PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON ORGANIC AGRICULTURE, BIODIVERSITY AND BUSINESS

September 30 – October 1, 2009
Sofia, Bulgaria

PROCEEDINGS
OF THE INTERNATIONAL CONFERENCE ON
ORGANIC AGRICULTURE, BIODIVERSITY AND BUSINESS

September 30 - October 1, 2009
Sofia, Bulgaria

Editor: Darko Znaor

Avalon

P.O.Box 14, 8730 AA
't Bosk 71, 8731 BK
Wommels
The Netherlands
Tel (+31) (0)515 331955
Fax (+31) (0)515 331980
E-mail: office@avalon.nl
http://www.avalon.nl

Table of contents

INTRODUCTION

The problem

Human existence depends on nature! Nature provides a range of services, often referred to as ecosystem services. These are the benefits humans receive, directly or indirectly, from nature. The four major groups of ecosystem services include provisioning services (food, fibre, timber, water, etc.), regulating services (air quality and climate regulation, water regulation, erosion regulation, pollination, etc.), supporting services (soil formation, nutrient and water cycling, photosynthesis, etc.) and cultural services (cultural diversity, spiritual and religious values, knowledge systems, recreation, ecotourism, etc.). Biodiversity, which is very often defined as "totality of genes, species, and ecosystems of a region" is often used as a measure of the health of biological systems (nature in wide).

World leaders have already held several important meetings on sustainable development and biodiversity, among which the most notable were the 1992 Rio de Janeiro and the 2002 Johannesburg Earth Summits. However, despite increased efforts made in the last decade or so, protection of biodiversity has not been realised. The loss of natural resources and damage to the global biodiversity goes on. According to the UN reports, biodiversity and fish stocks are depleted, desertification claims more and more fertile land and air, soil, water and marine pollution continues, robbing millions of people of a decent life. Millennium Development Goal number 7, to ensure environmental sustainability as defined at the Johannesburg Earth Summit, is unlikely to be achieved.

The role of agriculture

Appropriate land management is essential for biodiversity and agriculture plays an important role in biodiversity maintenance. Many areas of high natural value require some degree of management. Human intervention or rather stewardship has become even more important since the disappearance or extinction of large herbivores, notably ungulates. Landscape, ecosystem, species and gene diversity is enhanced or preserved with appropriate land management techniques- primarily by mowing, grazing, browsing and trampling. Even the most valuable species-rich grasslands require some minimum grazing pressure to maintain the sward.

Intensive agriculture is often detrimental to biodiversity. Land reclamation, narrow crop rotation, monocultures, the use of just few modern varieties (including GMOs) and breeds, the application of agrichemicals and in some cases livestock manure (oversupply) has lead to the decline of biodiversity on agricultural land.

Organic farming and biodiversity

Numerous studies indicate that in general, organic farming is more beneficial to biodiversity than non-organic management. Due to careful management, ecological infrastructure maintenance, moderate nutrients input and avoidance of agrichemicals, organically farmed areas very often have a much higher abundance and diversity of plants, invertebrates, birds and mammals. In comparison to non-organic farms, organic farms show more weed and total plant species, have more evenly distributed numbers among genera and harbour more native and exotic plant species than conventional systems. They often attract significantly more predatory species, earthworms, butterflies, spiders, bees, bats, birds and bees and food chains appear more often on organic than conventional farms. However, in some cases, from the biodiversity point of view, traditional farming systems (e.g. pastoral) appear to be more appropriate than (certified) organic management.

Objectives

The conference objectives were to:

1. Inform about potentials and challenges of organic farming in regard to biodiversity.
2. Provide opportunity to exchange ideas about research, education and demonstration projects and opportunities on organic farming and biodiversity.
3. Inspire to adopt policies fostering development of organic farming and promoting the spread of its practices.

Target group

The conference has brought together a range of organic farming stakeholders, mainly from Central and East European countries, the Balkans, the Caucasus and Central Asia. The participants are expected to come from the ministries, universities, research institutes, extension service, organic NGOs and the business sector.

The programme

Tuesday, September 29, 2009.
Arrival and registration of participants

19.00 – 21.30 Welcome dinner

Wednesday, September 30, 2009.

Theme: **Biodiversity Benefits of Organic Farming**
Chairman: Dr Darko Znaor, Associated Expert, Avalon, the Netherlands/Croatia

09.00 – 09.15 Greetings and Introduction
Mr Martien Lankester, MD. Executive Director, Avalon, the Netherlands

09.15 – 09.45 Organic Farming and Landscape Qualities
Dr Jan Diek van Mansvelt, First professor of organic farming at Wageningen Agricultural University and former IFOAM president, the Netherlands

09.45 – 10.15 Organic Farming and Biodiversity: EU and Bulgarian Policies and Practices
Dr Viara Stefanova, Head of Department of Agroecology, Ministry of Agriculture and Food, Bulgaria

10.15 –10.30 Discussion

10.30 – 11.00 Coffee break

Theme: **Organic Farming: an Opportunity for Biodiversity-Friendly Business?**
Chairman: Dr Vladislav Popov, Manager, Avalon Branch - Bulgaria, Bulgaria

11.00 – 11.30 Linking sustainable farming, biodiversity and business: UK demonstration farms programme
Mr Robert Kynaston, MA, Vice-Chairman LEAF (Linking Environment and Farming), UK

11.30 – 12.00 Organic Farming and Biodiversity: Italian Policies and Practices
Mr Riccardo Bocci, MSc., IAAB- Italian Association for Organic Agriculture, Italy

12.00 – 12.30 Organic Farming, Biodiversity and Food
Dr Stoilko Apostolov, Manager, Bioselena and Coalition "Pure Food - Fair Living", Bulgaria

12.30 –13.00 Discussion

13.00 – 14.30 Lunch

Theme:	**Successful Banking and Business Examples Caring for Agro-Biodiversity**
Chairman:	Dr Mark Redman, Associated Expert, Avalon, UK/Romania
14.30 – 15.00	Biodiversity-based booming organic farming business booming in Croatia Ms Sonja Karoglan Todorović, BSc., Executive Director, Ecologica, Croatia
15.00 – 15.45	How can Industrial Partners Help to Maintain Agro-Biodiversity? Mr Andreas Ellenberger, MSc., Environmental Manager, Weleda, Switzerland
15.45 – 16.15	Discussion
16.15 – 16.45	Coffee break

Theme:	**Organic Farming and Biodiversity in Transition Countries**
Chairman:	Ms. Sonja Karoglan Todorović, BSc., Executive Director, Ecologica, Croatia
16.45 – 17.10	High Nature Value or Organic? Conserving Farmland Biodiversity in Transition Countries Dr Mark Redman, Associated Expert, Avalon, UK/Romania
17.10 – 17.35	Organic Farming and Biodiversity in Romania Mr Razvan Daniel Popa, MSc., Fundatia ADEPT, Romania
17.35 – 18.00	Contribution of Organic Farming to Georgia's Agro Biodiversity Ms Mariam Jorjadze, BSc., Director, Elkana, Georgia
18.00 – 18.25	Rhodopi Mountains Lanscape, Organic Farming and Business Dr Georgi Terziyski, Landscape Planning Portfolio Manager, Rhodope Project, Bulgaria
18.25 – 18.45	Discussion
19.30 – 21.30	Dinner (with as much as possible organic ingredients from Bulgaria)
21.00 – 22.00	Amazon your business: video on biodiversity-based business in the Amazon region Mr Meindert Brouwer, Partner in communicatie , The Netherlands

Thursday, October 1, 2009.

Theme:	Organic farming and biodiversity business opportunities: an Interactive Workshop
09.00 – 10.30	Business and Biodiversity: an Opportunity for Organic Farming? Part 1 Mr Nico van der Werf, MSc. Executive Director Projects, Avalon, The Netherlands Ms Natasja Hulst, MSc., Senior Consultant, CREM, the Netherlands Dr Mark Redman, Associated Expert, Avalon, UK/Romania
10.30 – 11.00	Coffee break
11.00 – 12.30	Business and Biodiversity: an Opportunity for Organic Farming? Part 2 Mr Nico van der Werf, MSc. Executive Director Projects, Avalon, the Netherlands Ms Natasja Hulst, MSc., Senior Consultant, CREM, the Netherlands Dr Mark Redman, Associated Expert, Avalon, UK/Romania
12.30 – 13.00	Presentation, Discussion and Adoption of the King's Village Declaration on Organic Agriculture, Biodiversity and Business Mr Martien Lankester, MD. Executive Director, Avalon, the Netherlands
13.00 – 14.30	Lunch

The King's Village Declaration on Organic Agriculture, Biodiversity and Business
The Netherlands - November 2009

By endorsing the King's Village declaration, 98 participants, representing 28 nationalities, of the Avalon International Conference on Organic Agriculture, Biodiversity and Business, held on September 30 - October 1, 2009 at King's Village, Sophia, Bulgaria, would like to urge farmers, the business community, consumers and policy makers to act responsibly and to support the further adoption of organic farming.

Organic Agriculture & Protection of Biodiversity

Organic farming can make a substantial contribution in enriching our biodiversity and protecting it from further degradation. This is because careful management, enhancing biodiversity and stimulating the biological processes of the farm ecosystem, is central to all organic farming concepts and practices. Numerous studies indicate that, in general, organic farming is more beneficial to biodiversity than non-organic management, notably intensive conventional agriculture. Organically farmed areas usually have a much higher abundance and diversity of micro-organisms, plants and animals.

Increased Knowledge and Quality through Education and Research

Like organic methods, some traditional farming methods, notably those practised on marginal land (mostly upland grasslands) can also be very beneficial for biodiversity. In many marginal regions traditional farming is the only biodiversity-friendly alternative to land abandonment. Traditional high-nature-value farming methods are usually practised by small-scale, (semi-)subsistence farmers. In most cases their farming practices fully comply with the principles of organic farming. However, since their production is not predominantly market-oriented, and although in most cases fulfilling organic criteria, it is not certified as organic. Further research on harmonization and areas of divergence between organic and high-natural-value farming would be welcome.

