?

A2. If we rotate this question a bit and ask about entry points to the household consumption basket through which nutritional changes are already being delivered, that I think allows us discussion of a more current state of affairs. Under what are called "value chains" nowadays (which I am unhappy to see even FAO is using) the end is the household and the beginning is a laboratory, with the cultivator/farmer and his plot of land somewhere in between. If the laboratory is adjacent to a planning outcome - country or region - which has elements of public-private partnership (PPP) and which has not enough publicly-funded and publicly-evaluated agricultural research taking place, then the first entry point is the seed the small cultivator is provided. There may be incentives to taking such seed, or disincentives to growing community-saved seed - this varies depending on the political and investment climate (close companions nowadays).
Why this is the first entry point is easily answered - because there is the income generating imperative for the small farmer (it becomes stronger for the larger and better connected farmer, who will be considering how best to make his way up the "value chain"). Without a strong community supported agricultural tradition, there are entry points for R&D-based nutritional objectives - otherwise there is no use for them. In South Asia, the per capita consumption of cereals has been declining for this reason, while the intake - even amongst the rural and urban poor - of fats is rising. These are the entry points being used, and they are certainly being leveraged, to benefit the food retail and processed food industry.

Q3. Do you have experience in agricultural/food systems projects and programmes that have resulted in improved nutritional outcomes? If yes, please share the success factors, constraints faced, lessons learned: why you consider it as a success, how you measured the impact and whether a nutritional objective was explicitly built into the programme.

A3. Yes I have. Better nutrition for school-children in India - in this case 'better' means a mix of cereals, pulses, vegetables and milk that is as close to the recommended dietary allowance adjusted for culturally appropriate regions in a large and diverse country. Without fresh hot cooked meals served in schools and at community creches, malnutrition would result. A vast network of voluntary groups, NGOs and CSOs are involved, with varying degrees of competence and who work at a number of levels, to achieve this. If in our country's development indices malnutrition has been arrested it is because of the contribution of these programmes, which are amongst the world's largest.

Providing the largest number of children in the 0-6 years age group one hot fresh cooked meal a day is the objective. Success depends on the ability of the community kitchens to take this as their own, to provide the space and support it needs. When this is done sensitively and by committed people, it works well. The price of food staples is a consistent worry - there is a group of practitioners and proletariat economists who are now working on a consumer price index for India's Midday Meal programme (for schoolchildren) and for the Integrated Child Development Services (ICDS) programme, which also has immunization, health check-ups, referral services, and health and nutrition education to children under six, and to pregnant and nursing women as part of the programme. These are often hindered every month by food price movements that are not budgeted for, or made allowance for, using the national CPI (which for local use is quite meaningless).

Q4. If you have experience of an agricultural/food systems project or programme with a nutritional objective but that failed to achieve it, what were the factors that led to the failure and what would you recommend to others to overcome the barriers to success?

A4. I don't. However, there is a looming failure if our government (India) gives in to the demands of the food industry and dilutes the provisions of a Food Security Bill to include the provision of ready-to-eat food packages and take-home meals under the guise of solving problems of micronutrient deficiency or what you have called 'hidden hunger'. This is nothing but the entry point to commercialising our existing food-based remedial welfare programmes, which are a success because of the community ownership and participation, and because they follow a culturally cognate food systems approach.

Q5. What are the key gaps in knowledge or good practices that limit the ability of agriculture and food systems to improve nutritional outcomes?

A5. As a votary of traditional knowledge being applied to cultivation and to the care of natural resources, I can hardly find omissions. Where these exist is in the national agricultural research systems of countries, which tend depressingly often to see laboratory science as providing
'answers', and farmers and cultivators being unlettered consumers of such 'answers'. Twenty years after Rio and forty years after Limits to Growth, the science-technology dominance of agrarian questions continues to bewitch governments - this is the key gap.

Thank you for framing this topic and opening it up to the Forum. Regards, Rahul Goswami

A6. Here are two openings into views of value:

(a) "In the past, Green Revolution approaches have focused primarily on boosting cereal crops. However, rice, wheat and maize are mainly sources of carbohydrates: they contain relatively little protein, and few of the other nutrients essential for adequate diets. The shift from diversified cropping systems to simplified cereal-based systems thus contributed to micronutrient malnutrition in many developing countries. Indeed, of the over 80,000 plant species available to humans, rice, wheat and maize supply the bulk of our protein and energy needs. Nutritionists now increasingly insist on the need for more diverse agroecosystems, in order to ensure a more diversified nutrient output of the farming systems."

"The diversity of species on farms managed following agroecological principles, as well as in urban or peri-urban agriculture, is an important asset in this regard. For example, it has been estimated that indigenous fruits contribute on average about 42 per cent of the natural food-basket that rural households rely on in southern Africa. This is not only an important source of vitamins and other micronutrients, but it also may be critical for sustenance during lean seasons. Nutritional diversity, enabled by increased diversity in the field, is of particular importance to children and women."

This is from the report submitted by the Special Rapporteur on the right to food, Olivier De Schutter - UN General Assembly Human Rights Council, December 2010.

(b) "Agroforestry or comparable techniques such as the use of leguminous-cover crops to fix nitrogen also have a huge potential. This matters particularly to the poorest farmers, who are least likely to be able to afford to buy inorganic fertilizers, and whom fertilizer distribution systems often do not reach, particularly since the private sector is unlikely to invest into the most remote areas where communication routes are poor and few economies of scale can be achieved. But it is also of great importance to low-income countries, which import to meet their inorganic fertilizer needs. In sub-Saharan Africa, part of the reason why the use of fertilizers is very low (average 13 kilograms (kg) of fertilizer nutrients per hectare) is because of the considerable fiscal costs involved in the import and distribution of fertilizers."

This is from C. Badgley et al., "Organic agriculture and the global food supply," Renewable Agriculture and Food Systems, 22, 2007.

A7. Relevant publications that will help (and which can be easily searched for) are:


- United Nations Environment Programme (UNEP), The environmental food crisis – The environment’s role in averting future food crises, 2009
• Ulrich Hoffmann, "Assuring food security in developing countries under the challenges of climate change: Key trade and development issues of a profound transformation of agriculture," Discussion Paper No. 201, UNCTAD, November 2010

• Miguel A. Altieri, Agroecology: The Science of Sustainable Agriculture, Westview Press, 1995

• S. Gliessman, Agroecology: the ecology of sustainable food systems, Boca Raton, Florida, CRC Press, 2007

• International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD), Summary for Decision Makers of the Global Report, approved by 58 governments in Johannesburg, April 2008, see Key Finding 7; see A. Wezel et al., "A quantitative and qualitative historical analysis of the scientific discipline of agroecology," International Journal of Agricultural Sustainability, 7:1, 2009

• Miguel A. Altieri and Clara I. Nicholis, Agroecology and the Search for a Truly Sustainable Agriculture, UNEP, 2005


55. Jane Sherman, Italy

I have been following this discussion with great interest as I have a real need to understand how agriculture and good nutrition do, or can, or should, relate to each other. The recent posting by Rahul Goswami was a particularly interesting analysis, and also allowed us to hear (I think for the first time in this debate) the voice and outlook of the small farmer.

One point made by Rahul and also by several others is that traditional homestead farming produces a greater variety of crops, which results in a more nutritious all-round household diet, and that this relatively healthy relationship has been subverted by mono-cropping. If traditional food systems were to be maintained or restored, then "all-round good nutrition is built in". Please correct me if I have distorted this argument. If not, do we have convincing evidence to support it?

Jane Sherman
Nutrition Education consultant

56. Masresha Yimer, consultant, Ethiopia [fourth contribution]

Hi Dear Organizers and Participants,

The forum is going more informative each day. I believe this results from the well experienced and highly educated nature and deep professional commitment of the participants.

1. The Decade of the Nutritionist in the coming?
It is interesting for me to observe that Nutrition and the Nutritionist is to become the next decades new professional tasked with huge global responsibilities.

Yes, with agriculture producing, in traditional and modern farming systems, different ordinary but also new agri products for the market.

Some of the agri products are initially meant for the foreign market and are often related to the domestic economy consumers. But in instances where the export market demand levels off or air freight movement curtailed due to weather, etc ... you see rush by investors and their marketers to see to local markets all of a sudden.

In this situation, I feel there is a need for investors to also give room for nurturing domestic consumer base for their products which in situation of a growing economy could become a good buyer of say grade 2 or 3 or not exported agri products.

But here again, following the global change in disease, climate, etc ... our nutritionists need to interven and recommend nutrition advices and teachings based on global standard but also local availability considerations - this is no a new idea it is just think global, act local! If too much potato is in supply in a region or sub region, how to go about making good diet for children and youth and elders applying other ingredients or additives, maize, etc ..

So, the Nutritionist of our time to come up with professional advice and standard materials based on global but importantly local considerations, as local supply and availability is the key to buy and prepare and use the food by the household easily and cheaply.

Here, it is also good if some discussion comes up on issue of inter regional trade and integration and how it could affect the agriculture and nutrition development issue.
... With sufficient nutritional education (and stability and growth in countries and regions), agricultural development could also follow the demand of consumers for recommended nutritious crops and non crop agri products.

2. How about bringing Consumer Associations to the Nutrition Education/Awareness framework?

I am observing big failures in these associations. In less developed countries either this institution is non existent or inactive, often coming up with voicing consumers concerns when something bad happens to consumers due to food poison, poor sanitation, etc ... I observe critical challenges to consumers, say, resulting from use by local business of rotten or expired agri products (directly or by further processing them), no Code of Practice in place for processors and traders (wholesaler or retailers) to adhere to.

After the start of this Forum, I am thinking of why not put this largely less active association on to the Nutrition framework, and make them work not just the BAD side of what happens to consumers, but the GOOD and PROMISING aspects for the consumer. That is, why not make them play supportive role for the Nutrition effort for promotion and teaching, awareness creation.

Some sub standard agri or food products imported may have problems on consumers health. So in situations of both relief and developmental efforts, informing the public/consumers about what has happened what nutrition strategy and action to implement under the given circumstances and above all how to communicate such advices and awareness quickly and effectively calls for involvement of consumer associations and their structure where they exist or establishment of new ones.

This also helps consumer associations get out of their passive role and play constructive role to protect safety and wellbeing of the consumers.
Bye for now!
Masresha, from Ethiopia

57. George Kent, University of Hawai'i, USA

The discussion on Linking Agriculture, Food Systems and Nutrition has been fascinating. I would like to make just one point, on distinguishing between methods and motivation.

Many argue for new approaches to agriculture that are better for the environment, the economy, and ourselves. There is no doubt that food can be produced in better ways. I think the real challenge is not in finding the methods, but in finding the motivation. For many farmers, especially large-scale farmers, the arguments in favour of these better ways are not very compelling.

To illustrate, Susan Sarandon said, “Producers grow the crops they can sell the best, traders seek profit and consumers want quality food at an affordable price.” Yes, but there are also some consumers who want junk food. With or without advertising, there is likely to be a strong market for processed foods that feature sugar, salt, and fat. And these products are likely to be more profitable for the processors than quality foods.

She points out that alternative food systems show us there is the possibility to change. Yes, but the possibility needs to be combined with strong incentives if we hope to implement large-scale change.

Sarandon said, “we need the participation of all, producers, the state, the private sector and consumers to achieve our aims.” While there are sub-groups in these categories that share common concerns about food quality and the need to end hunger in the world, views on these issues certainly are not unanimous.

In much of the world, it is the processors that dominate food systems. Most of the money spent on food goes to processors, not to farmers. Many farmers respond to demand from processors, rather than responding directly to consumers.

We can say that “we” need new forms of agriculture, but what do we do if those in power don’t agree? We should not harbor illusions about common interests. Differences in motivations should be addressed explicitly and directly, and they should be taken into account as we strategize.

I think this struggle needs to be carried out at the local level, in the communities, rather than at the global level. When there are distant forces that push us in the wrong direction, rather than fight them, it might be wiser to just turn our backs on them, and do what we think is right locally. Local food policy councils can be important tools for regaining local control over food systems.

Aloha, George

57. Themba Phiri, South Africa

It interesting to note that nutritional and food security are on top of the farming agenda these days. The limitation of land to areas such as South Sudan has led to serious nutritional food insecurity. The farmer of today is faced with a serious predicament of declining low yield levels and the extinction of high nutritional plants due to the introduction of GMOS. First and foremost
we need to go back to the basics and introduce indigenous vegetables and crops to the small holder farmers but at the same time moving from subsistence farming to semi-commercial that way our farmer of today can improve and reduce food and nutritional insecurity.

Themba
Technical Specialist for a non-governmental organisation in South Africa

58. Daniel Adotu, Africare, Uganda

Nutrition entails a lot of things put together in order for one to live an active, healthy and productive life. Availability of food does not guarantee good nutrition but the quality of that food. So that one gets all the necessary nutrients for proper growth.

The person should be able to properly utilize the food; therefore we bring in issues of good sanitation & hygiene which covers the following:
- Availability of a latrine for fecal disposal
- Clean compound/environment
- Hand washing facility
- Proper rubbish disposal /pit.
- Plate/sauce pan drying rack
- Even the person him/herself should be clean (body & hands)
- Clean drinking water access will ensure that one is using good water which in turn reduces diseases associated with such , which can impede for utilization.

Wherefore, in nutrition, food utilization is one of the key aspects for a person to able to obtain the best out of every meal one eats.

Inadequate nutrition leads to malnutrition which really causes a lot of human suffering. It is also associated with >50% of all deaths of children worldwide. And people who become adults after suffering malnutrition, are less physically & intellectually productive and are chronically ill and disabled which is very costly to society. In terms of lost time for work, inability of kids to understand and study properly at school. They are also constantly sick/ill and are not able quickly to recover from disease attack.

I strongly believe that, women education is a better way of improving households’ nutrition in general. Since women are charged with the responsibility of preparing food for their households. It is necessary to ensure that they know how to prepare nutritious foods for their families’ everyday for all categories of people in the household. The woman should know what kind of food she needs to cook for children, pregnant mothers, elderly persons and a sick person. They should know all the food requirements for each category.

59. Anna Antwi, GD Resource Centre, Ghana

Agriculture can certainly contribute to improving nutrition in so many ways as have been discussed by other members of the forum. In fact, nutrition is seen as an ultimate outcome of food security though it is also one of the pillars. This even shows the multiplicity and complexity of nutrition within agriculture itself let alone the other sectors.

Needless to say, agriculture in our part has focused too much on production without consciously integrating nutrition. From experience, what needs to be done to incorporate nutrition into agriculture for better results are:

Research and Extension:
• breeding (bio-fortification of essential micro-nutrients like Vitamin A, iron, zinc into major staples
• multiplication and availability of planting materials to farmers
• promotion of cultivation of agro-biodiversity, and consumption of household dietary diversity

Infrastructure:
• storage/ preservation
• road network

Empowerment of Women in nutrition:
• from production through storage to when food is placed on the table
• cooking methods
• care and hygiene/ sanitation
• feeding practices

Linkages with other government Ministries, Departments and Agencies (MDAs); collaboration, coordination and harmonization of efforts in these MDAs:
• Water and sanitation
• Women and children
• Health
• Education

Taking food system approach is broad enough to tackle nutrition from production to consumption and the selection of agro-commodities to be promoted is also essential. However, other important considerations are:
• Use of indigenous knowledge and the promotion of local foods (availability, affordability and diversity/ variety)
• The political will and commitment of government is necessary especially in policy direction in promoting nutrition outcomes, the scale up to make impacts
• Nutrition education targeting girls, women in productive age (as well as boys and men) for consumption of fruits and vegetables, home and school gardens
• Methods of agricultural production to make foods safe and nutritious for human consumption
• Sustainable agricultural production models
• Irrigation for all year round production (Reduction of hunger gaps)
• Domestication of wildlife/ small ruminants/ forest products etc
• Market access that can boost farmers’ income (for example in Ghana, the WFP’s local purchases increased farmers income and thus encouraged production of local rice/ maize.
• Consumer preferences for cheap foods that are easy to cook and easy to eat foods that are highly nutritious

The Ghana School Feeding Programme (GSFP) is an important overarching instrument for improved market access for farmers, strengthen lineage with school gardening, promoting high productivity in the communities used, and improved nutrition of school children. The home-grown GSFP is one example of policy direction that uses the food system to link agricultural production of community to create market access for them (for improved incomes) to nutrition of school children.
In short, agriculture and the food system can contribute to nutrition outcomes, but proper targeting, policy direction and support is needed to achieve the needed results

Anna Antwi,
Executive Director GD Resource Centre, Ghana
60. Md. Mizan Ul Islam, Bangabandhu Sheikh Mujibur Rahman Agricultural University, Bangladesh

Most important thing, according to me is to improve knowledge of the people about nutrition. How they utilize their land to establish a homestead garden. In my country; Bangladesh; huge population is here. Agricultural land is decreasing day by day. But there is still opportunity to develop vegetable gardening. I have visited many villages and found that there is lots of space around home. They use the land but not in a proper way. If they know which plant contains which type of vitamin or nutrition properly, I think they will utilize those lands in a proper way.

60. Comment by Corinna Hawkes and Karel Callens, facilitators

It is good to hear the supportive voice of a well-known celebrity here. We all know what kind of power a famous voice can have, especially when so intelligently articulated.

It is equally good to hear voices in this discussion who have much less opportunity - by many many orders of magnitude - to be heard.

One area that has received a lot of attention in the discussion so far concerns "indigenous foods" and "indigenous food systems." This is indeed an issue that has relatively little voice at high-levels. Yet given the sheer amount of discussion, this is clearly an area of critical importance for many people concerned with the intersection between agriculture, food systems and nutrition. More discussion is needed from all types of different perspectives to ensure that the passion in this area is channelled towards truly positive outcomes.

Another theme that comes through in recent posts is that of "multi": multi-sector, multi-disciplinary, multi-scale. It seems self-evident that this is needed if all actors are to play a role. But it is likewise necessary to recognize that different actors have different interests in all of this (the case of income being the chief interest of the farmer being a pertinent example).

One issue I am surprised not to have seen more of is women. The need to "empower women in agriculture" has been mentioned only once. Is this something we should be talking more about in this discussion?

61. Judith Appleton, United Kingdom

Improving nutrition sustainably across communities requires safe drinking water, basic education, especially of girls, effective population measures, basic health services... as well as a good diet, and the livelihoods that produce or support buying it. So why have Save the Children, UNICEF, and other nutritional big-hitters recently published global reports on nutrition focussing on food and feeding? Are they bored with the medical approach of the Lancet’s series? Do they think food is cheaper to address than water and sanitation? Do they deny that only a few years ago their "answer" was variously girls’ education, clean water, or birth-spacing? Or is it just too damn difficult to get them all addressed by chauvinist organisations and sectors in a coordinated way? The latter is often true. But if we keep changing focus every couple of years, how can nutritionists expect to be taken seriously? Yes to an agriculture, and its marketing, that is better at taking consumption into account, and not least the diets of food producers. But we all need to at least nod, systematically, to other vital roles in nutrition than just our own. Ideally, while we each do our bit, we also discuss and collaborate with the others. Food AND agriculture
AND livelihoods supporting good diets AND water AND population policies AND basic health care AND basic education for all... for sustainably adequate nutrition. Not one, or two, but all.

