Written inputs from panelists of the Main Track Session

9A: **Innovations:** A call for innovations that change the (organic) world (Fish bowl)

Tuesday, 15 October 2014 (09:30-11:00)

Innovations: A call for innovations that change the (Organic) World

Background

Recent developments in organic farming and consumption show dynamic growth in markets; new uptake of Organic Agriculture by farmers, however, has been slow. Hindrances appear to be production problems or lack of trust by the farmers that organic methods can solve farming problems, such as fertilization, plant protection, animal health, efficient use of workforce, marketing diversity etc. While in some cases those problems can be solved through learning existing and regionally practiced methods, innovations are imperative to make organic farming competitive and a viable alternative farming system.
OFIA, the Organic Farming Innovation Award, part of the Organic World Congress, highlights outstanding innovations and publishes priorities for innovative research.

Session Objectives

The discussion will focus on the most important needs for innovations in order to address bottlenecks to achieving organic visions and goals, so that markets can grow and organic farmers â€“ both existing and new â€“ can have a decent livelihood. The session will reflect on what needs to be done to stimulate and manage innovation, and to make available knowledge accessible.

Leading Questions

- What keeps farmers from converting to Organic agriculture?
- When do Organic farmers exhaust their eco-intensification strategies and need innovative ideas? Where should research investments be made?
- How does knowledge reach farmers? What promising traditional and modern capacity-building and extension approaches exist?
- Are there innovative ways of facilitating transfers of knowledge and experience?
- How can processors and traders better support farmers to build resilient and productive systems based on the organic principles and standards?
- How can research become more attuned to farmers' problems?

Methodology: Fish Bowl with 4 panelists and 2 open chairs

Moderator/Rapporteur: Mathew John/Robert Jordan

Speakers

- Mustafa AkyÃ¼z, ETKO, Turkey
- VÃ©ronique Chable, INRA, France
- Kellee James, Mercaris, USA
- Urs Niggli, FiBL, Switzerland
- Vanaja Ramprasad, Green Foundation, India

Kellee James[1]

Kellee James is Founder and CEO of Mercaris, a market data service and trading platform for organic and non-GMO agricultural commodities. Mercaris provides price discovery and information for the cash market. Prior to Mercaris, Kellee spent five years at the start-up company Chicago Climate Exchange (CCX), the first electronic trading platform for spot, futures and options contracts on carbon, sulfur, clean energy and other environmental derivatives. In 2009, she was appointed by President Barack Obama as a White House Fellow where she advised members of the administration on environmental markets. She has also worked with coffee farmers and commodity banks in Latin America on risk management and income diversification strategies. Ms. James is an Aspen Institute Catto Environmental Fellow and has also served on the board of Net Impact, a membership organization of more than 12,000 MBA professionals committed to sustainability through corporate responsibility. She is currently a non-resident senior fellow at the Joint Center for Political & Economic Studies, a think tank in Washington, DC. Kellee received her MBA and MA in International Development from American University and completed a BA in Spanish from the University of Kentucky.

Session Idea Description and Questions:
Speaker can discuss market-based barriers and innovations that either inhibit or assist the sustainable growth of organic agriculture. Organic agriculture provides ecosystem services for society at large and accurately pricing and disseminating that information will provide incentives for growth in the sector. In particular there are several leading questions that seem to be directly related to this:

What keeps farmers from converting to organic agriculture?
Many causes exist, including those that are policy related, expertise related, etc. But, there are a cadre of reasons that could be called market failures including: lack of price information and other market data, lack of financing options for farmers, and lack of risk management tools. Innovative solutions to these can be discussed.

How can processors and traders better support farmers to build resilient and productive systems based on organic principles and standards?

The development of transparent and efficient markets and marketplaces is one creative way to address this. Market mechanisms and tools like contracts that provide both longer-term assurances of demand while also offering flexibility to the participants could be of use. Examples of new types of insurance products and forward contracts that require the input and cooperation of both producer and processor are being developed and utilized.

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How does knowledge reach farmers? What promising traditional and modern capacity-building and extension approaches exist?, and

Are there innovative ways of facilitating transfers of knowledge and experience?

When speaking about market signals, public exchanges (for physical goods) not only serve to help with price discovery, but also serve the function of price dissemination. This combined with technology (tablets, phones, etc) are key innovations in the way in which farmers consume information, but also play a role in producing good information as well.

How can research become more attuned to farmers' problems?