Organic Food & Farming – Successful Through Combined Effort

Organic farming provides an ample opportunity for biodiversity-friendly businesses. Organic farming both protects and benefits from biodiversity. Organic food and farming is a growing sector. Besides a number of small and medium sized businesses, several large international companies have already recognised the opportunity for agriculture-based biodiversity-friendly businesses, and their success paves the way for others.
By adopting organic farming in the chain (production, processing and trade), farmers and other businesses are helping to enhance biodiversity. By buying organic food and eating where organic food is served, consumers can also help to protect biodiversity. Together with organic farmers and other relevant parties (e.g. nature protection organisations), they can be a powerful driving force for the further development of organic farming.

Achieving Responsible Legislation

A great deal of responsibility for the development of organic farming and biodiversity-friendly business rests on policy makers. They can change legislation which is detrimental to biodiversity and organic farmers, among which many are small-scale farmers. Notably the existing seed laws favouring industrial businesses and the use of just a few high-yielding varieties should be changed. In order to catalyse the further development of the organic food

and farming sector, policy makers should put into place a set of regulatory, economic and informative policy instruments favouring the development of organic farming and discouraging biodiversity-damaging businesses.

Creating a dialogue

Avalon and its network partners will actively lobby for the recognition of the role that organic farming plays in protecting biodiversity, and invite responsible farmers, consumers and policy makers to support and enable the further adoption and development of organic farming, to help in solving one of the most challenging problems of humankind: loss of biodiversity.

Interested in follow up?

We invite your reactions and welcome discussion in an open dialogue. Please direct your opinions on this subject to office@avalon.nl. For further information and news on this topic, please visit our websites at www.avalon.nl and www.avalon-conference.org.


avalon
Biodiversity
avalon
A better nature with Organic
Agriculture, Biodiversity and Business
Supported by:
VROM


KTBG


avalon


avalon
Prof. Jan Diek van
Mansvelt
/The Netherlands/

Landscape and Agriculture

Jan Diek van Mansvelt

Independent Consultant and Author, the Netherlands
Email: JanDiek@vanMansvelt.nl

ABSTRACT

Landscape management and Agriculture are compared in their opposing and their common features – in the perceptions of those involved. Their common benefits are discussed in the framework of a worldwide transition from segregation toward integration: including that of the citizen / consumer and the farmers that produce their food as well as their rural landscape. The needs to reconsider the use of fossil energy and fresh water – both under threat of global depletion – is discussed.

1. The concept of landscape

To me, landscape is what I see and otherwise experience around me. So we meet urban landscapes in villages, towns and cities, whereas we meet rural landscapes in the rural areas and wild landscapes in the wilderness – wherever that can still be found these days.

Landscape has colours, forms, smells, tastes, sounds; it touches feelings, it has an atmosphere, a character, even an identity. To discuss and do research on landscapes, it is crucial to always clarify which landscape is under discussion: what is the scale, what are the limits and borders of the landscape that you mean.

But most important here: do not think landscape starts where agriculture finishes or vice versa: rural landscape refers to all the non-urban landscapes, all links and barriers included.
Nature conservation is fine as a part of landscape management, as is the design and management of parks or gardens of whatever size. Rivers, ponds, lakes, marshes, shores: they all Figure in landscapes, as do hills, slopes, mountains and cliffs. But also farmhouses, sheds and stables, roads and pathways, hedges and fences, hamlets and villages are an intrinsic part of the rural landscape that they Figure in.

2. The agro-landscape

What does agriculture mean for a landscape; how does the farmer effect the landscape management? First of all: the farmer works the land in order to facilitate his production. He structures the land in parcels, he regulates its wetness / drought; he controls the ditches, holes and pits, streams and creeks. He can work the land going transverse to the slope line (contour wise) or, up-and-downhill, thus creating little soil erosion in the first case and much in the latter one.

2.1 Soil fertility

However, for the farmer, I see as his most important contribution to the landscape management his art of increasing the local soil fertility on all the lands he works. Soil erosion is the root of landscape erosion; humus a key to the soil's fertility[1]. Obviously the humus content can balance between to much and to little. But in today's agriculture worldwide, the first is quite rare and the last most common.

Here I must add that in rich countries easily two trends can be found: over fertilisation with NPK and / or over manuring with liquid manure. In both cases we find a breakdown of soil / humus (mineralisation) instead of soil / humus building.

Most crop diseases and pests, by the way, reflect bad soil and ecosystem management.

[1] Here a variety of humus types can be distinguished, ranging from very young, N-rich and short-living to very old, N-poor and peaty conservative, with most useful qualities in between those extremes.

A good soil management demands the art of good compost and manure making and application, supported by appropriate attention of the farmer, appropriate room (space) on the farm and appropriate manure mechanisation (aeration, C/N balance, storage, field application).

Do note that the application of manure is 'only' a way of N-reallocation in space and time; it does not really add N to the farm!

2.2 Crop rotation

As another crucial instrument for soil fertility management the farmer has his crop rotation. Varying so called demanding crops with neutral and giving crops, in space and or in time, allows the farmer to make sure that his soils structure and organic matter content warrant sustainable harvest levels as well as sustainable crops and soil quality. Interestingly this goes along with three intrinsic 'side' effects[2].

First a good crop rotation is crucial in pest prevention, together with its contribution to soil quality which warrants low pest incidents. Secondly a highly varied crop rotation contributes to the landscape's structure, colours, smells etc. Landscape diversity is obviously served by an enriching crop rotation (that is: soil and landscape enriching). Thirdly those two are the key to crop quality and quantity (Torjusen *et al*., 2001).

In the sustainable, soil fertility warranting crop rotation, the N-fixing crops are crucial as they provide the N together with the C that stabilises its volatile nature. Green manure production with leguminous crops is important as it is the only way the farm gets N from outside (the air).

Do note that crop production is the tool to bring N into your farm!

2.3 Animal Husbandry

Another crucial instrument for soil fertility management is animal husbandry. Seen from this point of view the key question is how much of which type of animals can serve best to warrant this particular farm's soil fertility, which is needed for the farm's optimal crop (human food) production.

Not the maximally allowed number of cattle units per ha but the minimally needed c.u./ha is crucial. The more the farm is into vegetable production adding to the arable production, the more reason the consider adding pigs to the cattle; the more on-farm work on the grains is done (storing, cleaning, milling) the more reason to add poultry as well.

All specialised high quantity production of whatever animals boils down to stress of the livestock, the environment (too much stress food in; to much bad waste out), the farmer and ultimately the consumers are victimized as well: world-wide.

2.4 Mixed farming

Here I mean mixing plant- and animal production in a farm or a farming system.

Referring to the before said regarding crop rotation, animal production and manuring, I guess it's clear that combining animal and plant production is the optimal strategy for a sustainable agriculture that produces an appreciated landscape as well as appreciable healthy food.

In view of all the options for mixed farming, most crucial are the capacity, the preference and the personal presence of the farmer.

Please do realise that 'the farmer' can also be a farming woman, a farming couple or a farming team (couple of couples, couples and singles, etc). Here again there is a range of opportunities, each with their particular strength's and weaknesses, threats and opportunities.

[2] Side effect when seen from an outsider's analytical point of view; intrinsic when seen from a farmers holistic understanding.

The more complex the farming system the larger the options for internal eco-networking (recycling), the greater the options for autonomy of the farming system (Anonymous, 2006).

This is very much in contrast to the history of agriculture over the last century in Western countries, which are then followed by farming systems in other countries world wide. The historical trend I mean here is that of specialisation that goes along with decreasing labour and knowledge intensity, increasing investment of external capital (lending form banks), increasing farmland surface per farm and increasing size & weight of agro-mechanisation & agro-chemisation. They all cause soil erosion (Boincean, 2009).

If you're a farmer, the banks want your money, not the fertility of your soils, nor the beauty of your farm landscape or the quality of your products. Moreover the industry wants your money as well, not the fertility of your soils, the beauty of your farm landscape, your food's health.

Governments tend to focus on cheap food for their voters to warrant cheap industry labour and cheap civil servants. They also want the tax money from the banks and the agro-food & health industry, which brings them more that the poor farmers do[3]. In most Western countries the ministries of Agriculture cherish the people's idea that they care for agri-culture but in fact they - by and large - work solely for the agro-industry. The less farmers and the more consumers the better: that is their obvious strategy over the last century! Guess for whom that is better on the long run.

3. The Landscape-management

Let me now say a few words on landscape production. What does agriculture mean for a landscape; what is the role of the farmer for the landscape management?

First of all: the landscape is managed according to a landscape concept just as farmers work their land according to their farming concept. Such concepts are part of a state of mind, a way of thinking, a value system and a way to act-as-usual, in short: a practised world view. Both landscape management and farming, each in its diversity, reflect and represent particular worldviews – although the actors might not be aware thereof.

3.1 Species and habitat conservation[4]

As of old the landscape management was closely linked to nature conservation and 'thus' opted to keep farming out of the lands they managed. Still - in the landscape conservation concept of today - all farmers are inevitably ruining the original / natural qualities of the landscape by structuring the land in parcels, regulating its wetness / drought, controlling the ditches, holes and pits, streams and creeks, killing the wildlife directly (hunting, trapping) or indirectly (destroying the wildlife's habitat). The farmers focus on cultivating the land, whereas the conservative landscape management is focused on habitat conservation for rare plant- and animal species. And there they surely have a point. A point that however is quite dependent on the frame of reference they have chosen to use. For example:

- what point in history do they choose to 'define' the 'natural' ecosystem / biotope of that particular area / region?[5]
- what plant of animal species are chosen as a reference to indicate the 'naturalness' of the biotope at hand?

