

THEME 4

AGRICULTURE, NATURAL RESOURCES
MANAGEMENT AND BIODIVERSITY

THE WAY FORWARD FOR SMALLHOLDER FARMERS

Topic raisers and facilitators: OP Rupela, Principal Scientist, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and Subhash Mehta, Devarao Shivaram Trust, India.

Issue: smallholder farmers represent a major part of the population and have been facing numerous problems. What is the way forward for these farmers and what are the implications, particularly for policy-making?

Discussion content

Participants identified the problems faced by small-scale farmers and made several suggestions for the way forward for these farmers. The discussion pooled several good practices, country cases and 19 reference papers.

ISSUES RAISED

Participants' main recommendations

- Empower farmers and mainstream their interests into policy-making
 - Engage farmers in finding and applying location-specific and affordable ways of improving their family FSN, based on an understanding of local food consumption patterns, deficiencies and the available options
 - Enable small farmers' participation throughout the policy cycle with a rights-based approach
 - Effectively link research and programme/project activities to policy-making (ref. Discussion No. 1)
 - Inform planning with farmers' viewpoint on their malnutrition/food security situation
 - Prioritize interventions and outcomes that can have most impact on FSN, based on an understanding of the causal process that can lead from improved agricultural production to improved FSN
- Offer a wide range of alternatives on and off the farm for small farmers
- Look at solutions that lie beyond farming system improvements (e.g. by broadening access of poor families to land and protecting widows' and children's land rights) and sensitize stakeholders on what is needed to impact positively on household FSN
- Learn from small farmers' success stories
- Promote sustainable agricultural practices, e.g. organic agriculture
- Organize smallholder farmers into groups, associations and cooperatives in order to improve their low economies of scale and their inability to meet market requirements
- Use custom-hiring, contract labour and contract farming to make small farming fast, time-saving and profitable
- Ensure access to a regular and predictable cash transfer for the hungry. Well-targeted and managed social security programmes, for instance, help translate need into effective demand and hence stimulate local markets

Good practices and success stories

- Effective methods to inform planning with farmers' viewpoint
 - problem trees that help community people identify the varied interlinked issues and how many different actions contribute to food and nutrition
 - compare the varying stakeholder views from various administrative levels using the UNICEF framework, giving equal weight to the voices of the different stakeholders
- The Producer Company (PC) concept has been adopted by farmer groups in India and consists in organizing small farmers as a business group but staffed by professionals, facilitated by interested government agencies
- The bio-intensive farming systems in Nepal and India have shown positive impacts on food security and household incomes of the farmers concerned
- In Andhra Pradesh, India, numerous organic villages have been developed with a women's leadership role through self-help groups
- Rice-duck farming in Bangladesh, particularly in the project "Integrated Rice-Duck Farming for Resource-Poor Farm Households" showed numerous benefits
- China has been successful in supporting smallholder farmers

33 contributions from 12 countries. Key contributors include:

- Charles Lagu, Livestock Production Scientist, National Agricultural Research Organization, Uganda
- George Kent, Political Science Professor, University of Hawaii, United States of America

Discussion No. 6, from 15 January to 22 February 2008



COMMUNITY FORESTRY AND FOOD SECURITY

Topic raiser: Denis Mahonghol, Forestry Engineer, FAO, Democratic Republic of the Congo.

Issue: what would be the best mechanisms to anchor agricultural activities in a community forestry process?

Discussion content

With eight contributions from four countries, participants shared different experiences on community forestry. The discussion pooled 12 reference papers.