A first step is the data to accurately identify problems to answer the question: What is the highest and best use of research dollars and human resources? Markets are not the complete answer to the question, but they can provide supporting evidence and allow policy makers to prioritize various thematic areas. Basic data such as the notional value of particular crops, production/yield statistics, price volatility, etc can help shape priorities.

Dr. Mustafa Akyüz

What keeps farmers from converting to Organic agriculture?

Organic farmers face a series of five, interconnected challenges in the areas of production, processing/storage, marketing, regulation and community.

In terms of production, organic farmers lack access to knowledge about organic production methods, to production inputs and to qualified labour.

When it comes to storage and processing, organic farmers are often out of luck there is a lack of certified organic processors and facilities.

With respect to marketing challenges, organic farmers lack access to markets for higher-priced produce, and face increased competition within the growing organic sector.

In terms of regulation, organic farmers who run small or medium-sized farms find that many regulations benefit larger operators at the expense of smaller ones.

And when it comes to community, organic farmers face conflicts with neighbours over pesticide drift and GMO contamination.

When do Organic farmers exhaust their eco-intensification strategies and need innovative ideas? Where should research investments be made?

Sharing experiences and Inheritance of techniques:

Farming methods applied by the historical communities and modern civilizations until 1960ies could be interesting to learn and gather the information for the benefit of farming society to put in practice. To collect the old techniques applied could be learned from the elderly people still living in the countryside and books written and kept in the archives in libraries.

Important is this collected information to be publicly available and transmitted to the next generations globally through electronic media:

Collecting information and classifying in different categories are possible such as: Plant products, Tees, Essential oils, Minerals, Animal based materials, Bee-products, Homoeopathy medicines.

How does knowledge reach farmers? What promising traditional and modern capacity-building and extension approaches exist?

Agricultural experts' needs to learn traditional practices from the farmers and transfer it to others, if they know certain modern techniques applicable for the specific region agricultural practices then it must be integrated with the traditional methods. Do not pretend you know better then the producers. They will reject your approach and will not consider your advices. Producers need independent experts which do not have any conflict of interest such as

involvement with the farm inputs traders.

In Turkey the non-expert professionals do extension work. Ministry employs agriculturists without experience. Experienced agriculturists do not believe in general organic agriculture due to their education was based on modern techniques and intensive farming. Professional Independent

Advisory offices do not exist due to same reason; there is no organic agronomist producer who is focused in organic able to teach something to neighbors.

Alternative extension work:

Small scale family farming should be advised and promoted. In cities every private house which has a small land could be the base for this extention work. Education starts from the family, kids learning by doing in house. Education may continue in schools as visiting organic and industrial farms, showing the alternative production methods, advantages and disadvantages.

Are there innovative ways of facilitating transfers of knowledge and experience?

Global Database of Organic Producers:

Every individual producer who is experiencing a different situation in his farm could register his experiences in to a public database through his PC. Database should be divided into different sections such as organic livestock, poultry, aquaculture, vegetables, fruits, wild collection, arable crops, mushroom, herbs and spices, medicinal plants, forestry, bee-keeping etc. Subcategories such as Irrigation, Fertilization, pest and disease control, and weed control, Crop rotation, Fallowing. Every producer around the globe should be able to access to this database and extract the information **freely.** Database could be based in multi-lingual options.

How can processors and traders better support farmers to build resilient and productive systems based on the organic principles and standards?

It is considered marketing is the major problem for developing organic production, then take the market rule the organic production. **Here is the solution:** State funds goes to market not to producer. State subsidizing the consumers, could be the engine for organic sector. Producers are in needing market not the government support. Price should be paid by the consumer and state subsidies the consumer.

State can oblige consuming organic products by the following consumers firstly, then follow others: schools kids, hospitals personnel and patience, army personnel, government offices personnel,

How can research become more attuned to farmers' problems?

You need to train producers to do research, work with them and teach them very simple techniques in cropping, fertilizing, pest-disease monitoring and

control and so on. Farmers need to be trained in farming science also. Farmers do not like to read in general but they like to learn by doing. Training projects should be supported only for field work, not for seminar rooms and receptions & cocktails.

Objective support should be provided to the producer if a project is accepted such as a field trial for organic arable crops, bee-keeping. Project should bring the propagation material, pest-disease control material, fertilization inputs. Expert assigned to follow up the production with the producer throughout the season. Part time experts are not able to reach the goal.

10 well-trained producers per year is enough in one region, this can change the future.