Interestingly, borders in the landscape or transition zones show a much richer biodiversity than 'pure' established ones. However: needle forests (always green), deciduous forests (colouring & falling leafs), dry lands and wetlands, heathers and moors: each have there particular plant and animal specific species – which tend to be few but therefore not unimportant and not worth sustainable management.

[3] I could elaborate on the link between cheap food and high costs of Medicare: a positive link as seen by the government and medical industry together. Here food industry and medical industry both make money from cheap food and environmental pollution, without government / society effectively demanding a transition.

[4] See for example: http://en.wikipedia.org/wiki/National_Landscape_Conservation_System; http://en.wikipedia.org/wiki/The_Landscape_Agency ; http://fr.wikipedia.org/wiki/%C3%89cologie_du_paysage ; http://de.wikipedia.org/wiki/Landschafts%C3%B6kologie .

[5] For example: 1950? 1850? 1700? 1000? Or before the glaciers?

On top of that, the presence of grazing animals effects each of the systems. You can easily imagine a sheep landscape, a cattle landscape, a goat landscape, a deer landscape, a wild boar landscape and a horse landscape, and so on, including several combinations of the before mentioned.

Similarly, for birds it holds that species-rich areas ('hotspots') frequently do not coincide for different taxa, and many rare species do not occur in the most species-rich squares (Prendergast *et al.*, 1993). However, as Mayers et al state: 44% of all species of vascular plants and 35% of all species in four vertebrate groups are confined to 25 hotspots comprising only 1.4% of the land surface of the Earth. This opens the way for a 'silver bullet' strategy on the part of conservation planners, focusing on these hotspots in proportion to their share of the world's species at risk (Myers *et al.*, 2000). Efficient as this argument sounds, it should not be understood to mean that the other 56% of plant and 65% of animal species living outside the silver bullets can be just ignored.

Moreover, there is the conservationists' challenge to face the natural succession, particularly that of 'early' (pioneer) stages, as they all tend toward their climax stage under the particular soil-climate condition that is at stake.

3.2 Landscape organisation's concerns

Key issues of the landscape activists are the defence of nature on all levels, ranging from full landscapes to selected species. They tend to defend 'natural' (original, virgin) landscapes against urbanisation and unlimited logging, hunting, fishing and mining: activities that benefit a small number of industrial capitalists, at the costs of natural ecosystems and large populations in rural societies. By and large the motives for landscape conservation can be well understood and respected (Martín-López *et al*., 2006).

However, as human history proceeds and cultures develop, conservation alone is a dead end policy, and tends to bow for the psychological resistance against all development that is regarded as 'naturally' present in humans.

Here I argue that ecosystem's succession, cultural evolution and sustainable development are notions to be included in the mentioned respect for nature that nature conservation has its roots in (Pedroli, *et al.*, 2007).

When by and large we nowadays divide the rural land in 'white' food production areas and 'green' natural conservation areas for tourism (physical exercise and sense perception), we disregard the double use potential of both: the food from the forest[6] and the beauty of the farmland, including its opportunities for physical labour (work-out).

Some products from Forest Farming viz. Agro-Forestry:

- edible flowers, eg. elderflowers
- canopy trees like hazelnuts, walnuts, chestnuts, pecans, pine nuts
- vegetables, eg. radish, beetroot, Swiss chard, honey from bee plants, eg. plum, black locust
- herbs, eg. mints
- fruits, eg. blueberries, elderberries, blackberries, raspberries, strawberries, currants, gooseberries
- sap products - eg. maple syrup, birch sap wine etc.

3.3 Individual preferences

Interestingly, in options for landscape management and nature conservation a similar phenomenon can be found as in agricultural land use: the personal preferences of the management / the decision makers.

The type of 'nature' they prefer is as semi-rational as the type of farming chosen by the farmer / landlord. This is not to blame any of them, but to emphasise the importance to be aware of that intrinsic moment of freedom for each management: freedom to choose the system you want to belong to, and want to contribute to (van den Berg, 1999). This goes back to the early stages in history where aristocracy and clergy in their castles and cloisters, each with their widely surrounding lands farmed

[6] See at http://www.foodforest.com.au/ ; www.forest-food.co.uk/ ; www.agroforestry.co.uk/forfarm.html

out to leasing farmers, each had their specific identity reflecting the landlords´ preferences. The same holds for parks and gardens in cities.

In all ways the individual preference of those responsible interact with others, they tend to fit the fashion of the particular time and region, wherein most are followers of fashion and only some are trend setters viz. opinionated lone rangers. You find them both, among farmers, home gardeners, landscape managers and conservationists all alike.

4. Dualism separates – the public alienated – a social disconnection

The dualistic concept (nature vs. agriculture) had its function in practice, but was overly strengthened by science's and politics' way of particles thinking. Mutually separating out one another discouraged farmers to realise in how much they actually create most of the landscape that travellers see when they cross the country by car, train, bike or when walking.
Fencing out both nature (don't touch) and agriculture (keep out) makes the public alienate from both, contributing to the emergence of Disneyland type of fun parks – where the public can spend money on freak nature like dragons and dolphins in swimming ponds. Nature as kermis or village fair. Not as a crucial base for our survival / for a sustainable development for our offspring.
In the same line of separating out the public from their roots lies the supermarket's emergence, where the focus is on more or less sophisticated, mainly processed food from 'nowhere' and 'always'.

5. Holism integrates – the public reconnected – a social renovation

In the sub stream or counter current of society, a variety of efforts can be found of people that realise their personal responsibility for the future of the world they live in[7]. To give an idea on some options on how to contribute to the integration, as practised in various countries worldwide, here are some options (Popov, 2006):

- Farmers cooperating with environmental protectionists & their organisations by
    - Warranting a high carbon concentration in their manure (low N losses)
    - Feeding the cattle maximal carbohydrates and minimal proteins (id.)
    - Minimize gasoline use (from depleting non renewable resources to maximal use of renewable energy – minimal ploughing, minimal HP traction, minimal transport of primary products)
    - Minimise freshwater use to prevent depletion (go for crop rotations that need minimal irrigation)
    - Transition to on farm production of wind- and solar energy (surplus sold for fair prices to the common / public networks)
    - Lowering greenhouse gas emissions (Znaor, 2009 and Znaor 2009a).
- Farmers cooperating with nature conservationists & their organisations by
    - Later mowing to protect birds´ breeding and grassland herbs flowering (Aguiar, 2008)
    - Introducing N fixing leguminous species and selected dairy and meat management to prevent soil, water and air pollution in grasslands (Richard *et al*., 2001)
    - Introducing various forms of woodlands (bushes, hedges, shrubs) on and around their lands for wildlife (biodiversity), farm climate, CO2 fixation (Chen, et al. 2006).
    - High Nature Value Farming (de Rijck, K. and Erg, B., 2006; IEEP, 2007, Redman, 2009)
- Farmers cooperating with animal welfare organisations
    - Animal friendly husbandry – species specific management; going for longlivety, health and happiness of the cattle, pigs and poultry
    - Creating or conserving biotopes for birds, bees, butterflies, on the farmland, together with shade and lee for the grazing animals.
- Farmers cooperating with citizens by organising labour opportunities on their farms for
    - Mentally handicapped people (young an old) (Bonnet, 1997)
    - Recovery for warn out and overstressed people (m/f)

[7] See the films ´Farming for our Future´ and ´Home´.

    - Drug addicts reintegration after quitting their drogue habit
    - Delinquents on their way to re-socialisation.

- Farmers cooperating with citizens / society by producing according to the consumers demand
    - Community Supporter (Shared) Agriculture (CSA): a know group of citizens warranting the farmer´ income in exchange for a weekly food package[8]
    - Farm holidays, camping on farms, farm weekend events, harvesting festivals
    - Farmers producing on x years´ contract for institutions (schools, senior nursing houses, industry kitchens (labour lunches), hospitals): fresh & healthy!
    - Farmers cooperating with regional hotels, restaurants, cafés to deliver their unique regional produce.

- On farm upgrading and sale of the raw harvest products: raw milk, cheese, butter, curds, bread, wine, fruit juice, compote, honey, flowers, oils.
    - Regional on farm produced products (regional & farm identity!)
    - Additional income – job diversification & job creation.

- On farm reuse of farm wastes for animal feeding and manure – compost production

- Make sure GMO crops are banned – their production destroys biodiversity, rural agriculture and the health of the whole system: from farms to households[9]

- Small scale farmers' organisations to trade out with governments a fair share of the public funding spend for agriculture for farms managing less than 5 ha. Thereto their cooperation with the above mentioned nature, environment and consumers' organisations can increase the political impact of their fair demands

In all cases mentioned, the increase of farms´ complexity contributes to their resource efficiency (Znaor *et al.*, 2005; Boincean, 2006)! And it obviously is up to each farmer to find the mix of diversification that fits him, her, their farm's situation (history – biography – opportunity). For the self awareness of farmers it is important to look into today's trend for plural jobs viz. mixing part-time jobs becomes socially seen increasingly acceptable and much appreciated by those doing a mix of jobs fitting their individual capacities and demands.
Thus, in my opinion, the trend for the future is re-appreciation of the rural life, re-appreciation of rural landscapes´ biodiversity combined with rural social and cultural diversity.

Farms with a face, elaborating their unique identity of place, history and leadership vision, are the farms of the future. People want to meat and eat identity as a contribution to the development of their own identity.

6. Agro Landscape management in a global framework of resource depletion

The above mentioned strategies, when elaborated in the context of organic ecological and fair trade ideals, including HNVF, will certainly contribute to a sustainable development: local as well as global. In view of the world wide efforts to meet the enormous challenges of:

- Oil reserve depletion
- Fresh water reserve depletion
- Global heating – CO_2 emissions, methane emission

They all underpin the long standing arguments of people pleading for a transition of today's agriculture toward an agriculture that meets such ideals as those of Organic –, Biodynamic Agriculture, Fair Trade, Permaculture, HNVF and Slow Food.