ISSUES RAISED

Market Analysis and Development (MA&D) approach

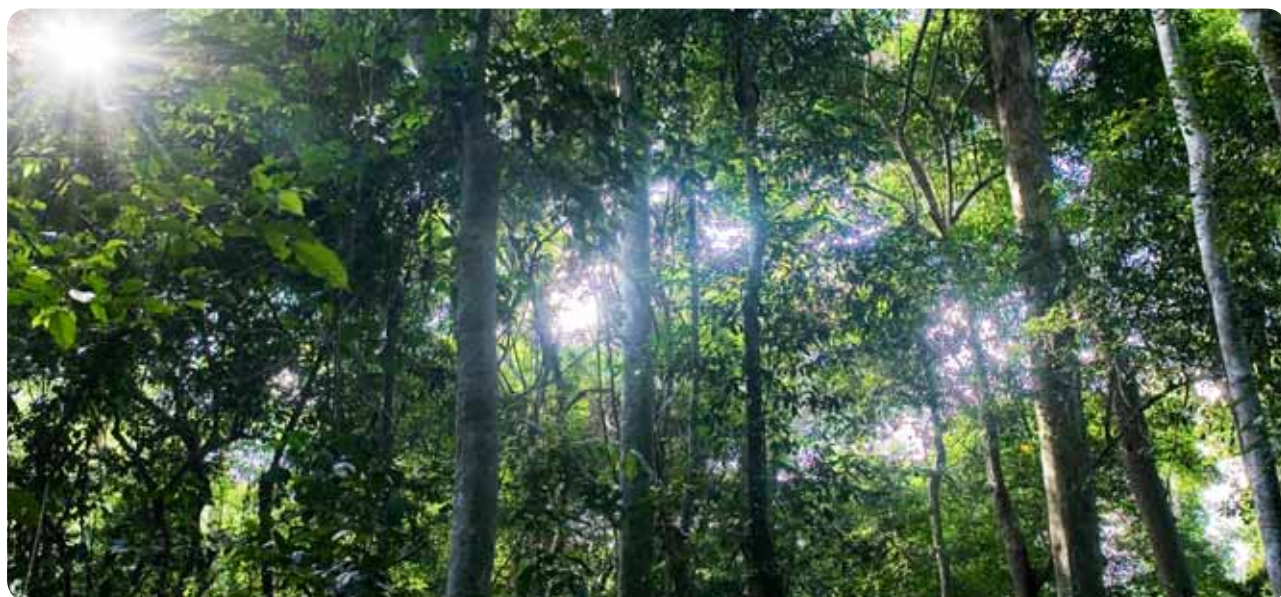
Identify and select viable enterprises that improve livelihoods and contribute to the conservation of forest biodiversity

Local forest management and small and medium forest enterprises (SMFEs)

These provide a viable and sustainable alternative to poverty reduction and forest conservation

Examples of Farmers' Forest Management Schools (FFMSs) and the MA&D approach applied to community forestry

- **Nigeria:** the National Programme for Food Security (NPFS) includes a subcomponent on agroforestry (modules, community forestry, development funds) with a special emphasis on the extension and training approach of the Farmer Field School (FFS)
- Dinder National Park in the **Sudan** integrates agroforestry into NPFS, giving support to enterprises based on alternative resources and/or services provided by the park, such as community-based tourism, and protecting park resources and conservation
- Farmer Field School in community forest management in Nepal is an approach to group learning and experimentation by forest user groups
- Community forestry in the **Gambia**
- Community-based forest enterprise development for improved livelihoods and biodiversity conservation at the Bwindi World Heritage site, Uganda



Discussion No. 8, from 17 March to 17 April 2008



GENETICALLY MODIFIED ORGANISMS AND FOOD SECURITY

Topic raiser and facilitator: Kathryn James, Ph.D. candidate, Lancaster University, United Kingdom.

Purpose: collect (i) examples of the use of genetically modified (GM) crops by smallholder farmers and the advantages and disadvantages they have noticed in relation to conventional crops; (ii) examples of promotion of GM crops by multinational companies/ governments and others to small-scale farmers, specifically thinking of promises of higher yields and greater access to new markets; (iii) contact details of organizations or people who are aware or engaged in studies on the reach and rhetoric of multinational companies in relation to the slow spread of genetic crops.

Discussion content

Participants discussed and shared information and insights on the benefits and disadvantages of genetically modified (GM) crops for small-scale farmers. Seven country examples and ten reference papers were shared.

