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FARMING MATTERS

Small-scale agriculture for a sustainable society

Insects on a farm

Friends or foes?

- Insect conservation
- Preparing for Rio+20
- A new section on agro-biodiversity

CALL FOR ARTICLES

Farmers and their organisations

All over the world farmers work together, in both formal and informal settings. Collective action can help farmers to have their voices heard in the political and commercial arena, to minimise risks, to strengthen their capacities and to secure property rights – all extremely challenging things for individuals to achieve working alone. By grouping together, farmers can build strong track records which can help them obtain financial support. Farmers' organisations can be instrumental in buying, selling or processing agricultural products in bulk – and they can do this in a sustainable way. Farmers' organisations can play important roles in developing supply management schemes and various income insurance programmes. Farmers can learn from each other, about production, marketing, rights, etc., and join a platform to learn about others' experiences. As a group, farmers can exercise more political pressure for change.

Yet, even though there are many potential benefits for small-scale farmers who become organised, the logistics and governance of farming organisations can be problematic. Farmer organisations do not automatically benefit everyone in the community: are they, for example, open to everyone, including female farmers? The UN has declared 2012 the International Year of Co-operatives – a common type of farmers' organisation. *Farming Matters* will also pay special attention to farmers' organisations in the September issue. In what different ways do farmers organise? What problems exist in farmers' organisations and how are these dealt with?

Please visit our website and leave your suggestions, comments and ideas on articles for this issue. Articles for the September issue of *Farming Matters* should be sent to Jorge Chavez-Tafur, editor, before June 1st, 2011. E-mail: j.chavez-tafur@ileia.org

Water, and more

Lekitatu, a village near the northern Tanzanian city of Arusha, is known for its paddy fields. These days, up to 6 tons per hectare are harvested twice a year from more than 400 hectares – significantly higher yields than the 1.5 tons/ha which were common a few years ago. This is largely the result of the regular availability of water which, in turn, is the result of the River Basin Management Smallholder Irrigation Improvement Project (RBMSIIP) and of the efforts of the local farmers' organisation. Vincent Hugo is one of the members of this organisation: the UWAMALE Irrigators Marketing Cooperative Society Ltd. Starting with 15 members in 1997, the Society now has 175 farmer members, all of whom work to maintain, rehabilitate and expand the irrigation infrastructure. The Society's objectives extend beyond irrigation, and it also provides the necessary support for all the members to market their products. As no financial institution is willing to give them loans, members are now seeking to establish a local Savings and Credit Cooperative (SACCO). Working together with projects and programmes, such as those run by the Hope Empowerment and Development Organisation (HEDO), a local NGO working in the area, they are sure to be successful.

Text: Eunike L. Kuzwa Photo: Jorge Chavez-Tafur

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AND MORE

The bees' message to Rio

Ask a person (a farmer, an agrochemical vendor, an extension worker or a scientist) what she thinks of the role of insects in agriculture, and you will quickly learn about that person's perspective on agriculture and ecology. Fear of insects is widespread, and based on an incomplete or distorted understanding of what insects do in an agro-ecosystem. This fear has been fuelled by agrochemical companies, the global seed industry and more generally by the type of thinking that underlies modern "industrialised" agriculture. Small-scale farmers have been made to believe that all insects are evil creatures and that the only effective way to deal with them is to kill them all by spraying them with pesticides. Or by using genetically modified seed that has an in-built resistance to certain (but not all) insect pests, such as Bt cotton. Modern agriculture has estranged farmers from their natural environment, and from their own knowledge about this environment. This is one of the main causes of increasing impoverishment of small-scale farming communities around the world.

This is why knowledge about insects is important. Knowledge about agro-ecosystems – the crops and their larger environment – empowers farmers to think beyond short-term solutions. Insects show us how all parts of the system are interconnected and how deadly the consequences can be if we unnecessarily tamper with them. There are effective ways to deal with pests and diseases that do not destroy ecosystems but work with them. They are well-known but do not get sufficient policy support.

The message to be taken to Rio+20 is that a "green economy" can only exist with an agriculture that respects people and ecosystems – including insects! Einstein (quoted in this issue of *Faming Matters* by John Wightman) had it clear when he said that "the bee is the basis of life on this earth."

It's time to think, and to act. Now.

Edith van Walsum

Edith van Walsum, director ILEIA

Agro-biodiversity @knowledged

Hivos people unlimited Oxfam Novib

Biodiversity is important for the resilience of our planet. Smallholders depend on biodiversity for their livelihoods and survival, and they are its main guardians. Farming practices which use and enhance this diversity are common, yet agriculture can also be the greatest destroyer of biodiversity. Can we add insights and evidence to the debates?

This is the basis of a knowledge programme that has recently been started by Hivos and Oxfam Novib. It aims to develop concepts and ideas about agricultural biodiversity, smallholder livelihoods and climate change, building on and adding value to existing resources, and also leading to change. This is a three-year programme that includes action research, network development and the establishment of a platform for public debates.

Preparatory steps Over the past few months, the Stockholm Resilience Centre has been working to provide us with an overview of the theory and praxis with regards to agro-biodiversity and smallholder resilience, and to identify possible knowledge gaps. One of their main observations was that farmers' knowledge and experiences in agricultural biodiversity have not (yet) been adequately translated into the policies and strategies relevant to development organisations working in the South. A related constraint is that existing policies are often perceived as inadequate, or even conflicting, while the lack of technical knowledge was rarely mentioned as a constraint. The outcomes of this initial exercise were discussed at a workshop in Kenya, which sought to identify areas where improvements could be made. One image that emerged from the discussions was that of a "glasshouse" that is limiting the scaling up, institutional embedding and horizontal extension efforts of an approach to agriculture that promotes biodiversity and resilience.

Can we break through the walls and the ceiling of the glasshouse around agro-biodiversity? During the coming three years we will share experiences, information and knowledge around this topic, and develop a network of experts and practitioners. As part of this programme, the next 8 issues of *Farming Matters* will carry provoking articles, challenging debates, opinion pieces and general information, for which we welcome your contributions. You can post your ideas and comments on our website, or send an e-mail to the editor (j.chavez-tafur@ileia.org), to Gine Zwart (prd@oxfamnovib.nl) or Willy Douma (w.douma@hivos.nl). In 2014 we will invite you to join us in harvesting the results, with a full issue of this magazine.

Academics and practitioners, participants at the first knowledge programme meeting. The meeting was hosted by PELUM at the SACDEP Training and Conference Centre in Thika, Kenya.

Farming Matters welcomes comments, ideas and suggestions from its readers. Please send an e-mail to ileia@ileia.org or write to P.O. Box 90, 6700 AB Wageningen, the Netherlands.

Regional food systems

I was really delighted to read the September issue of *Farming Matters*. All the articles in this issue made very good reading: I really liked reading about food sovereignty and food security in the context of a globalised food system. I see many good reasons for developing and strengthening local farming systems, producing multiple local crops and avoiding monoculture patterns. This seems better than introducing foodstuffs, which almost always seem to disturb and destabilise culturally sound food habits, and introduce a large degree of vulnerability into the food chain.

Giridhar Kinhal, Sustainable Livelihoods and Poverty Reduction Programme, International Center for Integrated Mountain Development (ICIMOD), Kathmandu, Nepal

Land grabs 1

The themes and scenarios outlined in the different sections of your December issue are visible in our country, where there is a myriad of problems concerning land ownership – including land grabbing by powerful actors and insecure land ownership. A new escalating scenario is currently emerging: big chunks of land are being sold or leased to big multi-national companies for tourism and horticultural enterprises and the local population cannot see the social, economic or environmental benefits. This problem is especially affecting our area, the Laikipia district (in the Rift Valley Province), a semi-arid area where many "invaders" are taking advantage of the local population and seizing their land through cheap transactions. Let me pay tribute to your magazine for highlighting these problems.

Bernard Nderitu Kamwaro, Nanyuki, Kenya

Land grabs 2

As a long time reader of *Farming Matters/LEISA Magazine* I am very much concerned about the recent trends in some countries in the tropics, where large-scale businesses are invited to "develop" a region with large-scale plantations or with timber and mining operations. Unfortunately, this is also the case in Indonesia, but it is not a new development. The "One million rice farms" scheme was started in 1994 in Kalimantan and has been going on since then. Though officially meant to assist small-scale farmers, this has been a way for timber companies to obtain cheap wood, and has resulted in thousands of traditional farmers being evicted from their land and the loss of more than one million hectares of traditional forest on peat lands.

A number of similar schemes were recently announced, following laws which promote the development of mining, large-scale farming and timber industries – but which will give no benefits to the traditional population of these areas. Implementation of these schemes will again lead to the eviction of many traditional farmers from their lands and to large-scale companies making huge profits. Most surprising is that these new laws are all in conflict with the Agrarian Law of 1960, which protects the rights of traditional rural societies in Indonesia to work on the lands of their ancestors.

Charles van Santen, Bogor, Indonesia

Rio+20 section

Your website information on the coming Rio conference is very relevant to the work I am doing in Northern Ghana. I am happy you have included the implementation of financial mechanisms to support "green economy" initiatives. Sustainable initiatives are not just happening in the Western world, but also on the ground here. There are several projects encouraging the usage of new sustainable agriculture practices and technologies which are as effective, if not more so, as other practices used. Yet at the same time there are other projects that often contradict these initiatives, confusing small-scale farmers about which practices they should best use. Hopefully soon we will see some more co-ordination and consensus.

Siera Vercillo, Engineers Without Borders (Canada), Kpandai, Northern Region, Ghana

It's the economy…

Your magazine reaches me regularly. It is very thoughtful and it helps us professionals who work in agriculture. But would you consider adding materials related to co-operatives and also about economic issues? According to our government, yields are high and we are exporting lots of agricultural products. But all we see is huge scarcities everywhere. How can we make sure that macro-economic policies benefit farmers? And how do we cope with very high inflation rates?

Degu Assefa, Debre Tabor, Ethiopia

Insects, farmers & farm-management

Insects can be seen as one of the many components of an agro-ecosystem. Yet farming has a strong influence on the population balance between different insect species: it helps some multiply exponentially by increasing the quantities of a species' preferred host, or reduces their presence with the use of pesticides. Alternative agricultural approaches show that farmers can also manage a farm in a way that combines a stable diversity of species with high yields and production levels. Insects do not just "combine well" with high yields: a larger insect population can actually help achieve these objectives.

Text: Luis L. Vázquez Moreno

Insects are closely related to many different human activities. Among these, agricultural production is probably the one that gets most attention, as insects can cause significant losses. Millions of dollars are spent every year in order to minimise the presence of insects in the field and avoid such losses. However, farmers are usually unaware of the huge diversity of insect species to be found on their farm, and their functions within the agro-ecosystem. Most farmers react to insects by looking for ways to eliminate them. This simplistic behaviour has contributed to the ever-growing use of pesticides, with all their attendant side-effects. The need to "control" the presence of insects is also one of the main arguments used by those promoting GMOs. Insects play many different roles within an ecosystem: some are phytophagous species, others pollinate crops, other species feed on detritus. Farmers are most familiar with the phytophagous species. Yet only a small part of all phytophagous insects (less than 3%) occur as pests; the rest are regulated naturally by entomophagous species and entomopathogens and other natural factors. All species are linked to each other as part of a complex food chain, and have different relationships with each other, acting as parasitoids, predators and hyperparasites. As a result, in a natural ecosystem, the population of the insects we think of as pests is generally kept in balance, and remains stable. In contrast, in agricultural systems involving a high degree of human modification, this natural balance is disturbed and lost, with some phytophagous insects coming to predominate.

From insects to pests – and back

The intensification of agricultural production has been the main reason why some insect species have become pests. This occurs through a co-evolutionary process, driven by two main factors. First, the reduction of a farm's biodiversity, with one crop (or only a few species) being grown over large areas, often year after year. This provides the perfect environment for one or a few species of insects to thrive. Second, conventional agricultural production helps drive the evolutionary selection of new populations of phytophagous species, as the use of pesticides, fertilizers or the soil preparation system,

gives rise to populations that are tolerant and resistant to these external factors.