Every step people make in agriculture, every single act they do or do not, reflects a decision to contribute to a system that they want to belong to.

[8] See for instance www.nal.usda.gov/afsic/pubs/csa/csafarmer.shtml
[9] See for instance http://db.zs-intern.de/uploads/1189158018-Romania2.pdf

Excerpt from a Dutch report: Nature in the feet and between the ears (Lenman, *et al*., 2006)

Nature gets up and takes root; the effect of social incentives on the quality and performance of nature conservation by farmers, apart from financial incentives, social incentives are important in realising nature and landscape conservation programmes on farms in the Netherlands. Social incentives aim to realise a change in behaviour or attitude, not forced to by financial or legal means. These incentives are aimed at the incorporation of nature and landscape in the mentality and the management of the farmer.

This research project provides information on the effect of these social incentives on the implementation and the quality of activities to conserve nature and landscape by farmers. This information leads to the identification of options for the National government to support these social incentives. Therefore, we analysed incentives related to environmental cooperatives, their members and other farmers who take part in the main nature and landscape programme in the Netherlands.

Through literature study we further elaborated social incentives in the Dutch context. This resulted in a questionnaire, which we used in 17 interviews with representatives of environmental cooperatives and farmers who are active in nature and landscape conservation. The farmers were either a member of a cooperative or not. Themes in the questionnaire were motives, goals and activities of both farmers and cooperatives. The results were used to identify relevant social incentives.

The presence of environmental cooperatives alone is a major social incentive. It encourages participation of farmers, by helping them with the procedures to enrol. They refer to other than economic motives alone. These cooperatives themselves also show different motives: ideal, traditional and economic motives. Ideal motives originate from concerns about the relation between agriculture and the civilian population, as well as from environmental concerns. Traditionally motivated cooperatives focus mainly on regional (agricultural) problems, whereas economically motivated cooperatives regard nature and landscape activities as a possible economic pillar, next to other farm activities. Members of cooperatives do not necessarily have the same motivation as their cooperatives have.

All cooperatives enhance the information environment of the nature and landscape conservation programme. Ideally motivated cooperatives, and to a lesser extent also traditionally motivated cooperatives, seem to succeed in incorporating nature and landscape in the mentality and the management of their members. Civilians do participate in the activities of the cooperatives, but the effect on nature and landscape conservation is still unclear. In their region, ideally and traditionally motivated cooperatives are frequently asked by other stakeholders to participate in projects and regional planning activities.

This is the major social incentive received by these cooperatives; members and other farmers both regard this as very important. Sometimes, cooperatives seem to be dependent on one or two key persons, and this could mean that their continuity is threatened.

Cooperatives and farmers express their wish to have more influence on the implementation of the nature and landscape conservation programme. In some regions, attitudes towards nature differ significantly amongst farmers; some are afraid of the consequences of nature and landscape activities on their farms.

The government has options to support social incentives, which lead to a positive effect on the implementation and the quality of activities to conserve nature and landscape on farms. A first option is to express the importance of environmental cooperatives for the whole of the countryside in the Netherlands. Secondly, nature policy could stimulate the contribution of farmers and environmental cooperatives, and act upon their responsibility. This would certainly improve the social bond between agriculture and nature policy. Together with the agricultural sector, government could stimulate cooperation and knowledge transfer between cooperatives with different motives. Another option is to put more emphasis on continuity in the organisation of the cooperatives.

7. References

Aguiar, R.M., 2008. Biodiversity in Grasslands. Current Changes and Future Scenarios. From: http://www.fao.org/ag/AGP/agpc/doc/climate/aguiar/aguiar.pdf

Anonymous, 2006. Proceedings from the First International Conference on Agriculture and Rural Development Topusko, Croatia, November 23-25 2006.

Boincean, B., 2009. Farming Practices in Moldova for Preventing Pollution and Degradation of the Environment. In: Bahadir, A.M. and Gheorghe, D. (Eds.): The Role of Ecological Chemistry in Pollution Research and Sustainable Development. Springer.

Boincean, B., 2006. Toward Sustainable Farming Systems in the Republic of Moldova. From: http://www.ldd.go.th/18wcss/techprogram/P19178.HTM

Bonnet, M., 1997. Motor disabled people in the agricultural and rural sector in Cambodia. From: http://www.fao.org/sd/ppdirect/PPan0011.htm

Chen, Y., *et al.* 2006. Emission and Fixation of CO_2 from Soil System as Influenced by Long-Term Application of Organic Manure in Paddy Soils, Agricultural Sciences in China, Volume 5, Issue 6, p. 456-461.

de Rijck, K. and Erg, B., 2006. High Nature Value farming in the Western Balkans Final report of Workshop on High Nature Value farming in the Western Balkans 2-3 February 2006, Belgrade. WWF Danube-Carpathian Programme, Sofia

IEEP, 2007. Final Report for the Study on HNV indicators for evaluation. Contract Notice 2006-G4-04. Institute for European Environmental Policy, London.

Lenman., H., Groten, J., de Bakker, E. and van der Elst, M., 2006. Natuur in de benen en tussen de oren. Over de effecten van sociale stimulansen op de uitvoering en de kwaliteit van agrarisch natuurbeheer. Rapport 7.06.09; LEI, Den Haag.

Martín-López, B. *et al.*: The non-economic motives behind the willingness to pay for biodiversity conservation. Biologicsal Conservation Volume 139, Issues 1-2, September 2007, p 67-82.

Norman Myers et al., 2000. Biodiversity hotspots for conservation priorities. Nature 403, p. 853-858

Pedroli, G.B.M.; Elsen, T. van; Mansvelt, J.D. Van, 2007. Values of rural landscapes in Europe: inspiration or by-product? NJAS Wageningen Journal of Life Sciences 54 (4). - p. 431 - 447. http://dissertations.ub.rug.nl/faculties/ppsw/1999/a.e.van.den.berg/

Popov, V., 2006. How to successfully set up and implement National Action Plan for Organic Foodand Farming. From: http://eko.laei.lt/eko_fls/fao2006/11_ZUM_strategijos%20diskusijos%202006-11-30_Vlad_EN.pdf

Prendergast, J.R. *et. al.*, 1993. Rare species, the coincidence of diversity hotspots and conservation strategies. Nature 365, p. 335 - 337.

Redman, M.H., 2009., High Nature Value or Organic? Conserving Farmland Biodiversity in Transition CountriesIn: Znaor, D. (ed.), 2009. Organic Agriculture and Climate Change. Proceeding of the International Conference held in Sofia, September 28-29, 2009. Avalon, Wommels

Richard T. Conant, Keith Paustian, Edward T. Elliott (2001) Grrassland management and conversion into grassland: effects on soil carbon. Ecological Applications: Vol. 11, No. 2, pp. 343-355.

Torjusen, H., *et al.*, 2001. Food system orientation and quality perception among consumers and producers of organic food in Hedmark County, Norway: Food Quality and Preference, Volume 12, Issue 3, April 2001, Pages 207-216.

van den Berg, A.E., 1999. Individual differences in the aesthetic evaluation of natural landscapes, Dissertation, RUG, From:

Znaor D., Pretty, J.N., Karoglan Todorović, S. and Morison, J., 2005. Macro-economic and environmental implications of large-scale conversion to organic farming in Croatia. University of Essex, Colchester and Food and Agriculture Organisation of the United Nations, Rome. From: ftp://ftp.fao.org/paia/organicag/2005_12_doc02.pdf

Znaor, D. 2009. Impact of Large-Scale Conversion to Organic Farming on Greenhouse Gas Emissions. In: Znaor, D (ed.): Proceeding of the International Conference held in Sofia, September 28-29, 2009. Avalon, Wommels

Znaor, D. (ed.), 2009a. Organic Agriculture and Climate Change. Proceeding of the International Conference held in Sofia, September 28-29, 2009. Avalon, Wommels


LEAF

Linking sustainable farming, biodiversity and business: UK demonstration farms programme

Robert Kynaston

LEAF (Linking Environment and Farming), UK
Email: robert.kynaston@ukgateway.net

1. Background

LEAF was formed in 1991 by UK farmers who were concerned with the sustainability of farming at that time. It was also recognized that the public had become disconnected with where their food came from and how it was produced.

LEAF was created by farmers to address these problems that farmers were facing. This was done by developing Integrated Farm Management (IFM). Over the years LEAF has worked with the wider agricultural industry, wildlife organizations and government. LEAF's aim is to work and co-operate with other organizations rather than duplicate their work. There are now over 2,000 farming members of LEAF, with 10 percent of UK being farmed under Integrated Farm Management principles. A practical way of doing this is by using the LEAF Audit. The Audit is now a computer based self assessment set of questions which do not duplicate existing assurance scheme but add a whole farm view of what is being done; from the soil to government regulation.

2. Sustainable farming

In the short term; sustainable farming must be economically sustainable. It is of no benefit to farm in a sustainable way only to go out of business and the land to then be farmed in an unsustainable way by someone else, who by farming unsustainably is making a profit.

In the medium term; reduce the use of natural resources both finite, such as oil and certain minerals like phosphates, and water, air and soil.

The reduction of the release of carbon dioxide, methane and nitrous oxide into the atmosphere will slow climate change. The increasing rate of climate change will put great pressure on biodiverse eco-systems.

And that is the long term aim; to stop the decline of biodiversity. An important part of achieving this is to explain to the general public why it is important.

Integrated Farm Management encourages farmers to farm in a sustainable way by looking at the whole farm and making it work together in a balanced fashion. The audit is a central aid in this, focusing on 8 main areas which relate to the aims above.

