

DISCUSSION: AGRICULTURAL BIODIVERSITY

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I. GENERAL INFORMATION

Duration:	7.01 – 1.02.2008
Facilitator:	Luigi Guarino
Number of participants:	11
Number of Contributions:	12

II. INTRODUCTION OF THE TOPIC

Hello,

My name is Luigi Guarino and I work at the Global Crop Diversity Trust (<http://croptrust.org>). The Trust is an independent international organization housed by FAO devoted to the development and support of a rational system for ex situ conservation of crop genetic resources. It is an element of the funding strategy of the International Treaty on Plant Genetic Resources for Food and Agriculture.

I'm not very familiar with FSN concepts and practice and I would like to educate myself. Can I therefore ask whether the issue of agricultural biodiversity (i.e. the ecosystem, species and genetic diversity found in agricultural landscapes) is much discussed in FSN circles? For example, are variables such as the number of different varieties of sorghum or the number of different leafy green vegetables (for example) grown by people in an area the kind of baseline data that are documented when doing livelihoods and food security vulnerability assessments? I have a feeling that this aspect of livelihoods and food security is sometimes ignored, or at least not given the consideration it deserves. But that may just be a bias on my part because of the work I do.

I would really appreciate the input of participants in this forum so I can try to better understand the field and the possible role of organizations like the Trust and Bioversity International in this kind of work.

Best regards,

Luigi Guarino

Global Crop Diversity Trust

III. LIST OF CONTRIBUTIONS

Contribution by Mr Kevin Gallagher, Special Programme for Food Security, FAO

Dear Luigi,

From what I have seen in some of the better food security programmes, there has been some limited focus on indigenous grain, vegetable and fruit development. FAO AGPC (FAO Crop and Grassland Service) has been involved in this area. However, I agree that much more needs to be done including looking at greater use of local varieties and plants, incorporating landscape issues where plants and animals are integrated into mixed systems and stronger participation of local knowledge holders in both of these areas. In forest communities, similar work on non-timber forest products could be included. Biodiversity from aquatic resources (e.g. rice systems, mangroves) seems to need more work if Matthias Halwart's work in South East Asia is any indication - high levels of wild species collected with important nutritive impact.

At a philosophical level, I would hope that the right of any species to exist without needing to be defined as "useful" could be more strongly promoted but FAO may not be the organization to work on these ethical issues?

With best regards,

Kevin Gallagher, FAO TCOS

Contribution by Eltighani Elamin, Agricultural Economic & Policy Research Centre, Sudan

I agree with Kevin that native food and forest-based products are often overlooked during design and implementation of most of the food security projects, including the very recently launched IFSIA in Africa and Asia (e.g. Yemen). However, there also more important issues are overlooked, such as the linkage between Biodiversity and poverty, which is leading to the other, because utilization of natural traditional food beyond the current level might lead to deterioration on biodiversity and hence to accelerating poverty in particular on marginal dry lands, the most food vulnerable areas in the world. I have written a concept paper for Montreal UNU Conference on reconciling the spread of poverty and deterioration on biodiversity in 2002, which is currently under expansion and reconsideration for an international food security conference to be held in Sussex University in April this year. By that time I hope will find a chance to distribute it through this Forum.

Regards,

Professor Eltighani Elamin

Agricultural Economic & Policy Research Centre, Sudan

Contribution by Mr Robert Huffaker, from the Development and Planning Service, Fisheries and Aquaculture Division, FAO

Dear All,

With regards to Prof. Elamin's point on the linkage between Biodiversity and poverty, there are available resources online that discuss the impact of biodiversity and productivity.

UNEP has published a document recently that reviews the links between biodiversity and sustainable provision of ecosystem services in a broad perspective (link provided below).

Section 3.1 (p.12) is particularly relevant and discusses food provision and food security.

<http://www.unep-wcmc.org/latenews/Biodiversity%20and%20Poverty%20Reduction%20UNEP-WCMC.pdf>

Best Regards,

Robert Huffaker, MA Student: Human Development and Food Security, Roma III University

Contribution by Ms Dominica Navarro Ros, Assistant Moderator FSN Forum, FAO

Hello,

I'd like to contribute some on-line resources relevant to our current discussion on Agricultural Biodiversity. Actually the World Food Day 2004 was dedicated to "Biodiversity for food security" and lots of resources on how biodiversity benefits natural and agricultural ecosystems can be found on the FAO platform on Biological Diversity <http://www.fao.org/biodiversity/index.asp>.