Urs Niggli

Organic farming is a knowledge- and labour-intensive farming methods and as such less competitive than conventional or industrial farming. As long as the conversion is driven by public subsidies and organic market growth only, the number of organic farmers will grow very slowly. A public discussion about the externalities of agriculture is of utmost importance (true cost accounting). Eco-functional intensification still has a big potential although it is very challenging for scientists, farm advisors and farmers. It is less competitive thank technical or technological innovation. The productivity gap between organic and conventional farming will therefore increase in the near future. Social innovation is often described as reactivating traditional knowledge, improving site specific knowledge and adaptation, mutual learning among farmers, cooperation and synergies among farmers, new farmer-consumer-citizen cooperation, using modern ITC technologies for knowledge sharing and marketing etc. Innovation in conventional farming is the successful application of results and findings in all relevant scientific disciplines. In order to improve organic farming, a clever and thoroughly attuned combination of social and technical innovation might be the solution. Most organic scientists work either on practical problems of farmers or on the public goods provided by organic farmers. Farmers are frustrated about science because new solutions and recommendation often take a lot of time and are not easily applicable.

Vanaja Ramprasad

What keep farmers from converting to organic farming?

Perspective from the South

The whole certified market driven organic agriculture has penetrated into the south but with some clear differences.

In the western world certified organic agriculture seems institutionally embedded in civil society and is facilitated through public policies while in the southern hemisphere OA is grafted upon small holders by agents mostly serving external demands.

This is followed by the fact that the small holder farms are unable to meet quality, safety, packaging and labeling standards of the “supermarket revolution” from where the demands for the organic products originate. Under such conditions farmers in the developing countries who expect higher returns from the market are unable to involve themselves in the conversion to organic farming.

Besides countries where the green revolution was promoted still believe in the subsidy for chemical fertilizers and similar inputs for agriculture. **Subsidies for chemical inputs are a major deterrent for farmers in poor conditions to convert to organic farming**

In this context sustainable management of soil ecosystem through organic residue manipulation becomes an important concern. Organic farming has often been interpreted by the lay public and even by a large body of scientific community as replacement of inorganic fertilizer with organic manure application. This leaves us with a vacuum in the technology approached ranging from fallow management practices in time, agroforestry systems, composting technologies, in situ soil management through enhancing soil biodiversity along with organic residue application.

In the Indian context what deters farmers from engaging in organic agriculture, there are three scenarios.

There are farmers who are farming with intensely managed “Green Revolution” driven monoculture production which is also focused on the market. The states of Haryana and Punjab are a case in point Here the natural resources are depleting rapidly. Farmers are faced with the challenges of buffering mechanisms in the landscape to cope with the ill effects arising from natural resource degradation and rehabilitation of the natural ecosystem.

Secondly a major section of the rural population working outside the green revolution model struggle with traditional monoculture production systems which is dependent on tree cover that is depleted and complex interactions with the disappearing animal husbandry and the resources recycled from these two resources.

There is the third sector of 15 percent of the population living in the upland areas with complex agro ecosystems also operating under difficult ecological and socio economic circumstances.

It is obvious that each of the models offers challenges for the farmers to manage their organic resources. And convert to organic farming

When do organic farmers exhaust their eco intensification strategies and need innovative ideas? Where should research investments be made?

Eco intensification has an impact on the Ecological indicators like: land use and land cover changes, biomass quality and quantity, water quality and quantity, and soil fertility; energy management becomes the key measure for achieving the best in terms of the desired objectives.

Land use and cover change: any conclusion that suggests land degradation in the long run is obviously not sustainable.

Biomass quality and quantity: The quality of biomass generated on the land (biodiversity), and the quantity of biomass generated through rehabilitation measures of a given ecosystem, is equally important indicators. We need quality and quantity of biomass for multiple uses, for ecosystem integrity as well as sustainable use by humans.

Water quality and quantity: Any land use and cover change, and indeed any land-based human activity, if unsustainable, may be reflected in ground-water recharge and the water quality. Monitoring this through sequential recharge characteristics of the system and/or monitoring water quality in rivers, ponds and lakes in the area would immediately give an idea as to the sustainability of a given developmental pathway chosen.

For that landscape. *Soil fertility:* Sustainable management of soil fertility implies the effectiveness with which one is able to maintain soil fertility by strengthening internal biological processes within an ecosystem, within the soil profile and above the soil, and thus minimize energy subsidies through inorganic fertilizers. The less the energy subsidy, the more sustainable the soil fertility management becomes.