Making a living PR & marketing	))	Economic sustainability
Energy efficiency Crop husbandry Waste managements	)))	Protecting natural resources
Wildlife and landscape Soil management Animal husbandry	)))	Stop the decline in biodiversity

Integrated Farm Management uses the best of traditional farming practices to achieve this. Farming has evolved over thousands of years, and that knowledge is invaluable in keeping it sustainable. But farming is still evolving and so is IFM. Thus it looks to and uses the best of modern technology. Not

all modern technology is sustainable, while others are not at present but may be with future development; but farming cannot be bound by unchanging rules and needs to move forward.

3. LEAF Demonstration Farms

There are 50 demonstration farms around Britain, as well as 20 colleges and research establishments which are LEAF Innovation Centres. The demonstration farms fulfil various important functions: influence politicians, general public and farmers.

LEAF is involved with government consultation, and by getting politicians out onto farms a better understanding is created between the two. Politicians need farmers to deliver some of their targets; just as farmers need politicians to create a framework to farm sustainably.

For interested groups of the general public, they can arrange a visit to a demonstration farm. There are many different types of demonstration farm so if a group as a particular interest then there is usually a farm which can host that particular visit. Schools and colleges also use demonstration farms, since the farmers are trained by LEAF in how to communicate what they are doing in an informative but understandable language. Not to use farming jargon is a major advantage when speaking the people with no farming background.

LEAF realized that although many people were visiting farms they were all involved with a group, society or education.

So LEAF tried to find a way to open farms to the public which would not result in people arriving at a working farm on any day of the week and expect to be taken round. It was brought to LEAF's notice that countries in Europe hold a Green Sunday on one day a year when some farmers host visits by the public.

LEAF has run Open Farm Sunday for the last 4 years. One Sunday in early June as many farms as possible are encouraged to open their gates to the public. It is not just restricted to LEAF farms; any farm that wants to be involved is welcomed. This year The Soil Association was very actively involved.

There is national press coverage and a website to find the closest open farm. This year there were: 425 events; 6,000 helpers at these events; other farmers, friends etc.; 140,000 visitors; as well as press coverage in national and local papers and on the radio about the day.

This involvement of non LEAF farmers is an important step in making those farmers think about what they are doing and draw them into a sustainable farming method.

LEAF is also making LEAF farms economically sustainable by developing the LEAF Marque brand. This gives farmers an environmental standard to their product beyond the standard assurance schemes. This can give a premium price or it can allow the sale of product to certain retailers which ask for the LEAF Marque standard.

Integrated Farm Management also delivers economic sustainability by helping farmers reduce the unit cost of production be better use of the farm's resources.

4. The LEAF Audit

The audit, as said above, makes farmers examine their business. It asks farmers to take action where areas of weakness or underperformance are found. Farmers are asked at say when these changes will be done. The next year these changes are assessed and new ones set. This is continual, proactive development. Improvement is made in steady manageable steps.

Since this audit is computer based and connected to the internet there is the ability to compare one farm against the averaged results of all the farms. A farmer can see how many other farmers are doing certain things and to what extent.

LEAF also can see how performance changes over time. If there is a decline in any area, LEAF can find out why and focus changes to stop that decline.

Some questions are rated to show how, if certain measures are adopted, they improve economic and environmental performance.

Integrated Farm Management can reduce the decline in biodiversity as long as the farmer wants to achieve that goal; as in any system there is a range of outcomes.

Biodiversity-based organic farming business booming in Croatia

Sonja Karoglan Todorović

Ecologica, Croatia
Email: sonja.karoglan-todorovic@zg.t-com.hr

ABSTRACT

As farmland covers more than half of the total Croatian land area, the type of agriculture that is predominant is one of the most important factors in the conservation of Croatia's biodiversity. There is a large body of evidence that organic farming supports a much higher level of biodiversity than conventional farming systems. Organic farming applies many beneficial practices, reversing the trends in conventional farming that have caused a decline in biodiversity. The Croatian organic agriculture sector has recorded a rapid expansion over the last couple of years. In 2008 Croatia had some 10 000 hectares under organic farming managed by some 630 - mostly family - farms. Many of these farms are viable businesses contributing significantly to biodiversity conservation.

1. Introduction

Croatia is a Central European and Mediterranean country with a population of 4.5 million. It stretches from the slopes of the Alps deep into the Pannonian Valley to the banks of the Danube and Drava rivers. The high biodiversity in Croatia is enhanced by its location in quite different climatic, (geo) morphological and hydrological zones: the Danube floodplain, the Karst limestone zone, the Dinaric Alps and the Mediterranean Coast with its unique islands. There is a huge diversity of ecosystems and agriculture land use practices in Croatia - from intensive agriculture in the western part of the country, across karst areas with traditional grassland management practices in the middle, to the Mediterranean crop cultivation in the coastal area along the Adriatic Sea. Because there is such a wide range of climatic conditions and geographical regions across the territory, the agricultural output is exceptionally diverse for a country of this size.

Figure 1: Diversity of Croatian agriculture (photo S. Karoglan T., D. Znaor and Web)

Currently, around a quarter of Croatia's territory is utilised agricultural land (1.3 million ha), supporting almost 450,000 farms. Family farms constitute the core of the agricultural sector of Croatia, occupying 80% of the total agricultural land and owning 82% of the livestock. Although as many as three quarters of all Croatian family farms are smaller than 3 hectares the average size of a vital, commercial family farm is substantially bigger - 12 hectares. The vast majority of these family

holdings are mixed farms with crop and animal production, knitted together in a mosaic pattern across the landscape.

Such varied farming activities are at the heart of Croatia's agriculture and are a vital socio-economic lifeline for people living in rural areas. They are also an important component of Croatia's cultural identity and of its rich natural heritage.

2. Organic agriculture in Croatia

The Croatian organic agriculture sector has recorded a rapid expansion over the last couple of years. According to the data of the Ministry of Agriculture, Croatia has some 10 000 hectares under organic farming managed by some 630 - mostly family - farms (Figures 2 and 3).

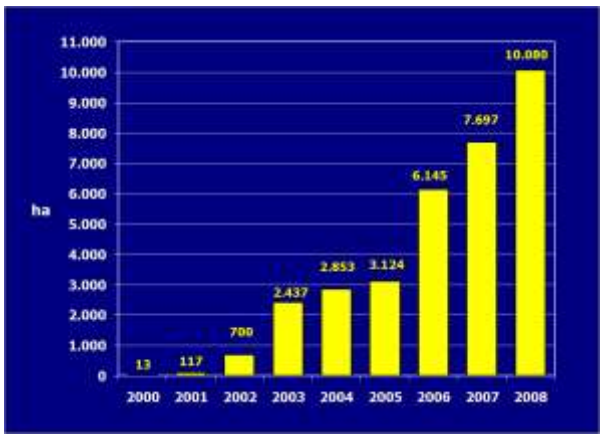


Figure 2: Area under organic farming

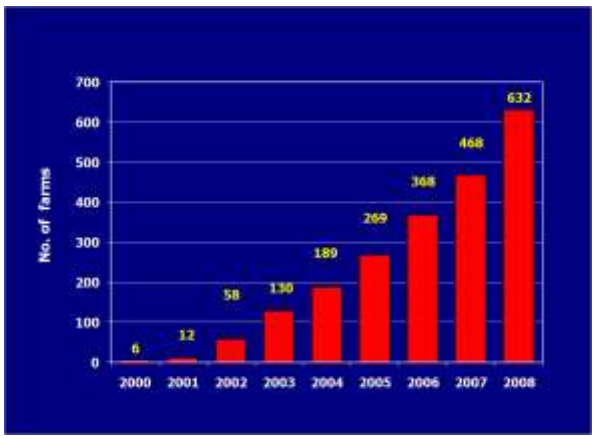


Figure 3: Number of organic farms

Cereals are grown on 2 445 ha, root crops on 56 ha, industrial crops on 299 ha, green fodder on 3 883 ha, vegetables on 96 ha, permanent crops (orchards, vineyards and olive trees) on 1 100 ha and other arable crops on 278 ha. Permanent grassland accounts for 1 739 ha. There are 10 428 sheep, 2 780 goats, 5 811 cattle, 337 pigs, 409 equidae and 3 608 poultry.

Organic farming in Croatia is regulated by the Law on Organic Agriculture adopted in 2001. In 2003 the government introduced subsidies to support organic farming (400 EUR/ha of arable land). All registered organic farmers (both in conversion and fully converted) are entitled to subsidies. This had a great impact on the development of the sector and the area under organic management has increased tenfold in five years since the introduction of subsidies. In 2007, Ministry of Agriculture spent some 2.3 million EUR on subsidies for organic farming.

Croatia has a fully functioning domestic inspection and certification system. There are five inspection and four certification organizations accredited by the Ministry of Agriculture.

Neither data on the organic market nor a thorough market analysis exists and the value of the Croatian organic food sector is difficult to estimate. Almost all products are sold on the domestic market. The premium price is in the range of 30 to 100 percent. Only a few organic enterprises export their products, mostly herbs and spices. Organic produce is sold either directly at the farm and farmers markets or at numerous health food shops. Almost all supermarket chains also sell organic products but most of these are imported.

3. Why does agriculture matter for biodiversity in Croatia?

In addition to food and fibre, agricultural land provides public goods in the form of wildlife habitats, protection of natural resources, aesthetic scenery and cultural preservation. Agriculture shapes the landscape and influences its quality and character. The landscape value of farmland represents the scenic beauty created by rural landscape, such as open fields, orchards, and herds of livestock grazing

in green pastures. Farmland, especially grassland and meadow orchards are very biodiversity rich habitats, hosting numerous valuable species.

As farmland covers more than half of the total Croatian land area, the type of agriculture that is predominant is one of the most important factors in the conservation of the Croatia's biodiversity. Intensive as well as extensive agriculture has an adverse impact on nature and the environment in Croatia. On one hand, the changes in traditional farming practice that have taken place during the last decades are the result of intensification of farming. These comprise the specialization of production, an increasing use of industrial fertilisers and pesticides, narrow crop rotations, changes in the types of crops grown and loss of field boundaries. This increases environmental pressures including soil erosion, loss of organic content, water pollution and a decreased number of wildlife species. During the last 50 years, a major part of Croatia's lowland grassland has been converted into arable land. Extensive land reclamation and regulation of watercourses has left hardly any marshy and wet grasslands. They are now very extensively and only temporarily used for grazing and mowing. This is resulting in a significant decline in biodiversity.