The FAO Biodiversity Awareness folder at http://www.fao.org/biodiversity/doc_en.asp, contains several papers relevant to this discussion, such as papers in "Theme 4. Mainstreaming biodiversity for food security: challenges and partnerships"

I hope you find these resources useful.

Regards,

Dominica Navarro-Ros

Assistant Moderator, FSN Forum

Contribution by Mr El Fadil Ismail, from the Agricultural Research Corporation, Sudan

Dear all,

I respond to Prof. Tighani reaction to the issue of biodiversity with this broad-based contribution and leave the details to second rounds. Although many reports looked at biodiversity in relation to poverty but few assessed the value of ecosystem services to the poor (economic valuation vs. ecosystem services). My comment on the issue of biodiversity tends to broaden the scope to encompass both the macro and global policy levels that addresses the relations between the environment and development. To me, biodiversity is not only a question of information on varieties at the genetic, species and ecosystem levels, nor the interactions between components of biodiversity, but rather at the facilitating components that bring the resultant gains of biodiversity to the poor into practice to become a daily life habit. This could possibly be through education, knowledge enhancement, and transfer to make a real and persistent change in the attitude of people in developing world.

In most developing countries, it is only few who have access to information on the usefulness of many indigenous plants to the local communities but this information is restricted or circulating only among researchers without being further disseminated to grass root level. Humble farmers are not in a position to go into sophisticated knowledge on the nutritional values of what they produce, nor the humble consumers in developing countries have the potentiality to this; they only require a ready made recipe which they have to eat. Therefore, the availability and easy access to existing scientific knowledge regarding bio-food products and simultaneously have a sustainable ecosystem services, is of vital importance to many developing nations whose people suffer from hunger and malnutrition while many indigenous food (species) available at their hand if some treatments can be made to process them. Indeed, very few efforts that are also cost effective can be made to develop indigenous-SMEs oriented food industry to alleviate both poverty and hunger. What is lacking is the money FINANCE that always defeats the UN slogans towards the Millennium Development Goals.

I think many stuff are to be resolved if we want things to proceed forward by the end of this decade:

- Biodiversity should not remain a concern of ministry of agriculture and forestry but incorporate other government ministries, particularly the ministry of education, to ensure knowledge dissemination & transfer, as well as NGOs agencies, which potentially have the capacity to develop and conduct such type of activities
- Second, we need to look for means and ways to down scale the information and findings about biodiversity of agriculture that have been at the national -level to be easily available and accessible at the local –grass root- levels and at affordable prices/costs
- I suggest producing a document, which outlines best practices and information in relation to biodiversity, food security (Poverty +hunger) readable by simply knowledge people rather than the indigestible academic information currently produced.

Best regards,

El Fadil Ismail

Contribution by Mr Luigi Guarino

I think maybe one of the more interesting examples of the use of agro-biodiversity to address issues of nutritional security (and indeed income generation) has been what's been happening recently in the promotion of African traditional leafy green vegetables. Participants may be aware of this bibliography <http://www.underutilized-species.org/documents/PUBLICATIONS/neglectedleafygreenvegetablecropsinafricavol2.pdf> . There's an interesting article here http://ajfand.net/Issue14/PDFs/SMITH-IPGRI_1.pdf. These

species have entered the mainstream in Kenya, for example. To the extent that commentators in Nigeria <http://www.tribune.com.ng/07112007/agric.html> are suggesting that country should follow the Kenyan example (but see also <http://agro.biodiver.se/2008/01/south-africa-turning-its-back-on-local-greens/>).

Luigi

Contribution by Bernardete Neves, from the Agricultural Development Economics Division (ESA), FAO

Hello,

I'm a consultant working for the FAO's PESAL project - Payments from Ecosystem Services from Agriculture Landscapes, together with Leslie Lipper, Monika Zurek and Giacomo Branca (ESA). On behalf of the rest of the team I want to share information about our work on ecosystem services, their benefits to the poor and the contribution these can make to FSN, in response to El Fadil Ismal message.