Judith Appleton MBE
4 Causeway Fold
Blackshaw Head
Hebden Bridge

62. Valentine J Gandhi, UNDP, Kenya [received through Solution Exchange India]

Dear Ms. Thirunavukarasu,

Thank you for a relevant and interesting topic of discussion. Everyone has given very useful inputs. Being a development economist, who works closely on nutrition and agriculture and health linkages; I will share some my experiences when I worked for World Bank, HDNSP Unit on a joint study in India, with University of Oxford. The study was focused on measuring destitution in rural areas or rather what constitutes destitution, it had both qualitative and quantitative components. I would like to point out from our findings the social barriers that contributed to lack of nutritional levels. Two things that were distinct was caste and corruption. In over 15 villages we surveyed 11 had corrupt local officials and the mid day meal scheme was in control of the local elite who ‘ensured’ that the money intended for quality meals was siphoned off and make believe food which was neither nutritious nor can be called food was being served. But the areas we surveyed were so poor that this was still better than nothing for the poorest of the poor. For every problem in the rural areas there already was and is a solution already in the form of one scheme or the other, but poor monitoring of how its distributed and ignoring, institutionalized discrimination would prevent any progress in improved nutrition among the children even if we achieve scientific milestones. We have several groups fighting corruption in India and other issues, however we don’t seem to advocate enough to remove these social barriers that give figures such as the following:

CINI - “47 percent of India’s children below the age of three years are malnourished (underweight). The World Bank puts the number – probably conservatively – at 60 million. This is out of a global estimated total of 146 million.”

With regards to entry points, a report from Inter-American Institute for Cooperation on Agriculture (IICA), 2009 on Food, Health and Nutrition, challenges sums it well for Caribbean countries, but which I feel is applicable in the context of India as well. To quote from the author Gillian Goddard:

“The perspective on agriculture linking food and health must be placed in the context of the scientifically proven, yet often overlooked role of nutrition. If it is accepted that nutrition must be placed at the centre of the agriculture, food and health interrelationships, then a discussion of what constitutes ‘food’ becomes a logical continuation. The paper continues by exploring the notion of food. In today’s society, ‘food’ in of itself, means different things to different people.”

This is very true in the Indian context.

“The source of ‘food’ is also a subject of much discussion. This is because even with extensive promotion of developing value-chains that link farm output to food processing industries, there continues to be an artificial divide and disconnect between the farm activity (often referred to as agriculture) and the ‘food and beverage’ industry (captured under manufacturing and processing). With the increased challenges to maintaining health and well-being, it is strongly
argued that the issue of food must be defined more from a nutritional than a market-led perspective."

While this may not be a major threat as yet in the Indian scenario its we are heading there already which is where the double burden issue is emerging.

The entry point should be further developments in the health and agriculture sector. Inconceivable as this may be, these developments continue to be addressed using a largely disconnected sectoral approach. Industrialized countries are already witnessing the drawbacks of such an approach and are increasingly designing alternative farm and food policies, with explicit public health goals. This approach is seen to hold great promise as a strategy for more effectively meeting the challenge of most, if not all, diet-related public health issues.

In this context, three issues that should occupy decision makers are the need for:

1. Reframing of the understanding of economic and social roles of agriculture and agricultural products in the region; in addition to understanding social barriers that exist in every corner in India.
2. Revolutionising the way of thinking on what is to be encouraged in terms of agricultural products and agricultural sector activities; and
3. Redirecting or changing human behaviour patterns with respect to food consumption choices.

Consideration to these three inter-related issues will position the region on a more firm footing to deal with any emerging issues and future challenges associated with diet-related health problems, food requirements and agricultural development.

Valentine J Gandhi
UNDP ATMS Project
Nairobi, Kenya

63. Purna Wasti, FAO, Malawi

Dear Colleagues,

It’s a great discussion topic not only because it’s the subject of agriculturists and nutritionists but also a sustainable solution of hunger and malnutrition. Although, it’s not very clear on how agricultural interventions can be instrumental in reducing malnutrition, agriculture has been playing a decisive role in solving the problem of hunger and malnutrition. The recent initiatives i.e. SUN and REACH have appreciated the importance of agriculture for improved nutrition. However, agriculture could have contributed more than what it is doing now. Please find my response as below:

1. Agriculture is not only a means of feeding the world but also a very important source of livelihood for millions of rural population. The majority of the agriculture in the developing world is subsistence type and the future of agriculture; no doubt, it’s going towards commercial agriculture. The efforts are underway by various donors in this direction. To make agriculture more nutrition sensitive, there is a need of two-pronged approach. The first prong should focus on supply side i.e. the producer side, which needs the scaling up nutritionally important crops and livestock which give an opportunity for improving the diet of producer farmers with some surplus for the market to provide healthy diet to urban consumers.
The second prong should focus on the commercialization of agriculture to produce nutritionally important crops and livestock in a large scale. At the same time, the consumers should also be educated on the importance of good nutrition, which will create demand for these crops. There is a wider scope of expanding agriculture into the whole food system, which will address the issue of food and agriculture holistically including food processing, preservation, trade and safety issues, utilization etc. This creates a wider alliance of organizations and professionals not only agriculturists but also food scientists, nutritionists, economists etc for the solving the problem of hunger and malnutrition.

2. To make agriculture and food system more nutrition sensitive, it’s very crucial to have a clear objective in mind. What is the main objective of this system? Is the objective to improve nutritional well being or make this system more profitable to increase income of the producers or both? In my opinion, either by providing nutritious food to the subsistence farmers and consumers or by increasing income of producers, the ultimate goal is to improve the nutritional well-being. In order to make agri-food system more nutrition focused, the following actions need to be taken:

- Production diversification: Diversification of not only staple crops but also production of legumes and nuts, fruits and vegetables, poultry and small ruminants for household food security
- Intensive production of nutritionally important crops and livestock: Production of fruits and vegetables, legumes and nuts, milk and milk products, meat and eggs
- Improve post-harvest handling for improved quality, reduced loss and less hazards
- Processing nutritionally rich products: Local production of highly nutritive foods such as cereals legume ready to eat porridge, baby foods etc
- Promotion of nutrition labeling: Intensify public education through nutritional labeling in the processed products.
- Food fortification: Fortification of possible staple foods such as maize flour in some parts of Africa and wheat flour in other parts and vegetable oil and sugar almost around the globe together with strong national ownership and social mobilization.

3. I personally do not have an experience of improved nutritional outcome as a result of implementing agri-food projects. However, I have interacted well as food and nutrition professionals with agriculturists, extension workers and public health experts. In one of the projects implemented by FAO in Nepal, we were successful to integrate nutrition with agriculture and livestock not only by improving the input package to the farmers but also a nutrition education package for improved feeding practices. Similarly, in one of the projects implemented by FAO in Malawi, I have observed closely that integration of nutrition with agriculture and food security is possible by supporting the farm families for agricultural diversification as well as nutrition education for improving family diet in general and young child feeding in particular. In other projects, where nutrient dense crops such as Orange Fleshed Sweet Potatoes and Iron Rich Beans were easily introduced into the agri-food systems, which showed a promising results for improved nutrition as well as better marketing for improved income.

4. I agree with the other contributors who have highlighted the need of working together with other sectors. Since it is very clear now that improved nutrition is an outcome of not only better food availability and consumption but also a result of good care, health and sanitation. Normally, it’s an obvious fact that all of these sectors act alone. Unless, we break all these silos and deliver as one package to the community, nothing concrete results will come out. From the experience it shows that it’s important to integrate nutritional objectives and actions in various sectoral policies, plans and programmes but not sufficient for better nutritional outcome. It is equally important to deliver as one. As a suggestion, I would like to propose the following:

a. In countries where the decentralization has started functioning well, we all the sector should implement through the local government, who can coordinate various actors and...
sectors for common goal of improving food and nutrition status of the vulnerable groups such as women and children.

b. In the short run, NGOs are doing well by “delivering as one” with programmes and activities to address the problem of hunger and malnutrition for better impact and have shown promising results. However, these efforts need to be made more sustaining by building the capacities of existing systems and communities.

c. Developing the capacities of communities in identifying the multiple causes of hunger and malnutrition and act accordingly with the support from development partners.

Thank you.

Purna Wasti, Technical Officer (Food and Nutrition Security), FAO-Malawi.

64. Anni McLeod, United Kingdom

I have enjoyed reading the contributions so far. My contribution relates, I think, to questions 1, 2 and 3.

Recently I worked with members of FAO to draft a book chapter on emerging issues in nutrition and dairying, based on literature review. One of the findings relevant to this forum was that, contrary to the assumption implied in question 1, many dairy projects and programmes are not designed with explicit nutritional objectives. Dairy development when promoted by governments and development agencies tends to have the objective of increasing access to milk markets and farmer income, and perhaps also milk supply. When done well it is positive for families owning dairy animals, increasing their incomes and often their food intake and the variety in their diets – although the information on nutritional impact for these families tends to be quite limited. When initiatives are led by the private sector they aim at increasing milk supply, market share, and profit from milk for farmers who can meet market requirements. Dairy development may perhaps have positive results for families who do not own dairy animals and consume milk, but this is hard to assess because for the most part nutritional impacts and consumer welfare have not been systematically monitored or measured. Hardly ever do dairy development initiatives have an explicit aim of making milk more affordable for the urban poor – this objective would rest with government ministries and departments of aid agencies other than those dealing with agriculture. Even when school milk programmes are introduced – and this has been done successfully in a few places – there seldom appears to be an explicit link back to the farmer of the kind mentioned by Anne Kepple for the National School Meals programme in Brazil.

Obvious lessons from all of this are: if we are to meet with the nutritional needs of a variety of people within the food system, we need to consider simultaneously working at more than one entry point; the agencies dealing with different entry points need to be communicating; and we need to plan from the start to measure the nutritional impact. Hardly earth-shattering conclusions, but often forgotten when investments are made and development programmes planned in food systems.

The insights from literature review are always limited by what you can dig up in the time available. I’d be delighted if someone would now reply “that’s rubbish, I can give you five examples of dairy programme where nutrition for the urban consumer was an explicit objective and the impacts were positive!”

Many thanks
Anni McLeod
Independent consultant (livestock policy / management of organisations and projects) development)
65. Aira Htenas, World Bank, USA

The timing of this discussion topic is most appropriate. As global and domestic prices remain high and volatile, it is worth noting that food price crises often coincide with major poverty and hunger crises. For poor households which spend up to 50-70% of their income on food, increases in the price of food not only can reduce their consumption of staple foods and decrease their consumption of higher cost micronutrient-dense fruits and vegetables, etc., but they further strain household budgets already burdened by high energy costs. Indeed the 2010 food crisis pushed an additional 44 million people into poverty compromising the quality of diets. Globally, two billion people suffer from deficiencies in micronutrients such as iron, zinc and Vitamin A. Deficiencies in micro-nutrients have serious implications for the health, survival, and optimal cognitive development of vulnerable populations such as pregnant women and children in the first 1000 days of life. Adjusting dietary quality and quantity in the face of increased food prices may jeopardize the short and long term welfare of the household through increased morbidity of both young children and women, and lowered adult productivity.

The prospect of a 50% increase in population by 2050, and the accompanying upward pressure in food demand further exacerbates a situation in which agriculture emerges as an obvious solution. There is significant potential to restore agricultural productivity and increase global food supply. Both a better use of existing practices and the development of new technologies at low cost need to materialize to provide more food and more nutritious food to the growing -- and perhaps more unequal-- world. Agriculture and rural development are also at the forefront of effective poverty-reducing policies through improved income as 75% of the world’s poor live in rural areas, and most of them are farmers.

The predicament does not lend itself to easy solutions, however. While there is a general understanding of the programs and policies needed to strengthen the linkages between agriculture and nutrition, in order to reduce poverty and increase food security, important knowledge gaps remain on how best to identify, design, implement, monitor and evaluate, and communicate interventions across sectors. We need to think critically and carefully plan sustainable solutions that address challenges of macro- and micro-nutrient sufficiency and adequacy.

SecureNutrition aims to bridge knowledge gaps between Agriculture, Food Security, and Nutrition. As a Knowledge Platform it will offer a space to exchange experiences, to disseminate information, and ultimately to increase coordination, collaboration, and co-generation of knowledge. Over the next few months, the SecureNutrition team will continue to actively engage with existing and potential partners on the design and functionality of this new community of practice (both online and in person). If you have any questions, if you or your institution is interested in partnering with us, or if you wish to stay informed, please contact us at sncontact@securenutritionplatform.org.

You can also visit us at:
http://www.securenutritionplatform.org/Pages/Home.aspx

My colleagues and I very much look forward to hearing from you!
66. Ardhendu S Chatterjee, Development Research Communication and Services Centre, India [received through Solution Exchange India]

Dear members,

Malnutrition especially among children is a big problem for our nation as India is leading in the number of malnourished children around the world. I would like to list some of the efforts tried so far in West Bengal, Orissa and Uttar Pradesh to tackle the problem of malnutrition.

1. The focus in home gardens should be on the production of nutrient rich vegetables such as basella or spinach, jews mallow, amaranths, roselle, hyacinth and winged beans. These should be combined with easy to grow fruit/food trees such as papaya, limes and lemon, drumstick and curry leaves (vegetables like cabbage and carrots should not be promoted as it is difficult to save or procure their seeds in most areas of India).

2. In each garden we should grow some roots and tubers like arum, taro, sweet potato, yam, cassava, etc. We should also train mothers to dry vegetables and fruits for dry season and encourage small scale animal and bird raising.

3. Awareness of simple processes like sprouting, malting, fermentation, etc that make food easily absorbable should be raised and practices such as eating nutrient-rich local weeds [naturally growing plants] e.g. lambs quarter, pennywort, spiny amaranth, ivy gourd, etc should be reintroduced.

4. Train women and children in areas pertaining to good nutrition and healthy dietary practices. I feel that we need a ministry of gardening as in Viet Nam.

Another reason for malnutrition is linked to agri-business corporates who control much of the national and international trade to sell and promote junk-food; and our present food policies are allowing these corporates to function in a oligopoly, behind the mask of free trade.

Our Public Distribution System should be more local grain based. MGNREGS should be used for soil and water conservation work especially for small farmers. Now-a-days more and more money is spent for introducing synthetic agro-chemicals and groundwater as well as water intensive hybrid and GM seeds, which are neither environment nor people friendly. We are bestowed with a region which receives abundant sunlight, rich in bio diversity, local knowledge and year-round growing temperatures. If farming has to survive, we need policies that reward farmers who practice environment friendly farming practices providing benefits to the community. Also, corporates or others who pollute our water, soil and environment, and threaten local diversity should be penalised.

We are dismayed that despite findings of International Assessment of Agricultural knowledge, Science and Technology for Development (IAASTD) after long deliberation, our aid agencies and trade policies both at national and international level are seldom supporting the development of sustainable agriculture. So called modern, chemical intensive farming cannot solve the problem of small producers and is in fact accelerating our journey towards disaster.

Thanks for raising this important topic. Let us try something together, but lets first acknowledge that there is a problem for which solution is pending.

Ardhendu S Chatterjee
Development Research Communication and Services Centre (DRCSC)
Kolkata, West Bengal
Dear participants,

Agriculture can help food systems when planned following a participatory approach and by consensus of all the stakeholders, as they usually are the consumers of agricultural products. Agricultural projects require participation and involvement before, during and after their implementation. In this way, a harmonious and conscious participation of all the stakeholders will be ensured, avoiding potential disruptions that may arise during the process.

I have participated in a home gardening project in which certain type of seeds were provided to the families and planted with the assistance of a technician, with the aim of using the production for self consumption. It was expected that the project would improve the household nutrition. However, the reality was quite different. The families received the seeds and planted them with great effort but little enthusiasm. As the vegetables were not part of their traditional diet, most families didn’t use these for consumption and offered them to their chickens, ducks, pigs, etc. This experience shows me that one of the factors that led to the failure of the project was the vertical nature of its planning and conception.

Given the global food needs, it is necessary to develop agricultural systems that ensure an integral diet and take into account contexts and stakeholders, as well as their culture and food traditions. This will avoid failures like the experience described before.

Spanish original

Estimados participantes,

La agricultura puede ayudar a los sistemas alimentarios cuando ésta ha sido planificada de manera participativa y bajo el consenso de todos los involucrados pues éstos son los que, en la mayoría de las veces, son los consumidores de los productos agrícolas. Los proyectos agrícolas tienen que ser acompañados antes durante y después de su ejecución de este modo se asegura la participación consiente y harmóniosa de las partes involucradas así como también se evita los impasses que puedan presentarse durante el proceso.

Participe de un proyecto de huertos familiares en el cual se otorgaba cierto tipo de semillas a las familias para que éstas con apoyo de un técnico las sembrasen y posteriormente consumiesen el producto, todo esto bajo el supuesto de que los resultados se verían reflejados en la mejoría alimentaria de la familia. La realidad era muy distinta a la descrita pues las familias recibían las semillas y con mucho esfuerzo y poco entusiasmo las sembraban más en el momento que éstas estaban listas para ser consumidas la mayoría de las familias preferían ofrecerlas a sus gallinas, patos, chanchos, etc, mas no las consumían; esto debido a que eran productos que no hacían parte de su dieta alimentaria tradicional. Esta experiencia me indica que uno de los factores que indujo al fracaso de este proyecto fue la verticalidad con la que se escribió y planifico el mismo. Ante las necesidades alimentares mundiales es necesario pensar al sistema agrícola y alimentar como un todo desde el inicio hasta el fin, pensar en los contextos en los que se dan las cosas y las personas involucradas, su cultura alimentar, las tradiciones que envuelven al sistema; de esta manera evitaremos caer en desgastes como la experiencia arriba indicada.
68. Masresha Yimer, consultant, Ethiopia [fifth contribution]

Hi Dear Organizers and Participants,

Wow! I found the Fourm to be about exchange of ideas and for me it proved to be education and new exposures on projects and experiences. Fantastic for me. Hope same is true for you.

I saw various valuable ideas from you all. I picked three for brief comments.

1. experience of participants in different projects from which lessons are being learned for improvement and scale up. The Ghana school feeding program and others are good innovative approaches to boost our confidence whether we should go for them.
   So, based on this forum, "GOOD PRACTICES DISCUSSION AND DOCUMENTATION" should take place to help in scalability in existing project areas and introduction of them in others.

2. About education:
   Yes, awareness of consumers and other market actors adn support and regulatory institutions need to be enhanced through training and other awareness interventions but in a planned manner.
   It is good to go this way for expanding understanding on nutrition and to implement nutrition and agriculture goals that are to be set.
   However, again such interventions are costly to reach the millions of consumers and other actors.
   In such instances, e.g. in Africa, as the population is very young, then do not you see opportunities to introduce nutrition as one course in primary and secondary and then tertiary levels to improve consciousness of society to act in an informed manner?

3. It is about Nutrition, but it is also about MDGs?

   Our effort for tranforming the agriculture and nutrition issue is practically about transforming our activities to work towards achieving the MDGs and after.
   Good nutrition is about sanitation and neatness, about how we use our food /raw or cooked/, how we preserve our processed foods, etc ... as much as it is about balanced nutrition, etc. ... This way will help attract the focus and possible better support of politicians for meeting their MGDs goals, which they are finding it to be a challenging one.

   So, can we go about agricultural extension profession, health extension professional and nutrition extension professional? or can we combine health and extension professional through rigorous training for health extension agents that are deployed and working in rural villages and urban areas?

Bye for now.