At the other hand, land use has been strongly influenced by the process of economic transition and the exodus of the rural population caused by the recent war. The dissolution of a number of large state co-operatives and the failure of the state-planned economy resulted in the abandonment of 1 million hectares of agricultural land. A particular threat is the absence of mowing and grazing operations. Due to the lack of livestock shrubs and other pioneering vegetation is taking over vast areas and thus diminishing the biodiversity of the rich meadows and pastures. This results in reforestation and the loss of species-rich grasslands and open landscape important for migratory birds and many other species.

As a candidate country for membership to the EU, Croatia has to prepare to designate NATURA 2000 sites, the centrepiece of the EU's biodiversity policy. The NATURA 2000 network is a European ecological network, created to conserve more than 1 000 endangered and endemic species and approximately 230 natural habitat types as described in the EU Birds and Habitats Directives. By its date of accession to the EU, Croatia will have to propose sites for more than 250 species and 70 habitat types important for protection within the NATURA 2000 network.

Figure 4: Traditional farming practices beneficial for biodiversity (photo S. Karoglan T.)

A large number of the NATURA 2000 sites are located in agricultural areas. In Croatia, an area of 2 224 082 hectares has been preliminary designated for the NATURA 2000 network and out of this some 739 000 ha (33%) are agricultural habitats. It is a requirement of the EU Birds and Habitats Directives that these habitats are maintained in a favourable conservation status. Because high

biodiversity levels usually coincide with low agricultural outputs and small-scale farming, most of the farmland in proposed NATURA 2000 sites is located in marginal farming areas rather than in intensively managed arable land. Given the fact that each third hectare of NATURA 2000 in Croatia will have to be managed by farmers, it is necessary to work out conservation measures that farmers who live and work in these regions can easily adopt.

4. How does organic agriculture benefit biodiversity?

There is a large body of evidence that organic farming supports a much higher level of biodiversity than conventional farming systems. Organic farming applies many beneficial practices, reversing the trends in conventional farming that have caused the decline in biodiversity. Three broad management options are particularly beneficial to farmland biodiversity: prohibition/reduced use of chemical pesticides and inorganic fertilisers; sympathetic management of non-crop habitats and field margins and preservation of mixed farming (Hole *et al.*, 2005).

According to the Soil Association (2000) the following practices benefit biodiversity on organic farms:

1. Mixed farming provides a range of wildlife habitats across the farm area, a greater variety of food sources and also food sources at different times of the year, as well as a variety of nesting habitats.
2. Crop rotations with grass leys are a key means of achieving pest and weed control.
3. Spring sown crops supply important nesting habitats for ground nesting birds and the stubble over winter provides important food sources (weeds and grain) for seed eating birds.
4. The avoidance of agrochemicals is the best-known feature of organic crop production systems. It means there are higher levels of invertebrates and wild plants that form the base of food chains and support natural predators.
5. Maintenance of trees, hedges and fields margins as habitats of natural predators, such as spider, birds and beetles.
6. Green manuring - ploughing in of unharvested crops for fertility building/retention - is also valuable for supporting invertebrate populations.
7. Undersowing - the sowing of grass or clover leys under a cereal crop so that it exists at low levels while the crop is there and then after harvest, growth takes off.
8. Intercropping - the growing of two or more different types of crop within the same row or in alternative rows at the same time on a field. It is done for pest and disease or fertility reasons.

5. Biodiversity-based businesses in the agricultural sector

Typical biodiversity-based businesses are usually small and medium, commercially viable enterprises with a high degree of dependence on biodiversity for their core business and contributing directly to biodiversity conservation through that core business (Dickson *et al.*, 2007). The agricultural sector offers many opportunities for development of biodiversity-based businesses. Agriculture depends on healthy ecosystems to provide services like nutrient and waste recycling, pollination from insects, clean water, etc. Therefore, an enterprise that, for example, maintains or enhances biologically diverse soils will generally be more productive and will deliver the same quantity and quality of services for agriculture (RSPB, 2009).

According to Bishop *et al.* (2008), the promotion of biodiversity-friendly agriculture tends to involve some or all of the following practices: creating biodiversity reserves or sanctuaries on farms; creation of 'biological corridors' that connect areas of significant biodiversity around and between farms; reducing conversion of wild habitat to agriculture by increasing farm productivity and by protecting priority areas, such as watersheds, forest fragments, rivers and wetlands; taking marginal agricultural land out of production and assisting in the regeneration of natural habitats; modifying farming systems to mimic natural ecosystems as much as possible; low-input or less environmentally damaging agriculture practices, focusing on reduced erosion and chemical or waste 'run off', through 'zero tillage' planting techniques, contour ploughing, use of vegetation and trees as windbreaks, use of leguminous species; sustainable livestock practices like modified grazing and pasture management systems. Although agriculture is one of the several natural resource-based sectors that can provide biodiversity benefits through the application of modified management systems and the adoption of

alternative technologies and practices these benefits are usually the least important consideration for farmers (Bishop *et al* 2008).

Since agriculture is one of the major sources of biodiversity loss, through habitat degradation and pollution, there is increasing pressure upon farmers to reduce the environmental impact of their businesses. Organic farming is one of the best and most sustainable answers to the problems of the modern farming. It is a management system that is widely applicable, economically viable and has been proven to reverse the decline in biodiversity.

6. Examples of biodiversity-based businesses organic farming business in Croatia

Several national and nature parks have a substantial proportion of agricultural land (e.g. Lonjsko polje, Kopački rit, Žumberak-Samoborsko gorje and Velebit nature parks). There are more and more farmers living and farming in these areas that are converting to organic farming. They are often encouraged by the management of the parks, who perceive organic farming as an agriculture production method benefiting biodiversity and organic products as an attraction for tourists. The most common organic farming businesses in national/nature parks are bee-keeping and honey production; extensive sheep production and autochthonous breeds rearing.

There are a few organic farmers paying particular attention to plant genetic diversity, such as Mr Grdić who is experimenting with and preserving old cereal and potato varieties. Another farmer, Mr Bašić, is growing old fruit, especially apple varieties and processing them into juices, vinegar, dried chips and spreads. Mr Bašić is also applying various methods that enhance on-farm biodiversity such as building of sanctuaries for beneficial insects.

Figure 5: Mr Grdić experimenting with old cereal varieties (photo S. Karoglan T.)

Figure 6: Old apple varieties and sanctuary for beneficial insects on Bašić's farm (photo: M. Ševar)

One of the most successful organic farming businesses is the Eco Sever family farm, a 70-hectare farm, some 35 km from the capital, Zagreb. This is a mixed farm growing almost 100 different types of cereals, fruits, vegetables and animals. It also processes a variety of cereal and vegetable products. The Eco Sever family farm has a very diversified selling system - it has stands at the three biggest open-air markets in Zagreb; its products are sold in more than 50 DM - Drogerie Markt shops all over Croatia and it runs a green eco-box scheme, a well established system of regular home-delivery directly to some 800 consumers.

Some biodiversity enhancing methods have been successfully applied on the Sever family farm such as establishing flowering strips to attract beneficial insects.

Figure 7: Flowering strip and green eco-box on Eco Sever family farm (photo D. Znaor and S. Karoglan T.)

Terra Magnifica is a company producing and collecting organic herbs and wild fruits. Its entire production is exported to EU countries and the USA. By harvesting ferns and birches that are growing on abandoned agricultural land this organic business is contributing to halting the loss of biodiversity.

Figure 8: Preparing wild fruits for export to the EU (photo: D. Znaor)

The agricultural co-operative Svirče on the island of Hvar produces organic wine from the Croatian autochthonous grape variety "Plavac mali". Its vineyards bounded with traditional dry stone-walls, almost touching the beach and rising 300 m above the sea create fascinating scenery.

As the slopes are very steep, machines cannot be used in the vineyards and all the maintenance is done with hand tools. In this way weeds are controlled and rotted manure is spread, providing aeration of soil to stimulate organic substance mineralization.

Figure 9: Fascinating organic vineyards on island of Hvar (photo: Svirče agricultural co-operative)

The Žampera family farm grows organic olives and goats in Žman on Dugi otok (Long Island). The goats are grazing in an olive orchard, which has been a traditional method of management on Croatian islands for many centuries. In this way, weeds are naturally controlled and manuring is provided. The vegetation growing under the olive trees also represents important habitats for valuable fauna. The Žampera family produces olive oil and goat cheese and is combining organic production with tourism.

Figure 10: Traditional olive growing with goats grazing (photo: M. Ševar)

7. Conclusions

The agricultural sector offers many opportunities for development of biodiversity-based businesses. Organic farming supports a much higher level of biodiversity than conventional farming systems. The Croatian organic agriculture sector has recorded a rapid expansion over the last couple of years. The majority of Croatian organic farming businesses are family farms operating as small and medium, commercially viable enterprises depending on and contributing directly to biodiversity conservation.
There is a growing trend of organic farming in national and nature parks sometimes combined with tourism. The management of these protected areas is especially encouraging the breeding of autochthonous breeds.

Some organic farmers are paying particular attention to plant genetic diversity and are growing and preserving old cereal, fruit and vegetable varieties. There are other farmers applying methods that enhance on-farm biodiversity such as establishing flowering strips and building sanctuaries for beneficial insects.

By collecting and exporting wild fruits and plants that are growing on abandoned agricultural land one of the organic businesses is actively contributing to halting the loss of biodiversity.