ISSUES RAISED

Benefits of GM food crops

- Potential to raise agricultural productivity
- Operational advantages, including timing and efficacy of weed control
- Genetically engineered (GE) crops could deliver benefits to small-scale farmers, but there was a large variance across cases, including exceptions where they were not effective

Criticisms of GM crops

- Most GM crops belong to just two traits – herbicide tolerance (HT) and insect resistance (Bt), which causes plants to synthesize their own insecticide, but there is no quality trait
- Risks of loss of markets, higher seed costs and lawsuits
- Various risks in growing the first generation GM crops, especially for the control of agriculture and food by few, powerful and uncontrollable companies
- Serious difficulties in evaluating and controlling risks associated with GM crops
- GM plants, especially Bt cotton, caused the apparition of resistant insects and the substitution of targeted pests by secondary and more serious pests
- Even when GM technologies generate benefits, there is a steady concentration of profits in fewer hands and the share of the overall benefits for small farmers is steadily reduced
- GM technology can lead to bad environmental and economic consequences

Related studies on GM crops

- International Food Policy Research Institute (IFPRI) comprehensive review of the literature on the economic impact of GM crops in developing countries
- Workshop by Oxfam America and International Development Research Centre (IDRC) Canada with economic and social experts who have conducted case studies on the impact of particular GE crops on small-scale farmers in developing countries

Examples of the use of GM crops by smallholder farmers in seven countries

- Bolivia, China, Colombia, Honduras, India, the Philippines and South Africa

13 contributions from seven countries. Key contributors include:

- Michel Ferry, Institut national de la recherche agronomique, France
- Guillaume Gruere, International Food Policy Research Institute, United States of America

Discussion No. 10, from 31 March to 9 May 2008



BIOLOGICAL PESTICIDE RESEARCH AND EXTENSION

Topic raiser: Aude Viviane Goulivas, Biopesticide Project Team Leader, Côte d'Ivoire.

Purpose: collect advice, experiences and information regarding biopesticides.

Discussion content

With five contributions, participants shared relevant experiences, useful contacts and reference papers regarding biopesticides.

ISSUES RAISED

Recommendations

- Biopesticides are effective in managing pests only if farmers adopt proper preventive steps in the form of surveillance and management practices
- An input internalization model is most effective in helping farmers to gain control over resources as well as local knowledge and resources
- The institutional base of community-based organizations (grassroots extension systems managed by the community) such as the federations of women's self-help groups provides a good platform for scaling-up ecological farming practices such as the use of biopesticides
- The Indian model of neem kernel aqueous extract (NKAE) provides low-cost technology that could be adopted in West African countries, especially for resource-poor farmers, in the widescale application of neem-based pesticides in plant protection programmes

Experiences in researching and using biopesticides

- The Sustainable Agriculture Information Network (Sustainet) (<http://www.sustainet.org/index-en.html>) is working on the use of biopesticides in organic agriculture and providing related training
- The Non-Pesticidal Management (NPV) movement in Andhra Pradesh, India has been led by the Centre for Sustainable Agriculture (CSA) (<http://www.csa-india.org/index.htm>) for more than 15 years – biopesticides are made from neem and other plant species, and animal dung, urine and other products



Discussion No. 12, from 22 May to 14 June 2008



IMPROVING RICE PRODUCTION IN AFRICA

Topic raiser: Glenn Ashton, Ecogaia NGO, South Africa.

Purpose: gather views on new varieties and techniques to improve rice production in Africa.

Discussion content

With five contributions, participants commented on the role of rice in Africa and approaches to improve food security through improving production productivity.

Participants' main comments

- An increase in rice production does not automatically improve people's consumption and nutrition since their intake of rice/food/calories depends on their purchasing capacity (their access to food), not on supply
- Criticism on the use of rice in Africa
 - In Africa, traditional foods could bring more ensured food security to people so that a return to traditional staples is advisable
 - Rice is the most costly cereal crop and needs maximum water, endangering the environment
- Rice is only one of the staple foods and should not be considered to be the only choice for local production and consumption
- Distribution of food and facilitating access to production technologies by the poor are as important as the issue of improving food production
- The focus should not be limited to methods of food production, as opportunities for improving food security might be found outside agriculture