The increasing difficulties that farmers face in "controlling" insects could be the best argument for a drastic change in the world's agricultural production systems. An alternative approach, however, should not just seek to minimise the damage caused by pests, but rather to enhance all ecosystem services in order to achieve higher and more sustainable yields. Thus, there is a need to "unlearn" the old approach of "protecting" or "defending" crops by focusing on pest control, and to adopt an approach that looks at the system, the interactions that take place within it – and the benefits that farmers do, and can, get from insects.

Insects play a very important role in every farm system. Bees and apiculture are perhaps the best known example. Honey is produced and consumed throughout the world, and this contributes to the income of millions of farmers and the diets of millions of people. Bees also are important pollinators. As Sanagorsky (p. 10) shows, bees (and other insects) play a crucial role in the sexual reproduction of plants – something we only seem to acknowledge when it is not happening. Sam Adams (p. 18) describes another role of insects which is generally overlooked: their contribution to improving the soil. Again, this may be difficult to quantify, even if there is no doubt that better soils directly contribute to higher yields. As predators and parasites, insects also play a key role in controlling the populations of other insects.

Helping those who help us

Acknowledging the many benefits that insects bring is the first step. But farmers, together with many other professionals, can help ensure – and increase – these benefits. One widely used strategy is biological control: the selective breeding and release of species that regulate the populations of phytophagous insects. This is widely practiced in Cuba, where there are more than 200 *Centros de Reproducción de Entomófagos y Entomopatógenos* run by the Ministry of Agriculture. These centres produce 9,000 million Trichogramma wasps every year, which are then released (in doses of 30-50,000 individuals per hectare) in order to regulate the presence of pests in pastures, rice, sugarcane, vegetables and other crops. On a smaller scale, there are also production units that breed specific types of parasitoids (Braconidae, Chalcididae, or Eulophidae) and predators (Coccinellidae, Anthocoridae or Reduviidae) that can be released to control various insect pests. Some farms have "on-farm reservoirs", a source where insects can be collected and taken to other fields. For example, the remains of banana plants are used to encourage the multiplication of colonies of a predatory ant (*Pheidole megacephala*), which are then taken to sweet potato or banana fields. A recent survey found that such reservoirs are used to protect some 16,000 hectares of these crops, reducing the presence of two of the main pests that attack these two crops.

It can be equally beneficial to simply encourage the presence of a wide variety of insect species within a farm by paying attention to factors such as the presence of weeds. Often maligned, weeds can play a positive role on a farm by regulating a farm's microclimate and reducing soil erosion. They can sustain large populations of phytophagous insects, but also their natural regulators, another important role in the cycle. Farmers in the western region of Cuba tolerate the presence of the weed known as "sour broom" (*Partenium hysterophorus*) in their fields, and even encourage it in the borders and other areas, as these plants provide an important habitat for predators of the Coccinellidae family (like parakeets or ladybirds) which feed on several species of aphids. The shrub known as "piñón florido" (*Gliricidia sepium*) serves as a host to seven species of phytophagous insects (of which only one, the bean aphid or *Aphis craccivora*, is a pest) but also hosts 21 species of entomophagous insects, of which 19 are known to regulate populations of phytophagous pests in vegetables and grains. The Ministry of Agriculture's *Programa de Agricultura Suburbana* is thus promoting the wider use of *piñón* as live fences in all urban and peri-urban agricultural plots. These different approaches are further described by Holland (p. 38).

The evidence shows that insects provide many benefits. Isn't it only logical to change the way we look at agriculture and encourage their presence?

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Not minimising the damage, but rather enhancing all ecosystem services. Photo: Luis Vázquez.

Managing for higher yields

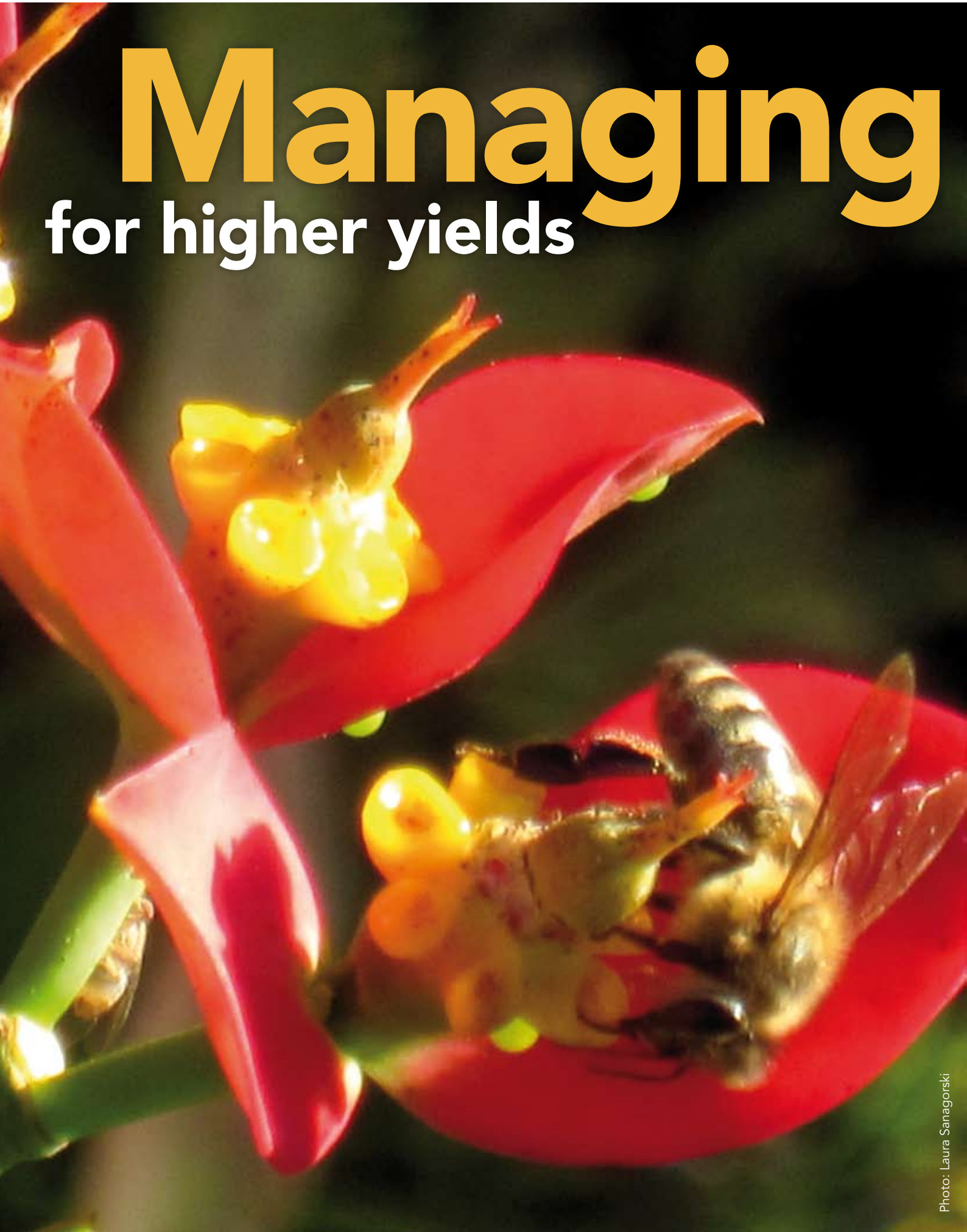

Photo: Laura Sanagorski

We tend to think of "insects" and "bugs" synonymously with words like "harmful" and "pests". However, only a very small fraction of the world's insect population cause damage to crops or harm humans. There are far more insects that can help in some way. Farmers can use techniques to attract beneficial insects to assist with pest management and pollination – and benefit enormously.

Text: Laura Anne Sanagorski

IPM, or Integrated Pest Management, is widely presented as an environmentally friendly and sustainable method. It relies on scouting activities and the setting of action thresholds, which together with regular monitoring, are used to prevent pest and disease outbreaks. Farmers and agriculturalists can use these techniques to identify the risk of pest and disease outbreaks at an early stage, which allows for the use of less toxic and less severe management options. IPM rejects the idea that the mere presence of any insects warrants control measures. IPM incorporates the principle of "managing" the presence of insects, in contrast to completely eradicating them, so that populations remain below a particular threshold level.

As in many other parts of the world, farmers in the United States are harvesting the benefits of this approach. Farmers in the southern state of Florida produce approximately 40% of the tomatoes consumed in the whole country. This high value crop is threatened by very many pests and diseases and has historically been protected by high doses of chemical products. IPM techniques are proving to be a very useful alternative to this. Statistics show that the adoption of IPM in tomato production has led to an 82% reduction in pesticide usage. More surprising, however, is that the farmers have seen their yields increase from an average of 29,000 to 36,700 pounds per acre in just 8 years. This increase is directly related to this more sustainable approach and to the resulting biological diversity.

Planting diversity

Diversity refers to the variety of plant species, types, and ages within an (agro)-ecosystem. Plant diversity adds stability to an agro-ecosystem. The more diverse an agricultural system is, the more resistant it is likely to be to the damage caused by pests, diseases, or severe weather. We know that monocrops are risky in many ways: some of the most severe disasters in agricultural history have been the result of plant monocultures. Consider the Irish Potato Famine of the 1840s. The particular variety of potato that was so widely planted and so heavily depended upon as a food source was a vegetatively-propagated clone. Each potato plant was genetically identical, and the lack of genetic diversity meant that there was no resistance when potato blight began to infect crops throughout the country.

Planting one single crop may seem, at first sight, to be the most productive and profitable option. But most pests prefer a single specific plant host, so diversity can reduce the amount of damage that they can do. Equally important, plant diversity has the added advantage of attracting beneficial insects. Diversity in crops provides more plant types with more blooms at different times of the year, something that attracts a more diverse population of insects.

More bees, more yields

Less than 5 percent of the world's insects are harmful to humans or crops. This means that more than 95% of the

Hand pollination is hard work, expensive, and not really necessary. Photo: Laura Sanagorski

Small but powerful: Braconid wasps on a tomato hornworm. Photo: Laura Sanagorski.

insects killed by indiscriminate management techniques, such as blanket applications of pesticides, are not pests and may even be beneficial. The loss of beneficial insects through such activities is detrimental in different ways. This is particularly evident in the decline of bee populations around the world, a phenomenon known as Colony Collapse Disorder. Researchers believe that this phenomenon is related to some combination of environmental disruption, diseases and excessive pesticide use.

As many other insects, bees are critical to Florida's agriculture. Approximately one-third of all of Florida's vegetable and fruit growers hire pollinator services for crops such as citrus, avocados, watermelons, cantaloupes and squash. This is because honey bees have been shown to increase crop yields by anywhere between 20 and more than 60 percent. Florida's citrus industry benefits greatly from pollinators. Bees ensure adequate fruit size and set, and the citrus blossoms provide nectar that makes for a very high quality honey. This creates a valuable relationship between beekeepers and citrus growers: beekeepers want to raise their bees near citrus groves and citrus growers benefit from the pollination. (Florida has such mild winters that some beekeepers from colder parts of the country overwinter their bees in parts of the state.) Some of

Parasitoids, predators and pollinators

The actual percentage of insects that are considered to be pests is very low: the majority of insects are actually helping farmers, in different ways:

Predatory, or insectivorous insects, eat other insects: pests that would otherwise feed on important crops and plants. Lacewings feed on the eggs and juvenile stages of a number of agricultural pests, such as some types of thrips, mites, whiteflies, mealybugs and the caterpillars and eggs of numerous pest moths. Ladybirds feed on aphids, mealybugs, spider mites and the eggs of some beetle and borer agricultural pests.