How does knowledge reach farmers? What promising traditional and modern capacity building approaches exist? Are there innovative ways of facilitating transfer of knowledge and experience?

A variation of the individual-based approach in extension is the acclaimed Farmer Field Schools (FFS) model. The FFS model enables farmers to improve their decision-making capacities through weekly “informal schools” in which a small group of farmers observe and evaluate possible agricultural interventions on one individual’s farm. The FFS model is claimed to have

spread the adoption of Integrated Pest Management (IPM) practices in Asia by graduating more than four million farmers in 50 developing countries [9]. The evidence suggests that the social value of the informal schools contributes greatly to the success of this model, although there are lingering questions about its fiscal viability.

It is in this context that the Digital Green, a technology-supported means of agriculture extension. Initially inspired by a project called *Digital Study Hall* that seeks to improve primary school education in rural India, we use video as a basis for disseminating agricultural practices. The components of Digital Green are (1) a participatory process for content production, (2) a locally generated digital video database, (3) a human-mediated instruction model for dissemination and training, and (4) regimented sequencing to initiate new communities. The use of video for agriculture extension is by no means new, and DG was inspired by a number of different projects. These can be broadly categorized as IT for agricultural development, video in agriculture extension, and mediated instruction for effective training with video (related work will be discussed in a later section). DG weaves together the best of these three strands of work into a novel system that maximizes the impact of agriculture extension workers. Among its unique strengths, the DG system uses cost-realistic technologies, like TVs and DVD players, to build the capacities of farmers to be able to better manage their agricultural operations. The video-based content improves the diffusion of better farming practices and reduces the expert support required for each farmer. The videos are localized to a region and feature the participation of familiar farmers, as opposed to experts in idealized conditions.

The more critical aspects are how video is used and how it capitalizes on natural social dynamics to amplify a single extension worker's ability to evangelize agricultural practices. Village-level mediators facilitate the showing of these videos to ensure that farmers personally connect with the content on a regular, accessible basis.

The methodology that was used to arrive at the overall Digital Green system is described below.

How can processors and traders better support farmers to build resilient and productive systems based on the organic principles and standards?

THE answer to the above question is subsumed in the certification processes that have been set in place.to enhance trade

The two that have been in vogue are the organic certification and the fair-trade certification. Fair-trade pros and cons tend to focus on the benefits of the farmers, while organic certification tends to focus on the impacts on the environment. Fair-trade certification ensures that farmers in developing countries are paid fair prices for their products. This is accomplished through the buyer and seller, and therefore eliminates the middleman

Fair trade is an organized social movement whose stated goal is to help producers in developing countries achieve better trading conditions and to

promote sustainability. Members of the movement advocate the payment of higher prices to exporters, as well as higher social and environmental standards. The movement focuses in particular on commodities, or products which are typically exported from developing countries to developed countries, but also consumed in domestic markets (e.g. Brazil and India) most notably handicrafts, coffee, cocoa, sugar, tea, bananas, honey, cotton, wine,[1] fresh fruit, chocolate, flowers, and gold.[2] The movement seeks to promote greater equity in international trading partnerships through dialogue, transparency and respect. It promotes sustainable development by offering better trading conditions to, and securing the rights of, marginalized producers and workers in developing countries.[3]

Cons of Certification

There are also some drawbacks of certification. Different organizations have their own particular understanding of what fair trade entails.The market share of certified products is less than 1% This is due to the fact that price, quality, convenience, and brand familiarity are the most important factors for consumers when making a purchase and thus consumers are reluctant to purchases these products. This view also argues that market share is so small that it really is not having a large effect on the entire process. Additionally, the argument here is that fair-trade and organic farmers could make more in a free market because they can sell to a larger audience. The important fact to be considered here is the high cost of certification both in organic and fair-trade.

In a country like India there is scope for organic certification which has been fulfilled by the PGS (group f NGOs coming together) Yet it has to be recognised by the govt Similarly there is scope for Fairtrade within the country where the disparity between the rich and poor is growing .it need not be a fair-trade for export exclusively.The prohibitive costs of registration by international fair-trade organisations is simply unaffordable .If a combination of organic and fair-trade certification can be promoted, it will be a great boon to the small farmers who are producing food for the market.

I hope we can give ample space for discussion and ways to identify how fair-trade can be Implemented for local markets.

How can research become more attuned to farmers' problems?