Organic wine and olive producers on the Croatian islands are still applying traditional management practices such as the production of autochthonous grape varieties, cultivation by hand on steep slopes, preservation of dry stone-walls and grazing of goats and sheep in olive orchards. All these methods are beneficial for on-farm biodiversity and are also part of Croatian cultural heritage.

8. References

Hole D.G., Perkins A.J., Wilson J.D., Alexander I.H., Grice P.V. and Evans A.D., 2005: Does organic farming benefit biodiversity? *Biological Conservation 122: 113–130*

Bishop, J., Kapila, S., Hicks, F., Mitchell, P. and Vorhies, F., 2008: *Building Biodiversity Business*. Shell International Limited and IUCN, London, UK, and Gland, Switzerland

RSPB, 2009. *Handbook for Developing and Implementing Pro-Biodiversity Projects* - an output from the EC Biodiversity Technical Assistance Unit project, Sandy, UK

Dickson, B., Watkins, D. and Foxall, J., 2007: *The Working Partnership: SMEs and Biodiversity*. Fauna & Flora International, Cambridge, UK

The Soil Association (2000): *The Biodiversity Benefits of Organic Farming*, Bristol, UK


KTBG

Linking biodiversity to High Nature Value and Organic Farming in Romania: Târnava Mare, Transylvania, Romania

Nat Page*, Akeroyd, J. R. and Razvan Daniel Popa.*****

* Fundatia ADEPT, East Knoyle, Salisbury, UK.
Email:nat@fundatia-adept.org
** Fundatia ADEPT, West Tisbury, Salisbury, UK.
Email: jrakeroyd@dsl.pipex.com
*** Popa, R., Fundatia ADEPT, Mures, Romania
Email: poparazvand@yahoo.com

ABSTRACT

The landscape and biodiversity of the Târnava Mare pSCI, in southern Transylvania, comprise a remarkable fragment of an older Europe, where species-rich plant and animal communities thrive alongside traditional agriculture. The wildflower meadows are probably the best that survive in lowland Europe. This High Nature Value landscape has not been created by landscape architects or nature conservationists but by farmers, by centuries of traditional management. In 2005 Fundația ADEPT began an integrated programme of biodiversity conservation, agri-environment and rural development. The project area is about 85,000 ha, with a population of about 25,000 people, 90% of whom are small-scale farmers. Economic and social benefits from biodiversity conservation will provide a sustainable future for economically deprived farming communities. Improved marketing of local food products, improved access to EU funding, training schemes and schools education, new products and ecotourism, are all adding up to local people seeing real benefits from protecting their landscape.Recognition of Romania's semi-natural landscape heritage, of European importance, leading to positive policy measures, in key to conservation of the biodiverity. Grassland management, organic and natura 2000 payments are all key policy elements.

1. Introduction

The Saxon Villages area of southern Transylvania is one of Europe's last extant medieval landscapes (Akeroyd 2002, 2006). The region (Figure.1), lying within the southern bend of the Carpathians, exhibits a remarkable diversity of habitat types, from natural and semi-natural woodland to dry and semi-dry grassland, damp grassland and wetlands (Akeroyd 2006, Mountford and Akeroyd 2008). An eroded plateau of often steep valleys and gently rolling hills to 600–700 m or more, the well-wooded countryside has well-dispersed settlements and few roads. Agriculture is largely un-mechanized with little use of agrochemicals. The region retains both an ancient human culture and an abundance of wildflowers and wildlife once plentiful but now disappeared from much of modern Europe, including significant numbers of large mammals such as brown bears and wolves.

The region provides an astonishing glimpse of biodiversity-rich rural landscapes lost over most of Europe, with its traditional villages, fortified medieval churches (several now UNESCO-designated), extensive woodlands and flowery meadows, and wealth of vertebrate and invertebrate wildlife. In particular, in summer the orchards, arable strips, hay meadows and pastures are a display of wildflowers on a scale unseen in northern Europe for a generation. This is how Europe may have looked in the 18th or even the 14th century, a landscape where rich animal and plant diversity thrives alongside traditional and non-intensive agriculture; a fragile ecosystem that needs to be conserved as a geographical, cultural and biological entity.

This landscape is a product of centuries of extensive agriculture. From the mid-12th century, immigrant 'Saxons', actually from Flanders and the Moselle region, settled here at the invitation of the Hungarian kings who then ruled the region, to defend their eastern marches against the Cumans and other invaders. Farmers, craftsmen and merchants, the Saxon colonists were part of a mass movement of German people and improved agricultural techniques such as 3-crop rotation into eastern Europe in the 12th and 13th centuries. Their frontier existence as farmer-warriors encouraged independence, isolation

and self-sufficiency. For 800 years these Saxon communities formed an inward-looking and intrinsically conservative but well-ordered and prosperous society.

Traditional agriculture, without mechanization or intensive land-use, has enabled ancient patterns of European agrarian and village life to survive, modified but substantially intact, to the present day. Viscri, for example, has 400 inhabitants and 85 working horses. Mowing is largely by scythe and weeding by hoe, and the lack of herbicides has enabled rarer arable weeds to survive. Most of the Saxon population emigrated to Germany in the early 1990s, but their cultural legacy endures, in their farmhouses and churches, and in the landscape they created (Akeroyd 2006). This landscape is threatened by economic and social change, especially after Romanian accession to the EU.

The conservation of this landscape depends on continued traditional management of the forests and the agricultural land, especially the grasslands. This paper described a project in which the regeneration of rural economy and village prosperity is being used as the main tool for biodiversity conservation. ADEPT (www.fundatia-adept.org) is an Anglo-Romanian, multi-disciplinary, project, established in 2002. Since 2006 ADEPT has been principally supported by funding from UK Government (Darwin Initiative),Romanian Government (Fondul de Mediu), Norwegian Government (Innovation Norway) matched by Orange Romania, constituting the country's largest corporate sponsorship of a conservation project. ADEPT aims to protect the landscape-scale, multi-habitat biodiversity of the Târnava Mare pSCI (Figure 1) by sustainable economic use, building direct links between economic prosperity and biodiversity. The Târnava Mare pSCI comprises 85,000 ha including 28 villages in eight communes with some 25,000 human inhabitants.

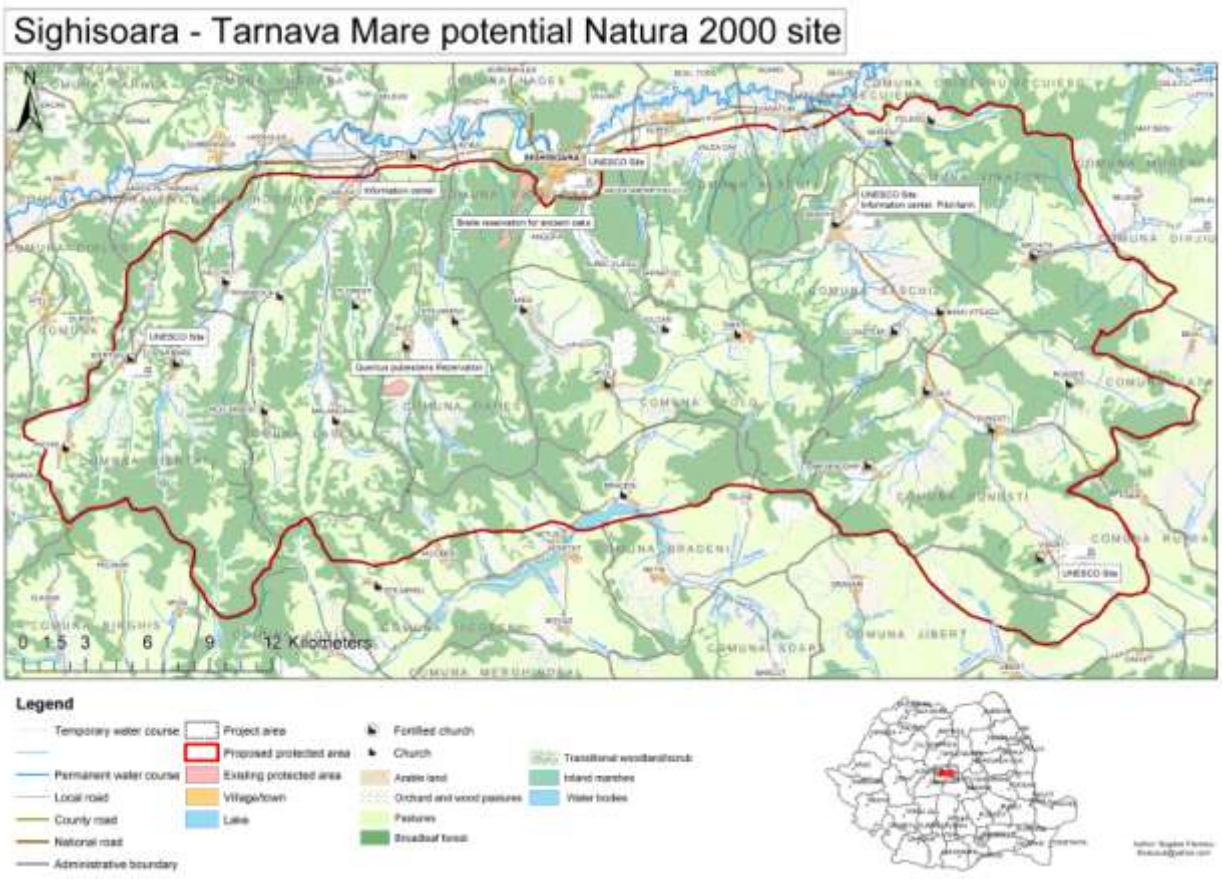


Figure 1: Map of the Târnava Mare pSCI, in southern Transylvania, Romania

2. Why is the area's biodiversity so important?

2.1 Habitats

The Târnava Mare pSCI still supports extensive stands of semi-natural vegetation, which is species-rich and, in the case of the woodlands, closely resembling the natural habitats that occupied the Transylvanian foothills of the Carpathians prior to human impact. At the same time the region supports habitats that have evolved in intimate association with human agriculture and other activities. Several of the habitats present, and individual species, are localized in distribution and highly characteristic of this part of Central Europe. It is a classic High Nature Value (HNV) farmed landscape, of considerable international value (Table 1).