Parasitoids live out most of their lifespan "attached" in some way to another insect or being, and ultimately kill their host. The *Braconidae* family, made up of over 1000 species of tiny wasps, represents only one of the many examples: these wasps feed on, reproduce in, and eventually kill some very harmful caterpillar pests that damage agricultural crops, such as hornworms. The female braconid wasp lays her eggs just under a hornworm's skin, rendering it unable to continue feeding and damaging crops. After the wasp eggs hatch, the juveniles feed on the living hornworm. When the juveniles are ready to become adults, they will chew their way out of the hornworm and spin cocoons that protrude from its body. Once the adult wasps emerge from their cocoons, the hornworm perishes.

A number of insects, including different types of bees, butterflies, wasps, and some ants, are responsible for pollinating plants around the world. They transport pollen from the male stamen of a flower to the female pistil of another flower on the same plant or another within the same species, allowing for the combination of genes, fertilisation, and sexual reproduction. Some plants, including at least one-third of the world's agricultural crops, and an estimated 90% of all flowering species, are reliant on pollinators. It is a mutually beneficial relationship that ensures the survival of both plants and insects. Plants rely on pollinators to ensure reproduction, fruit set, and seed dispersal. Pollinator insects rely on plants for food and habitat.

"Managing" the presence of insects should not be limited to those species we recognise as pests.
Photos: Don Rice / Laura Sanagorski.

Florida's citrus varieties, such as Mandarin and Pummelo Orange, are self-incompatible, meaning that they require cross-pollination. Bees are the most reliable, economical, and efficient method of pollination for these varieties.

A blanket application of a pesticide can actually make a pest infestation worse if it also kills the pest's natural enemies alongside the pest, as the absence of predators gives the pest an opportunity to re-infest a crop. But there are even greater risks, as farmers in the Chinese province of Sichuan have found out. The use of pesticides has led to a drastic reduction of naturally occurring insect pollinators, something that in turn has created the need for them to hand-pollinate their crops in order to achieve a satisfactory yield. It can cost a farmer eight times more to produce hand-pollinated fruit than insect-pollinated fruit. And it is difficult for farmers in this area to rent bee colonies for pollination as beekeepers are wary of relocating their bees due to the high use of pesticides in the vicinity.

The same fear is sometimes felt by producers and consumers in Florida, where bee populations are also threatened by the overuse and misuse of pesticides. Millions of bees died rapidly and mysteriously in September 2011. The cause was later found to be the misapplication of a pesticide commonly used around homes. Everyone is affected by the loss of pollinators; yet this is avoidable.

Managing habitats

While IPM practices can bring many benefits, "managing" the presence of insects should not be limited to those species we recognise as pests, nor to the (reduced) use of pesticides. Different species of flowering plants can be established among or close to crops to attract beneficial insects. The provision of plentiful nectar will attract beneficial insects and increase their lifespan and the number of offspring they produce. This means more pollinators, higher crop yields and more predator and parasitoid insects that help reduce the presence of pests. Even a simple patch of undisturbed land, allowed to remain in its natural state next to a cultivated field, can attract and nurture populations of beneficial insects of all types. There are many opportunities to protect and attract beneficial insects in agricultural operations, regardless of a farmer's location. It is our responsibility, as stewards of our planet, to participate in the sustainable management of pests and beneficial insects. In return for our stewardship, we can enjoy the assistance that beneficial insects afford our agricultural operations.

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More information

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"We need to convince civil society of the urgency for a radical transformation"

Twenty years after Rio de Janeiro was the stage for the United Nations Conference on Environment and Development, the world's gaze returns to Brazil for the Rio+20 Conference in June this year. The sequel to this first international meeting on sustainable development may well have important implications for the future of family farmers. Jean Marc von der Weid founded and works with AS-PTA, a non-governmental organisation based in Rio, supporting capacity building and institutional policies in favour of family farming and agro-ecology.

Interview: Laura Eggens

Even though Rio+20 holds many promises for changing the world's perspectives on sustainable agriculture, it is important to remain realistic about the limited possibilities of it leading to serious political commitments. Jean Marc von der Weid is a "Rio+20 realist" – he does not expect much from the official meeting, but he is very positive about the political impacts that civil society mobilisation can have on international public opinion, "with positive effects in the medium to long term".

How are the preparations for Rio+20 going?

Preparations in Brazil are progressing at a snail's pace. The facilitating committee is too large and has strongly conflicting views. One group of organisations gives more importance to lobbying government representatives, and are more receptive to some of the "green economy" proposals. A second group is more focused on organising external demonstrations to denounce the anticipated failure of the official conference. This group is looking to mobilise opinions around the issue of peoples' exclusion from development and the negative impacts of development. A last group rejects the whole framework of the official document that will provide the basis of discussions at Rio+20. These organisations criticise the document's inadequate diagnosis of the causes of the multiple and interrelated ecological crises. They denounce the "green economy" proposition as a lure to make people forget about the promises made at the 1992 conference that were not kept. This group criticises the very concept of development and proposes alternative pathways and policies to change the present situation.

How did the 1992 conference influence small-scale farming?

I think that conference consecrated the concept of sustainability, even though the definition of the concept is still subject to intense debate, with everyone, from Monsanto to *Via Campesina*, considering they have the right take on it. From a practical point of view, since 1992 there has been a strong expansion of industrial agriculture, with more use of pesticides and chemical fertilizers, as well as the launch of GMOs. The conference did try to address this trend, but most of the decisions taken there to try to control the onslaught of conventional industrial agriculture were eroded at further international negotiations.

What would be your desired outcome from the Rio+20 conference?

"Desires" in this case are more like dreams. We need a clear "anti Green Revolution" resolution, a condemnation of chemical inputs, and most of all, of GMOs. We need resolutions in favour of agrarian reform. We need resolutions in favour of fair trade and food sovereignty. Internationally, in relation to sustainable agriculture and food security, there is a paper signed by some 130 organisations called "Time to Act". Its main message is to condemn conventional agricultural development and push for strong support for agro-ecological development, centred on family farmers. The document seeks to push the agriculture issue to the forefront of the Rio+20 debates as the most important single cause of many of the present ecological crises. I have participated in the formulation of this document and in the discussions in Washington last summer to build a consensus around it. Agro-ecological farming has made great progress, and we can now present hard evidence of its successes, and demonstrate its potential as a solution to the evil effects of industrial and corporate agriculture. However, all these advances cannot hide the fact that family farming is being destroyed all over the world, and that public policies at a national and at an international level have been biased to support unsustainable forms of industrial agriculture. This situation is simply a result of a *"rapport de forces"* or "balance of power". Corporate money, plus government power and policies, plus a supportive international framework (CGIAR, WTO, etc.) have been more powerful than small-scale farmers and the environmental and consumers' movements.

So do we need another Rio conference?

We do need an environmental conference, but not of the kind that is offered by governments and the UN system. Governments and international UN organisations have shown themselves to be unable to implement the dramatic changes in national and international environmental policies that are needed. They have consistently watered down whatever gains were achieved in 1992 in the series of negotiations and conferences that followed that event. I do not believe any amount of lobbying will be enough to bring about the international and national policies needed to promote sustainable agriculture based around family farming and agro-ecology. Civil society organisations in Brazil are divided on these issues, even though my feeling is that most organisations are critical.

What do you believe will make a difference for small-scale farmers?

I guess we may have more success by denouncing the official meeting as irrelevant and convincing civil society of the urgent need for a radical transformation of the present food and agricultural systems. Of course, I don't believe that civil society by itself can substantially change the *status quo*. We need appropriate national and international policies, and as such we need governments and international institutions to act responsibly. However, I think that a change

A step towards greater changes. Photo: Gabriel Fernandes / AS-PTA

in the latter will not occur without a very strong pressure from the public opinion and social movements. It will be hard to succeed in pressing the conference to adopt the needed reforms, but demonstrating against their conduct will be a step for further changes in the future. Unfortunately, I think that the crisis will have to become even more pronounced before the actions needed are adopted. Let us hope it will not be too late.

Do you think that the voices of small-scale farmers will be heard? There has been very little participation of small-scale farmers' organisations up to now. In the facilitating committee there is *Via Campesina* and FETRAF (the National Federation for Family Farming) which both represent farmers. We are missing the biggest (and more conservative) small-scale farmers' organisation, CONTAG (the National Confederation of Agricultural Workers). There are also several NGOs who work in support of small-scale farming, including ourselves, that have not yet been involved in the committee. This can be changed once a clear call to arms is launched by a significant group of organisations. We hope to encourage such a mobilisation. We think that the choice of civil society activities during the conference will provide a starting point for other social movements to identify where and when they can participate. At a national level we believe the farmers' movements will become more engaged as the conference date approaches. As for the international farmers' movements, I don't have a clear view of their intentions. We know *Via Campesina* will gather an international group at a camping site at the People's Summit, but I don't know how big this mobilisation will be. I believe that the most important positive effect of this event will be the education of the general public: publications, like *Farming Matters* and *Agriculturas*, will reinforce our case through examples and studies. This is most welcome.

AS-PTA and Rio+20

AS-PTA is the Brazilian regional partner of the Agricultures Network: they produce *Agriculturas – Experiências em Agroecologia*. Since 1983, AS-PTA has been working to strengthen family farming and promoting sustainable rural development in Brazil through the application of agro-ecological principles.

As a member of the political co-ordination group of the National Agro-ecological Alliance (ANA), AS-PTA is immersed in a dialogue process with the Brazilian government over how to elaborate the National Agro-ecological Policy, an official initiative to be launched during the Rio+20 conference. ANA brings together movements, networks and organisations engaged in the construction of alternative sustainable rural development. AS-PTA and ANA are organising a set of regional seminars around Brazil in order to engage civil society networks and movements in this process. The two organisations are also involved in laying the foundations for the debates about agriculture that will be held at the People's Summit, the side event of the Rio+20 conference. "Our future role will be to co-ordinate the activities around the agriculture issue surrounding the conference at the national level with the rural social movements," Jean Marc explains. AS-PTA and ANA are discussing the launch of an initiative to unite all the organisations involved in the multiple issues surrounding sustainable agriculture and food security and to put together a parallel event just before the beginning of Rio+20.

The outcome will be a document based on an updated and expanded version of the "Time to Act" document. This document will be taken to government representatives, published through various media and (if agreed with the facilitating committee) be presented to the conference. On behalf of ANA, AS-PTA will also contribute to organising the Sustainable Agriculture debate. Paulo Petersen, executive-director of AS-PTA, elaborates: "In coherence with our methodological principles, we will propose activities that will be based on concrete experiences and cases. Our magazines provide a strong voice for our political proposals."

Goodbye bees – and thanks!

Based in Australia, **John Wightman** promotes landscape development and the enhancement of natural control as the basis of sustainable pest management. He has worked on rearranging farming systems across Africa, South-East Asia, and the Pacific.
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Honey bees are amazing creatures. They can navigate, communicate, air-condition their hives, detect and segregate contaminated pollen, repel invaders... and collaborate. They pollinate about 90 kinds of crop plants – and of course there is also the honey. But they are dying by the millions.

I wonder if the teachings of Nobel Prize winner Daniel Kahneman can help us understand what is happening. He highlights an unfortunate facet of our psyche: that we react to challenges or threats in two ways. First is a "fast" response, which basically involves (a) denial *("Oh, that can't be right...")*, (b) doing nothing and hoping the problem will go away, or (c) applying a solution that may have worked for another problem. A second or "slow" response may follow: it is called rational thought. It involves time and effort and the collection and analysis of evidence. Guess which category the majority of decisions fall into.

I have been telling myself that the world population of honey bees just cannot be under threat. Bees are just too important and cannot disappear (= denial). But all the time, more evidence is coming in from all around the world saying "think again". Beekeepers inspect their hives one day and find the bees have gone. What we now call Colony Collapse Disorder keeps on happening. And more location-specific bee challenges keep on being reported: another species is displacing the honey bee across the Pacific Region; there is a beetle from Africa that destroys honey in Australian hives; a "new" bee parasite was reported in California this year.