Masresha (Ethiopia)

69. Mahmood Bill, Ghana Muslim Mission, Ghana [third contribution]

I have greatly enjoyed the various submissions made so far. I also agreed in my earlier submission that the issue of food security needs a multi-faceted approach thus I do side with my big sister Ann [Ann Tutwiler, key note speaker of this discussion, Ed.]. Meanwhile the handling of raw food produce from the farms to the market places and also how they are handled at the markets are of essential importance with respect to health status of consumers.
Fish production in Ghana for some time now is on the low and many issues regarding pair trawling, light fishing, the use of chemical have been raised as key contributors of this problem. It seems government is just playing lip service to tackling this issue.
In alleviating poverty through the empowerment of locals in agriculture sector, government must take the lead and provide the direction for partners to follow.
Thank you

70. Isaac Olaolu Akinyele, University of Ibadan, Nigeria

Dear FSN Moderator

I would like to share a project report on gender informed nutrition and agriculture which was implemented by the Food Basket Foundation International in Nigeria with financing by USAID. http://typo3.fao.org/fileadmin/user_upload/fsn/docs/Agriculture_nutrition/GINASummaryfinal2.pdf

Professor I O Akinyele

71. National Programme for Food Security in Nigeria

On behalf of the National Programme for Food Security in Nigeria, we share our contribution below:

With thanks.
NPFS Nutrition and Health Subcomponent.

Our perspective are as follows:-

(1) Production Processing and Utilization of Nutritious Traditional Crops

The changing food patterns in our urban Centres has adversely affected the consumption of nutritious indigenous foods. Foods like African yam beans, Bambara beans/nuts, Bread fruit and oil bean seed are no longer cultivated and widely consumed. Yet these are crops that we have the ecological advantage to produce. Inadequate processing and preservation methods of these crops has similarly rendered them unattractive and inconvenient for most busy urban families, thus narrowing the range of foods available to them. Renewed efforts to massively produce these foods as well as processing them into convenient forms for storage and marketing beyond the areas of production will help increase their demand and enhance improved family nutrition, through the provision of a wider range of vitamins and minerals.

(2) Prevention of Post Harvest Losses of Foods

Very poor road networks, and lack of easy access to markets among others result in post harvest loss of foods to the tune of 30 to 50 percent of harvested foods. Nutrient deterioration and loss in palatability start immediately after harvest and continue unabated. Losses in the artisanal fishery sector from spoilage, poor handling, processing, storage and marketing practices have been estimated at 45% of the initial fish catch. Women farmers in Ebonyi State lament the sale of their crop produce below cost of production due to inadequate market access. To overcome this situation appropriate food processing skills and equipment should be placed at the disposal of farmers to minimize these losses. In addition market development at community level, cold storage and road infrastructural development in the rural areas should be embarked upon urgently.

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http://km.fao.org/fsn
(3) Agriculture as an Entry Point for Nutrition Intervention

Nutrition is mostly regarded as a health issue, yet food is the source of the nourishment that keeps the body alive. Farmers must be made to appreciate the nutritional implication of their job. The richer the soil, the more food values absorbed by the crops and consequently the more nutritive value obtained from foods. Agricultural nutrition strategies should be promoted at all levels of Government. Specifically nutrition issues should be mainstreamed at the level of agricultural policy development. Home gardens should be promoted for dietary diversification at the household level. The teaching of agricultural sciences in schools should also be seen as a nutrition strategy while school gardens should lead to skill acquisition not only for food production but also in nutrition.

(4) Strengthening the Role of Women Farmers

Rural women are a formidable force to reckon with in household food production. They are the most important actors in the food chain which begins from farm production, processing, preservation, marketing and intra house food utilization. Nationwide, women contribute over 65% of the agricultural labour force. Yet, their deep involvement in farming has not resulted in food sufficiency even at the household level. Their efficiency is limited by a number of factors including lack of modern agricultural skills and inputs, poor management practices, inadequate access to land among others. Low level of food production limits family food intakes and consequently leads to malnutrition. Extension service to women farmers as well as nutrition education should be intensified to effectively harness their food production potentials.

(5) Scaling Up Agricultural Based Nutrition Initiative

Nutrition services at the rural communities are at the lowest level. Intervention modules are very thinly spread within the communities. The impact is consequently marginal. Considering the negative consequences of malnutrition to the growth, development and productive potentials of the individual, nutrition interventions should of necessity be upscaled nationwide.

72. Bjorn Marten, GEIST, Sweden

Our diet is closely related to how efficient our land use is or in other words what area you need to feed a family. From history we can learn from the Essenes living about 2000 year ago how to survive on less than 300m2 on a raw vegan diet, based on cereals, fruits, nuts and green leafs that they prepared without cooking and boiling. In Sweden one single meat eater occupies more than 3200 m2 per year for food supply.

Raw vegan food is not only area, water and energy efficient but also extremely nutritious and especially when sprouting beans and combining fruits and green leafs when making green smoothies. It also paves the way for releasing the full capacity of two energy and cost effective food storage technologies, fermentation and drying. During fermentation there will also be an increase of vitamin B12 that otherwise might be a problem in vegetarian diet. Fermentation also make the food easily digested, a present for sensitive stomachs especially when you are trying to switch your diet to raw vegan food.

Solar dryers can be used not only for drying fruits and beans and vegetables but also for baking living bread. The dough is normally made of grinded sprouted cereals and a combination of dried fruits and dried vegetables. You leave the bread in the sun for 8 hours in the solar dryer and turn the bread around at noon.
Maintenance of soil fertility is a key challenge for humanity. Use of chemical fertilizer and linear flows of nutrients will never be sustainable since rock phosphate is a limited resource. Recycling of organic waste is thus a key issue. There are two ways of recycling – composting and production of bio manure from anaerobic digestion in a biogas plant. Composting is frequently used but has some limitations especially in metropolitan areas. It also creates huge losses of energy (heat) and nitrogen. Anaerobic digestion however can be adapted to any situation from family digesters to municipality digesters of several thousands m3. During fermentation in the digester, around 50% of the raw material is transformed into bio methane, a flexible bio fuel with the highest exergy and energy content of all bio fuels.

At the same time bio manure is produced that can be spread directly in growing crops, since nutrients are mineralized during fermentation and can be taken up directly by the plants without losses. Thus the use of biomanure from biogas plants will be a possibility for organic farmers to increase the crop yields compared to conventional farming.

Biogas technology is like introducing an industrial cow that produces fertilizer. In Sweden initially cattle where kept for producing manure and feedstock for fermented milk products. But when chemical fertilizer was introduced and electricity became available, milk and meat production became key issues for farmers and a disaster for humanity. They are now the biggest contributors to the global warming and declining health in the world.

However biogas technology offers an excellent solution. By switching from the real cow to the industrial cow, meat and milk producing farmers can get a sustainable alternative since the industrial cow feeds very well on grass and any organic waste including blackwater. In Sweden 4 out 5 fishes are used as feedstock for cattle. Thus declining fish populations can be restored by switching the cows.

Raw vegan food will lower the demand for cooking fuel and thus prevent deforestation and soil degradation. The only cooking fuel you need is for making safe water for soaking beans and cereals.

A family digester feed by household waste and black water will produce around 1 m3 of biogas per day which will be more than enough for the raw vegan family. On a global level, 240 Mha of arable land is used for producing cattle feed. If we lowered our meat consumption by 80%, we should be able to release 200 Mha of arable land for growing grass and energy crops that together with organic waste and bio methane from thermal gasification can support all our vehicles with bio methane. Scams like and biodiesel and ethanol from monocultures can be stopped once and for all. Further on biogas technology will make it possible to reclaim denuded land that makes it possible for exploiters of the rain forest to operate outside the rainforest. Rescuing of the rain forest is the most important issue right now since the rain forest is a rain cloud factory that distributes rain to surrounding countries. Clearing rain forests is like stealing rain from your neighbor and without rain there will be no food.

Summarizing – Can we afford to say no to a full scale implementation of raw vegan food and biogas technology?

Bjorn Marten, chairman Geist
Karlingsund 209
451 97 Uddevalla

Global Forum on Food Security and Nutrition
http://km.fao.org/fsn
English translation

Dear Forum participants,

Following the questions raised by the moderators, I am pleased to share my comments regarding this topic, currently very important:

1. The added value of the contribution of agriculture to the food system is based on the following aspects: 1. Facilitating the inclusion of smallholder farming as a supplier of healthy and safe food. 2. Strengthening the procedures for sustainable good practices. 3. Strengthening the value chain approach. 4. Identifying and validating the sustainability indicators for the entire chain. 5. Extending the public support to agriculture.

The advantage of an agri-food system approach is the involvement of new stakeholders in the value chain, creating new scenarios of support and benefit for all the parties. The risk lies in not generating enough communication channels between the stakeholders and implementing a structure with little institutional strength.

It should be remembered that, from a practical perspective, the implementation of an agri-food system is undertaken locally, whilst the technical support and monitoring are completed at national or international level. There must be a fluid communication and feedback between them. Otherwise, the benefits of the system will not be easily identified.

2. Producers associations connected to open markets, to increase the availability of fresh and safe food in urban marginal areas in developing countries. These networks operate locally, are very dynamic, and adapt easily to development models. If these networks are involved in nutrition programs, they will continuously contribute to consumption monitoring and will provide better opportunities for the participation of all sectors involved in the agri-food system.

Price information services and consumer networks, trying to prioritize seasonal and locally produced agricultural food. They must be involved in the formulation processes identifying focal points.

Public procurement systems or national programs responsible for supplying food to community and school canteens and other institutions like hospitals and prisons. These systems have the responsibility of providing healthy and good quality food at fair prices.

3. I was involved in the formulation and implementation of food security projects in Colombia, Honduras, and Nicaragua, where nutritional goals are even more important.

These projects were related to urban agriculture and homestead gardens, enabling the promotion of fruits and vegetables consumption for a healthy diet. When setting up each project socioeconomic and food consumption baselines were determined. Consumptions of fruit and vegetables were well below the average recommended by the WHO. Hence, a new goal was considered for the projects: targeting an increase in fruit and vegetables consumption of at least 200 g/capita/day.

This goal was achieved in Tegucigalpa (Honduras), Managua (Nicaragua) and Popayan (Colombia), where the relevant assessments confirmed an increase in the household's consumption and therefore a nutritional improvement.
However, monitoring the consumption indicators is not easy. The sampling methods are not standardized and therefore measurement standards can change for every assessment. Furthermore, the institutions responsible of monitoring the nutritional status did not get involved, and therefore only project data are available.

4. Lack of updated reports about the nutritional status per country, limiting the identification of potential agricultural systems.

Limited recognition of urban-rural and socio-cultural dynamics, homogenizing the monitoring patterns and the promotion of unpopular diets.

Poor implementation of food systems sustainability indicators, increasing the risks of food contamination.

Lack of empowerment of participatory and multi-stakeholder platforms within agri-food systems, strengthening market targets with respect to nutritional goals.

I am pleased to share a link to a FAO RLC publication about the promotion of healthy food consumption through homestead gardens:

**From the garden to the table: Promotion of fruits and vegetables consumption from homestead gardens** [http://risalc.cepal.org/portal/publicaciones/ficha/?id=1461](http://risalc.cepal.org/portal/publicaciones/ficha/?id=1461)

I hope my contributions in Spanish will be useful for this Forum.

Best regards,
Sara Granados
Urban Agriculture Network. Chile.

**Spanish original**

Estimados colegas del Foro:

Siguiendo la línea de preguntas planteadas por los moderadores, estos son mis comentarios a este tema de suma importancia actualmente;

1. El valor agregado de comprobar la contribución de la agricultura al sistema alimentario radica en varios puntos: 1. Facilitar la inclusión de la agricultura familiar como fuente abastecedora de alimentos saludables e inocuos. 2. Reforzar los procedimientos de buenas prácticas sostenibles. 3. Fortalecer el enfoque de cadena de valor. 4. Identificación y validación de indicadores de sostenibilidad a toda la cadena. 5. Ampliar la escala de apoyo público al sector agrícola.

La ventaja de apropiar un enfoque de sistemas agroalimentarios es que involucra nuevos actores a la cadena de valor, creando nuevas instancias de apoyo y beneficio para todos. El riesgo es no generar los canales suficientes de comunicación entre los actores e implementar una estructura con poca solidez institucional.

Es necesario tener presente que la aplicación de un enfoque de sistema agroalimentario tiene una ejecución práctica en lo local, y soporte técnico y monitoreo en lo nacional e internacional. Entre los niveles debe existir una fluida comunicación y retroalimentación, si no, los beneficios del sistema no serán identificados fácilmente.
2. Asociaciones de productores conectadas a ferias libres, para aumentar la disponibilidad de alimentos frescos e inocuos, en zonas marginales de las áreas urbanas en países en desarrollo. Estas redes operan localmente, son muy dinámicas, y fácilmente se adaptan a modelos de desarrollo. Si estas redes se involucran con programas de nutrición, contribuirán de manera permanente con el monitoreo del consumo y propiciando mejores espacios para la participación de todos los sectores involucrados en el sistema agroalimentario.

Servicios de información de precios y redes de consumidores, buscando darle prioridad a los alimentos agrícolas de estación y producidos localmente. Es necesario involucrarlos en los procesos de formulación identificando puntos focales.

Los sistemas de compras públicas o programas nacionales encargados de abastecer comedores sociales, escolares y otras instituciones como hospitales y cárcel. Estos sistemas tienen la responsabilidad de proporcionar alimentos saludables y de buena calidad a precios justos.

3. Estuve involucrada en la formulación y ejecución de proyectos de seguridad alimentaria en Colombia, Honduras, Nicaragua, en donde los objetivos nutricionales cobraron una importancia superior.

Estos proyectos tuvieron componentes de agricultura urbana y huertas familiares, en donde fue posible promover el consumo de frutas y vegetales para una alimentación saludable. Al establecimiento de cada proyecto se levantaron líneas de base socioeconómicas y de consumo alimentario. En todas los consumos alimentarios de F y V eran muy por debajo del promedio recomendado por la OMS. De ahí que se introdujo un nuevo objetivo a los proyectos, buscando al menos un aumento del consumo de 200 gr/capita/día de F y V. Esto fue posible en Tegucigalpa (Hon), en Managua (Nic) y en Popayan (Col), donde evaluaciones ex - post confirmaron un aumento en el consumo de la familias y por tanto una mejora nutricional.

Sin embargo el monitoreo de indicadores de consumo no es fácil. Los métodos de muestreo no están estandarizados, por lo que en cada evaluación podían cambiar los patrones de medida. Por otro lado, las instituciones responsables de monitorear el estado nutricional no se involucraron, por lo que solo contamos con los datos del proyecto.

4. Falta de reportes actualizados por país del estado nutricional, lo cual limita la identificación de sistemas agrícolas potenciales.

Limitado reconocimiento a las dinámicas urbano – rurales y socioculturales, lo cual genera homogenización de los patrones de monitoreo y la promoción de dietas impopulares.

Escasa implementación de indicadores de sostenibilidad de los sistemas agroalimentarios, lo cual aumenta los riesgos de contaminación alimentaria.

Falta de fortalecimiento a plataformas multiactorales y participativas al interior de los sistemas agroalimentarios, por lo que los objetivos de mercado se hacen más fuertes que los nutricionales.

Comparto además link a publicación de FAO RLC sobre promoción del consumo de alimentación saludable a través de huertas familiares:
De la huerta a la mesa: Promoción del consumo de frutas y vegetales a partir de huertas familiares http://risalc.cepal.org/portal/publicaciones/ficha/?id=1461

Espero que mis contribuciones en español sean de utilidad a la memoria de este foro.
Dear All,

Agriculture is fundamental to achieving nutrition goals: it produces the food, energy, and nutrients essential for human health and well-being. Micronutrient deficiencies (for example, vitamin A, iron, iodine, and zinc) are now recognized as limiting for human growth, development, health, and productivity than energy deficits.

**Gorta’s Approach**

- Our approach to the hunger crisis promotes access to resources and strengthens local capacities
- We identify innovative approaches and foster processes that improve food and nutrition security to make a positive, long lasting difference in the lives of rural farm families
- We use both indigenous and scientific knowledge to empower smallholder farmer groups and community members
- We implement our programmes through partner organizations

**Agriculture and Nutrition activities in the East Africa Region**

**Understanding the context and underlying causes of Malnutrition**

**Food security issues**

- Droughts reducing yields – variability/ Insufficient food produced
- Underutilisation of available land due to labour intensive farming practices
- Underutilization of appropriate technology
- Over –reliance on rain fed agriculture
- Food seasonality
- Under-utilisation of indigenous food resources / limited forms of utilising the crops /food diversification
- Food safety (food processing utilisation) / Food preparation in the home/ value addition
- Post-harvest losses
- Poor market access of agricultural produce

**Caring practices & inadequate child feeding**

- Time availability - Women’s work load / maternal health and nutrition
- Breast-feeding practices – early cessation
- Child feeding practices – lack of special weaning foods and low frequency (mainly due to lack of crop and animal food diversity)

**Health services and healthy environment**

- Malaria
- HIV/AIDS
- Diarrhoeal diseases in children
- Hygiene practices
**Education and Knowledge**

- Poor education, knowledge gaps
- Poor policy environment and infrastructure: old policy
- Poor coordination of food and nutrition and health activities e.g. at government level
- Limited information on nutritional status & prevalence of non-communicable diseases for policy/decisions
- Lack of holistic extension services – extension services biased towards agricultural issues at the expense of other issues like nutrition, hygiene and sanitation etc

**Intervention strategies/Solutions**

**Overall programme idea:**
Interdisciplinary/integrated Area Based approach to increasing sustainable food and nutrition security for improved health

**Project components:**

**Food security: Sustainable agriculture**

- Improve crop and livestock productivity – targeting increase in yields of crops and productivity of livestock
- Promote the production of staple and indigenous crops and animal food resources
- Use of appropriate technology – drip irrigation, use of improved seeds that are disease and drought resistant
- Facilitate market linkages for agricultural produce
- Post-harvest handling – Food preservation, storage and value addition
- Dietary diversification - Kitchen gardens, domestication of nutritious wild foods like the green grasshopper in Uganda, the white ants in Kenya, Food recipes and combinations to improve food preparation
- Improving the micronutrient content of staple foods: Growing of orange fleshed sweet potato for Vit A, Millets for Iron, ETC

**Improving maternal & child health and nutrition**

- Treat and prevent malaria
  - Provide insect treated bed nets
  - Support health service screening
- Improve dietary intake of iron
  - Support introduction of greater diversity of foods for weaning including legumes
  - Agriculture extension and encourage small animal production
  - Encourage high nutrient varieties of staple crops
  - Examine local wild foods for nutrient content and local anaemia prevention qualities
- Improve intake of vitamin C and other vitamins that support iron nutrition
  - Support home gardening
  - Support food preservation, marketing of fresh produce
- Reduce intake of dietary inhibitors of absorption, e.g. phytate
  - Encourage optimum milling that removes outer layers but not germ
  - Research and disseminate information on fermentation, germination to encourage phytase activity
Health and Sanitation
- Water and sanitation improvements, hygiene promotion, health service improvements
- Install water and sanitation facilities and provide education on hygiene

Capacity strengthening in Policy Framework development and review for food and nutrition security
- Recommendations for improving nutritional outcomes in an agricultural project
  - Target women
  - Encourage diversification of production systems
  - Introduce micronutrient-rich varieties of crops
  - Promote small-scale agro-processing
  - Improve storage practices / technology
  - Improve markets
  - Encourage policy links
  - Include nutrition based indicator in the project monitoring framework

Challenges/Constraints
- Increases in food prices
- Growing population
- Climate change
- Changing diets
- Rising energy costs
- Natural disasters
- Poor health of farmers/ those exposed to farming – Mainly HIV/AIDS

Measurement of Impact
- Baseline and end line household surveys – consider large sample sizes and one control group for comparison of results
- Strong and routine monitoring of project processes
- Identify clearly defined process and impact indicators

Regards,
Rebecca Amukhoye
Gorta’s Regional Director for East Africa
Kampala, Uganda

75. Denis I F Lucey, GORTA Hunger Secretariat, Ireland

Contribution to FSN Forum Discussion on “Linking Agriculture, Food Systems and Nutrition”
From Denis I F LUCEY, Chairman, GORTA Hunger Secretariat, IRELAND  denis.lucey@gorta.org

GORTA, Ireland’s “Freedom from Hunger Council”, has been responding vigourously to the Government of Ireland Hunger Task Force (HTF) recommendations a few years ago to promote a joint focus on the two areas of Smallholder Agriculture and Nutrition as the best means of addressing the persistent issues of World Hunger. This joint focus, of course, immediately brings to the forefront the crucial roles of women, both in smallholder farming and in managing household nutrition to attain improved diets -- understood as sustainable and diversified -- while simultaneously trying to enhance small holder farmers’ resilience to future shocks. The third “Pillar” of the HTF recommendations was to reform the international mechanisms for dealing with Hunger, so as to harness political will (and action) at various levels to “go beyond Emergency” to recovery and resilience towards building robust, nutritious food systems at local, national and international levels as a sound basis for livelihood development!
GORTA is actively promoting the building of robust interactive linkages among these three pillars of thought and action. This began with hosting a multisectoral “Nutrition and Agriculture” workshop in Dublin held by FAO for Irish Government departments and the Irish NGO sector. Since then, GORTA has placed greater emphasis on mainstreaming nutrition dimensions in its agriculture and livelihoods programmes, addressing in particular a persistent gap in the sector: food security programmes and projects do not automatically generate nutrition outcomes either in design or results frameworks.