Research can be attuned to farmers only when they actively participate

What is participatory action research?
As a tool for evaluation, participatory action research (PAR) works in
Two important ways: it produces evidence about an ongoing process
Of change, and it promotes learning among the people closest to the
Change. PAR can help ignite a cycle of inquiry that is participatory,

Participatory action research
Committed to action, and attuned to the demands of rigorous research.

In China: Using PAR to cross-fertilize knowledge between farmers and scientists.

The highlands of southwest China are believed to be one of the first places in human history where maize was cultivated, despite the region's varying and often difficult growing conditions.

Through the generations, the challenges of their local conditions have forced poor farmers to preserve a high level of genetic diversity in corn seed, a "bottom up" diversity whose importance to the future of China's maize cultivation some scientists are coming to see as vital. But to improve food security, the country has developed a "top down" system of seed production and supply, producing a small number of scientifically hybridized maize strains that are particularly suited as high-yield crops for the fertile north and promulgated by the government in a formal "extension" system throughout the country. As China has opened its market-driven economy in recent years, profit motive has accelerated the formal system.

This formal system has not necessarily benefited the rural southwest highlands. "High yield means high input" of fertilizer and other maintenance, said the lead researcher of a PAR project to partner modern breeding scientists with farmers using generations-old "informal" systems that preserve genetic variety. In a written report on the project, a program officer noted "poverty remains persistent" in the southwest, "in particular affecting women and households headed by women," and "rapid growth . . . goes hand-in-hand with increasing natural resource degradation."

As the report explained, the project "set out to identify and assess ways of mutually beneficial partnership between the formal and informal systems in maize crop development specific to the southwest region." Misunderstandings between local farmers and representatives of the formal breeding system were the norm. The researcher characterized the beliefs of formal breeders, who had little personal knowledge of the highlands:
"The farmers are stubborn. Why won't they accept our high yield seeds?"
To build a team, the researcher had to find "common interest." In an early step, she brought a national breeder for a first visit to the mountain region. "He was so touched," she recalled.

"How could local farmers bring fertilizer into the mountains?" He also recognized that local maize breeds were important to the preservation of biodiversity. For their part, local farmers saw value in improving their varieties and possibly selling their own seeds.

The team that was developed included the researcher, national and provincial breeders, local "extension workers, the formal system to serve as facilitators, and, importantly, five women's farmer groups from six local villages. (Men, many of whom had mitigated to the cities, joined later). According to the program officer, the project has aimed for "empowerment through knowledge."

Team members reported that they wanted to improve the livelihoods of women and men farmers, building their abilities to manage agro biodiversity and sustain the development of crops.

Farmers learned new breeding techniques that are appropriate to their fields and complementary to those used by government breeders. Team members decided consensually on the breeds to be tested and the characteristics they saw as important, such as drought resistance, high yield, and the self-saving of seeds. Participants came together to evaluate and vote on varieties during the cycle of each harvest season.

Some of the hard science accomplishments:
From several dozen local maize varieties, farmers selected three — taking into account “agronomic, cultural, and economic” factors — for use in ultimately successful formal trials in neighborhood villages.

Several varieties from outside the region have been locally adapted, and local varieties have been improved collaboratively. Women farmers produced an improved variety, both robust and flavorful, that has been “tested and certified by the formal breeding institution” and is used throughout the project region. One of the measures of greatest success, according to the researcher, has been that China’s “institutional approach has been changing to a more collaborative approach.” “Farmers used to be passive receivers,” she said. “But now they have a platform through the project and their community organization. They speak out more and are listened to.”

At the policy level, the Ministry of Agriculture will include participatory approaches in a pilot project to reform the national extension program. And locally, farmers have organized several “diversity fairs,” at which they plan to sell their own seeds.

Veronique Chable[2]

Short biography: I have been a researcher for 30 years at INRA, the French Institute for Agronomical Research. I have worked at the Genetic and Plant Breeding division for 16 years and from then so until the present, in the Science for Action and Development division. Since 2001, I have been involved in organic agriculture programmes and I began the first experience of participatory plant breeding (PBB) for organic farmers in Brittany (France). When the EU Regulation 1452/2003 requiring the use of organic seed for planting went into force in 2004, organic seed professionals were not ready to fulfill the demand. Thus, I met organic farmers and their organisations to initiate several PPB projects and to create seed associations. Currently, about 30 species are concerned in France, mainly arable crops and vegetables.