Agricultural ecosystems sustain human life. They supply food and drinking water, maintain a library of genetic resources, preserve and regenerate soils, fix nitrogen and carbon, recycle nutrients, control floods, filter pollutants, pollinate crops and provide livelihoods for over half of the world's population, and for about three quarters of the World's poorest. Despite the importance of these services, ecosystems are being challenged as never before by the combined effects of population pressure, rapid economic growth, the demands of greater global integration and climate change.

In response, we have recently seen increasing recognition of the importance of adopting ecosystem management practices that can generate global or regional environmental goods and services. These services are provided mostly through the agricultural, forestry, land and water use decisions made by farmers, fishermen and forest dwellers. Payments or other forms of support may be channelled to these communities in return for the environmental services they can provide. It is through this mechanism that benefits could/will be generated in the form of additional income and improved food security as well as protection and enhancement of global and regional ecosystems, enabling and enhancing environmental goods and services.

Setting up one of these compensation mechanisms can be a lengthy process, requiring institutional change, extensive negotiations and substantial start-up funding, all of which are greater obstacles for poorer groups, generally with less access to information, negotiation channels and finance options. It is in this context that FAO, with support from the FAO-Netherlands Partnership, is working to improve capacity for the poor in accessing and capturing the PES potential for poverty alleviation, through its PESAL project- Payments from Ecosystem Services from Agriculture Landscapes.

The project conducts studies on the potential sources of payments for such services with focus on the agricultural sector (Agro-PES) and explores types of mechanisms and programmes which may facilitate the poverty reduction benefits. Lessons learned and sharing of experiences will be facilitated through a new FAO PES dedicated website that will be available at www.fao.org/es/esa/pes from mid February.

As part of the project's activities, and in collaboration with the Land and Water Division (NRL) and their upcoming Transboundary Ecosystem Management Project in the Kagera River Basin, FAO will hold a capacity-building workshop in Dar Es Salaam 4-6 February, focusing on the potential application of PES mechanisms in East Africa. Organized in collaboration with CARE Tanzania, the meeting will facilitate discussions on the potential for the application of PES as incentives for sustainable land management. It will also encourage regional partnerships among policy makers and natural resource managers for future collaboration, and scope out conditions required for the participation of poorer rural groups in the region.

In addition, this year's State of Food and Agriculture Report (SOFA) focuses on PES as a possible policy tool to enhancing farmer incentives to sustain and improve the ecosystems on which we all depend. The report can be downloaded at :
<http://www.fao.org/docrep/010/a1200e/a1200e00.htm>

For more information on the PESAL project kindly contact me at Bernardete.Neves@fao.org

Regards,

Bernardete

Contribution by Ileri Mathew, Nutritionist from the Ministry of Health, Kenya

Thanks for FSN discussants for the issue of agro biodiversity, particularly on dissemination of different researches and studies on different food crops.

As a nutritionist working with ministry of Health in Kenya, I wish to concur with El Fadil that there's a need to have sector wide approach to agro - biodiversity. Ministries of health, agriculture (including livestock), education and water, to mention a few, need to actively be involved in social marketing and promotion of indigenous knowledge in a package easily understood to the common people rather than current presentation using technical language and jargon that also trouble educated people.

With over 50% of the population in Kenya suffering micronutrients deficiencies, like anemia, vitamin A deficiency, folic acid deficiency and deficiencies of B complex vitamins, all of which can be reversed by the use of African traditional leafy vegetables and also cereals and pulses.

It is imperative to not contain knowledge in books and archives, but in habits and practices of the needy population. This will enable the developing countries, particularly Kenya, to achieve the envisaged Millennium Development Goals (MDGs).

Thanks,

Ileri Mathew

Contribution by Ms Angela Kimani, Nutrition student at the University of Nairobi, Kenya

Hi,

The use of traditional vegetables has been on the rise in the African continent, especially in Kenya (where I live).

Many more research is being done and more people are getting aware of the high nutritional value in these vegetables.

Angela Kimani

Nutrition student at the University of Nairobi, Kenya.