While there is nowadays a growing and widespread appreciation at policy levels of the need to build stronger links between nutrition and agriculture, those links still remain very weak at operational levels, so that many agricultural activity managers lack guidance on priorities and opportunities related to health and nutrition. GORTA is trying to address the issue of “How can the policy aspiration for stronger agriculture-nutrition linkage work down to operational programme activities which are oriented to nutritional outcomes, not just assuming they will happen?”

Promoting effective operational dialogue is not easy. The agriculture and nutrition communities use different language and often have concerns which differ from one another. Just as emergency famine relief tends to overshadow recovery/resilience activities, so also clinical nutrition focused on individual patients may overshadow broader “public nutrition” activities. Consumers often choose to purchase food of poor nutritive value, while farmers may choose to produce what they think they will sell. Exhortations to improve quality are usually ineffective unless there is some market return and smallholders often have little local market power.

The need for listening, understanding, and learning how to work more meaningfully together at policy and operational levels has come across clearly in several of the contributions to the current Discussion Forum on “Linking Agriculture, Food Systems and Nutrition”. This is clearly the case in the report of the FAO-AED forum last November, which Gabriel from FAO shared with us. It is also highlighted in the Report of an IFPRI Conference in New Delhi last year on “Leveraging Agriculture for Improving Nutrition & Health”, which contains this telling statement: So far, the agricultural and nutrition sectors have tended to operate in separate spheres and little effort has been made to use agricultural policies and programs to improve human nutrition.”

Last October, GORTA organised a very successful workshop in association with the FAO Committee on World Food Security (CFS) meetings in Rome. The workshop on “Improving Nutrition Security through Agriculture: Ensuring Access, Quality and Resilience.” The event discussed how best to enhance the nutritional impact of agricultural interventions and explored how to reduce long-term nutritional problems through tailored agricultural programmes with an emphasis on resilience of local food systems and the sustainable management of biodiversity. The programmatic focus was balanced by policy reflections on how best to mainstream nutrition into policy planning at local level, using case-study material from an ongoing GORTA-FAO partnership in Uganda. The proceedings of the workshop are currently in final editing and we plan to circulate shortly the links to the written reports and to video recordings of presentations/discussions through the FSN Forum network. Meanwhile, Rebecca Amukhoye, GORTA Regional Director for East Africa, is posting a brief outline of highlights of the Uganda partnership.

Among the key conclusions emerging from the GORTA Workshop in Rome are that dialogue, understanding and the design of meaningful, constructive and feasible developments which can be built into agricultural and food programmes/projects/practices will be enhanced by

- Thinking of agriculture as multi-functional, producing crops and animal products from the land and from the local natural environment, as well as other environmental services, water management and biodiversity outcomes in the local bioeconomy
- Thinking of all the links from smallholder agriculture to actual access to food consumption by households in a varied diet at affordable cost through local markets or quasi-markets (or public/community mechanisms targeting the vulnerable) and building local partnerships of public, private, community and cooperative groups making their food systems more resilient at producing nutritional value in the face of future shocks.
- Thinking of what chains or interactive circles can provide that value to the benefit of the participants and the mix of messages, persuasions, signals and incentives backwards, forward and around the food system to influence nutrition focused outcomes on the land, in local storage, simple processing, preservation, distribution, access, cooking and eating, as well as interaction with wider market systems.

- Recognising the potentially powerful role of government at local level to promote fairness in the market systems, where market power can be very unequal. This role can include regulation of market behaviour, promotion of countervailing mechanisms or actual participation in the market such as the examples from Brazil and Ghana, featuring purchases from local smallholders, enabling them to plan ahead for future production levels in response to new sources of demand.

- Realising that the same “solution” is not appropriate everywhere and, equally importantly, that the “solution” appropriate now in a specific place may not be the best “solution” there for all time. Local food systems need the capacity to adjust and evolve as knowledge, trust, experience and opportunities evolve over the years as part of rural development based in many places on “agricultural and food led” local growth.

The evidence base on what works well and how and why is only slowly being built up, especially on the complementarities between strong local food systems and national/regional systems. As a follow-on from our Rome workshop, GORTA will happily explore partnerships to work together to fill the evidence gaps. Let’s work together to collate, demonstrate and disseminate good practice, not with a view to communities copying the detailed mechanisms that worked elsewhere, but with a view to their designing and implementing solutions giving equivalent effect for them in terms of nutritional outcomes in their particular situation! How can GORTA best be a catalyst in this process??????

Denis I F LUCEY
Chairman, GORTA Hunger Secretariat

76. Maria Luisa Rodriguez Aguirre, Servicio Nacional de Sanidad, Inocuidad y Calidad Agroalimentaria, Mexico

English translation

Dear all

The relationship between the amount of food consumed and produced is deteriorating. This relationship lacks a culture of good management practices (harvest, transport and storage) of perishable fresh products. This culture must promote avoiding losses.

It is necessary to implement a scheme with a focus on the productive land, where yield and volume per hectare (ha) are measured. The current approach is obsolete, as it has been overtaken by factors such as:

In focus. The alert on global agrifood great shortages, with millions of hectares at immediate risk, victims of global warming and with government and productive neglect.

Multiplying risks in the rural system due to a poor production factor.

In front of a high demand for agri-food that will be critical in the next 3 decades, the loss / wastage of this agri-food is not because of farming surpluses! .. But because of poor handling (harvest, packing, storage, distribution with?)
What do we need to address the problem? We are forced to use the resources available for this activity with awareness and efficiency in reducing and controlling losses.

There is great disparity in technology between Europe and Latin America in the areas of harvesting, handling, storage and distribution. As in the purchase for consumption (some people consume per unit/piece and some other buy by kilos / pounds) it is time to impose a financial penalty and be aware of avoiding losses/wastage.

Why not punishing those who generate losses in agri-food, for lack of best management practices, due to an excess of handling in the agri-food business

Repackaging - by operator services in wholesale markets.
Lack of regulatory policies - with more storage without quality practices and food safety.
Lack of health policy-applied to wholesale food markets

Each government must design a plan to address this problem, which shows a lack of assessment of the agri-food.
Stop talking about producers and start referring to productive units.
Promoting a culture of competitiveness and productivity.

Spanish original

Saludos y estimados todos...

Existe un deterioro entre la relación entre la cantidad de consumo y volumén producido. Carece ésta relación de una CULTURA EN BUENAS PRACTICAS DE MANEJO(COSECHA, TRANSPORTE Y ALMACENEJE) DE PRODUCTOS FRESCOS PERECEDEROS;ésta CULTURA debe promover el evitar la GENERACIÓN DE MERMA.

Es necesario implementar un esquema con enfoque en el campo productivo, donde se mida el rendimiento, vólemen por Ha (hectarea)el actual ah caducadio, pues e ah visto rebasado por factores como:

En Primer Plano - La Alerta del gran desabasto Agroalimentario Mundial; con millones de superficies de hectareas bajo un enminentemente riesgo, víctimas del Calentamiento Global, con abandono gubernamental y productivo.

Multiplicando Riesgos en el Sistema Rural debido a un deficiente factor de producción.

Ante un gran demanda de Agroalimentos que seran crítica a futuro en las próximas 3 decádas, La Merma/Desperdiciode éstos Agroalimentoses no es por excelente!...sino por la falta de una CULTURA DEFICIENTE EN SU MANEJO - COSECHA - EMPAQUE - ALMACENAJE - DISTRIBUCCIÓN?...

¿Qué debemos para contrarestar las problemáticas? Estamos OBLIGADOS a que con los recursos que se encuentran para está actividad seamos concientes y eficientes en reducir y controlar MERMAS.

Existe una gran disparidad en tecnología Europa y América Latina) en la actividad de cosecha, manejo de almacenaje y distribución. Como en la adquisición para su consumo (quien consume por unidad-pieza y quienes adquieren por kilos/libras) ya es el momento de imponer una sanción economica, a razón de tenener Conciencia de evitar MERMAS.
Porque no sancionar a quienes generan Merma de agroalimentos, por su falta de BUENAS PRACTICAS DE MANEJO, debido al excedente en el número de veces en la manipulación cuando los agroalimentos son por actividad comercial:
REEMPLACADOS - por servicios de operadores de de mercados mayoristas.
FALTA DE POLITICAS REGULADORAS - Al mayor almacenaje sin practicas de calidad e inocuidad agroalimentaria.
FALTA DE NORMATIVA SANITARIA - Aplicada a centrales de abastos.
Cada Gobierno debe estructurar un Plan para contrarrestar éste problema, que DENOTA FALTA DE VALORACION A LOS AGROALIMENTOS.
Dejar de hablar de PRODUCTORES, centrarnos en PRACTICAR Y HABLAR refiriendonos como UNIDADES PRODUCTIVAS.
Promover un CULTURA DE COMPETITIVIDAD Y PRODUCTIVIDAD.

77. Salimata Wade,Université de Dakar, Senegal

English translation

The Geography Department of Dakar University has asked me to coordinate a study on the Senegalese Food Model(s) and their evolution in the context of urbanization, and an exploratory work to set up a Masters degree on food systems, which grosso modo should encompass food systems, sustainable development, and socio-cultural, economic and sanitary models. It is a cross-discipline subject which will require the collaboration of several disciplines and fields of expertise, and which should refresh the curricular of the Geography Department and allow for the training of students in the relevant cross-disciplinary tasks, given the complexity of our times, a period of transition given all the kinds of crises that might arise and interact to underline the urgency of new paradigms and new models.

Furthermore, I am founder and facilitator of La Compagnie du Bien Manger (The Eating Well Group), a small team that, recognizing the neglect of local products in the food of today's predominantly urban Senegalese society (food models are influenced by urban fashions), the exponential development of metabolic illnesses and the extroversion (internationalism) of food supplies, has launched the renewal (or the resurgence) of a Senegalese cuisine, integrating dietary as well as gastronomic concerns. The culinary arts are exploited to develop new products which correspond to the taste of the consumers and in which the concern about nutritional balance is determinant, for sanitary, economic, and environmental reasons as well as for cultural considerations.

Currently, La Compagnie du Bien Manger with the collaboration of the NGO Asradec and the Plus Value Culture Association is setting up an action-research in several locations in Senegal with the objective of improving food education for children between the ages of 2 and 16 years, giving them access to sufficient and balanced food, jointly with a theoretical and practical introduction to an indigenous and tasty cuisine, preferring foods suitable for growing children and which will improve the condition of their studies/training and of their education. If this action-research could be financed it would enable a flow of information to the study started by the Geography Department on the evolution of food models in Senegal in a context of urbanization.

I am Secretary General of the Plus Value Culture Association and at the moment we are building the prototype of a machine for iodinating salt, a micronutrient, on behalf of a Canadian NGO, and as part of a tripartite agreement that links the Association to the Department of Mechanical Engineering of the Ecole Polytechnique of the Université Cheikh Anta Diop, Dakar.

The President of the International Fair of Agriculture and Animal Resources of Dakar (FIARA, for its acronym in French) has requested us, as representative of the Compagnie du Bien Manger and Plus Value Culture Association, to provide a scientific, technical and cultural animation during the 2012 edition scheduled for April 2012. Moreover, the president of FIARA has invited us to participate in this present Forum. A tripartite convention is being developed with the purpose
of making food systems a subject to be discussed by the general public and not only amongst the professionals involved, because what is at stake is a model to be chosen, therefore to some extent a social proposal that needs to be queried.

I am convinced that instead of continuing to talk mainly about agriculture in Senegal, we would benefit from looking at the entire food system, because production must not be separated from consumption... the model must be constructed from the consumer back to production, above all in a world more and more urbanized where the city dwelling consumer does not produce what he eats but can buy what he eats and what he likes can be purchased all over the world, provided that the products seem practical, are available geographically and financially... without any guarantee of their nutritional value, because the imported food industry products are of lower quality, in particular from the nutritional point of view, even when they do not present dangers concerning food safety. Furthermore, if food security is a worthwhile objective, it does not guarantee the nutritional quality of food and does not automatically favor local products, which is really a shame when one considers the nutritional importance of many of them. In addition, not all local food products are produced by agriculture nor by dominant production systems; indeed, gathered products from natural sources are often important from a nutritional point of view and complement cultivated products (however, there is a kind of competition because the systematic clearing of forest for cultivation does not take into account the economic value of these gathered products which are finally sold in the urban markets at high prices and can not benefit food supply to a greater number of people, in a context of structural poverty.

Dr. Salimata WADE
Géographe
Enseignante chercheure
Université Cheikh Anta Diop de Dakar

French original

Le département de géographie de l'Université de Dakar vient de me confier la coordination d'une étude sur le (les) modèle(s) alimentaire(s) sénégalais et leur évolution dans un contexte d'urbanisation et un travail exploratoire pour mettre en place un Master sur les systèmes alimentaires et qui devrait prendre en charge grosso modo les systèmes alimentaires, le développement durable et modeles socio-culturels, économiques et sanitaires. C'est un sujet transversal qui requerra la collaboration de plusieurs disciplines et spécialités, et qui devrait renouveler les thèmes du département de géographie et permettre de former les étudiants à des travaux transdisciplinaires pertinents compte tenu de la complexité de notre époque qui est une période de transition quand on envisage toutes les sortes de crises qui surgissent et interagissent pour signifier l'urgence de nouveaux paradigmes et de nouveaux modèles.

par ailleurs je suis fondatrice et animatrice de La compagnie du Bien Manger, une petite équipe qui partant du constat du délaissement des produits locaux dans l'alimentation d'une société sénégalaise aujourd'hui à dominante urbaine (les modèles alimentaires sont influencés par les modes urbaines), et du développement exponentiel des maladies métaboliques et de l'extraversion alimentaire, a lancé le renouvellement (ou le renouveau) d'une cuisine sénégalaise, intégrant des préoccupations de diététique autant que de gastronomie. les arts culinaires sont mis a contribution pour développer de nouveaux produits, qui correspondent aux goûts des consommateurs et dans lesquels les préoccupations d'équilibre nutritionnel sont déterminantes, autant pour des considérations sanitaires, économiques, environnementale que culturelle.

La Compagnie du Bien Manger est actuellement en train d'élaborer, an partenariat avec l'ONG Asradec, et l'association Plus Value Culture, une recherche action dans plusieurs localités du Sénégal pour favoriser l'éducation alimentaire pour les 2-16 ans, leur donner un accès à une
alimentation suffisante et équilibrée qui accompagnerait les initiations théoriques et pratiques à une cuisine endogène et savoureuse, favorisant une alimentation adaptée à la croissance des enfants et permettant d’améliorer les conditions de leurs études/formations, et de leur éducation. Si cette recherche action venait à trouver un financement, elle permettrait de verser des informations dans l’étude initiée par le département de Géographie sur l’évolution des modèles alimentaires au Sénégal dans un contexte d’urbanisation.


le Président de la Foire internationale de l’Agriculture et des produits Alimentaires de Dakar (FIARA) nous a sollicitée au nom de la Compagnie du Bien Manger, de l’Association Plus Value Culture pour assurer une animation scientifique, technique et culturelle durant l’édition 2012 prévue pour avril 2012. c’est d’ailleurs le président de la FIARA qui nous a invitée à participer au présent Forum. Une convention tripartite est en chantier pour faire que les systèmes alimentaires figurent parmi les thèmes débattus au sein de la société et pas seulement parmi les acteurs professionnels, car il y a en jeu un modèle à choisir, donc quelque que part un projet de société à interroger.

Je reste persuadée qu’au lieu de continuer à parler surtout d’agriculture, au Sénégal, nous gagnerions à envisager le système alimentaire, car la production ne saurait être déconnectée de la consommation... le modèle se construit du consommateur vers le production, surtout dans un monde de plus en plus urbanisé où le citadin consommateur ne produit pas ce qu’il mange et a la possibilité d’acheter ce qu’il mange et ce qui lui plaît peut être acheté partout dans le monde, pour peu que les produits paraissent pratiques, soient accessibles géographiquement et financièrement... sans garantie de leur intérêt nutritionnels car les produits de l’industrie alimentaire qui sont importés sont de moindre qualité, surtout d’un point de vue nutritionnel, quand ils ne présentent pas des dangers du point de vue de la sécurité sanitaire des aliments. La sécurité alimentaire par ailleurs, si elle est un objectif louable le suffit pas à garantir la qualité nutritionnelle des aliments et elle ne privilégie pas automatiquement les produits locaux, ce qui est bien dommage quand on envisage l’intérêt nutritionnel de nombre d’entre eux. Par ailleurs, tous les produits alimentaires locaux ne sont pas issus de l’agriculture ni des systèmes de production dominants dans la mesure où les produits de cueillette sont souvent intéressants d’un point de vue nutritionnel et complètent les produits cultivés (il y a comme une compétition cependant, car les défrichements systématiques en vue de cultiver ne tiennent pas compte de la valeur économique des produits de prélèvement, qui finalement sont vendus chers sur les marchés urbains et ne peuvent même plus bénéficier à l’alimentation du plus grand nombre, dans un contexte de pauvreté structurelle.

Dr. Salimata WADE
Géographe
Enseignante chercheure
Université Cheikh Anta Diop de Dakar

78. Fabrice Kayani Amani, La Solidarité Estudiantine pour la Bonne Evolution, Democratic Republic of the Congo

Dans le monde entier, l’agriculture est considérée comme source de subsistance socio économique de part sa production qui peut être causée par un champ fertile, la meilleure sélection des semences, l’utilisation des engrais organiques et chimiques. Au fur et à mesure que l’agriculture est promue, le système alimentaire est moderé, en definitif le bon résultat s'annonce. Dans le système alimentaire, seuls les aliments complets sont sources de croissance nutritionnelle compte tenu de leur valeur, le risque est la non variation de ces derniers qui aboutit à une malnutrition, aussi il est à ajouter que pour les ignorants lors de la production, ils...
vendent en majorité les produits, tandis que le taux de consommation familiale baisse du jour en jour.

La valeur ajoutée que l’agriculture peut contribuer non seulement à l’alimentation mais le résultat nutritionnel est d’environ 90% dans nos villages les risques du perspective fondée sur le système alimentaire est que la population qui produit ne consomme pas valablement leur production; chose qui entraîne la malnutrition.