New varieties and technology enabling improved rice production

- NERICA (new rice for Africa) was devised by crossing Asian and African native rice strains and is successful in several West African nations, where most of the continent's rice is grown
 - Agronomic advantages: higher yield, better control of weeds, etc.
 - Agronomic disadvantages: the neglect or sidelining of other crop varieties or practices of agronomy that may also offer future advantages for feeding Africa
- SRI (System of Rice Intensification) was devised in Madagascar in the 1970s and 1980s and has many agronomic advantages such as increase in rice yield and reduction of water demand although water management is the main challenge in its application



Discussion No. 13, from 3 to 16 June 2008



ORGANIC AGRICULTURE AND CLIMATE CHANGE

Topic raiser: Poonam Pande, Senior Technical Expert, German Agency for Technical Cooperation (GTZ) Sustainet Project.

Purpose: collect experiences on organic agriculture. How do organic agriculture systems utilize traditional skills and knowledge, manage with weather extremes and enhance productivity and resilience?

Discussion content

With five contributions, participants gave insights into the opportunities and challenges for organic agriculture. They shared country cases of organic farming development and related initiatives. Ten reference papers were pooled.

PARTICIPANTS' MAIN COMMENTS

Opportunities for organic agriculture

- Organic farming could be one of the coping mechanisms and adaptations to climate change
- Organic farming provides safe and secure food and enhances the health status of the majority, particularly pastoral people

Challenges for organic agriculture

- Organic farming practised by rural farmers has a very low productivity and relatively high cost per unit produced
- Indigenous knowledge, including that on organic practices, would be difficult to transfer to other climatic conditions
- Absence of an organizing body to oversee the whole range of issues along the supply chain for organic farming development
- Lack of awareness about biofoods on the part of farmers for international markets – high demand limits trading opportunities with local markets

RELATED CASE STUDIES AND INITIATIVES

Organic agriculture in Sudan

The emphasis on organic farming by the Arab Authority for Agricultural Development in 2001 relates to the production of food commodities free from agricultural pollutants, mainly for export. Almost all food crops produced in traditional and mechanized rainfed agriculture can be considered to be pollutant free. The Sudan has a good opportunity for trading biofoods (organic products).

Suleiman mountainous region, Balochistan, Pakistan

This area has been famous for organic agriculture and livestock production in pastoral systems for centuries and the majority of pastoral people depend upon them. All flood-irrigated agriculture is practised without using chemical fertilizers or pesticides. Most farmers follow their indigenous star calendar for their crop cultivation and animal breeding programmes.

Farmers' Research Endogenous Institute, Bangladesh

The Institute promotes organic farming with unique methods such as no project culture, no compromise, open for all (no groups), practising with schoolchildren in play mode, news boards, continuous discussion in public places such as tea stalls and marketplaces, all of which have resulted in positive outcomes.

Sustainet (Sustainable Agriculture Information Network)

Sustainet (<http://www.sustainet.org/index-en.html>) is a German network with three other networks in the pilot regions of India, Kenya/ United Republic of Tanzania and Peru/Bolivia. In India, Sustainet works on issues based on organic farming, creating linkages between farmers and markets, advocating public/private partnerships and tackling issues of dryland agriculture by a watershed approach, bearing in mind the protection of biodiversity.



PROMOTING COLLABORATION AMONG STAKEHOLDERS IN AGRICULTURE DEVELOPMENT

Topic raiser: Chris Ramezanpour, member of the Global Farmer Field School (FFS) Network.

Issue: how to promote collaboration among stakeholders in agriculture development, in particular within an FFS programme.

The topic was initiatively raised on the Global Farmer Field School Network and was cross-posted on the FSN Forum.

Discussion content

With seven contributions, participants made practical suggestions on improving collaboration among stakeholders in agriculture, with emphasis on FFS programmes.