Contribution by Op Rupela and Subhash Mehta

We wish it will be good if somehow get Ileri's message across to all involved in the discussion/scientists that what matters is the language which could be understood by 60% of the worlds' farmers who are largely illiterate and do not know the language of published papers (most of them not implementable and rarely successful in the long run). As widely observed, most scientists are specialists (e.g. an entomologist may have done his PhD on a single pest and is likely to find prescribing field solutions on several insect-pests that affect a given crop – also in

nature many pests are best managed by their natural enemies: the infamous cotton boll worm or *Helicoverpa armigera* has been reported to have approximately 300 natural enemies - Sharma HC. 2001. Crop protection compendium: Cotton bollworm/legume pod-borer, *Helicoverpa armigera* (Hubner) (Noctuidae: Lepidoptera): Biology and Management. Wallingford, Oxon OX10 8DE, UK: Commonwealth Agricultural Bureau International) and not agriculturists. We need more of agriculturists and less of specialists.

On the subject of Nutrition, health and food there is enough research available to prove that agriculture following organic principles when compared to conventional agriculture mostly has the needed food security and nutritional values for the sustainability of the agri-rural communities, supporting paper can be found at http://km.fao.org/fsn/resources/fsn_viewresdet.html?r=333

Regards

Op Rupela and Subhash Mehta

Contribution by Op Rupela

I wish to add the following to the response below of Mr El Fadil to Prof. Tighani, dated 21 Jan 2008.

I guess in his response El Fadil is indicating the lack of use of “biodiversity” in real world for harnessing environmental benefits. Harnessing ‘Biodiversity’ in crop production and protection is highly relevant but over the years it has been ignored. Poly cropping was wide-spread and crops were generally sown by broadcasting. Monocropping based mechanization (I believe that even multi-crop based mechanization could have been possible or may be it is followed in some places) – poly cropping (to harness diversity) was a casualty. I noted broadcast sowing of seven grain crops in pockets of Nepal and India until 1995. Some farmers in some of India still sow occasional plant of around 5 different crops in an otherwise monocropped field e.g. sorghum or maize plants in chickpea. On enquiry, better management of crop pests was indicated as a reason.

Plausible explanation: each crop has its important insect-pests and each insect-pest has its natural enemies (e.g. predators). The diverse crops perhaps promote a given insect that may serve as a food for the pests of the main crop. A concept widely used by practitioners of organic farming.

With best wishes,

Op Rupela

Contribution by Shakuntala Haraksingh Thilsted

I wish to make the following comments and share a paper.

When the starting point is primarily **agricultural production and increased yields**, a very different focus is reached than a starting point which also incorporates **food consumption patterns** – what are the commonly consumed foods, how much, in which seasons, eaten by whom and which nutrients and how much are contributed by these foods. Taking these points into consideration makes it easier to link agriculture, health and nutrition, focus on biodiversity and sustainability. For example, poor, rural households may adopt aquaculture of carps in small ponds and increase income; however if open water bodies are not protected and managed, the intake of small, nutrient-dense fish is decreased, leading to lower intakes of limiting, essential micronutrients. In addition to consumption data, **local perceptions of the value of common foods** (including for example, wild foods and soil) **for health and nutrition** must also be considered. **Investigating the scientific basis for local perceptions must be used to set the agenda for agricultural biodiversity.**

The above points must be included in the **curricula and training of extension agricultural workers and health workers** in order to have a mind set and focus at field level that favour agricultural biodiversity and FSN. I'm sharing a paper that illustrates how the above concepts have been implemented:

http://km.fao.org/fsn/resources/fsn_viewresdet.html?no_cache=1&r=343&nocache=1

Shakuntala Haraksingh Thilsted

Department of Human Nutrition, Faculty of Life Sciences

University of Copenhagen, Denmark

Contribution by Dr. R.A. Ram, Principal Scientist (Horticulture), Central Institute for Subtropical Horticulture, Rehmankhera, India

As I understand **organic farming practices can secure food security of marginal and small farmers as well as save biodiversity**. Therefore I would like to share our experiences in organic farming in India. A brief of this has been contributed to the website at http://km.fao.org/fsn/resources/fsn_viewresdet.html?no_cache=1&r=350&nocache=1

The brief presents **organic farming** experiments/practices carried out in India, with good achievements on soil, fruits, vegetables, crop protection and revenue generation etc. Please read the brief for more details

Regards,

Dr. R. A. Ram
Principal Scientist (Horticulture)
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