Les principaux points d’entrée pour incorporer les objectifs nutritionnels dans l’agriculture est de:
- introduire les nouvelles espèces de cultures rares qui sont utiles à la nutrition;
- sensibiliser la population sur le point de consommation de la production locale et l’initiation de stockage

D’autres points d’entrée sont:
- Instaurer le système de jardins potagers à plusieurs espèces dans chaque menage et stockage de semences ;
- Disponibiliser les techniciens en matière agricole et nutritionnelle pour sensibiliser la communauté ou les groupes cibles en donnant la valeur consommation supplémentaire. Ces points sont d’une importance capitale pour changer le système alimentaire jadis et enfin de lutter contre la malnutrition. Pour y arriver, une enquête sur terrain savere indispensable.

Voici les principales lacunes:
- l’ignorance sur l'agriculture et le système alimentaire -manque ou insuffisance des semences -la non disponibilité de la main d’oeuvre du travailleur -le manque de maîtrise des aléas climatiques pour favoriser une bonne culture -la non mise en pratique du stockage -la retissance à la consommation de la production -la quantité produite est inférieure par rapport à la consommation -la non utilisation rationnelle des aliments dans une façon déséquilibrée -pas de bonnes méthodes pour la conservation de produits de legumes marraicheres -la non mise en pratique de techniques culturales et la sous information -l'ignorance de consommer les fruits et les legumes
**79. Key note message by Ann Tutwiler, FAO Deputy Director-General (knowledge), Italy**

What is the role of FAO in improving nutrition along the food system? How can FAO work with others to strengthen the links between the agricultural and food system and nutrition? Remarks by Ann Tutwiler, Deputy Director-General (Knowledge), FAO

When considering how agriculture contributes to nutrition, I think it is useful to expand our worldview to take in the entire food and agricultural system, as this Forum has done. As Deputy Director-General (Knowledge) for FAO, I am dedicated to making sure that all those concerned with food and agriculture, as well as with overall social and economic development, are aware of the significant contributions that the food system can make to better nutrition throughout the lifecycle – and how better nutrition leads to improvements in human capital, higher levels of economic productivity and growth, and reductions in poverty. I also want to make sure all these actors have the knowledge and support they need from FAO to promote a nutrition-responsive food and agricultural system.

That the food and agricultural system as a whole has a key role to play in reducing malnutrition in the world seems obvious. Agriculture is the primary source of livelihoods for billions of people. It is the engine for an entire system that links rural and urban areas and provides not just food but jobs for many, regardless of where they live, who work in transport, marketing, and processing. But as the contributors to this Forum have pointed out, food and agriculture contribute to better nutrition in many other ways as well.

Of course, good nutrition depends not only on food being available but also on the family being able to access that food and on healthy food choices for self and family, appropriate caring behaviors for infants and young children, a healthy household environment, and access to health services. These other contributors to good nutrition cannot be forgotten. But this Forum has highlighted the role of the food and agricultural system. As the discussion closes, it may be useful to group the main pathways that link food, agriculture, and nutrition that seem to have emerged from the Forum discussions and the resources it has gathered. This can help identify where policies, investments, or programs can be most effective in improving nutrition.

- **Food production, marketing, and processing.** As the discussion noted, producers can be encouraged to grow a wider variety of crops, often reviving traditional crops with high nutritive values. Fish is a major source of protein and omega-3 fatty acids. For many, fish should be, and in many parts of the world already is, part of a healthy diet. In some places, plants and animals from the forest and the wild contribute variety and taste to otherwise poor rural diets. For those who consume out of their own production or from home or school gardens, diversity in the kinds of foods they grow, gather, fish, or raise is important. Through urban agriculture, city dwellers can grow fruits and vegetables or raise small animals and increase their intake of micronutrients and protein. Industrial fortification is another avenue to address micronutrient deficiencies.

- **Food choices and dietary diversity.** Of course, even if nutritious foods are available, consumers and caregivers must know which foods to choose for a healthy diet and how best to prepare and store them. Nutrition education and information are thus essential to making a food and agricultural system “nutrition-sensitive.” The contributions by the International Agri-Food Network, Bioversity, the International Potato Center and the example from Micronesia make this point. They show that not only does the food and agricultural system affect nutrition but that considerations of nutrition can affect production decisions and reorient the food and agricultural system as a whole. Ensuring foods are safe so they don’t contribute to malnutrition through illness is also important. Here concern for food safety is relevant not only for international trade but wherever foods are prepared, whether at local markets, by street vendors or in the home.
- **Empowering women and girls.** In addition to taking care of their families, women and girls play critical roles in agriculture and throughout the food system as farmers, traders, and business owners. Yet currently rural women lag far behind rural men and urban men and women for every MDG indicator. FAO’s State of Food and Agriculture 2010-11 showed that removing barriers to women’s participation in the food economy and promoting gender equality is not only good for women, it is good for the economy and society as a whole. If women had the same access to productive resources as men, they could increase yields on their farms by 20 to 30 percent. Agricultural output would go up by 2 to 4 percent. Malnutrition would be reduced by 12 to 17 percent. Labor-saving, gender-friendly technologies could increase agricultural productivity and give women more time to care for themselves and their families. Women with more control over household decisions tend to invest relatively more than men in education and spend more on food, leading to better nutrition and food security. Ensuring women have the knowledge they need to improve their family’s nutrition as well as the resources they need to act on that knowledge should significantly improve nutritional outcomes. As part of a nutrition-sensitive food and agricultural system, then, women must be primary beneficiaries of education, extension, and technology. We all must work, too, to remove legal and cultural barriers to women’s full participation in the economy and society, such as laws that exclude women from inheriting land or securing access to credit.

- **Improving livelihoods.** Those in rural or urban areas who depend on the food and agricultural system for their livelihoods, including fisheries and forestry, can use increases in income to purchase more and more nutritious foods. They can use the increase in income to improve household hygiene, invest in education, or access needed health services. All these things together can contribute to better nutrition at the household level.

- **Overall increases in production and improved system efficiency.** Increasing general levels of production, reducing waste and post-harvest losses, and lowering costs of storage, transport, and processing can reduce relative prices and make a variety of foods more accessible to consumers. In many countries, the value chain is getting shorter, with closer connections between producers and consumers. Input and output markets, such as those for seeds and finance, and market infrastructure, including transportation networks, are weak in many developing countries. While paying careful attention to the needs of smallholders, who are the large majority of producers in many countries, the private sector, often in partnership with government, can play a significant role in strengthening these markets.

As the UN agency dealing with food and agriculture, FAO has a major interest in strengthening these pathways in order to effectively address problems of under- and overnutrition and micronutrient deficiencies. By cooperating with country governments, other UN agencies, and other development partners, FAO is able to work at global, regional, national, and local levels. By helping to coordinate dialogue and action on multiple levels, FAO can provide the leadership and technical support for what to do and how to do it to strengthen the food and agricultural system for nutrition. FAO’s major roles in this effort include:

- **Generating and sharing knowledge.** FAO is an authoritative and objective source of information and advice and is a leading provider of global public goods on food and agriculture. Through its publications, databases, and consultations like this FSN Forum discussion, FAO brings together the most relevant current knowledge, including the latest research findings, statistics, and lessons learned from project experiences. For instance, FAO recently published food composition tables for West Africa that give nutrient values needed for policy and program analysis for a variety of foods as well as a book on food-based approaches to combating micronutrient deficiencies. It has helped to develop tools for assessing dietary diversity and supports initiatives on sustainable diets. It is partnering with the World Bank and others to develop a knowledge platform on agriculture, poverty, and nutrition. FAO is already working with multiple partners to organize the ICN+21 (International Congress on Nutrition) in 2013. As co-host with WHO of the Codex Alimentarius Commission, FAO assists in development of international norms and standards.
On a more individual level, government officials often turn to FAO’s representatives in the field for evidence-based guidance on policy and investments. This role will become more important as FAO places increased importance on assistance and impact at country level.

FAO is also keenly interested in strengthening the knowledge base about how to enhance the effectiveness of the food and agricultural system for good nutritional outcomes. We already have a good idea of what sorts of more health-related interventions can help to reduce malnutrition, but as noted in the discussion, we have less solid knowledge about what policies, programs, and practices based in the food and agricultural system have the greatest impact. These approaches, focusing on having a healthy diet, will tend to be more integrated with a household’s own livelihood strategies and so will be more sustainable throughout the lifecycle. But the evidence building cannot stop at determining actions are most effective: To have real impact, we also need to know what are the most effective institutional arrangements and how best to actually implement these programs and policies.

- **Putting knowledge into practice.** Along this line, FAO is actively working to put knowledge into practice. FAO contributes to global initiatives like SUN, which brings together multiple stakeholders to deepen political commitment for fighting malnutrition, and is a partner in REACH, which works at country level to improve coordination of action against malnutrition among the UN agencies, as well as other partners. FAO is a trusted presence at country level, and through its advice, assistance, and convening ability, FAO can work in partnership to respond to country requests and help stakeholders, in the Ministry of Agriculture and elsewhere, identify, implement, adapt, and adopt policies and programs to strengthen the ability of the food and agricultural system to produce good nutritional outcomes. From these practical experiences, further learning, dissemination, and cross-country knowledge exchange can emerge. FAO is thus working to improve communications platforms across the organization so others can easily access the knowledge they need and put it into practice.

- **Developing capacities.** As an integral part of providing technical assistance and putting evidence into practice, FAO works to develop individual and institutional capacities for knowledge-sharing, decisionmaking, and improved policy and program coordination. For example, as part of its work with Codex Alimentarius, FAO works at country level to build capacity to more effectively implement food safety standards. Nutrition specialists from FAO have designed guidance for developing academic curricula in nutrition and for setting up school gardens. With WFP, FAO is working to strengthen information systems for analysis and policymaking in food and nutrition. And various divisions across FAO are involved in supporting the Africa-led CAADP process. As part of CAADP’s work to develop strategies for improving agricultural growth and also protecting the most vulnerable, FAO is working with country partners to make investment plans “nutrition-sensitive” by mainstreaming nutrition objectives and activities into agricultural policies and programs.

Appropriate policies and investments can support rural and urban livelihoods and energize the entire food and agricultural system so that it is resilient and makes a substantial, sustainable contribution to improving nutritional outcomes for children and adults throughout their lives. A nutrition-sensitive food and agricultural system will help address the multiple burdens of malnutrition: undernutrition, overnutrition, and micronutrient deficiencies. In its role as knowledge generator and broker, as adviser, communicator, and convenor, FAO looks forward to partnering with others to respond to country needs and strengthen the nutrition focus of national and global food and agricultural systems.
Dear all,

This is a very important discussion indeed. I'm currently studying public procurement of food in Africa, especially in the form of Home-Grown School Feeding, for my PhD thesis. I have also worked at the National Food and Nutrition Security Secretariat (SESAN) of the Brazilian Ministry of Social Development and Fight against Hunger (MDS), so my contribution will be about the power of public purchases of food in reducing malnutrition.

SESAN/MDS works with this perspective of intervening in the agrifood chain in order to guarantee better food and nutrition security results. More information can be found here (unfortunately, in Portuguese only): [http://www.mds.gov.br/segurancaalimentaria](http://www.mds.gov.br/segurancaalimentaria)

The largest programme of SESAN (which has an annual budget of over USD 300 million) is called Food Acquisition Programme (PAA). It aims at purchasing food from family farmers and distributing it to social assistance institutions and public facilities (like popular restaurants).

In a country like Brazil, with a large proportion of smallholder farmers in the agriculture sector, and a large proportion of food insecure households/individuals, the programme can be very powerful in leveraging nutrition while shaping the food chain. It promotes social and economic inclusion in the rural areas and addresses food insecurity, while the State fulfils its responsibility towards the right to food. The Brazilian National School Feeding Programme (annual budget of USD 1.6 billion, from which at least 30% has to be spent with local purchases from family farmers) also works with the same perspective. Decentralization and a simplified purchased are characteristics of these programmes.

Intersectoriality is indeed a strength of the programme. It builds on a previous effort of the Ministry of Agrarian Development to identify and recognize family farmers, as well as it benefits the target population of social assistance programmes. Difficulties in operationalization include corruption and a clear understanding of its objectives (reflected in monitoring). Is it a programme to support agriculture or to improve nutrition? Whereas the relation of consumers with the programme is more straightforward, the same is not true for producers. If functioning well, the programme will invariably increase farmers’ incomes, but the same might not apply for farmers’ household nutrition. Women might start working more in the fields, reducing the amount of time spent as caregivers at home; the composition of the fields might change, reducing the diversity of food consumed by the family. In Uganda, where WFP operates the P4P Initiative, there have been discussions on the need for the nutritionalization of agriculture: [http://ugandanationalacademy.org/downloads/FINAL%20UNAS%20BOOK%20%20.pdf](http://ugandanationalacademy.org/downloads/FINAL%20UNAS%20BOOK%20%20.pdf)

As for consumers, some researches show that there can be a compensatory reduction of food intake of children at home as a result of institutional (school) feeding.

Kind regards,

Thaís L. Bassinello (Ms.)
PUREFOOD Fellow
Makerere University School of Public Health
http://purefoodlinks.eu/author/tbassinello/
http://purefoodnetwork.eu/

80. Thaís L. Bassinello, Makerere University School of Public Health, Uganda
81. Anne W. Kepple, State University of Campinas – UNICAMP, Brazil [second contribution]

I would like to contribute a brief reflection on the most recent contributions to the forum.

It struck me that most of the challenges raised were predominantly political in nature: the challenge of getting different sectors to work together (Purna Wasti); agri-business’ control of the markets and promotion of junk-food (Ardhendu Chatterjee), which point to the contradictions of promoting food security within the predominant economic model; corruption and social barriers in India (Valentine J Gandhi); and the need to emphasize participatory solutions (Iris Guerrero), which imply new relationships of power. Without political awareness and savvy, “technical” science-based solutions are rarely effective and are often, in fact, harmful. We must learn how to work in the face of power, paying closer attention to the relations of power that reproduce inequalities and aggravate food insecurity, and the roles we play as researchers and program people engaged in nutrition/agriculture/food security initiatives. These may be the most significant knowledge gaps.

Anne Kepple

82. Naser Qadous, American Near East Refugee Aid (ANERA), Palestinian Territories

I appreciate much the holistic approach Madam Tutwiler/ the forum highlighted on how to link food, agriculture, and nutrition, but I felt something missing, and this is the feeling of many many people talking in similar forums that is the social discipline, namely solidarity and equity in distribution of food. So many interventions are adopted for increasing agricultural production, diversification, capacity building empowerment...etc, all the respect and those are needed, but how many interventions are defending or promoting the right of poor in the wasted food, not only in rich countries but even in very poor countries. Food is wasted during postharvest due to bad handling, but it is also lost ‘post Kitchen’. It is just awareness, some legislations, and may be simple infrastructure to save this food.

To give two examples:
- First, penalties for those who do not eat their ordered food in some restaurants, like in Saudi Arabia contributed to rational ordering of food.
- Second Wedding parties are misusing food because of social habits. May be just working on changing the way of serving food will save high percentage of “post Kitchen losses”.

There is a valid Arabic saying with different versions “No single poor became hungry without a voracious rich”.

Naser Qadous

83. Angela Kimani, FAO- Sub regional Office in Nairobi, Kenya

Dear Colleagues,

this is a very vital discussion that should be incorporated in any agricultural forum. Improved human nutrition is the ultimate goal of agricultural programs.

The major entry points that we can use to mainstream nutrition are:

- Poverty alleviation - we cannot eradicate poverty when the population is hungry. Thus, good quality food, with diversity is vital for this. Good nutrition improves the resilience of the population to any hardships.
- MDG 1- Eradication of Poverty and Hunger- Nutrition is at the heart of this MDG. As discussed above, poverty eradication= to access to good food and improved nutrition. Good nutrition will definitely eradicate hunger.

- Gender programmes - we all know that women play a great role in agricultural production. Thus, gender would be a good entry point for nutrition intervention, as women contribute a greater percentage of food produce; they are the major care givers and also are affected by intrahousehold food distribution, especially where cultural issues are involved.

- Livestock programmes- a good percentage of human food comes from animals, and thus, integration of nutrition in livestock programmes is very vital. This mostly includes issues of milk and meat hygiene (covering food safety), handling, processing and preservation for future use, especially in populations affected by climate change, where food insecurity is high and they depend on livestock for nutritional well being.

Thank you,

Angela
FAO- Sub regional Office in Nairobi

84. Salma Akter, Padakhep Manabik Unnayan Kendra, Bangladesh

Increasing homestead production is an example of one preventative strategy which can assist households in meeting their food security needs by increasing food availability and providing an additional source of income. Homestead production can also reduce malnutrition through the cultivation of more varied crops and the creation of alternative food sources such as livestock or aquaculture. Malnutrition can be combated by improving dietary intake by having a sufficient, affordable and diverse supply of micronutrient-rich foods throughout the year, and providing information to households to that ensure these foods are consumed in adequate amounts.

In Bangladesh, there are large numbers of farmers who rely upon traditional home gardens, which are defined as seasonal, found in scattered plots, and involving the production of locally available vegetables in an unsystematic fashion. These home gardens are less costly to maintain and thus it is marginal and landless rural farmers who are particularly dependent upon them for their primary source of income. Constrained by illiteracy, minimal financial and technological resources and inadequate land holdings, these farmers are therefore unable to maximize the potential yields and profitability of their holdings.

Initiatives to increase homestead production can therefore be of great value considering that of Bangladesh’s approximately 19 million farm holdings, nearly 14.03% were landless, having no cultivable land other than their homesteads. Furthermore, 38.63% are marginal, with 0.05-0.49 acres of land (BBS, 2009). The situation of farmers already suffering from land scarcity is further aggravated, because estimates suggest between 0.56% and 1% of the country's agricultural land is converted toward non-agricultural purposes each year. As a result, improvements made not only to the home garden, but the entire productive capabilities of the homestead hold particular benefit for the marginal and landless.

Targeting homestead production alone cannot address the multitude of reasons for food insecurity in Bangladesh. Nevertheless, due to the situation of impoverishment described above, as well as the importance of homesteads to the poor of Bangladesh, increasing homestead production can still have a significant impact. This opportunity for improvement is clearly
revealed in light of the fact that an estimated 20 million small homesteads remain underutilized. This, together with the fact that Bangladesh produces less than 30 percent of the fruits and vegetables needed to meet the minimum daily requirements for its population that if more effective utilization of holdings can increase the availability of fruits, it can serve as a viable method to address malnutrition.

Salma Akter
Bangladesh

85. Tara Acharya, PepsiCo, USA

1. Agriculture is often looked upon as a tool to generate nutritional outcomes. What is the value added of looking at how agriculture could contribute not just to improved nutritional outcomes, but food systems more broadly? What are the risks and benefits of taking a food systems perspective?

I disagree with the opening statement. I believe that agriculture is seen as a tool for economic productivity and food production, but not as a tool to generate nutritional outcomes. Recent reports from IFPRI and Chicago Council have underscored the important contribution of agriculture to nutrition, but these linkages are only now being highlighted, together with a call to action to bring the worlds of agriculture and nutrition closer together.

I believe the benefits of leveraging food systems to more specifically deliver nutrition and health outcomes far outweigh any challenges. The recently released report on chronic child malnutrition by Save the Children underscores the critical role that good nutrition plays in global economic productivity. Food systems can be adjusted to meet the nutritional needs of people globally – those who have insufficient nutrition, those who suffer from micronutrient deficiencies, and those who consume too much energy-dense but nutrient-poor food.

2. What/where/who are the key entry points within agriculture and food systems to incorporate nutritional objectives? Why? And how can they best be leveraged?