ISSUES RAISED

How to promote collaboration among stakeholders in agriculture development

- The new technologies might encourage collaboration and strengthen connections with farmers on the ground, e.g. through handheld cellular devices, and there will be an opportunity for more organizations and stakeholders to access and share information
- It might be useful to create a Web-based network of communication among stakeholders, sharing educational audio and video files (for local radio and television use), contact links to important agriculture-related services, relevant papers, news and market linkages
- Field education models can better serve their target audience when the message taught is supported by secondary tools that will help to apply that message
- Experts (World Bank, Care, Plan, K-Rep, etc.) could assist field education models such as FFS in the provision of services to supplement the agriculture training, such as credit access, irrigation support and health training

FFS – A recommended approach

• Features of the FFS Programme

- FFS is an ongoing, if not lifelong, education process, if farmers can sustain the group
- The FFS group is a social network that often connects numerous groups across villages for benefits beyond farming and the power of the group, or of many groups, is the best way for many small-scale farmers to access high-value contract farming opportunities
- Post-FFS activities are extremely important for continued learning as a group and undertaking activities with mutual support, which makes a distinction between the real FFS and the farmer group that continues to stay together

• Advantages of integrating the FFS methodology in FS programmes

- FFS can be used as an entry to creating or strengthening self-sustained groups in FS programmes
- FFS should be used within a strategy linking to the overall direction of development and helping to move forward
- The real value of the FFS programme is to put continued learning into cash crops

• Challenges/suggestions for improving the FFS approach

- The success of the FFS programme in the near future depends on support for agriculture extension officers who can help relay feedback from farmers
- The effectiveness and potentiality for application of learning in FFS could be enhanced by linking FFS participatory learning and experimentation efforts with other stakeholders
- FFS should remain as clear budgetable items with start and finish dates and with the release of their facilitators (or transfer of facilitator responsibility) so that new FFS may be established



GARDEN IN A SACK

Topic raiser: Peggy Pascal, Food Security Adviser, Solidarités NGO.

Purpose: share experiences about mini-garden techniques and projects.

Discussion content

With 16 contributions from eight countries, participants shared different experiences on mini-garden techniques and projects in the urban context and explored the possibilities of collaboration across countries.

PARTICIPANTS' MAIN COMMENTS

Advantages of sack gardens

- Sack gardens are mobile and require little land and water and, because they have low physical requirements, are a potentially appropriate option for households with low adult labour ratios, i.e. child- and female-headed households, elderly-headed households and those with chronically ill adults
- Sack gardens have an immediate impact and are extremely appropriate for grassroots groups
- Sack garden techniques are most effective for
 - vulnerability interventions
 - complementing school garden initiatives, improving household income and addressing gender issues
 - complementing any community development initiative and/or emergency programme

Suggestions for promoting urban agriculture and sack garden techniques

- Link sack gardens in schools to school feeding programmes
- Carry out systematic research on sack gardens, especially to analyse their advantages and disadvantages compared with conventional gardens, possibly with the help of aid agencies to document sack garden experiences.
- Carry out advocacy activities to promote sack garden techniques, e.g. by creating a Web site to distribute information

SACK GARDENS IN PRACTICE

- **Solidarités Sack Garden Project in the two largest slums in Kenya**
 - Each family has been given one to three sacks filled with earth and 6 000 families are now cropping tomatoes, onions, kale or spinach. A nursery has been established where one group is in charge of management while another group trains the beneficiaries. Each sack is 1 m³ wide and represents 5 m². A single sack can contain 50 seedlings of kale or spinach and 20 tomato plants. Vegetables are used directly and indirectly by households to obtain food, access cash when needed and educate children. On average, each household has increased its weekly income of USD5.
- **Small-scale homestead vegetable initiative in Gaza, Mozambique**
 - Under the FAO/Netherlands Partnership Programme, the initiative was tested in Gaza with tomatoes, lettuces, green peppers, spinach, cabbage, beets, parsley, turnips, onions, etc.
- **The CL4 group in South Africa** has used sack gardens for households with family members suffering from HIV/AIDS.
- **Philippine initiative on food production**
 - Used cans or trash plastic containers are utilized to grow plants/vegetables to supplement household food intake.
- **WFP multistorey gardens in two Kenyan refugee camps in Kakuma and Dadaab**
 - Several thousand refugees participated in the programme. It should be noted that this type of programme is suitable for areas with similar challenges but will scarcely compete with conventional kitchen gardens in areas where these are feasible.
- **Action Against Hunger-USA promotion of micro gardening in small bed, tyre and sack form in IDP camps in northern Uganda**
 - Production has been extremely significant in contributing to household food and consumption, as well as to household income through sales in the internally displaced person (IDP) camps.