I then initiated and built several projects in participatory research for organic agriculture with diversified forms of funding (regional, national and European programmes). The main programme that I am currently coordinating is a European Large collaborative project, SOLIBAM (Strategies for Organic and Low Input Integrated Breeding and Management). It began in 2010, for a duration of 4.5 years with 23 organizations involved in Europe and Africa. SOLIBAM has been developing plant breeding and crop management approaches to answer to key adaptation bottlenecks of organic and low-input agriculture in several agroecological conditions to increase crop performance and best adapt cultivated plants to environments. Farmers, users and researchers are full partners in the development of new methodologies and concepts, all based on diversity.

Recently, I have been involved in the EIP AGRI Focus Group Organic Farming of the European Commission, a group of selected experts (researchers, farmers, advisers etc.), which explore practical innovative solutions to problems or opportunities in organic agriculture performance.

Description of the ideas about the session and the answers to the leading questions

All suggestions to the following questions come as much from my experience within participatory research programmes as from my commitment and time spent in organic farms and associations involved in informal seed network development in France.

What keeps farmers from converting to Organic agriculture?

The slow development of organic agriculture originates both from (1) the conversion from conventional farming to organic is difficult because of technical reasons (i.e. lack of adapted varieties) or/and of lack of market and of well-informed consumers and (2) little to no access to land for farmers

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[2] Research Engineer INRA (Institut National de la Recherche Agronomique), Sciences for Action and Development Division

(mainly young people) with strong commitment to develop new agroecological systems.

When do Organic farmers exhaust their eco-intensification strategies and need innovative ideas? Where should research investments be made? **How can we imagine that organic agrosystems might be optimized with varieties selected and animal breeds bred for conventional conditions for nearly one century?**

First of all, we have to determine the meaning of eco-intensification in organic conditions. How can the efficiency of an organic farm be measured? Research investments, which aim at optimizing performance in organic agriculture, should consider the “agro-eco-system” as a whole. Optimizing yield also implies dealing with the stability of yield and the sustainability of soil management. The performance of a crop in organic systems very much dependent on all the services brought by a healthy ecosystem. Moreover, consumers of organic products are very interested in quality (nutritional and sensorial qualities), which is often antagonist to quantity.

Research investments are emerging and are implying paradigm evolutions and new methodological approaches. They will help to understand how agricultural systems interact across different scales. Each question should consider interactions with ecological, agronomical and socio-economic domains. Researchers have to manage analytical approaches in a multidisciplinary context, going towards “a global approach”. In our SOLIBAM project, we aimed to propose “strategies” to combine plant breeding and crop management trying to consider overall food systems.

How does knowledge reach farmers? What promising traditional and modern capacity- building and extension approaches exist?

The question can also be: How does knowledge reach the researchers? « Is it rational in such a subject as agriculture to attempt to separate science and practice? » said Howard, pioneer of organic agriculture, in his Agricultural Testament in 1943. Thus, in participatory projects, our aim is that farmers, users and researchers become full partners with full decision-making power in planning, implementation, monitoring, and evaluation. Organic agriculture is based on tacit knowledge. Considering that most of traditional know- how had been forgotten and that current scientific knowledge, concepts and methodology are not adapted to the complexity of organic agriculture, collaboration should be organized at all levels between the stakeholders.

Are there innovative ways of facilitating transfers of knowledge and experience?

Participatory research associates knowledge and experiences among researchers, processors and farmers, but the a long period of communication is needed to establish a common vocabulary. Outside the research groups, dissemination needs to be organized between researchers to reinforce transdisciplinarity, between farmers to link the local experiences, between organic stakeholders and all citizens to develop the organic sector and the

commitment to protect our environment. The important question is now how to support the financial cost of the collective actions. Their financial support is not sustainable in the long term and will be a societal challenge.

How can processors and traders better support farmers to build resilient and productive systems based on the organic principles and standards?

For organic agriculture, all technical and socio-economical issues need specific and local solutions. As participatory research favors local technical solutions adapted to local environments and farmers' practices, can processors and traders participate in the localization of markets?

How can research become more attuned to farmers' problems?

Most of the researchers currently involved in participatory processes are isolated; they are engaged in societal transition, and promote a scientific culture based on diversity. The organization of public research institutions has favored the enlargement of teams, increased specialization and the evaluation of researchers by the number of publications achieved. Today, many actors in society call for a radical change. This call was relayed by International Assessment of Agricultural Science and Technology for Development (IAASTD) in 2008: after a 4-year process that involved over 400 international experts, a reorientation of agricultural science and technology towards more holistic approaches has been recommended.