But what exactly is happening? There are so many "fast" responses. Some say that the parasitic Varroa mite and/or the pathogens it transmits have mutated. Plausible, but these pathogens have been around forever and are not pandemic. *"It must be insecticides"*: the neonicotinoids (such as imidacloprid) are certainly implicated. But these products have been available since the 1980s. Why are they only now having an effect? Hives are often moved long distances to pollinate specific crops. Do the bees get pathogen-induced travel stress? Such bee movements have been "normal" for many years. So it must all be due climate change then...?

Please someone – is there an international organisation that can apply slow response thought processes to integrating a search for global solutions? *If the bee disappears from the surface of the globe, then man would only have four years of life left.* That is what Einstein said, and he was a real slow response thinker.

Mulch
a home for insects

One of the ways in which farmers can protect their soils is through the use of mulch. When the soil is covered with a thick layer of organic matter, it is protected from extreme rainfall, winds or drought. Mulch also serves as a home for insects, helping attract many species which significantly improve soil texture and soil fertility.

Text and photos: Sam Adams

The greatest resource that a farmer has is the soil. It is the soil that gives life. It provides the nutrients for plants to grow, which in turn feed humans and animals. One can confidently say that, without arable soils, human populations would find it impossible to survive. With this in mind, it would be logical to assume that farmers do their utmost to protect their most precious asset. Tragically, this is not the case. Bad farming practices are devastating soils around the world. The long term negative effects of this are yet to be fully realised, but if this continues one can anticipate widespread food shortages.

While ploughing makes the soil easy to plant, it weakens the soil structure. Repeated ploughing breaks the soil down into fine particles, which are easily blown or washed away during wind and heavy rain. Research suggests that Africa is losing soil to this form of erosion at a rate of 30 tons per hectare per year. It is sadly joked that soil is Africa's biggest export. In the United States of America the situation is not much better: researchers have estimated that the annual losses of soil to erosion are worth US$ 300 million. This is no small matter. Erosion is quite literally washing away the farmer's greatest asset. This is where mulch can have a significant beneficial impact.

A significant impact Much of my work involves teaching farmers and home-scale gardeners to use mulch, presenting it as a solution to the problems mentioned above. Running workshops and teaching organic and conservation farming practices in the Cape Town area, South Africa, I challenge farmers to be part of a "mulch revolution". In October last year, we ran our first agricultural academy with nine students from across South Africa. Students saw at first-hand how to prepare and apply mulch, and had discussions with farmers who regularly mulch their fields, and who have experienced massive increases in soil health and therefore in yields and profits.

So what is mulch? Put simply, it is the name given to any covering of the soil. Some call mulch "God's blanket" as it can be observed naturally occurring beneath plants and trees in wild areas. Natural mulches are made of straw, grass, leaves, crop residues, wood chips or bark, although some farmers use artificial mulches (such as plastic sheets, which are used by strawberry farmers in the municipality of Stellenbosch). In Khayelitsha and other South Afri-

Joining the "mulch revolution".

can townships, it is common to see old cloths and carpets being used.

In the Cape Town area the hottest months of the year are dry, often with strong winds – some reaching 50 km/h. The Mediterranean climate is a harsh environment for farming food crops. This is why many farmers focus on grapes and olives that are processed into juice, wine and olive oil. Those farmers who decide to grow vegetables and grass crops have a difficult time in the hot and dry summer. On our training farm, as elsewhere, the soil looks like the sand on a beach. This is where mulch is most valuable as it adds mass and body to the loose particles of sand. As it decomposes, we find the soil is full of valuable humus and organic matter. Einstein Sibanda, one of the farmers we work with, comments that mulch *"keeps the temperature equal, so it keeps the ground warm, but not hot… and it preserves the water for a long time in the ground."* The mulch ensures water retention in the soil, as it insulates the soil from the dry wind and hot sun.

An insect reservoir In addition to the benefits generally seen (see box), mulch contributes to farming by repelling certain pests. Snails and slugs, for example, like to crawl along smooth surfaces, such as exposed soil. Covering the soil with dry and coarse mulch, such as crushed shells, oak tree leaves or wood chip, discourages these pests.

In addition to repelling pests, mulch also attracts beneficial insects. As mulch forms a warm, dark and damp

Different benefits

Farmers recognise six major benefits in using mulch. Firstly, mulch protects the soil from erosion. Heavy rain is absorbed by the mulch, slowing down the water so that it can penetrate the soil gradually. This means that more water is absorbed by the ground and to a deeper soil depth. Plants then receive more water. Secondly, mulch protects the soil from temperature extremes and evaporation in hot weather. Mulch insulates the soil from both hot and cold temperatures. By using mulch, farmers can decrease the evaporation rate by as much as 40%, a huge saving.

Thirdly, the mulch protects the soil from "baking" in high temperatures and forming a hard crust. This means the soil always remains loose and friable, making ploughing less necessary. Mulched soil is light and rich in humus and organic matter. Fourthly, as mulch stops light from reaching the soil, it discourages the germination of weed seeds. This means there are fewer weeds to remove from the ground, again ensuring water and nutrients go straight to the crops and that there is less work to be done on the farm.

Fifthly, natural mulches will slowly break down and feed the soil with nutrients, increasing the soil fertility. It is like applying a layer of compost across the soil that slowly releases nutrients to the plants. Finally, mulch attracts insects to the soil, as the insects enjoy the moist warm space beneath the mulch that is rich in food.

Working together towards better soils in Lesotho (above) and Uganda. Positive results are easy to see.

blanket across the surface of the soil, it is an ideal habitat for beneficial insects. Without insects, the mulch would still have a beneficial effect through water retention, but insects play a key role in breaking down mulch, converting it into rich humus and improving the soil fertility, texture and structure. These benefits are clearer when looking at a farm where pesticides are used. Farmers who use chemical pesticides will find their mulch breaks down very slowly, remaining as a separate layer above the soil. By killing the insects, the potential for mulch to enrich the soil is significantly diminished.

Together with earthworms (or annelids), the larva and adults of many insect species may be seen as a farmer's greatest ally. As they burrow down into the soil, they create tiny paths for water and air to travel to the plant roots, increasing aeration and water infiltration. Insects also create a system of tiny underground tunnels which carry rainwater down to the roots. These tunnels have a positive effect on the soil health, and help the development and growth of plants, particularly in heavy clay-based soils. In waterlogged clay soils, the tunnels help drain away excess water. The tunnels also carry oxygen to plant roots and to aerobic bacteria in the soil.

At a micro-level, the insects are constantly turning the soil and enriching it. One could argue that, after a few years of farming without artificial pesticides, the insects would be doing all of the fertilizing and ploughing, saving farmers much hard work and money as well as providing considerable environmental benefits.

A larger biodiversity

Like insects and earthworms, centipedes are another beneficial group that live in the mulch. These tiny creatures eat caterpillars, slugs and fly larvae, naturally protecting crops without using any expensive and harmful pesticides.

Finally, mulch also encourages the growth of millions of micro-organisms in the soil. These microscopic "insects" are constantly breaking down organic matter and enriching the soil. One example is a group of beneficial nematodes or "non-segmented round worms" which occur naturally (and which in some cases are also commercially available). These beneficial nematodes live in the soil beneath the mulch and kill harmful insects such as fleas, termites and cutworm.

As part of our work we are looking at ways to measure these benefits. There is no doubt, however, that mulch is critically valuable for farmers as it decreases erosion, decreases water loss, and improves soil health. By covering the soil with a layer of organic matter, farmers are also creating a new habitat where beneficial insects can prosper. These insects, together with many other species of earthworms or centipedes, aid soil aeration, soil enrichment, and natural pest control. The Cape Town farmers who adopt mulching experience increased soil health, higher yields and higher profits, while farming in a way that is harmonious with beneficial natural systems.

Sam Adams (info@startlivinggreen.co.za) runs a food security consultancy in Cape Town. He works across Southern Africa teaching conservation farming and sustainable agricultural systems to both rural and urban farmers.

All you need to know about bees

Honey is probably the first association that comes to mind when we hear the word "bee". Humans' appreciation of this sweet product goes back thousands of years. Yet, in a recent conversation with Elizabeth McLeod, Project Officer at *Bees for Development*, she reminded us of at least two aspects of bees that people often tend to forget. Firstly, bees can be an important source of income for many people, especially in developing countries. Secondly, these black and yellow striped insects are the major pollinators of flowering plants, which means that they are essential for conserving biodiversity.

Text: Nicola Piras Illustration: Fred Geven

Although beekeeping can contribute enormously to alleviate poverty, Mrs McLeod pointed out that it is "usually overlooked as a marginal activity not worthy of investment and attention". *Bees for Development* is an organisation that works to overcome this lack of attention. Describing itself as "the hub of a network of beekeepers all around the world", it encourages and promotes sustainable apiculture, and particularly focuses on poor and rural areas. *Bees for Development* has developed a series of educational and training programmes that facilitate the spread of knowledge about bees and profitable and sustainable beekeeping methods: practices that increase beekeepers' incomes without jeopardising bee populations and local biodiversity. "Our organisation's view", Mrs McLeod says, "is that the most important thing for beekeepers is information". The organisation has developed a huge, free-to-use, online database about all aspects of bees and sustainable beekeeping – their "Information Portal". But, as we all know, the best way to learn is by doing. Mrs McLeod explains that "what commonly happens is that an experienced beekeeper is approached by others who want to get involved". *Bees for Development* also support training, workshops and meetings, offering Resource Boxes (packs of explanatory material such as booklets, posters and the *Bees for Development Journal*), the content of which can be varied according to the needs and purposes of those taking and running the trainings. Mrs McLeod went on to emphasise that the training activities also aim to stimulate and strengthen beekeeper organisations: "When beekeepers can organise themselves into co-operatives or collective marketing groups, they can improve the terms of trade with other people. This is a significant element of our training: teaching people how to form effective associations to represent their own interests". This is all crucial for beekeepers, as demonstrated in a recent training programme in Uganda: "When we got to Kampala we noticed that, notwithstanding the presence of many local beekeepers who produce excellent honey, the majority of what is consumed has been imported. The issue in Uganda is that producers cannot meet their national market". *Bees for Development* started working with a co-operative, providing trainings for local beekeepers. "Now, we can proudly say that the co-operative we were working with has been invited by a supermarket supplier in Uganda to start supplying their stores and even to export to Kenya. Their produce is being very well received."

Bees for Development was founded in 1993 in Monmouth, South Wales, U.K. The standard price for Resource Boxes is £50, but those who cannot afford it can receive a Sponsored Resource Box free of charge. Further information about all the current initiatives of the organisation is available at www.beesfordevelopment.org.

Training the trainers

In April 2010, IFAD and FAO launched a joint programme to provide people working on poverty reduction projects, with the skills and tools required to gather and share knowledge gleaned from their projects. Different workshops in knowledge sharing techniques, writing effectively for different audiences, and systematisation were held in 2011. The last meeting was a "training of trainers" session, which specifically aimed to upscale the whole process. Participants of this workshop are now running their own knowledge management processes back home, training their colleagues.

Text: Denise Melvin and Jorge Chavez-Tafur

The International Fund for Agriculture Development (IFAD) and the Food and Agriculture Organization (FAO) are involved in many country projects that seek to reduce rural poverty and food insecurity in Asia and the Pacific. People working on these projects acquire valuable knowledge and a wealth of practical experience. However, their knowledge is often "lost" when projects end. By developing capacities to share knowledge, the FAO-IFAD programme helped ensure that projects build on proven successes and avoid repeating errors, that the voices of a wide group of stakeholders are included, and that knowledge is properly documented and well communicated, so that it can have the greatest impact.