IMPACT OF CASSAVA DEVELOPMENT ON THE FOOD SECURITY AND NUTRITION OF THE RURAL POOR

Topic raiser: Michael Carbon, Evaluation Officer, Office of Evaluation, International Fund for Agricultural Development (IFAD).

Issue: what has been the impact on the rural poor of projects and programmes focusing on cassava? What lessons have been learned from cassava development projects/programmes?

Discussion content

Participants discussed the impact of cassava development on the rural poor, focusing on the nutritional implications. They shared lessons learned on how to make cassava development more effective and pro-poor. Five reference papers were shared.

ISSUES RAISED

Impact of cassava development on the income and food security of the rural poor

- Dissemination of new high-yielding cassava varieties and the consequent impact on processing and marketing is slow, typically felt after 10–15 years
- Improvement in the quality of local products derived from cassava and the development of new derivatives, which in turn have contributed to an increase in the income of the rural poor

Impact on the environment

- The biggest impact is on the soil via water erosion when grown as a single crop but in Southeast Asia and Latin America this problem has been controlled by various agronomic practices, including the use of live hedgerows, terrace ploughing and zero tillage

Nutritional value of cassava and implications

- Cassava is a main staple food in Africa and a good source of energy but because it lacks protein and amino acids and provides mainly carbohydrates it needs to be supplemented with other food sources especially vegetables, legumes and cereal grains
- Cassava leaves contain carbohydrates as well as proteins and vitamin A and are suitable even for children's diets yet, even though the leaves are nutrient dense, there are issues of bioavailability and acceptability
- New genetically modified nutrient-dense cassava varieties being developed under a Gates Foundation project (BC+ varieties) are very rich in protein and vitamins compared with cassava varieties currently grown
- Shifting from a maize/beans-based diet to a cassava diet can be problematic, since it may increase protein deficiency, which is of particular consequence for children who are in need of nutrient-dense and not only nutrient-rich diets
- Cassava has some toxic compounds that can be reduced by means of particular preparation methods

Lessons learned from cassava development projects/programmes

- Nutrition issues
 - Agricultural changes, such as reliance on cassava as a single crop, need to be accompanied by adequate nutrition information and education to avoid negative consequences
 - Where cassava replaces grains and beans, it is important to provide the lacking protein and essential amino acids
 - If cassava is grown as an income-generating crop, families could theoretically purchase more nutrient-dense foods with the additional income
- Market issues
 - There are huge price swings in fresh roots over the year for processing and marketing reasons, but also for the seasonality of the cassava harvest, long growth cycle of the crop and relatively low productivity by farmers
 - The success of any cassava development project will have to be evaluated by price stability and accessibility of cassava products all year – an organized processing and marketing supply chain will lessen wide price swings

- Targeting the poor
 - Work with first-, second- and third-order community-based organizations and involvement of local governments is important, while participatory needs assessment should be key to targeting intended project beneficiaries
- Key issues to be addressed by root and tuber (R&T) development projects
 - Provision of adequate information to mothers about the nutrition value of R&T products as compared with grains and about the need to complement their children's diet (or their own when breastfeeding) with protein, fats and vitamin- rich foodstuffs
 - Extent to which additional income generated by R&T products is used to improve the household diet
 - Sensitization of R&T processors and consumers on food safety issues (hygiene, toxins, etc.)
 - Promotion of safety nets for R&T producers and processors to cope in years of low prices
 - Organization of R&T value chains in order to reduce price swings for producers and processors, and promotion of access for all population group to high-quality products
 - Viability of support to the seed production system



12 contributions from eight countries. Key contributors include:

- Judy McLean, Nutritionist, University of British Columbia, Canada
- Martin Fregene, Donald Danforth Plant Science Center, United States of America

Discussion No. 33, from 15 April to 18 May 2009

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