Some food system interventions that can help to prioritize nutritional outcomes include:

- Selection of seeds that are high-yield, disease-resistant but also have optimal nutritional content
- Adoption of agronomic practices that maintain/optimize nutrient development in plants over the crop cycle
- Prioritization of post-harvest practices that maintain (or sometimes even enhance) nutrient content in produce
- Packaging, transport and storage of agricultural products to maintain and deliver nutrition to consumers

Each one of these interventions requires investment in research that can advance our understanding of what "optimal nutrition" is and how to maximize not just food production per hectare but nutrition production. Consumers, large multinational companies and small and medium enterprises, including informal purveyors of street food, all need the support of the academic community and government support to develop this research base.

3. Do you have experience in agricultural/food systems projects and programmes that have resulted in improved nutritional outcomes? If yes, please share the success factors, constraints faced, lessons learned: why you consider it as a success, how you measured the impact and whether a nutritional objective was explicitly built into the programme.

If you have experience of an agricultural/food systems project or programme with a nutritional objective but that failed to achieve it, what were the factors that led to the failure and what would you recommend to others to overcome the barriers to success?

Enterprise EthioPEA is one initiative that PepsiCo has undertaken that is a specific attempt to incorporate nutritional outcomes into food systems in Ethiopia. The initiative aims to establish
the processes, infrastructure and capacity to raise Ethiopia’s standing in the world as a major chickpea producing and exporting nation. It is positioned to contribute to the overall agricultural transformation that the country is now undergoing, and is helping to establish the highest standards for partnership between the Ethiopian government, international donors and industry. Chickpea production is expected to play a critical role in agricultural production as a driver for economic growth and food security. Improvements in quality and yield could contribute to increased income among smallholder farmers. As a cost-effective source of protein that accounts for approximately 20 percent of protein intake in the population, increased production, improved quality and lower domestic prices have benefited the Ethiopian rural and urban population. Natural soil maintenance benefits through nitrogen-fixing, have even helped to enhance the quality of soil, reduce fertilizer costs and boost yields of cereals through crop rotation. As part of the initiative, the World Food Programme has also received a grant from PepsiCo Foundation to develop and test a nutritious feeding product for hungry children in Africa.

The ultimate goal of the initiative is to elevate the importance of the crop not just for improved domestic nutrition, but also for global consumption, thereby increasing Ethiopian chickpea exports. Incomes of chickpea farmers in the country could be doubled as a result of improvements in chickpea productions systems, leading to improved yields and quality of chickpeas, as well establishment of better seed production systems, processing, packaging and transport of both raw materials and finished goods.

4. What are the key gaps in knowledge or good practices that limit the ability of agriculture and food systems to improve nutritional outcomes?

I believe the biggest gap is actually the lack of acknowledgement that the primary purpose of agriculture should be to deliver nutritious food to people. Following this, alignment of policies is essential to ensure that government, private sector and consumers can all act to ensure we collectively achieve optimal nutritional and health outcomes.

Tara Acharya
Senior Manager in Global Health and Agriculture Policy at PepsiCo

86. Suman K.A., CPPCIF and NAAHM India, India [received through Solution Exchange India]

Dear Members

A very interesting debate with multiple and valid perspectives from the community on this important topic.

On the second part of the query: Dr. S. Mahendra Dev (from IGDIR, Mumbai) cutting-edge paper titled 'Agricultural-Nutrition Linkages and Policies in India' (http://www.igidr.ac.in/pdf/publication/WP-2012-006.pdf) presents important clues to entry points. The succinct arguments suggest three key entry points - inclusive agricultural growth, food prices and women in agriculture. The paper further makes a strong case for nutrition sensitive agriculture development, and reviews three major agriculture food programs for their nutrition sensitivity at the policy level using an interesting convergence framework while also suggesting policy options for strengthening the agriculture - nutrition linkages.

In the more recent times, IFPRI’s international conference held in New Delhi, ‘Leveraging Agriculture for Improving Nutrition and Health’ (http://2020conference.ifpri.info/) brings forth several dimensions of the agriculture, nutrition and health nexus. The conference well attended by over 1000 delegates from over the world, examines the linkages from the...
perspectives as diverse as agriculture factor productivity elements, economic growth, agriculture growth, public investments in agriculture, changing consumer choices, diet composition and transition imperatives, value chain approaches, policy interventions, food safety and demographic contexts. The conference acknowledges knowledge gaps in the linkages, urges for quick actions for filling the knowledge gaps, fostering partnerships, scaling up innovative interventions and sensitizing policy makers on nutrition sensitive and nutrition enhanced agriculture development.

And to be able to fill the knowledge gaps, CGIAR Research Program 4 (http://www.ifpri.org/sites/default/files/crp4execsummary_oct07_2011.pdf) under the aegis of IFPRI and other partner institutions, has drawn up a 4 component research proposal covering value chains for enhanced nutrition, bio-fortification, prevention and control of agriculture associated diseases, integrated agriculture, nutrition and health programs and policies.

On the resources: The IFPRI virtual Ag-nutrition Community of Practice and the rich collection of publications from the CoP can prove to be useful start points (http://www.mendeley.com/groups/844241/agriculture-nutrition-and-health/members/).

Clearly, evidence seems to suggest that much leg work needs to be done to map out the agriculture nutrition linkages and perhaps a system dynamic and contextual map covering key dimensions of food security, health, economic and agriculture development, partnership approaches, demographics, value chain analyses, social protection and safety nets, food safety regulation, public investments in agriculture and allied sectors may prove useful.

This leads to the first part of the query. On this part, it might be worthwhile to consider India's hunger and malnutrition challenge from the lens of - mother and child nutrition, national food programs convergence, right to food, food aid and climate change, international experiences application, food trade, NFSB and plan priorities, public investments in Ag-nutrition linkages research and development and development access (education, health, sanitation, water et.al) indicators.

Best
Suman K A,
Founder, CPPCIF
National Alliance against Hunger and Malnutrition India

87. Comment by Corinna Hawkes and Karel Callens, facilitators

As this Forum discussion is approaching its close, we hope the discussion about linking agriculture, food systems and nutrition will continue.

The post by the FAO DDG for Knowledge, Ann Tutwiler, does an excellent job of putting the discussion in perspective. When agriculture’s contribution to nutrition (as opposed to just food supply) was discussed back in the 1980s in international development circles, it was mostly about agriculture’s role as an income generator – or, as we would now put it, its contribution to “livelihoods.” While participants have rightly pointed out this is a crucial pathway, they have also illustrated many other pathways in which food and agriculture can contribute to improving nutrition.

The discussion has also highlighted that income and food supplies are not all that is needed to improve nutrition – good caring practices, access to health services, education, clean water, sanitation, etc. are all essential. It is not just a question of how the food-supply aspect of
agriculture can improve dietary quality, but how that contribution sits alongside the other factors we know are essential for good nutrition. And importantly, as discussed in this Forum, how that fits into the food system as a whole.

Forum participants have illustrated many ways in which a “systems approach for looking at how food and agriculture can contribute to better nutrition” adds value. Not only to the analysis of the issues, but also to the identification of smart and sustainable solutions to problems of both over- and undernourishment. We have seen how a systems approach adds value by defining tangible roles for the various players along the food supply chain and placing the consumer at the centre of our discussion. The discussion has also highlighted the importance of looking at the macro-environment in which food systems operate e.g. in terms of food systems governance, the incorporation of public health and social goals in agricultural sector policies, the need to reflect on issues of sustainability, equitability, etc.

Many participants have also highlighted the importance of “informed choice”. While food supply and access issues remain important challenges in many parts of the world, nutrition education and information have been highlighted as essential in creating consumer demand and pressure for making food and agricultural systems more “nutrition-sensitive” and “sustainable”.

So why now? Why this “changing focus” (as one participant stated critically)? Well, there are many reasons, but one is indisputable: because of the persistence of nutrition problems and the negative impact that the recent food, financial and economic crises have had on food and nutrition security around the world, increasing attention is now being paid to the role of agriculture and nutrition in international development. There is a window of opportunity now to incorporate concrete nutrition objectives and considerations in food and agricultural policies and programmes and for re-engaging with public and private sector organizations and civil society on how to work better together to eradicate hunger and reduce the burden of diet-related chronic diseases.

It is true, as a participant pointed out, that perspectives – and interests – do differ in how to approach linking agriculture, food systems and nutrition. This is not just a matter of differences in perception of “what works” but differences in perception of “who really benefits?”

Yet whatever our perspectives, the strongest message for us from this Forum is that there is a community here, and out there, really excited about the possibilities, and wanting to share ideas, thoughts, and experiences. We are clearly still on a steep learning curve: there is much to be learned from past experiences, and much more to be learned in the future. Let’s carry on learning, and have courage to put into practice what we have learned.

88. Tasman Murray, Hatch, Australia

Dear Esteemed Colleagues,

After having trawled through the various well informed and well educated posts made throughout this forum, it seems to me that there exist several commonalities between the responses and with the concerns expressed. As such, instead of focusing on the 4 questions directly related at the beginning, I will instead focus on major subject areas that are of concern and finish with a project currently in development that is designed to deal with these. The problems discussed throughout, listed here in no particular order are: Malnutrition, Food Security, Economics/Poverty and Inclusion of Women. Naturally these will all have some inter-linkages, so, my apologies if I repeat myself.
Malnutrition: Though, before the most recent crises, there had been a drop in the levels of people suffering from malnutrition globally, it has recently increased and as everyone on this forum knows, is now over 1 billion people. This is despite repeated assertions that 'there is enough food in the world, it is simply unevenly distributed'. While on a caloric basis this may be true, it may not be true from a preferential basis. If somebody gives you a good you have never seen, that is uncommon to you, it is often true that instead of eating or attempting to cook this strange food, even when hungry, you may attempt to sell it off. This may mean switching from a high caloric food to a lower caloric, more relatable food. This has been seen time and again through developing countries, where unusual or altered food is shipped in, with the expectation that the population will eat what they are given. It is clear that is not the case. It is also clear that the people currently affected by malnutrition have not always been victims of this curse. When the weather followed 'normal patterns' and people were free to farm their lands, unaffected by war or other such vagaries, malnutrition was no issue. As such, it seems that in order to decrease the rates of malnutrition, it seems a bottom up approach is required, allowing the population to farm what they know, what they will use and what they traditionally eat. Naturally, this is more difficult in the current world we live in, but, if a farming method can be created that uses little water, is free from rapidly shifting climates and is protected from pests, then this method could go a long way to getting the affected population to pull themselves free from malnutrition.

Food Security: This leads directly into food security. While it is impossible at the moment to ensure people they will be free from war or bloodshed, as much as we desire to, it is possible to ensure people they will be free from hunger, despite extreme climatic conditions, so long as they maintain their farms. Using the current methods of farm protection, which includes GMO crops, extra fertiliser, a range of pesticides and other chemicals, this is still not possible. A flood, plague or a drought will destroy these crops, just as they have done every other time these methods have been employed. Food security is greatly affected by foreign wars in which the prices of oil are forced up. Transport costs account for around 60% of the total food prices in the world, so any spike in oil prices will also greatly influence food prices. This suggests that food security has two important areas; 1) protection of agricultural produce from the environment and, 2) local agricultural systems, thereby reducing the distance food must travel and the inherent costs that the supply chain can add to the food, making it more readily available at an affordable.

Economics/Poverty Reduction: It has been clear for a long time, through many countries that improved health systems will lead to increases in poverty reduction and increases in economic growth of a country. With this in mind, malnutrition can be viewed simply as a health indicator in a nation. In so doing, one can easily understand that a reduction in malnutrition, leading to improved health incomes will in itself reduce poverty and increase economic growth within a country. However, it seems clear that if malnutrition is an issue, there is a large market to exploit and with transport increasing the cost of produce, local farmer and merchants have an absolute advantage in crop production (ignoring international subsidies). With this simple observation, it is clear to see that local farmers should grow nutritional, traditional foods for the population within the country which would seek a rapid decrease in poverty, increased economic growth and improved levels of malnutrition.

Inclusion of Women: Many studies have been released that highlight the notion of inclusion of women as an effective method of improved outcomes within the family unit. The papers purport that if the women in the family handle the money, rather than the men, the money is more likely to spent on the family and local community. Women are more likely to be in charge of the money if they are the breadwinners. With many communities suffering from a lack of men, especially in areas where traditional agriculture is the staple
employment, it is clear that the role of farming profitably and managing the family farm should be shifted from men, towards women. A problem often cited for this however is the difficulty of the labour of traditional farming, meaning women have little time left to raise their children.

**A Solution:** What is needed is a farming system that: Involves no back breaking labour; That includes a collective of women within the community, preventing each woman from having to spend too much time away from their family while concurrently providing for their family and community; A system that produces more food than is required for subsistence, allowing communities to sell their produce and lift themselves out of poverty; One that works in any climactic condition, using no pesticides, no soil, no electricity, much less water than normal farming and without leaching any fertiliser into the soil, meaning none of the damage to the local environment that current farming techniques do.

I am currently working with an NGO that is designing and trying to raise the funds for a system such as this. It uses a system that captures and purifies water as well as growing crops in high concentration, requiring very little land. The current page for the project can be seen here: [http://igg.me/p/66368?a=415231](http://igg.me/p/66368?a=415231)

It is clear that the current methods, that have been repeated time and again do not work and that new solutions such as this need a place to grow, to be tested and if they work, to thrive in order to successfully tackle this continuing problem.

Tasman Murray
Managing Director of Hatch
Australia

89. **Isabella Dolphine Wandati Nyangule, Butere Focused Women in Development (BUFOWODE), Kenya**

Agriculture holds our lives and before we make any decisions we must consider the following: nutrition, health and community economic development, inputs and output at each stage and, most important, the regions should also be considered. Also, social, political, economical and environmental aspects, geographical economical accesibility, community knowledge and skills.

Why I say all that is that for my region seeds are brought but the supplies are not transparent with the information and farmers end up incurring costs which can not be accounted for.

We must consider the nutritional value which is not in chemicals. Availability and accessibility of the markets. Organic farming that it's readily available and the community has the knowledge and skills of it. It's cheap and one can never go wrong due to climate change. Most farmers are conversant with. With the application of organic fertilizers farms are always gaining fertility compared with the chemical fertilizer

90. **Hannah Guedenet, HarvestPlus, USA**

At HarvestPlus, we are using agriculture to reduce malnutrition by developing nutrient-rich staple food crops. I would like to share our experience with orange sweet potato (OSP), mentioned earlier in the discussion by Jan Low of CIP, as a way of addressing question #3 (examples of agriculture programs that have resulted in improved nutritional outcomes).

From 2007-2009, HarvestPlus and its partners distributed OSP varieties that were rich in
vitamin A to over 24,000 households in Mozambique and Uganda. The goal of this project was to use this popular staple crop to provide more dietary vitamin A. More than 60% of project households in both countries adopted OSP. Farmers substituted the more nutritious OSP for the traditional white or yellow sweet potatoes that are low in vitamin A. In Mozambique, many of the farmers also started cultivating sweet potato for the first time with the introduction of OSP. Adoption of OSP led to significantly higher consumption of OSP among women and children. Total vitamin A intakes among children and women increased significantly in both countries. For example, OSP contributed more than 70% of children's vitamin A intakes in Mozambique, as reported in a recent journal article published in the British Journal of Nutrition (http://journals.cambridge.org/bjn/sweetpotato).

The project is expanding the distribution of OSP in Uganda and Mozambique. In the next five years, for example, an additional 225,000 households in Uganda will be reached with this new crop, as well as other nutrient-rich crops like iron beans and vitamin A-rich maize.

This project is a good example of how an agriculture-based intervention can be used to address malnutrition. As we talk more about "feeding the world," one needs to consider food quality in addition to quantity.

As was already noted in this discussion forum, dietary diversity is the ultimate long-term solution to ending malnutrition. This will require substantial increases in income for the poor so they are able to afford more nutritious foods such as vegetables, fruits, and animal products. Biofortification is a new approach that can be effective in reducing hidden hunger as part of a strategy that includes dietary diversification and other nutrition interventions such as supplementation and commercial fortification.

91. Christopher Tanner, FAO Mozambique, Mozambique

Dear FSN Moderator
A few quick thoughts on the issue now presented to us all...

Too many governments which FAO assists still think in terms of 'food security = producing all our own food'. This then translates into internal policies that focus too strongly on maintaining the myth of subsistence agriculture, and agricultural policies that are intellectually distorted by some arcadian view of the peasant and his/her family producing all their own food.

Of course food systems are far more than just agricultural production and producing what you eat. A lot depends on where one draws the line around 'the system'. At the bottom line of course, food comes from agriculture and livestock production, and ultimately at the level of our planetary system, the equation is closed, and is about 'producing all our own food'. FAO has an important role in maintaining focus on this most macro of systems and how we need to preserve it in an era conditioned by the twin and intimately-linked challenges of climate change and continuing demographic growth.

But few national food systems are closed in the sense that all food needs are met purely from internal production. Imports of some form are always important, even if these are not food but are essential for growing it (fertilisers, seeds, tools and machines, capital, technical assistance...). The same applies to villages and, ultimately, households (which even in the poorest 'subsistence economy', usually resort to what years ago in my PhD research I called 'income gathering' from a range of sources and resources (including own farm food production).
Thus at country, provincial and village level, food and nutrition systems include an agriculture supported by policies focusing on income and not just 'subsistence' (cash crops including non food crops); having healthy, employed non-agricultural populations earning enough to maintain demand at a level to pay good farmgate prices for food crops (thus persuading farmers to grow more food instead of, say cotton or biofuels); having efficient and non-monopolistic marketing and input supply systems; and a range of other ‘non-food’ systemic elements that determine how ‘food systems’ and nutrition interact (principally issues such as food storage, water and sanitation to reduce water borne disease, health services and education – especially for women).

In this context the UN agencies also form a ‘system’ where some focus on the relatively short term needs to get food to vulnerable people and address immediate nutritional needs (WFP, UNICEF for example); while others look to the longer term issues of food production, incomes/demand, and governance, which determine access to food for a the huge urban populations of the future (FAO, ILO, UNIDO etc). It is interesting in the One UN context and the need to create joint UN programmes (see pilot countries like Mozambique), where the agencies work together guided by this common understanding the overall ‘food and nutrition system’ and their role at specific points in supporting and nurturing it.

These comments may be self evident and not very useful, but I hope they serve some purpose in the larger debate.

Regards

Christopher Tanner,
STA, Land and Natural Resources Policy and Legislation, FAO Mozambique

92. Yogendranath Das, Bhagalpur University, India

Dear Moderator,

I would like to add in this connection, the following points:

1. The modern technology has been contributing to encourage the producer saving time and investment. But due to mass unawareness proper use of the technology is not delivering required result.

2. The localization of production should be taken into consideration in view of the nutrition as the body is made of 5 items like earth, water, fire, air and akash and person’s birth place is very much important as the place where he born, the food produced there would not require additional nutrition. The nutrition automatically comes from local environment which is required for that person.

3. Simply we have to look after the production schedule and management for the local areas and make such thing that everyone should get proper share so that they would not be affected by malnutrition and maldistribution.

4. I have my personal experience by traveling from one part of the country to another and study the life style and the food stuff and vegetables, fruits produced in that part and the local people’s health and treatment during the illness, I find that rapid recovery has been observed by providing them the local produce to that person.

5. Therefore, I am of the opinion that what sort of nutrition for the persons of that locality is required may be determined by examining the soil of that area and food, vegetable and fruits produced in that area. Nothing more at least in India is required. I am sure that my experience is based on careful observation about life style of the persons, production of the local areas, health
and patient's requirement for recovery after illness. My opinion would require more attention to the persons working in this area but it would be surprising for all and it would save mental gimmick and need of the hour.