Working with regional organisations (such as, for example, ICIMOD in Nepal), the programme offered "hands-on workshops" focusing on participatory techniques and tools for knowledge sharing, and on writing skills. In total, more than 380 people participated throughout the year, representing projects being implemented in countries as diverse as China and the Maldives, Sri Lanka and Vietnam.

Focusing on "a methodology which facilitates the ongoing description and analysis of the processes and results of a development project", the programme paid specific attention to a systematisation process. This meant presenting some basic principles (such as involving as many stakeholders as possible, or identifying the general conditions needed), and then actually starting a systematisation process for sharing knowledge. The work of some of the participants, such as Abdul Qayyum Abbasi, describing and analysing the Community Development Programme in Pakistan, has already been published and shared.

One of the most interesting lessons learnt was about the use of videos. Participants discussed the challenges that practitioners face in using images in a systematisation process. This doesn't necessarily need expensive tools and materials – hand held devices such as mobile phones can be adequate. Videos are not only useful as a way of presenting a final product: they can also be used for collecting information (e.g. in interviews), for highlighting someone's opinion, and for asking feedback from other participants.

Training future trainers The programme also organised a three-day "training of trainers" session, with the objective of scaling up and sustaining the process. Some project staff who had attended the previous training events were invited to a workshop in Kathmandu, Nepal, in December 2011. The main objective was to present and discuss the issues that trainers (or facilitators) should consider when organising a systematisation process. Our discussions started by focusing on the necessary logistics and the general objectives. Participants discussed the advantages that such a process can bring in terms of advocacy, or simply by helping to "avoid re-inventing the wheel."

We looked at the importance of carefully selecting participants, in a way so that they contribute to and benefit from the process as much as possible. Beyond considering different groups or stakeholders, and considering specific criteria (such as being associated to an IFAD project), we also looked at other regularly occurring issues: the difficulties of inviting and managing a large group, and thus the need to to select those who represent a large community, and the difficulties when having different "categories" working together (politicians with farmers, extension agents with the director of an organisation) which can lead to some participating much less than others.

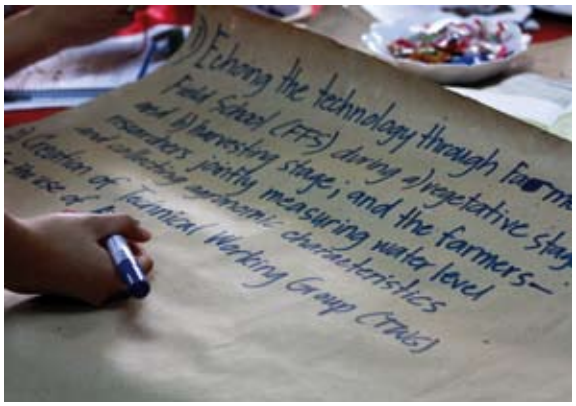
The discussions paid special attention to the role of the trainer, who plays an influential role in every systematisation process. Trainers need to decide their level of engagement: will they just provide the necessary resources for a process to take place, will they try to "catalyse" it, or will they actually take charge of it all? Each of these choices has implications for the selection of participants, and may mean providing mentoring, apprenticeship or coaching possibilities. Trainers also need to think about the different tools or techniques they will utilise and what, if any, incentives to provide to participants.

Finally, the participants looked at the steps that are common to all documentation processes, regardless of the methodology followed, and at ways of addressing the most common problems:

- How to select the "case" to be documented, which requires considering the audience who will benefit from the documentation process.
- How to collect data and information, and the importance of finding what information is already available, or of going to the field, and asking participants and stakeholders *in situ*.
- The need to encourage participation and involvement: (i) before the workshop, by selecting the "right" participants, (ii) during the workshop, by using different tools, defining people's roles and responsibilities and defining and explicitly mentioning all expectations, and (iii) after the workshop, providing incentives, or inviting participants to contribute to any subsequent publication.
- The dissemination of the results, which starts by identifying the target audience and then deciding what type of document is best (a policy brief, an article in a journal, etc.). Such documents can always be reinforced and made more accessible by using different media tools, such as press releases, the internet, street theatre, posters, or radio programmes.

The last step involved a short discussion about the need of scaling up and sustaining these efforts and also every systematisation process. This meant looking at the necessary requisites (support, resources), and at the steps to follow. Jun Virola, from the Philippines, highlighted that "this workshop was a systematisation process in itself. We looked at where we are, what we have been doing, and we described what we want to happen. At the end we were able to prepare and share our action plans." The first steps have been taken: many trainers are up and ready to start training their colleagues.

"This workshop was a systematisation process in itself". Photos: SEARCA / FAO.



Denise Melvin, Communications Officer at FAO, worked as Programme Coordinator on the FAO-IFAD Programme for the Development of Knowledge Sharing Skills (e-mail: ks-asia@fao.org). **Jorge Chavez-Tafur** facilitated the training workshops in the Philippines, Nepal and China. More information is available on the IFAD Asia portal: http://asia.ifad.org/web/1179-fao

Zambia
Abuzz with bees

Set up three years ago, the Zambia Honey Partnership (or ZHP) promotes the sustainable, social and economic growth of the country's emerging honey industry. Known as "the platform", it seeks to represent the interests of all stakeholders. By "enhancing their commercial orientation", ZHP aims to help translate the production of honey into higher incomes for all those involved.

Text and photos: Nawa Mutumweno

Honey has been produced in Zambia for many years, particularly in the northern region, and according to different statistics, the country is the largest producer (and exporter) of honey in Africa. Beekeepers in the North-Western and Copperbelt provinces harvest an average of 10 hives each, and each hive yields about 10 kg per year. At current market prices, the sale of 100 kg can generate more than US$ 5,000 per year. These are very high returns – especially considering that the investment costs are minimal. At the same time, however, a detailed analysis of the honey sector shows many difficulties, aside from yields and returns. These include a "non-commercial approach", or the "lack of a clear strategy". Studies in different regions have reported the possibility of hugely expanding the production areas. While producers lack information and short and longer-term finance options, market studies have shown that there is an unfulfilled demand in the local, regional and international markets.

Working together The country's honey sector has developed substantially since an umbrella body, the Zambia Honey Council (ZHC), was set up in 2003 with the mission of "developing the capacity of members through market development, technical innovation, information networks, policy advocacy, and through the promotion of ethics and standards in the honey industry". Membership has been open to beekeepers from different regions, many of whom have benefitted from the activities started by the Council: the organisation of training modules (in English and in local languages), the establishment of bulking centres in various honey-producing districts, and the dissemination of information via mobile phones.

In spite of the evident progress, a set of analyses carried out by organisations such as the Organic Producers and Processors Association of Zambia (OPPAZ) and the Agri-Business Forum (ABF) showed that a policy framework to govern and support the long-term development of the sector was still missing, and that the lack of co-ordinated efforts were seriously limiting growth. These studies showed that the positive results achieved at a local level could be scaled up with better links and co-ordination between all the different actors. This led to a series of meetings between government agencies, non-governmental organisations (NGOs), business and trade associations, beekeepers, exporters/packers, researchers and international development agencies, all of whom joined the Zambia Honey Council in establishing the Zambia Honey Partnership (ZHP). ZHP was set up to address the constraints and opportunities in the honey industry – particularly by increasing the possibilities to work together. Co-ordinated activities help farmers develop their capacities to produce honey and expand domestic production, and to improve profitability, by adding value to all prod-

ucts. Working together also offers the opportunity to scale up activities that support production and commercialisation (considering the necessary logistics, the provision of credit options and marketing).
The Partnership has put a set of strategic programmes in place. One of these is to target specific trade fairs; another organises beekeeper field exchanges. A special group is looking at the most important health issues affecting beekeeping and their potential implications, such as the trade barriers raised by South Africa (claiming there is evidence of the presence of American Foul Brood) or the incidence of what is known elsewhere as Colony Collapse Disorder. Neither problem has been detected, but regular monitoring is needed. The Innovation Grants Facility (IGF) also deserves special mention: grants will be made available to beekeeper or producer associations or to processors wishing to develop or expand their post-harvest activities (such as processing, quality control or marketing efforts). Grants will be used to complement and support innovations, and will be assigned under a cost sharing arrangement. Applications have to go through a competitive process based on their project proposals.

Broad results At the moment, the Zambia Honey Partnership is working in the three main honey producing provinces, with a total of 8 honey processors and more than 15,000 beekeepers. Although members recognise that there is still a lot to do, the quality of Zambian honey and packaging has already improved, and new marketing possibilities have been developed. This is visible, for example, in major retail shops such as Melissa and Spar, where different honey products are now sold. Larger

quantities are also being exported to South Africa and Botswana, and even to the United Kingdom, Germany and the United States. Mr Munshimbwe Chitalu, the ZHP Chairperson, proudly states that "Zambia has emerged as Africa's largest exporter of honey and bee products to the European Union and the U.S., and the supply to these markets will exceed 1,000 tons by the end of 2012." The industry is showing tremendous potential to help expand Zambia's export base, foreign exchange reserves and, most importantly, broaden and deepen the income levels of the rural population.
It goes without saying that Zambian woodlands today resonate with two kinds of buzz. First is the hum from millions of bees gathering nectar from the surrounding dry forests. Second is the rising excitement among local villagers who see honey production as a rewarding and potential source of income.

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Better links and co-ordination in order to tackle the technical and the organisational challenges.

Sustainable fa needs recognition

Twenty years ago, the first global conference on Sustainable Development in Rio de Janeiro became a milestone, and there are high hopes that Rio+20 will be an even more significant event. In the previous issue of *Farming Matters* we introduced Rio+20. Since then, the complex preparations for the conference have been continuing.

Text: Edith van Walsum and Marta Dabrowska

In January, the Zero Draft of the outcome document (which provides the basis on which the final resolutions of the conference will be agreed) was published on different websites. Even though this Zero Draft gives an impression of what the outcome document of the conference will look like, much can happen between now and June, so the outcome is not set in stone. Governments, UN agencies and civil organisations will continue to negotiate over the text of the final document, and campaign to put their issues on the policy agenda. Many parties are still working hard to ensure that small-scale sustainable family farmers are not left out of these discussions.

Zero or minus twenty? There has been a truly mixed response to the Zero Draft document. Generally, it is considered a major step forward, in that it talks about sustainable development indicators that go beyond GDP, proposes a Sustainable Development Council, an Ombudsman for Future Generations, and a reform of environmentally-harmful subsidies, including those for agriculture. Yet, many believe the document is too vague and open to too many interpretations. There are also some important omissions. The document does not mention sustainable agriculture or family farming. How can a document seeking to set the direction of a future "green economy" leave out 400 million farm families?

So, what is a "green economy", and what is the role of sustainable family farming within it? There is a growing conviction that for the economy to become green, it has to be totally redesigned. Hans Herren, one of the authors of the IAASTD report, says that cosmetic changes like "climate smart agriculture" and "sustainable intensification" are not enough, and while the Zero Draft document talks about green jobs, there is nothing about better working conditions (and returns) for self employed farmers. This suggests that a "green economy" is only about the "money economy". Vandana Shiva points out that sustainable family farming is about much more than money. It is about decent rural livelihoods, about the management of biodiversity and about democracy and freedom. *La Via Campesina* is arguing that ecosystems cannot be treated as economic goods. And Olivier de Schutter is making the case to establish a mechanism of accountability regarding the right to food.

> "The Zero Draft is a minus twenty draft"
>
> Vandana Shiva, Indian scientist and environmental activist

Recognition The key message to be taken to Rio is that **sustainable family farming needs recognition**. This was the conclusion of a recent global meeting of small-scale farmers' organisations at IFAD in Rome. They are not alone. All over the world there is a growing consensus among organisations of family farmers, scientists, civil society groups and influential actors within the UN institutions that sustainable family

mily farming

farming is key to the future of the planet. Major global problems – hunger, climate change and environmental degradation – cannot be solved without recognising and supporting family farmers.
The momentum of alliances that support this view is stronger than ever before. Yet, in spite of tireless lobbying, campaigning and dialogues, it is not clear how strong this message will come through in the outcome document of the Rio conference. There is still fierce resistance from numerous individuals and institutions who do not see sustainable family farming as having any potential. Even within the UN institutions that do support sustainable family farming there are very different perspectives. Some within these institutions still see large-scale agricultural systems as the best option, believing that "low input, by definition, means low output". Others attempt to subvert the notion of sustainable innovation in agriculture by advocating nanotechnologies and genetic modification. Whom will policy-makers (at Rio and after) listen to? And who will benefit from their political support?

In the fields and in the streets

The Outcome Document of the Rio+20 Conference will provide a general policy framework for several years. The outcomes of Rio will not be binding on governments, so the "follow through" will depend on the voices and actions of the people in the streets and in the fields: farmers, consumers and civil society. Influential thinkers like Ulrich Hoffmann, Director of UNCTAD, believe that the needed paradigm shift has already started: many positive developments are happening in the sustainable and organic agriculture spheres, millions and millions of farmers are practicing and developing sustainable methods every day. But this shift requires more time and more formal support. A Brazilian civil servant, involved in the organisation of the civil society event that will take place parallel to the main conference, said this with conviction: "the major decisions are made in the streets. Many farmers already made many decisions in their fields. Change is under way, and we have to document and share the experience. Rio+20 has to be owned by the people, not just by policymakers".

> "Sustainable family farming is the core of a green economy but it is not mentioned in the Zero Draft. It's really a joke"
>
> Ulrich Hoffmann, Director of UNCTAD

Joining those in the streets and in the fields. Photo: E. van Walsum.

Your voice is important

Some of our readers may travel to Rio, but most of you will not be there. Even so you can make an important contribution. If you have a message to share please send it to us. We will compile and publish all the **messages to Rio** that reach us, and take them to Rio.
And... do send us your best **photos of family farmers**, women, men and youth, in your area. We want to show the many faces of family farmers to the people that will be meeting in Rio. We hope to get thousands of pictures and to paste them on a very long wall!
Send your contributions to info@farmingmatters.org

A farmer-driven programme to reinforce advocacy capacity

The Empowering Smallholder Farmers in Markets (ESFIM) initiative is a farmer-driven research and policy development programme that started in June 2008. Its overall objective is to generate demand-driven action research that supports the policy activities of farmers' organisations. By helping to create an enabling policy and regulatory environment, and more effective economic organisations and institutions, this initiative will enable smallholders to benefit more from markets.

Text: Giel Ton

Most frequently, smallholders lack sufficient access to information, timely analysis and feasible, legal and technical proposals that can support their "voice". As a result, their position is weak – especially when compared to other economic and political interest groups, such as agricultural companies, importers and exporters of commodities, agro-processors, retailers, or even consumers.

Yet smallholder farmers are important. There are millions of them worldwide, and they play a key role in household and national food supply and economic development. At the same time there is a huge concentration of poverty in rural areas. Decision-making on agricultural and food security issues often favours the interests of consumers, and the interests of smallholders are rarely considered in regional and national discussions. This reflects the way in which food security policies are usually responses to short-term problems, rarely looking at the medium to long term development of the agriculture sector – further aggravating a situation of food instability and insecurity. Strengthening the voice of smallholders can help to re-balance these policies and interventions in ways that provide smallholders with incentives to invest in their farms and in value-adding activities, thereby structurally improving food security in both rural and urban areas.

Defining the agenda

The ESFIM programme is designed to tackle this. It seeks to reinforce the capacities of farmers' organisations to articulate their members' needs and interests, through a process of collaborative research. The identification of specific research priorities and strategies is determined at a national level, usually through a series of participative workshops, involving key organisations and their members. These workshops are enriched with the input of government officials and NGOs, helping participants identify critical and strategic issues.

This process of setting priorities is designed to maximise learning within all the participating organisations. With funds from IFAD and the Dutch Ministry of Economic Affairs, Agriculture and Innovation, AGRINATURA and local consultants have provided research support and helped participating organisations to refine their proposals. Local research institutes and independent consultants are subcontracted by farmers' organisations to develop the thematic issues discussed in the national workshop.

At the moment, activities are in full swing in ten countries. In the Philippines, for example, the aim is to establish an Agricultural Commodity Exchange System to improve the co-ordination mechanisms between stakeholders throughout the country. In Benin, specific attention is being given to maize value chains, aiming to make them "more competitive, sustainable and inclusive". The National Smallholder Farmers' Association of Malawi is working towards improving the seed supply system. The ESFIM website (www.esfim.org) presents news and results from each of the participating countries.

Coming up ESFIM intends to scale-out its approach to other countries, and link these national experiences in evidence-based advocacy at the regional and global level, through regional networks of farmers' organisations. Key findings and experiences were recently presented at the Farmers' Forum organised by IFAD in Rome, and will be discussed extensively in an international seminar planned for mid-2012. ESFIM wants to stimulate farmers' organisations to exchange their experiences on advocacy strategies that empower smallholders. This exchange will not be restricted to the organisations that are working with ESFIM funding, but will also include other similar or complementary organisations, initiatives and activities. We plan to use *Farming Matters* as a platform to facilitate this exchange and outreach. More news in the coming issues!

Giel Ton (giel.ton@wur.nl) a senior researcher in the Agricultural Research Institute (LEI), part of Wageningen UR, is the ESFIM Programme Coordinator. More information about the programme and about the participating organisations can be found online at www.esfim.org

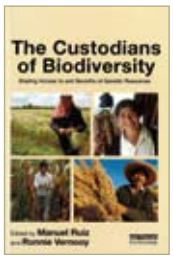
ESFIM in Peru

Peru has a strong advocacy platform called CONVEAGRO, an influential alliance of farmers' organisations, NGOs and research institutes. The majority of the involved farmers' organisations do not engage in collective marketing services, although some of them do. This group wanted CONVEAGRO to pay more attention to economic issues and to make them more effective at advocacy. To this end they formed a sub-group that partnered with ESFIM. During the first ESFIM workshop in 2009, they identified three priority areas where research support was needed: government procurement procedures; quality requirements and internal control systems, and management challenges in collective marketing.

The platform undertook a critical reflection on the government procurement policies. Peru has an extensive legal framework related to government procurement from small-scale farmers. The most prominent programme is PRONAA, a national initiative that procures for nutritional programmes, which has the explicit mission of acquiring products from small-scale farmers. However, reality is more complex, with middlemen brokering deals with buyers and collecting false certificates that show that farmers supplied them with the products. As a result of this and other malpractices, many farmers' associations and co-operatives are excluded. In addition, government programmes take a long time to pay and the procedures are complicated. Farmers' organisations find it hard to get access to capital because of their lack of collateral.

To analyse this, and further develop the advocacy agenda on government procurement policies, in-depth case-studies were commissioned to examine successful experiences, where organised producer groups have managed to sell their produce to government procurement programmes. These studies are now being used by CONVEAGRO and others to lobby in favour of changes that will give smallholders better access to government programmes and as learning material for organisations that want to benefit from this market.

Photo: Rik Thijsen



The custodians of biodiversity: Sharing access to and benefits of genetic resources

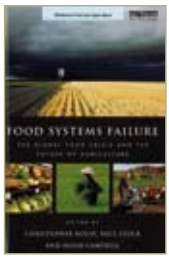
M. Ruiz and R. Vernooy (eds.), 2012. Earthscan, London. 193 pages.

Local genetic resources and traditional knowledge about them face an unexpected, but serious, threat: bio-piracy. Existing laws fail to recognise collective rights; a very important issue in, for example, participatory plant breeding. The good news is that national and international policy processes are emerging to protect these collective rights. In some cases local farmers, herders and fishers in local communities, often the *de facto* "custodians of biodiversity", are included. The authors of this book explore such policy processes in China, Cuba, Honduras, Jordan, Nepal Peru and Syria. They argue that, in order to be effective, national and international agreements on biodiversity need to incorporate the experiences of these custodians.

Transformation and sustainability in agriculture: Connecting practice with social theory

S. Vellema (ed.), 2011. Wageningen Academic Publishers, Wageningen. 167 pages.

This book explores the transition processes required to achieve more sustainable patterns of agriculture and food provision. The different authors examine a range of important social perspectives (such as Michel Foucault's concept of power and discipline and Mark Granovetter's emphasis on social networks) and the light they shed on the social or institutional mechanisms that enable or hinder change. The value of these theoretical insights is then put to the test by systematically applying each perspective to three case studies: rural reconstruction in horticulture and livestock systems, seed supply systems and pest control.



Food systems failure: The global food crisis and the future of agriculture

C. Rosin, P. Stock and H. Campbell (eds.), 2012. Earthscan, London. 236 pages.

This book argues that rises in commodity prices are a mere manifestation of a much deeper crisis in the global food system, and that any solution will need to address the dual challenges of social equity and environmental sustainability in current food production and food distribution systems. The first section explores the causes underlying the failure of the global food system and highlights the need to pursue alternative pathways. The second section presents examples of how the negative consequences of the global food systems manifest themselves, and describes the efforts of producers and consumers to overcome them.

The state of the world's land and water resources for food and agriculture: Managing systems at risk.

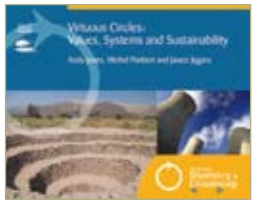
Food and Agriculture Organization, 2011. FAO, Rome and Earthscan, London, 320 pages.

The scarcity and degradation of land and water, the population growth trends and the changes in diets and climate, are placing the planet's food systems at risk. This book seeks to analyse the potential of the world's land and water resources to meet the challenge of feeding 9 billion people in 2050. It is estimated that global food production will need to increase by 70% by 2050, although 25% of the world's productive agricultural resources are already degraded and production growth is declining as areas reach their productive capacity. The report examines practices, such as integrated irrigation-aquaculture systems, conservation agriculture, agro-forestry and integrated crop-livestock systems, through which agricultural production can be intensified while limiting its impacts on the environment. The book also examines the current institutional arrangements and advances a series of policy recommendations.

Pro-poor benefit distribution in REDD+: Who gets what and why does it matter?

E.Y. Mohammed, 2011. IIED, London. 36 pages.

While the distributional issues of REDD+ have been explored at the national and international levels, the equity of benefit sharing at the household and community level has been often overlooked. This IIED working paper seeks to fill this gap by exploring whether benefits should be provided directly to individuals or to the community as a whole; and whether payments should be made in cash or in kind. The paper concludes that such decisions should only be made after consultation with the communities involved. This consultation process should involve a continuous and interactive assessment of the effects of REDD on the local economy, and particularly on the livelihoods of poor households. In very unequal societies, particular care should be taken to ensure that poor or weak claimants receive equal benefits.



Virtuous circles: Values, systems and sustainability

A. Jones, M. Pimbert and J. Jiggins, 2011. IIED and IUCN CEESP, London. 169 pages.

Our systems of production are based on linear models that implicitly assume that there is an unlimited supply of raw materials and that the environment has an infinite capacity to absorb pollution and waste. As a result, an increasing scarcity of resources and the abundance of waste and pollution have become serious problems. This book proposes adopting a circular pattern of metabolism in order to allow the development of productive systems that minimise external inputs, pollution and waste and their associated risks, dependency and costs. The examples of agro-ecology in Peru, biogas systems in Nepal, urban agriculture in Cuba, and regional markets in Ecuador show that this is possible.