Dr. Yogendra Nath Das  
Dept. of Economics  
T.M.Bhtagpur University  
Bhagalpur, Bihar, India

93. Francesca Gianfelici and Julien Custot, FAO “Food for the Cities” initiative

On question #1 “Agriculture is often looked upon as a tool to generate nutritional outcomes. What is the value added of looking at how agriculture could contribute not just to improved nutritional outcomes, but food systems more broadly? What are the risks and benefits of taking a food systems perspective?”

Food systems include the consumers living in rural areas or cities. To address the urban dimension for food and nutrition security, 3 ideas should be considered

1. Urban dwellers are part of the food system: urban dwellers are most often net buyers; they have complex consumption patterns that may change during time and between households and neighborhoods; nutrition is the result of complex interactions of many factors in the urban environment (education vs. advertisement and marketing; livelihoods with expenses constraints for urban households such as housing and shelter, education and transportation; availability of and access to health services)

2. A food system approach provides a coherent framework to deal with food and nutrition security challenges for people living in urban areas (under and over nutrition in high, medium and low income countries)

3. A food system approach contributes to more resilient cities: environmental services (e.g. watershed management and water catchment), climate change adaptation,

On the question #2 “What / where/ who are the key entry points within agriculture and food systems to incorporate nutritional objectives? Why? And how can they best be leveraged?”

In the recently published paper “Food, agriculture and cities” (http://www.fao.org/index.php?id=28645), 4 dimensions of city-region food systems have been identified, all supporting a nutrition component:

• nutrition within a people centered approach  
• nutrition within multi-level governance,  
• nutrition within urban and territorial planning,  
• nutrition within risk management and ecosystem resilience
For questions #3 “Do you have experience in agricultural/food systems projects and programmes that have resulted in improved nutritional outcomes? If yes, please share the success factors, constraints faced, lessons learned: why you consider it as a success, how you measured the impact and whether a nutritional objective was explicitly built into the programme. If you have experience of an agricultural/food systems project or programme with a nutritional objective but that failed to achieve it, what were the factors that led to the failure and what would you recommend to others to overcome the barriers to success?”

Different cities develop local policies regarding food and nutrition security. We may particularly mention Toronto which as set up a local food council (http://wx.toronto.ca/inter/health/food.nsf). In Brazil, Belo Horizonte has implemented the “Fome Zero” programme bringing greater linkages between producers and consumers. Information can be found in an interesting article published by RUAF in the September 2011 issue of the Urban Agriculture Magazine (http://www.ruaf.org/sites/default/files/UAM%20Creating%20Urban%20Agriculture%20Urban%20Agriculture%2021-24.pdf).

As for Question #4 is “What are the key gaps in knowledge or good practices that limit the ability of agriculture and food systems to improve nutritional outcomes?”, we can particularly highlight the need of better understanding the crisis contexts in a framework of disaster risk management.

The paper of Marc Cohen and James Garrett: “The food price crisis and urban food (in)security” (2009) (http://pubs.iied.org/10574IIED.html) states that “with the aim of fostering appropriate local solutions, municipal government and civil society organizations should facilitate poor people's ability to organize and articulate demands to local authorities.”

A recent meeting in Chennai, India, of ALNAP (Active Learning Network for Accountability and Performance www.alnap.org) has given certain visibility to this aspect. From its background paper on lessons learnt, it’s reported:

“Food security in urban environments - Food insecurity has often been seen as a rural issue but the recent food-price crises have also highlighted the vulnerability of urban communities, which often rely on domestically or internationally imported foods such as maize and rice. Food may remain readily available in cities after a disaster, but the urban poor often cannot afford to buy it. In addition, when food stocks run low, people on the urban periphery often flood cities in search of work, adding to the strain. This also affects rural populations, who can no longer depend on urban relatives or on finding work in urban areas in difficult times (CARE 2008).
Cities, unlike rural areas, depend on the urban periphery for food and therefore have constrained food-supply systems with limited urban stocks (Kelly 2003). Most urban populations, particularly the poorest, survive by buying and cooking food daily with limited storage for maintaining longer-term food supplies. Given the constraints on urban food systems, any disruption to supply or distribution from a disaster causes immediate consumer shortages. There is also the possibility that a food shortage in a city will disrupt food supplies to surrounding rural areas, as demand and prices of food increase in the city. (http://www.alnap.org/pool/files/alnap-provention-lessons-urban.pdf)

Therefore, linking agriculture, food systems and nutrition should be a major position and approach for food and nutrition security, including for the urban dwellers.

94. Adèle Irénée Gremombo, France

Linking agriculture, food systems and nutrition is translated "food security" which is having a healthy, balanced diet at anytime, anywhere.

Undernutrition is often the result of a lack of seasonal food products, it can also be the result of a non-balanced diet and food taboos. Over-nourishment is excessive consumption of calories without physical activity.

The seasonal deficit is often linked to farming traditional system, the problem arises, since production to conservation:

- Using non-performing tools aratoirs generate small acreage;
- crop pests;
- Problem of seed quality;
- Storage device of harvested crops inadequate: Are the causes of lack of food during the lean season;
- Inaccessibility of women to land.

Solutions:
- Improving the Culture system
- Financing agricultural research in order to make available seeds of high yield and resistant to pests;
- FAO must ensure that all seeds distributed to project staff are provided by research institutions;
- Support farmers in the construction of storage devices and modern conservation.
- Develop agri-processing, the preserve of women
- Each Government must create a network of agricultural marketing in its territory. For each agro-ecological zone corresponds to a given culture and the network should enable the entire population regardless of the area to have varied diet.

With respect, diets and overeating, the solution lies in nutrition education. Tell the people the nutritional guidelines and practice of physical activity. These roles can be played by NGOs.
Any Size Garden Can Make a Difference

Another important strategy is to consider any size sunny location to be a potential solution to growing for nutrition. Container gardens, Salad Tables, and small spaces of land around a household or in a community garden/allotment can grow foods which are tasty, nutritious, and add variety to the diet. The Consumer-Gardener can grow his/her own vitamin foods in a small intensively gardened space. These foods are often more expensive proportionally than the local grain/legume/staple crops and fare better if their transport is a short distance to the kitchen.

Individual Vitamin Gardens

If each family member has a 4 foot by 25 foot garden (1.3 meter by 7.7 meter), this can provide 800-1200 pounds (360-545 kg) of vegetables per year in a 3 to 4 season growing area. In order to get good yields the soil needs to be well cared for and the gardener regularly attentive to the needs of the garden. This bed width is one that most adult gardeners can reach to the middle of from each side. The advantage of each family member who is old enough caring for their own small garden is that everyone learns garden skills, and each person has a vested interest in their bed doing well.

To start a gardener might begin by planting 6-8 different vegetables per season and then increase the diversity to 20-25 per season per bed. It’s important to choose local favorite foods that grow well in the area, foods of rainbow colors, and to take advantage of all the edible parts of a vegetable. So for beets, radishes, turnips, or sweet potatoes, the gardener could eat the roots plus the greens. Here is a sample planting for one area as an example:

**Spring:** Beets, Bok Choy, Carrots (Red, Orange, Yellow and Purple), Chard, Mesclun, Onions, Parsley, Peas, Radishes, Spinach

**Summer:** Amaranth, Cucumbers, Green beans, Okra, Peppers—Sweet/Hot, Sweet Potatoes, Squash, Tomatoes

**Fall/Winter:** Cabbage, Collards, Garlic, Kale, Kailaan, Mizuna, Mustard, Turnips

While one such garden bed per person can make a great difference for each Consumer-Gardener, on average four such beds per person are a safer strategy where there is the space.

**Things to consider in addition to the usual:**
Safety and Fertility of the soil used to grow food, especially in urban areas
Safety of any containers used for growing food (Soy sauce or food oil buckets are usually a better bet than the paint bucket, but check all for safety for food growing)
Load bearing abilities of balconies or green roofs

**Resources:**
*Salad Tables* http://growit.umd.edu/SaladTablesandSaladBoxes/index.cfm
Dear Members,

Some of my thoughts on “Strengthening linkages between agriculture, nutrition and food systems” are as follows:

1. Overarching gaps exist in the potential and existing role women can play in both agriculture sector and household nutritional security. There is compelling evidence especially in poor families, that family’s nutrition and food security is improved, if the income is under women’s control. A common development approach is to target interventions, programs and services at women. Promoting women’s and girl’s empowerment broadly with a multi-sectoral approach will help.

2. Over and under nutrition is a dual challenge that society faces today. Engaging the value chain players in the food industry to produce specialized foods formulated to promote sustainable consumption is necessary.

3. Private sector can achieve the triple objective of agricultural development, nutritional security and food system integration and development. In developing and underdeveloped countries it will be more a matter of developing markets rather than servicing markets as they cannot access value-chains because they do not exist and thus need to create a fully integrated business across the value chain. This value chain driven by private sector and supported by the right policies, consumer choices and gender issue management can help create wonders. It will be a nutrition-gender-market sensitive value chain that can help support the existing industry and also create new markets. For e.g. the value chain can start with:
   - Seed fortification (seed treatment with bio-yield enhancers/bio fertilizers, etc) that helps in better yield and nutrition along with solving the problem of land scarcity
   - Improved storage at farm levels and downstream for preserving the nutrients
   - Educating the men as well as women (both producers as well and consumers) about the nutrition, feeding practices and income control and household budgeting. Nutritionist should work with marketing and education systems to change consumer preferences and make them demand better nutrition. Informed consumer, can exert influence throughout the value chain and thus adding value to it.
   - Regulators and industry associations can help align objectives of the whole value chain players towards the common goal of a sustainable society.

Bedanga Bordoloi
Novozymes South Asia
India

Nomeena Anis, FAO, Pakistan

My perspective is that Nutrition levels of the population can be improved by directly working at the household level. Nutrition should be taken up in the agriculture sector rather than only linking it with health sector. Food may be available but the problem is to use the right kinds of food and their quantities. Here comes the importance of nutrition education. We should educate the rural/urban household/farmers through agriculture extension workers and nutritionists to grow the right kinds of food, concentrating on kitchen gardening, poultry production, consuming dairy products and using safe drinking water. We are facing both protein calorie malnutrition and micronutrient deficiencies and the long term solution for both lies with the agriculture sector instead of health sector. Prevention/ treatment of malnutrition is possible at home.
through nutrition education, counseling, behavior change and making people self sufficient by growing the right food at household level (even using small pots and containers).

Dr Nomeena Anis
National Food Security and Nutrition Consultant
FAO-Emergency Rehabilitation Coordination Unit (ERCU)

98. Lalita Bhattacharjee, FAO, Bangladesh

Dear Colleagues,

Having followed the trail of communications, I would like to reiterate that opportunities exist for agriculture to contribute to better health, and for health to contribute to agricultural productivity. Here it is crucial to understand the linkages between the two sectors, how these linkages operate, where opportunities for joint action lie, and what the main obstacles to such action are. There is need to explore seriously how agricultural and health sectors can work more closely together to address food security, nutrition and health. Diversifying household diets needs to be promoted as a key strategy in addressing stunting, wasting and micronutrient deficiencies.

Poor diet diversification, notably cereals contributing more than ¾ of total dietary energy as a result of both highly cereal-based food production and consumption patterns, is one of the major factors undermining delivery on nutrition outcomes in many developing countries. Surveys in South Asian countries clearly point that breast-fed infants are given complementary meals that are inadequate in quantity and lack essential macro- and micronutrients even if these foods are available in the households. Breast-feeding should continue well into the second year and breast milk should be supplemented with frequent small meals that are rich in energy, protein and micronutrients from 6 months of age.

Children’s diets in Bangladesh for example show that only around 38.7% have adequate dietary diversity where 3-4 food groups are taken out of a total food list of 7 food groups (on a daily basis). Underweight rates are more pronounced in rural areas compared to urban areas mainly due to insufficient dietary intake and diet diversity, poor infant feeding and caring practices, and intergenerational malnutrition dynamics. It has also been noted that although mother’s retention rate of nutrition messages was high, what they are able to practise at home was limited. Nutrition programmes often fail to enable mothers to transfer this knowledge into practice.

Agricultural intervention programmes should strongly consider including explicit objectives of improving nutritional status with a focus on addressing child under nutrition. Child stunting should be addressed through building strengthened linkages between complementary feeding requirements/practices and agricultural production. A sustainable and cost effective way to improve complementary feeding of children in poor rural households is by ensuring that nutritionally appropriate foods are available and utilized at household and community levels.

Lessons from some FAO field projects have shown the need to institutionalize and mainstream community centered food based nutrition education strategies in agriculture and health service delivery structures to establish sustained nutrition behaviors. Emphasis should be on community based approaches providing better access to seeds, tools and materials; training of women farmers/households/agricultural extension workers on appropriate food combinations, food preparation, food processing, use of appropriate technologies, promotion of nutrition and health education and strengthening public private sector collaboration for value addition and income. Entry points between agriculture and health sectors should also be strengthened to
address prevention and control of infectious diseases and faulty weaning practices which are some of the prime causes of underweight and stunting throughout the pre-school years. Major efforts need to be made through convergent efforts of the agriculture and health sectors to improve national diets through a demand-led food policy whereby nutrition education policies (influenced by food-based dietary guidelines) stimulate consumer demand for healthier food choices.

In response to requests from the government stakeholders and as part of the research studies commissioned to inform policy, the National Food Policy Capacity Strengthening Programme being implemented in Bangladesh with technical support from FAO and funded by the USAID and EU, is supporting the preparation of complementary feeding guidance material targeted at mothers and care providers. This is being built on available national training curriculum on complementary feeding, but more importantly will include a wider range of recipe options using a variety of local foods including protein and micronutrient rich foods, indications on basic foods/groups, right food combinations, correct food handling methods, appropriate preparation methods and simple processing technologies as well as the schedule and frequency of complementary feeding. The focus will be to promote food-to-food enrichment through enriching staple foods with meat, local small fish, nuts, fruit, yellow vegetables, egg, etc. This will also involve reviewing studies on existing practices and constraints to adopting appropriate child feeding practices in Bangladesh and South Asia. Efforts will be made to strengthen capacity of agriculture interventions to respond to the requirements of complementary feeding.

Kind regards,

Lalita Bhattacharjee, PhD
Nutritionist
National Food Policy Capacity Strengthening Programme
Food and Agriculture Organization of the United Nations
Bangladesh

99. Mahmood Bill, Ghana Muslim Mission, Ghana [fourth contribution]

My contribution on the topic is on the impact of climate change on Agriculture. Despite considerable increase in global food production over the last few decades, the world’s efforts to meet the MDG of reducing hunger by half in 2015 appears to be beyond reach. In fact, the number of people suffering from areas of low hunger has increased from 800 million in 1996 to over a billion according to FAO. Most of the world’s hungry are in Asia and sub-Saharan Africa. These regions have large rural populations, widespread poverty and extensive areas of low agricultural population due to steadily degrading resource bases, weak markets and high climatic risks.

Farmers and landless labourers dependent on rained agriculture are particular vulnerable due to high seasonal variability in rainfall and endemic poverty forcing them to avoid risks. Climate change is of particular significance for these countries which already grapple with global and regional environmental changes and significant inter-annual variability in climate. For example changes in the mean and variability of climate will affect the hydrological cycle and crop production and land degradation.

Agriculture is highly sensitive to climatic change. Even a slight increase in global temperature will destabilize current farming systems.

Climate change has the potential to transform food production, especially the patterns and productivity of crops, livestock and fishery system and to reconfigure food distribution, market and access. The adaptive capacity of rural and urban communities confronted with economic and social shocks and changes is enormous but needs ongoing, robust support.
climate change will bring further difficulties to people for whom achieving food security is already a problem, and is perhaps humanity's most pressing challenge as we seek to nourish the world population.

**100. Final note by Karel Callens and Corinna Hawkes, facilitators**

Thanks very much to all those who participated in this discussion, whether it be by writing a contribution or reading the contributions of others. We hope you have all found it useful for your work. By sharing your experiences and views, you have added to building our collective knowledge in this area, and, importantly, promoting action on nutrition. We are looking forward to seeing more focus and collaborative work on leveraging agriculture and food systems to improve nutrition in a more sustainable and equitable manner in the months and years to come.

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**Additional contributions received through Solution Exchange India**

**DSK Rao, Gyantech Information Systems Limited, India**

Dear members,

There is a lot of dichotomy in India regarding Agriculture, Nutrition and Food Systems. It is observed that on one side we have severe malnutrition in certain sections of populations due to issues related to poor access to food due to poor economic conditions and due administrative issues. Unfortunately, the policy makers also do not collect accurate micro level data of these underprivileged people for any meaningful interventions. Without access to even two square meals a day, it is unrealistic to expect healthy individuals.

The Mid Day meal (MDM) scheme introduced by the Government has addressed to some extent hunger reduction in children. The meal is very basic from nutrition point of view, but the step is better than starving. There are nutritious and cost effective interventions that can be introduced in the MDM Scheme like introduction of Nava Dhanya Ragi Malt Soup (made from sprouted multi grains rich in fibre and proteins), moringa leaf powder (for anemia), boiled eggs, fresh fruits, milk, green leafy vegetables, etc. A simple balanced food which is amply produced in India, if made available to these underprivileged sections can to a large extent address the issue of malnutrition. I again reiterate the need to have accurate 'Panchayat Level' data and interventions with accountability and transparency.

On the other hand we have 'overnutrition' in middle and higher income groups where people are consuming excess calories and due to reduced physical activity. This is making them prone to obesity and other life style diseases.

I strongly suggest that we should have 'Hunger Shelters' where responsible professional organizations with proven track record provide 'Hot Meals' to the 'Hungry'. The initiative from ISKON 'Akshya Patra' (www.akshayapatra.org) is doing good work and should be strengthened.

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Global Forum on Food Security and Nutrition
http://km.fao.org/fsn
Farhad Ali, LEPRA Society, Bihar

Dear All,

India is a country where more than 75 percent people draw their income directly or indirectly from agriculture. We find that in India land holding is very small and most of the farmers in the country are small or marginal farmers. There are different agro-eco zones in the country that provides different kinds of crops. For example some areas are very good for maize production, some for wheat and some for rice production. An intensive cropping system is used in almost all crop zones. The problem starts when round the year farmers grow what is more suitable under a specific agro-eco climate zone. Due to this practice, the availability of other food items reduces such as local fruits and vegetables which are major source of nutrition for local population. Another problem is that farmers sell most of what they grow to earn money and thus, the availability of low-cost food reduces in rural areas.

There are lacunae’s in the policies as they tend to promote the production of specific crops. For example, production of flowers in hilly areas may compete with the production of vegetables and fruits affecting the nutrition of local people.

Another dimension to the problem is that people are more interested in growing commercial crops such as sugarcane, cotton, potato and so forth. This is because of the need to earn cash than growing more food for family and community. This is the reason that availability of food for self consumption is low in villages.

If we look at the behavioral aspects of eating, we all know that in India women eat less, eat after the family, eat leftovers and there are myths and misconceptions associated with the food as to what should be eaten, when and how much. So nutrition is also a behavioral problem. Poverty also plays an important role in the causation of under nutrition.

In my opinion, the focus of agriculture should be to produce different types of food (rice, wheat, maize, oil crops and fruits and vegetables) and the policies should support this and not merely the practice of mono cropping.

I would also like to draw attention towards agricultural research. The focus of agri-research should not be only on quantitative production but also towards the qualitative aspects of the crops i.e. production of nutritious food crops. Introduction of crops varieties (such as high vitamin B rich oil seeds) that helps to address the problem of nutritional deficiencies would definitely help solve the problem of malnutrition.