Insects and farms

"Bees, butterflies and blooms" is a recent BBC documentary on the rapid decline of bees in the U.K. and the attempts by Sarah Raven (the presenter) to reverse this. The disappearance of bees is also the subject of a UNEP (2010) report: "Global honey bee colony disorders and other threats to insect pollinators". Articles on the importance of bees also feature regularly in the "Bees for Development" journal. Other documents look at the role insects play within integrated pest management systems, sometimes eliminating the need for pesticides. State of the art literature covering the whole scale of issues on IPM include "Integrated pest management: dissemination and impact", edited by R. Peshin and A.K. Dhawan (2009), "The pesticide detox: Towards a more sustainable agriculture", edited by J. Pretty (2005), and "Biodiversity and pest management in agroecosystems" by M.A. Altieri and C.R. Nicholls (2003). Gabrielle Stoll's "Natural crop protection in the Tropics: Letting information come to life" (2000) provides a wealth of information about tropical pests, with detailed illustrations about how to recognise them. The final section also looks at methods of knowledge generation and transfer, with theoretical and case study chapters. "Pesticide News" is another valuable resource, containing up to the minute articles on relevant topics. An overview of the push-pull method, as one of the best examples of a really "integrated" approach, can be found in the article "Integrated pest management: The push-pull approach for controlling insect pests and weeds of cereals, and its potential for other agricultural systems including animal husbandry" (A. Hassanali *et. al.*, 2008), published in the Philosophical Transactions of the Royal Society of London. (LvdB)

Insects are one of the many components of an agro-ecosystem. Their presence can lead to severe farm losses, yet they also make many beneficial contributions. Research and experimentation at a local level can help us identify ways to restore the balance between the different components, and so enhance ecosystem resilience - and yields.

Iran

Neem in the Gulf

Researchers have identified more than 2000 plant species which, because of their specific properties, are or can be used as part of an Integrated Pest Management programme. Their use, however, is not new. More than a thousand years ago, Persians were using pyrethrum species, and in particular species of the genus *Chrysanthemum*, to control the presence of insects in their fields and also against lice (preparing what is still known as "Persian powder"). Iranians are now also benefitting from the neem tree. Some twenty years ago, neem trees were seen in the Qeshm and Kish islands in the Persian Gulf, and also in the Bandar-Abbas county (all of them part of the Hormozgan province). Since then, they have spread in these areas, and farmers have started to see why this tree is known as the "village pharmacy" in India, or why others refer to it as "the tree to solve global problems". Researchers are now exploring whether neem can be cultivated in the country's other provinces, beyond the Persian Gulf, and provide the basis for a new Persian miracle.

Photo: Trees for the Future

More information? Contact Ahmad Mahdavi at the University of Tehran / Sustainable Agriculture and Environment. E-mail: biomahda@gmail.com

Brazil

Trees and predators

The presence of trees has a positive effect on many crops, whether this is because of their contribution to soil fertility, the retention of water, or because of the resulting microclimate. More trees, in general, also means more insects, birds and bats, resulting in higher pollination rates and therefore in higher yields. Do trees also help in terms of biological control? This was one of the questions posted by researchers at the Luiz de Queiroz College of Agriculture in São Paulo, Brazil. The incidence of the leaf miner (*Leucoptera coffeella*) is high in most coffee fields in the Pontal do Paranapanema region. As part of the *Café con Floresta* project, small-scale farmers in this region are encouraged to grow coffee within an agroforestry system. The presence of trees in their one-hectare fields has encouraged a dramatic increase in the number of miner predators (wasps of the genus *Brachygastra*, *Polistes* or *Polybia*) in their fields. Working together with farmers, researchers have also found a direct relationship between the number of tree species present in each field and the number of parasitoids (and a lower incidence of *Leucoptera*). The message seems to be clear: the greater a farm's biodiversity, the better the balance between the species living in it.

More information? Contact Paulo Rogerio Lopes and his colleagues at the Luiz de Queiroz College of Agriculture. E-mail: biocafelopes@bol.com.br

Photo: Paulo R. Lopes

Senegal

Better recipes

In many parts of the world, neem oil is used as a safe, cheap, and effective alternative to pesticides. In many cases, all it takes is to emulsify several spoonfuls of neem oil in a few litres of soapy water, and spraying the mix. Yet, many farmers feel that its efficiency could improve. Farmers in the Bakel region in Senegal joined a group of researchers with similar concerns. Together, they looked at ways for grinding enough of the ripe seeds to ensure sufficient oil in the mix. Another improvement they identified was to make sure that the mix is soapy when sprayed. This guarantees that the soap, a potent insecticide on its own, ifs fully functional. Yet another was to use the mix before the chemicals in the neem are degraded by the soap. The options included adding specific ingredients, such as onion or garlic extracts, that have also been shown to help repel insects. The picture that emerged is broad. With or without neem, farmers have the capacity to produce cheap and effective insecticides. It is scientists who have to match the local knowledge and local possibilities.

Photo: Paul Wojtkowski

This project was conducted through USAID and the National Cooperative Business Association. More information? Please write to Paul Wojtkowski. E-mail: trigo123@hotmail.com

Ethiopia

More hives, more bees

The Tigray region in Ethiopia consists of several different ecological zones, has a large and diverse flora, and therefore has a huge potential for beekeeping. More and more farmers in this region are interested in beekeeping, seeing it as an environmentally friendly business – especially given the relative lack of farmland and the rewarding results which beekeepers have seen in the past few years. Yet there are also challenges, like finding ways to market the produce and identifying the specific techniques for increasing the number of hives in a given area. The Relief Society of Tigray, REST, is working with many different co-operatives in the region to tackle these difficulties, organising a series of capacity-building courses and providing technical advice. Rearing centres for Queen bees have been established to respond to the growing demand. These also serve as research centres where local adaptations of the "splitting method" are tried. Helping others by increasing the number of hives is now becoming profitable: different co-operatives, such as the Mayilingo Honey Processing and Marketing Co-operative, are now earning higher incomes from their bees than from their honey.

Photo: Abraha Lemlem

More information? Please contact Abraha Lemlem at the Relief Society of Tigray, Ethiopia. E-mail: labraham356@yahoo.com

Insect conservation

Although insects are capable of causing immense damage to crops, this is largely due to the way in which we farm, creating attractive monocultures of lush crops and failing to exploit the natural regulatory mechanisms that exist. Crop damage is caused by relatively few species, whereas many more species are beneficial: parasitising crop pests, pollinating crops, or breaking down organic matter. With so many potential benefits, how can we enhance their presence?

Text: John Holland

The plight of pollinating insects, especially the decline in domesticated bees, has attracted much media attention during past months, feeding on a growing concern about future global food supplies. There are growing calls for a swing towards a more ecological approach to farming, which would greatly benefit pollinating and other beneficial insects. However, a switch to ecological farming is not always possible, nor does it take place immediately. We therefore need to look at ways of enhancing the presence of insects on "conventional" farms, and to achieve this quickly. One of the best-developed approaches is "conservation biocontrol", which seeks to ensure that a farm's crop management practices are not having a harmful impact. This may involve adopting spray thresholds, or ensuring that non-crop areas are not contaminated with pesticides. The approach can also involve adopting practices to encourage the presence of natural enemies and beneficial insects by manipulating habitats, providing all the resources necessary for their survival.

Going SAFE

A review of natural enemies, their ecology, and of the impact of farming practices in the U.K. helped us identify four "essential requirements" to promote their conservation, summarised in the acronym SAFE: Shelter, Alternative prey, Floral resources, and an appropriate Environment.

Shelter habitats are needed as many species overwinter outside of the cropped area and benefit from habitats that provide appropriate environmental conditions and protect them from predation. Tussocky grasses along field boundaries have been shown to support a range of *Coleoptera* and *Araneae*, and the woody structure of hedgerows and woods can provide suitable conditions for species that disperse more widely. Such habitats may also allow pests and their parasitoids to survive the winter or the periods when the land is not being cultivated, thus ensuring their survival into the following season. A range of important natural enemies, including beetle larvae, parasitoids and spiders, also overwinter within the soil. Intensive tillage can destroy natural enemies, although the impact of this will vary according to the vulnerability of the insects at different life stages and the timing of cultivations. The majority of invertebrates will not emerge until spring, so cultivations that occur before then can be more damaging.

Predators also need sources of *alternative prey* when there are insufficient pests for them to feed on. These may be

found in either non-crop habitats or within crops.
Floral resources are utilised by a broad range of predators and parasitoids. They provide energy and can act as an alternative food source. Many facets of the biology of parasitoids (including, longevity, mortality rates and fecundity) are influenced by these food sources, and these can significantly affect the levels of biocontrol achieved. Locating these resources close to the crop improves their efficiency.
The *environment* in which the natural enemies occur must be appropriate. Invertebrates have different preferences for environmental conditions (humidity and temperature) and/or vegetation structures, often according to their foraging strategies. They can also require areas that are free of harmful pesticides or agricultural practices (e.g. tillage).

Trying it out The SAFE approach was tried out on a 250 hectare arable farm at Loddington (in Leicestershire, central England). This is a farm established as part of the Allerton Research and Educational Trust in 1992, set up to "advance public education in different farming methods and the effect thereof on the environment and fauna". Early research by the Trust identified that many predatory beetles and spiders overwinter at the base of tussock-forming grasses that typically occur along field boundaries. They then disperse into the field in the spring, where they help to control crop pests. Many of these species walk into the crop, which limits their dispersal distance. To facilitate an even and rapid coverage of these predators over large fields, 2m-wide raised banks (or "beetle banks") were created in the middle of the fields by ploughing furrows together. These were then sown with tussock-forming grasses such as cock's-foot (*Dactylis glomerata*) and timothy (*Phleum pratense*). When we studied the dispersal of the natural enemies we determined that the maximum distance between the banks or the field margin should not exceed 150 m.
We established beetle banks across the largest fields at Loddington, and widened and made other improvements to the grassy areas alongside the hedgerows. Further shelter was provided for insects overwintering within the fields by switching from a predominantly ploughed-based cultivation system to minimum tillage. We identified that up to 1.5 million insects per hectare overwinter in the soil, usually as larvae, and many of these are destroyed by intensive cultivation. Minimum tillage allows them to complete their lifecycle undisturbed. In a similar way, ditches are now cleared out less frequently to reduce disturbance.
Crop pests rarely form all of a natural enemy's diet; they also feed on, or parasitise other insects. The key to ensuring the presence of a range of alternative prey is plant diversity, which strongly influences insect diversity. This plant diversity can be created by allowing some weeds to survive within the crop, by having a diverse crop rotation, by establishing additional uncropped habitats and by not being too tidy and allowing vegetation to naturally regenerate in areas not

Feeling at home. Photo: Peter Thompson

used for production. At Loddington, the heavy clay soil has a relatively poor diversity of weed flora, although some weeds are very competitive and can threaten production, making it difficult to reduce the use of herbicides. Conservation headlands were established around the edges of the cereal fields, where only certain herbicides (and no insecticides) are allowed. This approach has been shown to encourage natural enemies. These insects also provide a source of food for bird life.

A five-course rotation of wheat, barley, oilseed rape, wheat and beans is used, although other crops have also been grown over the years (such as linseed, oats and more recently hemp). Individual crop types are spread across the farm, and a range of minor crops (e.g. kale, millet, cereals, quinoa and linseed) are also sown. As a "wild bird seed mix", these crops provide for farmland birds.

Flower-rich habitats are essential for insects, and should be provided on all farmed land. Early in the year, hedgerows provide an abundance of flowers, and many of them have been improved at Loddington through coppicing, hedge laying and replanting. Hedges are cut on a two-year rotation, leaving berries for birds to forage on in mid-winter. To encourage pollinating insects, a legume/grass/wild flower mix has been established either along field margins or in areas that are difficult to cultivate. These are cut in the autumn to reduce the competition from the grasses. More floral resources are provided in the woodland which has been thinned, allowing in more light and rejuvenating the ground flora.

What have we learned?

The different habitats around the farm provide a diverse range of environments, and thereby cater to the requirements of a diverse array of insects. Minimum tillage leaves stubble on the soil surface, creating structural diversity for spiders, allowing predatory insect larvae to survive and encouraging detritivores that act as alternative prey. Experience has shown that, when pesticides are used, an air-assisted sprayer helps ensure an accurate application, thereby minimising the drift to non-cropped areas. On the other hand, these efforts also carry some hidden costs, which need to be taken into consideration. Our conservation work, for example, means that that machinery has to travel further and the extra headland areas takes some land out of production, possibly reducing yields.

There are many other approaches that can be used to encourage beneficial insects and reduce pests, some of which (like intercropping or companion planting) have been well researched. It is still necessary, however, to continue studying the ecology of beneficial insects and their interactions with farming systems and the landscape in order to arrive at better farming systems and devise better plant mixes. In the meantime, we advocate the SAFE approach in all farming systems as this may help offset or reverse the declines of those species that urgently require help, such as bees.

John Holland is Head of Farmland Ecology at the Game & Wildlife Conservation Trust, Hampshire, England. His research focuses on developing practical solutions for farmers to increase farmland biodiversity and, in particular, beneficial insects. E-mail: jholland@gwct.org.uk

More information

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The Allerton Project, 2012. http://www.gwct.org.uk/research__surveys/the_allerton_project/default.asp

Sharing, discussing and enjoying the results of the SAFE approach. Photos: Peter Thompson

Food movements, unite!

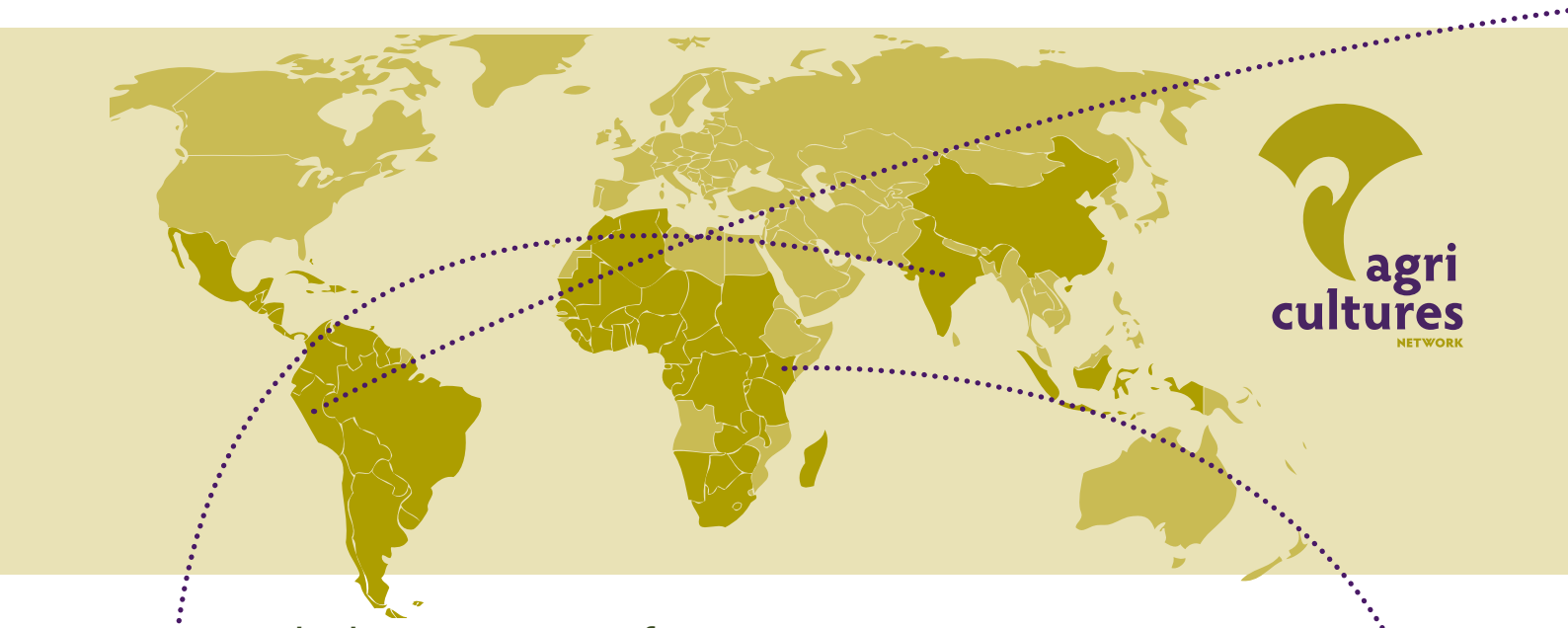
Eric Holt Gimenez is the Executive Director of Food First / Institute for Food and Development Policy. E-mail: ehotgim@foodfirst.org

A detailed analysis of the corporate food regime dominating our planet's food systems shows that it is environmentally destructive, financially volatile and socially unjust. Its central role in creating the global food crisis is well documented. What is most striking and disturbing is that the "solutions" call for more of the same destructive technologies, global markets and unregulated corporate power that brought us the food crisis in the first place. We need a vision for real solutions – not from those causing the problems, but from those who are most affected by poverty and hunger.

A dynamic global food movement has risen up to confront the corporate assault on our food. Around the world, food justice activists are taking back pieces of their food systems through local gardening, organic farming, community-supported agriculture, farmers' markets and locally-owned processing and retail operations. Food sovereignty advocates are organising for land reform, the end of destructive global-trade agreements and support for family farmers, women and peasants. Protests against – and viable alternatives to – the expansion of genetically modified organisms (GMOs), agrofuels, land grabs and the oligopolistic control of our food are growing everywhere, everyday, providing a vision of hope, equity and sustainability that is "breaking through the asphalt" of a reified corporate food regime.

The global food movement springs from strong commitments to sustainability, food justice, food democracy and food sovereignty on the part of thousands of farmers' unions, consumer groups, NGOs, faith-based and community organisations that spans the planet's urban-rural and North-South divides. This remarkable "movement of movements" is widespread, highly diverse, refreshingly creative and politically amorphous.

There are many hopeful initiatives for fair and sustainable food systems. However, there's been little strategic reflection on how to get from where we are – a broad but fragmented collection of hopeful alternatives – to where we need to be: *the new norm*. What is to be done? How can we roll back the corporate food regime and roll out healthy, sustainable, and equitable food systems? This transformation of the world's food systems requires *political will* – which comes about not just from good intentions and sustainable practices, but through *the power of social movements*. The question facing movements for sustainability and food sovereignty is "How can we, in all our diversity, converge to become powerful enough to transform the world's food systems?" The answer is being forged daily, on the ground, as political alliances grow between producers, workers and consumers, and as social movements begin bridging North-South and urban-rural divides: "convergence in diversity".



With the Rio+20 conference coming up, it is time to evaluate what a "green economy" really means. Is this addressed in discussions throughout the world? Is a truly "green" economy viable in different regions? What are the main barriers in different countries? Network colleagues shared some of their opinions.

T.M. Radha: "A gradual process"

With a population of over a billion and persistent poverty levels, government efforts in India are focusing mainly on the eradication of poverty and growth. However, as India is already facing the impacts of climate change, more prominently on the livelihoods and health of the people, the efforts towards "greening" the economy are gaining significance. Water conservation, renewable energy, converting waste into energy and protecting land from degradation are some of the priority areas. In countries like India, with a huge population, any investment is expected to generate local employment. Heavy investments are being made in the name of a "green economy", especially in the private sector. Yet, many fear that those "greening" the economy may end up controlling it completely, leaving local people clueless and unable to access the benefits. But India has another side too. For thousands of years it has been a land of recycling and resource conservation. Nothing is wasted, everything is re-used or recycled. Traditional Indian agriculture is the best example of this principle. Living simply is also part of the culture, even if this has been seriously affected by exposure to western cultures and domestic commercial interests. So most efforts only require "going back" to traditional cultures and practices. According to T.M. Radha, editor of *LEISA India*, "a 'green economy' driven by a prescriptive global development model may not be viable for a country like India. We can only be green if we follow our own development priorities. In developing countries like ours, the transition to a 'green economy' is essentially a gradual and a time consuming process."


photo: Jorge Chavez-Tafur

Anthony Mugo: "It needs to make economic sense to ordinary Kenyans"

Talk of a "green economy" is popular within the private and public sectors in Kenya – even though the resources to raise public awareness are scarce. Anthony Mugo, deputy director at ALIN, says that Kenya needs to "engage developed countries to put in the resources needed so that poorer countries can develop along the low carbon path." But, it is even more important to recognise that a truly "green economy" can only be viable if the public is conscious of what it means. "Discussions on 'greening the

photo: Elisabeth ter Borg

economy' should focus on 'green' options that make economic sense to the ordinary Kenyans." The private sector in Kenya is promoting environmentally friendly practices; many non-state actors are promoting the adoption of alternative energy sources, and the government has taken steps to monitor the environment. Since climate change is already having a negative impact on Kenya's economic sectors (such as agriculture, or wildlife and tourism), the government is calling for a sustained national effort to reduce the emission of greenhouse gases. The Ministry of Environment and Mineral Resources is also developing an action plan for implementing the National Climate Change Response Strategy (NCCRS). According to the NCCRS, the adoption of low-carbon production practices is necessary to reduce greenhouse gas emissions and combat climate change. These practices, in the same way as the carbon market, can increase incomes and help mitigate climate change. However, some government intervention is needed to help citizens understand and take advantage of them.

Teresa Gianella: "Our large social differences need first to be reduced"

In Peru today, large capital investments in extractive industries (such as mining) are the main reason behind the pollution of soils and water, and therefore behind the conflicts and social unrest seen in some parts of the country. In the Andes, there is still a very high prevalence of poverty in rural areas; it is in these areas where the impacts of these industries are the most controversial. On the one hand, they are not "green" enough; on the other, they provide the financial resources needed for infrastructure and social services. Defining and adopting clear standards can be one way to avoid conflict. Yet, the concept of a "green economy" should not only be applied to large-scale enterprises. Teresa Gianella, editor of *LEISA revista de agroecología*, thinks that "greening" the economy should also consider small-scale agriculture and the less privileged sectors of society: "Peru's large social differences need first to be reduced". A "green economy" approach should build on the agro-ecological approach to producing food, respecting the rights of peasants and indigenous communities to land and territory, as well as to water and other natural resources. Two newly created ministries (for Environment and Social Inclusion) give some hope for the future, as do the current debates concerning the country's economic development and rural people's rights to natural resources. A necessary first step is to establish a communication strategy aimed at increasing awareness among rural and urban consumers, as well as policy makers, of the importance and potential of an alternative model. (LE)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COLOPHON

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The authors have ultimate responsibility, however, for the content of individual articles.

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"THESE 'ECOSYSTEM SERVICES' – THE STORAGE OF CARBON IN TREES, THE POLLINATION OF CROPS BY INSECTS – ARE OFTEN CLOSELY TIED TO THE ECONOMIC FORTUNES OF THE POOREST IN THE DEVELOPING WORLD"

The Economist looks at the importance of "enhancing and valuing the economic benefits that the environment provides seemingly for nothing" as part of the Rio+20 deliberations. "Another effort to save the planet", *The World in 2012*, November 2011.

"What we need less is another Green Revolution… The way forward is to work in a holistic and integrated manner"

Hans Herren, president of the Millennium Institute, argues for the "push-pull" system as a strategy to effectively manage corn pests. Interviewed by *The Organic and Non-GMO Report*, December 27th, 2011.

"Anyone who's been stung by a bee knows they can inflict an outsized pain for such tiny insects. It makes a strange kind of sense, then, that their demise would create an outsized problem for the food system by placing the more than 70 crops they pollinate - from almonds to apples to blueberries - in peril"

Claire Thompson, writing for the Guardian Environmental Network series, *The Guardian* ("Honeybee problem nearing a 'critical point'"), January 13th, 2012.

"If we didn't have bees and other pollinating insects to pollinate our crops, the true cost for this service would be 153 billion Euros every year"

From the invitation to the first "Earth Debate", organised by the U.K.'s Natural History Museum. January 2012.

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