Farhad Ali
LEPRA Society
Bihar

Kashinath Karnic, Independent Consultant, Bangalore, Karnataka

The process of educating people, making nutritious food available and improving the purchasing power may contribute towards improvement of nutritional status of the population especially rural children. In urban areas, young mothers are carried away by advertisements and westernized culture and are more receptive to junk food. Therefore, educating rural and urban mothers about making healthy food choices is necessary. Also, farmers should be provided with varieties of nutritious food crops without damaging their income. Changing the cropping pattern
of an area is not a simple task as crop growth and yield is influenced by various factors many of which cannot be altered by human interventions.

Growing variety of crops without considering economics and need of the community may not serve the purpose. It is advisable to introduce improved varieties of vegetables, legumes, root crops, leafy vegetables, etc in every holding. Better infrastructure, irrigation facilities and education should complement this so that the produce is used for self consumption and only excess is sold in the market. This is simply Applied Nutrition Programme (ANP) once tried in 1970’s but failed due to various reasons. A review of that programme may throw more light on this issue.

Shraddha Srivastava, Institute of Economic Growth, Delhi

I totally agree with Samir Chaudhuri, I have done surveys in two villages of Faizabad District of Uttar Pradesh and found that knowledge about nutritious food is lacking in parents. The nutritional status of the population is appalling. Lack of knowledge in parents affects their food choices for children. Mostly children depend on ICDS meal or Mid Day meal for meeting their daily nutrient requirements.

Pramod Sharma, Mahila Chetna Manch, Indore, Madhya Pradesh

Thanks for raising this issue in a holistic way. I am working on a project in Bundelkhand region of Madhya Pradesh wherein we are involving SHGs to fight with the problem of malnutrition especially among children.

Mixed Agriculture (cultivation and livestock) is part of rural lifestyle. In many under developed states of the country, rain-fed area is more than 60 percent. It is obvious that rainy season is one of the important seasons for cultivation in most of these areas, so it would be good to use this season for growing edible food crops instead of cash crops. Lot of attention is given to the cultivation of cash crops but livestock management and cultivation of food crops in rainy season is ignored. Livestock management is very important for strengthening linkages between agriculture, nutrition and food system in India.

G Anuradha, MS Swaminathan Research Foundation, Chennai, Tamil Nadu

I would like to share an article by Amartya Sen published in the Hindu which discusses the growth and other concerns

http://www.thehindu.com/opinion/op-ed/article1451973.ece?homepage=true

There are numerous Government schemes operating at centre and state level to address the problem of food and nutritional needs of the people. If these schemes could reach people effectively, then the problem of malnutrition can be reduced to a large extent. The role of the state is equally important in effective implementation of these schemes. This can be done by creating awareness among people and to run these schemes strategically. I also feel that local governance should be involved for increasing the reach of the programmes and for accountability for its effective operation.
Gurusamy Gandhi, Institute for Subsidized Education Initiatives (ISEI), Bangaluru, Karnataka

Dear members,

Following are my views on the two key areas of this discussion.

**What are the barriers that limit improvements in nutritional levels despite significant economic growth in India and how to overcome these barriers?**

The main barrier that limits overall sustainability of our agricultural system is the 'chemical dependent' agriculture/farming practices that have been introduced for producing high yielding short duration food crops during the green revolution era.

As a result of using more and more chemicals - fertilizers, growth promoters and pesticides in our farm lands, soil has lost its natural agronomic characters and has become a chemical craving soil to permit normal growth of crops. Also, with the use of chemicals, food crops like paddy or wheat have become more demanding in terms of water and chemical nutrients. It has become a vicious cycle wherein the dependency can never be totally eliminated at any point of time.

With more chemicals applied to lands, the nutrient value of food crops too has been gradually reduced thereby necessitating the need to consume more and more of food to meet our nutrient requirements. This again is a vicious cycle, wherein allowing the easy entry of cancer producing chemical components into our systems.

**What are the key entry points within agriculture and food systems to incorporate nutritional objectives to overcome the dual burden of malnutrition and how best can they be leveraged?**

The panacea for all these vicious cycles is organic farming i.e. going back to the basics of natural farming. If only agricultural practices are reversed to those of olden days when our forefathers knew nothing about all the poisonous chemicals that are being applied to soil today. The entire nutrient value of each and every food crop is retained intact thereby when consumed, it enriches the health of living beings in every respect. So, in my opinion, it is only organic farming that can solve all key issues involved in modern day agriculture and its various challenges that we face today.

Gurusamy Gandhi  
Institute for Subsidized Education Initiatives (ISEI)  
Bangaluru, Karnataka

Vanisha Nambiar, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat

Dear members,

A very pertinent query has been raised in today’s rising burden of diseases, climatic changes and dwindling economy. I would like to share my experiences as a nutritionist in handling a mega project on pearl millet in the western part of India.
What are the barriers that limit improvements in nutritional levels despite significant economic growth in India and how to overcome these barriers?

As far as India is concerned, the first barrier in improving nutrition is moving away from the usage of healthy traditional foods in the race of urbanization and globalization! This is best illustrated by the example of declining usage of a very important millet, Pearl Millet (Pennisetum glaucum), also known as Bajra, which is grown in all the tropical semi-arid regions of the world primarily in Africa and Asia.

Bajra is well adapted to production systems characterized by low rainfall (200-600 mm), low soil fertility, and high temperature, and thus can be grown in areas where other cereal crops, such as wheat or maize, would not survive. In its traditional growing areas, pearl millet is the basic staple for households in the poorest countries and among the poorest people. It is also one of the most drought resistant crops among cereals and millets. Pearl millet is generally used as a temporary summer pasture crop or in some areas as a food crop.

Pearl millet is currently the world's sixth most important cereal grain and is grown extensively in Africa, Asia, India and the North East as a food grain and was the staple source of nutrition for millions of people. Pearl millet is one of the most extensively cultivated cereals in the world after rice, wheat, and sorghum particularly in arid to semi-arid regions. In Asia, the cultivation of millet is found to be highest in China and India, although Myanmar, Pakistan, and Nepal also produce small quantities. In China the major millet crop is foxtail millet as compared to India which is pearl millet. India is the largest producer of pearl millet, both in terms of area and production with an average productivity of 780 kg/ha during the last five years.

However, in India, Pearl millet is just a crop for the rural poor! As per the Indian Food Composition Tables (NIN, 2003) pearl millet has high nutritional value as compared to other cereals like wheat, rice, maize and sorghum. The potential usage of this crop which survives in the harshest environment is available on my publication titled Potential Functional Implications of Pearl millet (Pennisetum glaucum) in Health and Disease at http://japsonline.com/vol-1_issue-10/62-67.pdf.

What are the key entry points within agriculture and food systems to incorporate nutritional objectives to overcome the dual burden of malnutrition and how best can they be leveraged?

Intersectoral linkages are the call of the hour. The Agricultural Universities and the Nutrition Departments need to work hand in hand along with the extension departments to promote varieties with good production yield as well as nutritive values.

Green revolution can enhance the production but it is the hidden hunger which needs to be addressed through promoting the right combination of agricultural produce to the population in order to reduce the micro as well as macronutrient malnutrition in India. An example of intersectoral linkage:

1. Desk review of the production data of the local agricultural crops; mapping the trends (Agriculture department)
2. Food analysis of all the raw and traditionally cooked foods is required (Nutrition Department).
3. Background studies on the nutritional status of the population (Nutrition Department)
4. Improvement in the varieties and yield of the local crops and enhance availability by genetic engineering or biofortification (Biotech Department).
5. Implementation of these improved varieties in the field (Agriculture Department)
6. Educating the population for the use of these crops for betterment of nutrition, best cooking methods and household techniques such as soaking, fermentation, blanching, germination etc to improve the bio-availability of nutrients (Nutrition Department)
Vanisha Nambiar  
The Maharaja Sayajirao University of Baroda  
Vadodara, Gujarat

Kashinath Karnic, Independent Consultant, Bangalore, Karnataka

Making food available at all times and at reasonable cost would pave way for improvement in the nutrient uptake. There are umpteen number of examples to show that availability and cost of food influences the food choices. Our nutrition programmes should focus on this area. People staying in rural areas usually buy the food from shandi’s and that should be the place to make interventions. Nutritious food should be pushed in these places and also work should be done to make street foods safe, healthy and nutritious.

KV Peter, World Noni Research Foundation, Chennai, Tamil Nadu

National figures clearly show that malnutrition including micronutrient deficiencies are rampant in urban and peri-urban areas. Majority of women and girls are anaemic and underweight. Nutrition education is the ideal way to change the way people think and make food choices. The efforts should start at home. Nutrition education of parents is also very important as it affects the food intake of children.

Ardhendu S Chatterjee, Development Research Communication and Services Centre (DRCSC), Kolkata, West Bengal

Malnutrition especially among children is a big problem for our nation as India is leading in the number of malnourished children around the world. I would like to list some of the efforts tried so far in West Bengal, Orissa and Uttar Pradesh to tackle the problem of malnutrition.

1. The focus in home gardens should be on the production of nutrient rich vegetables such as basella or spinach, jews mallow, amaranths, roselle, hyacinth and winged beans. These should be combined with easy to grow fruit/food trees such as papaya, limes and lemon, drumstick and curry leaves (vegetables like cabbage and carrots should not be promoted as it is difficult to save or procure their seeds in most areas of India).

2. In each garden we should grow some roots and tubers like arum, taro, sweet potato, yam, cassava, etc. We should also train mothers to dry vegetables and fruits for dry season and encourage small scale animal and bird raising.

3. Awareness of simple processes like sprouting, malting, fermentation, etc that make food easily absorbable should be raised and practices such as eating nutrient-rich local weeds [naturally growing plants] e.g. lambs quarter, pennywort, spiny amaranth, ivy gourd, etc should be reintroduced.

4. Train women and children in areas pertaining to good nutrition and healthy dietary practices. I feel that we need a ministry of gardening as in Viet Nam.

Another reason for malnutrition is linked to agri-business corporates who control much of the national and international trade to sell and promote junk-food; and our present food policies are allowing these corporates to function in a oligopoly, behind the mask of free trade.
Our Public Distribution System should be more local grain based. MGNREGS should be used for soil and water conservation work especially for small farmers. Now-a-days more and more money is spent for introducing synthetic agro-chemicals and groundwater as well as water intensive hybrid and GM seeds, which are neither environment nor people friendly. We are bestowed with a region which receives abundant sunlight, rich in bio diversity, local knowledge and year-round growing temperatures. If farming has to survive, we need policies that reward farmers who practice environment friendly farming practices providing benefits to the community. Also, corporates or others who pollute our water, soil and environment, and threaten local diversity should be penalised.

We are dismayed that despite findings of International Assessment of Agricultural knowledge, Science and Technology for Development (IAASTD) after long deliberation, our aid agencies and trade policies both at national and international level are seldom supporting the development of sustainable agriculture. So called modern, chemical intensive farming cannot solve the problem of small producers and is in fact accelerating our journey towards disaster.

Thanks for raising this important topic. Let us try something together, but let’s first acknowledge that there is a problem for which solution is pending.

Srijit Mishra, Indira Gandhi Institute of Development Research (IGIDR), India

Dear All,

One has to understand that economic growth is a monetary indicator and need not be linked with nutritional improvements for a number of reasons. Let me elucidate some of them.

Economic growth will not be related to agricultural growth, which means that there may not be enough food produced. Even if there is agricultural growth, it is focusing on some specific kinds of crops that may not address a balanced nutritional requirement - for instance, Odisha may not be as calorie deficient because of high rice production and consumption but then this also indicates an absence of other nutritional requirement in their diet and thereby having adverse implications on their nutritional attainment.

Even if there is an adequate agricultural growth it may be purchased (not necessarily consumed) by an increasingly affluent class who have the money while there could be a deficit for the rest of the population, which among others also tend to include the farmers.

The focus of the production system is compartmental - each crop has its own approach and there is an excessive emphasis on a few crops say rice and wheat while neglecting the nutri cereals (millets) produced in the rainfed regions. This exposes the farmer to food and nutrition insecurity. There are instances where interventions through kitchen gardens and horticultural plants have increased the nutritional intake of poor households without necessarily increasing their entitlements to disposable income.

There can be a slew of other measures that increases the bargaining power of the poor households both as sellers as also as buyers of food. If farmers are aggregated at various levels they can aggregate to buy inputs or even go for technology that reduces cost, and thereby, risk.

Similarly, groups of net buyers of food can come together to get a better deal in terms of prices, quality and quantity of food that they purchase. This reminds of an anecdote from Godavaris Mahila Samukhya comprising of about 70+ fishing hamlets in Godavari district of Andhra Pradesh. In one of my visits, when I asked them how has these coming together of Self-help groups to form this federation helped. Their first reply was that it helped them to reduce hunger.
I inquired further and they said that in earlier days they had to go to local markets to sell the catch of fish that their menfolk got from sea and from the returns buy other food items that they bring back home and cook. There were times if they could not sell the fish till later afternoon then they either have to sell at a much lower price or come back without selling and on those days they have to remain hungry. Once they got together then they aggregated their demands for rice, dal and oil and through a loan from the Society for Elimination from Rural Poverty (SERP) they purchased these at a wholesale rate where they benefited in terms of quality, quantity and price. Now they cook, eat and then come to sell their produce.

The larger problem also has to be viewed with crisis in Indian agricultural, which in an analytical sense has two interrelated dimensions - the agricultural and the agrarian. The former is a failure on account of poor designing of programmes and inadequate allocation of resources and the latter is the threat to the livelihood of people dependent on agriculture. This crisis is now acknowledged, but we need to get out from the old lens - an approach that might have been successful in an earlier context, but it is this that has led to the crisis. Thus, there is a strong case for a different paradigm.

There should be a change from the emphasis on rice and wheat to other cereals and pulses grown under rainfed conditions. We need to think in terms of basket of commodities (with different response to monsoon and other risks) and also integrate crop production with horticulture and animal husbandry.

Emphasis should be on risk and cost reduction rather than yield enhancement. From the government’s perspective, dissemination is linked to subsidies. Thus, a technology that uses locally available resources with less cost cannot fit into existing pattern - this has to change.

Planning of a programme is budget driven. Thus, at an implementation level it boils down to distribution of this budget across so many states, then districts, then blocks, then panchayats, then farmers. This would mean that so many farmers got livestock, so many got seeds, so many got fertilizers and this will be in no relationship with the number of farmers or area under cultivation in the region. Such an approach is like a drop in the ocean and will take us nowhere if we have to address a crisis that has taken serious proportions.

The Rashtriya Krishi Vikas Yojana (RKVY) is bottom-up in its design, but with the absence of manpower required to engage intensively at the village level the implementation ends of becoming top-down.

I have taken these from others as also from my own related work. I hope that these are of help.

Srijit Mishra
Indira Gandhi Institute of Development Research (IGIDR)
Mumbai, Maharashtra

RK Pal, Indian Agricultural Research Institute, India

Dear All,

My observations to the query are as follows –

**Barriers that limit the improvement in malnutrition levels** - In my opinion lack of awareness among all income group of people is the major limitation in India. Pro-active mass communication is essential to reach the information on malnutrition in positive manner.
Key entry points in the agriculture and food systems - Diversified agriculture through a system approach focusing on nutritional security could be a very good option. Adoption of multiple cropping system including horticultural crops should be practiced in the key agriculture and food systems in order to ensure the household food and nutritional security that will certainly make a big impact in combating the malnutrition. Now a days many developed nations also face the problem of hidden hunger due to malnutrition. Similarly, in India a drastic shift in the consumption of junk fast food is being observed. Hence, there is an urgent need to develop and popularize the fast food that are rich in many functional components including essential vitamins, minerals and other micro nutrients. It is the high time we have to introduce the forgotten indigenous foods in our dietary system to combat the malnutrition.

RK Pal  
Indian Agricultural Research Institute  
New Delhi

Prasanna Khemariya, Self Reliant Initiatives through Joint Action (SRIJAN), India

Dear Members,

For strengthening linkages between agriculture, nutrition and food systems in India particularly for rural areas the first and foremost requirement is revamping of Public Distribution system (PDS).

Management of ration shops should be handed over to community-based organisations such as gram panchayats, self-help groups (SHGs), federations of SHGs and village cooperatives. This would lead to greater accountability, better coverage, reduce leakages and improve transparency. PDS ration shops can also be extended to remote areas as an extension counter to increase coverage to tribal areas where most vulnerable groups and people serving SAM (Severe Acute Malnutrition) reside.

Many tribal diets are found to be deficient in calcium, vitamin A, vitamin C, riboflavin and animal protein and the consumption of iron, calcium and vitamins during pregnancy has been found to be substantially below recommended dietary intakes. Time is also ripe for policy makers to realise that PDS supply system and Mid day Meal Scheme should also take into account local tastes, food preferences, eating habits along with analysis of nutritional demands and gaps. Merely supplying wheat and rice will not solve the problem completely. Rural people also require oil, lentils and salt and are willing to pay price for these commodities. In open market sometimes tribals pay 5-10 times above normal market price for getting one kg of salt.

In some parts of India, coarse grains like millets, finger millets and pearl millets are also used as staple diets and PDS should accommodate these food grains in their supply system. Procurement of these drought resistant millets would encourage farmers to grow these crops which are highly suitable for rain fed areas in India. Subsidised soy and rajma (red kidney bean) may also be included in PDS as these crops require less water to grow than rice, and are richer in nutrients.

PDS procurement and distribution systems needs to be redesigned keeping in mind local food and nutrition scene. Procurement and distribution should be done at regional level, to save all the hassles and cost of centralisation. Small scale storage units can be built at cluster level and this would result in reducing post harvest losses, wastage and spoilage. Once we are able to create these infrastructures and put systems in place then only we would be able to realise the concepts of "Boat to Throat, Farm to Fork, Plow to Plate, Till to Tooth and Staple to Table" in its true sense.
Investment in logistics in cold chain and warehouse would save a lot of wastage. Absence of proper back end arrangements in India leads to wastage of fresh produce to the extent of 25-30%, annual equivalent of over 50,000 crore. About 30-40% of these losses occur in farmers fields and then in packaging and remaining in transportation and marketing.

One also has to look into agriculture, food systems and nutrition in a broader perspective. Agriculture, back yard poultry, small scale aquaculture and small back yard vegetable/orchard farming, is all part of rural livelihood system which provides food, nutrition and income security to poor household. In many parts of rural India successful rearing of Kuroiler a hardy bird has encouraged women to become more market-oriented and has improved household food security and nutrition.

Efforts are also required to increase farm productivity before the right to food programme rolls out. Small scale aquaculture also plays a great role in ensuring food and nutritional security.

For reasons of culture and availability, the consumption of milk or milk products may be limited in pre-school tribal children. For example, the milking of cows is a taboo among some tribal groups of India. This predisposes children to calcium deficiency. In communities without access to dairy produce; consumption of fish is known to be an important source of dietary calcium (and in some instances vitamin D), of particular relevance to children and lactating and pregnant mothers. Fish is a key nutrient for tribal communities and especially women, and young and adolescent children to provide essential dietary components not easily substituted within local diets and to combat anaemia related to dietary deficiency of iron. The promotion of fish consumption, including through support for improved local production through small-scale aquaculture, should be considered a priority for the state to safeguard food security and livelihoods protection.

**MGNREGA should be used for livelihood promotion through agriculture, back yard poultry, live stock development, small scale fish farming to ensure nutritional, food and income security.** The real success of MGNREGA lies in raising the agricultural productivity. Immediate measures and concrete efforts are required to convert MGNREGA into a productivity-enhancing instrument that would allay the fear that production cost of food grains would go high and resolve conflict between MGNREGA, agriculture and allied sectors. Convergence of MGNREG with agriculture and allied sector can pave the way for this to happen.

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