Table 1: EU Habitats Directive Annex I habitat types present in the Târnava Mare pSCI

Natura 2000 Annex 1 code	Description
40A0*	Sub-continental Peripannonic scrub
3150	Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* -type vegetation
3270	Rivers with muddy banks with *Chenopodion rubri* p.p. and *Bidention* p.p. vegetation
62C0*	Ponto-Sarmatic steppes
6210*	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) with important orchid sites
6240*	Sub-pannonic steppic grasslands
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels
6440	Alluvial meadows of river valleys of the *Cnidion dubii* class
6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
6520	Mountain hay meadows
9160	Sub-Atlantic & medio-European oak or oak-hornbeam forests of *Carpinion betulii*
9170	*Galio-Carpinetum* oak-hornbeam forest
91Y0	Dacian oak-hornbeam forests
91E0*	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion Alnion incanae Salicion albae)
92A0	*Salix alba* and *Populus alba* galleries

** indicates priority habitats according to Annex I of Habitats Directive.*

2.2 Flora

Diverse and often pristine habitats support more than 1000 plant taxa in over 100 families, more than 30% of the Romanian flora. This richness is a result of geographical position, diversity of relief, varied climatic conditions and soils, and traditional land-use with a mosaic of woodland, grassland and arable cultivation. 87 taxa are listed for protection and conservation at national and international level, and 12 taxa threatened in Europe and included in Annex II of the EU Habitats Directive. A further 77 taxa are threatened at national level and included in the Romanian Red List. Just over half occur in meadow-steppe grassland communities. Several are rare and decreasing in Europe. More than 50 of the native plants are related to cultivated or crop plants and constitute a potential resource for plant breeding, notably distinctive variants of forage legumes such as Sainfoin (*Onobrychis viciifolia*) and Red Clover (*Trifolium pratense*). Some village fruit trees may represent old varieties or cultivars, especially plums and pears, and the wild pears too are a natural gene-pool.

The most obvious manifestation of Transylvania's astounding richness of plant and animal diversity is the wildflowers of the traditionally managed grasslands. These are probably the best lowland hay-meadows and pastures left in Europe; so extensive that you can walk through them for hours or even

days. The colourful and varied flora of these grasslands comprises a mixture of western and central European plants, but with a significant element of steppic species. This species-rich 'meadow-steppe' has retreated throughout Europe, even in Poland, Czech Republic and Slovakia (Cerovsky 1995). Wiry grasses dominate the sward, and the species-rich communities often include 30-40 species of legumes, notably Sainfoin *(Onobrychis viciifolia*), milk-vetches (*Astralagus* spp.), several dwarf brooms (*Chamaecytisus* and *Genista* spp.) and numerous clovers (*Trifolium* spp.), a characteristic floristic element of dry grasslands in Transylvania (Puşcaru-Soroceanu 1963).

On hot, dry south-facing slopes, the flora is distinctly steppic, with Pontic-Sarmatian elements such as *Adonis vernalis*, *Crambe tatarica*, *Linum flavum* and *Salvia nutans*, and Mediterranean elements such as *Muscari comosa* and *Vinca herbacea* (Akeroyd 2007).

One of the most interesting and significant factors is the low nutrient status of the soils (Jones 2008). Generations of villagers have transferred nutrients to the valleys as hay or animal dung with almost no input of nutrients to the upper pastures. This correlates with the great species diversity, the richest grassland communities (more than 40 species per 0.5 m^2 relevé) being on medieval 'ridge and furrow' fields along high slopes. In other parts of Europe, nutrient enrichment has done untold damage to similar ancient grasslands.

2.3 Fauna

The region's animals associated with the diverse habitats and flora include the last significant populations of wolf, bear and wild cat in lowland Europe, a rich bird population including rare species such as lesser-spotted eagle and corncrake, and 300 lepidoptera species including many rare and threatened taxa (Table 2).

Table 2: EU Habitats Directive Annex II species present in the Târnava Mare pSCI

Group	**Species**		**Group**	**Species**
Mammals	Canis lupus *		Insects	*Astacus astacus*
	Ursus arctos *			*Lucanus cervus*
	Lutra lutra			*Callimorpha quadripunctaria*
	Myotis myotis			*Eriogaster catax*
	Barbastella barbastellus			*Lycaena dispar*
				Maculinea teleius
Amphibians	*Triturus cristatus*			
	Rana dalmatina		Plants	*Echium russicum*
	Bombina variegata			*Crambe tataria* Sebeok
	Rana temporaria			*Cypripedium calceolus* .
				Pulsatilla pratensis ssp. *hungarica* *
Reptiles	*Lacerta agilis*			*Arnica montana*
	Natrix natrix			*Gentiana lutea*
	Emys orbicularis			*Angelica palustris*
				Lycopodium clavatum
Fish	*Barbus meridionalis petenyi*			*Pulsatilla vulgaris* subsp. *grandis*
	Gobio albipinnatus vladikovy			Adenophora liliifolia
	Rhodeus sericeus amarus,			*Cephalaria radiata*
	Cobitis taenia taenia			*Salvia transsylvanica*
	Sabanejewia aurata balcanica			
	Gobio uranoscopus frici			
	Gobio kessleri kessleri			

** indicates priority species according to Annex II of Habitats Directive.*

To summarize the ecological and conservation importance of the habitats and species of the Târnava Mare pSCI:

- The woodlands clearly derive from the original forests of the region, and their ground flora shelters plant ands animal species and plant communities of restricted world distribution. Distinctive oak wood-pastures are a local feature.
- The grasslands and their biodiversity are of considerable importance at a European level, and are particularly rich in Dacio-Pannonic, Pontic-Sarmatian and Mediterranean floristic elements. They represent a major resource of a habitat that has contracted or disappeared over much of Europe through agricultural intensification.
- Many of the wetlands, both floodplains and flushes, remain hydrologically intact, with a semi-natural zonation of habitats.
- The floristically rich habitats contain substantial populations of vertebrate and invertebrate animals that are increasingly rare over much of Europe.
- The architecturally outstanding villages are an integral part of this landscape in intimate association with the rich biodiversity.
- These habitats provide biologists with a model of historical ecological patterns and processes and how these can maintain high levels of biodiversity.

Rarity on its own may not always be the best criterion for assessing conservation needs and a holistic approach is required to protect such a sensitive and fragile ecosystem (Akeroyd and Page 2006). The grasslands cannot be separated from the cultural landscape, of which they are a historical and integral element. Sites with the rarest and most interesting plants, for example a steep grazed slope kept clear of scrub through burning and with *Salvia nutans* and *Linum flavum* (Jones 2008), were poor in species (c.10 per relevé) but of inestimable ecological and conservation interest at a European level. Plant species diversity, although important in ecological terms, should not be considered in isolation as a measure of conservation value. Numbers of Red Data Book species or other threatened plants (and animals) may not also be an accurate measure of the value of a community or habitat.

Throughout most of Europe, traditional grasslands have suffered drastic shifts in management and are in a state of flux. This part of south-east Transylvania represents a still functioning historic landscape, with the fauna, flora and complement of soil microorganisms of an intact ancient ecosystem, in which extensive wildflower meadows still retain their role in agriculture. Such areas are rare in lowland Europe, and are therefore extremely valuable for conservation research and interpretation. They also are a cultural treasure.

Low-input grassland delivers a broad spectrum of environmental benefits: enhanced landscape quality, wildflower and wildlife conservation, protection of archaeological sites, protection of water-courses, reduction of soil erosion, and public amenity and education (Allen, 1995). Experiments have also shown that farm grassland can lock up carbon to a similar degree to farmland that has been planted with trees (Smith *et al*., 1997).

3. Threats to the flora and vegetation

Although this ancient and special landscape remains substantially intact, the survival of its unique biodiversity depends upon maintenance of traditional agricultural practices. These are threatened by the precarious state of the local agricultural economy and social structure. The lack of profitability in traditional farming methods and the emigration of most of the experienced farming population have created pressure to abandon marginal land and intensify farming on readily accessible sites. The application of artificial fertilizers will seriously damage or destroy wildflower-rich hay-meadows, allowing coarse or vigorous grasses and weeds to invade. Traditional manuring is not a problem, but even a single application of chemical fertilizer would undoubtedly have catastrophic effects on the survival of the most species-rich grasslands. Woodlands are generally well-managed, but changes in ownership have created pressures for quick profits, and some localized abusive felling.

Research by ADEPT (Akeroyd & Page 2006; Jones 2008; and Akeroyd, Jones, unpublished) has identified a number of substantial threats to biodiversity. Unchecked, these factors will lead to loss of biodiversity, and will contribute to poverty and hardship for local people.

The principal threats to the wild plants and vegetation of the region are:

1. reduction of livestock numbers leading to abandonment or reduction of traditional grassland management such as grazing and scrub clearance;
2. Uncontrolled agricultural expansion into grasslands, with nutrient over-enrichment and over-grazing, especially by sheep, and invasion by a ruderal flora of unpalatable species such as thistles and other invasive weeds;
3. Unsustainable forestry practices such as planting with exotics or clear-felling ;

Secondary threats are:

1. Unsuitable and unsustainable infrastructure development for recreation and tourism, with new roads and buildings;
2. Unsustainable exploitation of wild populations of plants, especially over-collection of medicinal plants;
3. Lack of public knowledge and information about the region's ecological value, and the potential economic value of the natural landscape (e.g. EU incentives to conserve biodiversity, and market potential of natural image);
4. Further spread of weeds, especially aggressive aliens such as Japanese Knotweed (*Fallopia japonica* var. *japonica*);
5. Climate change, for example an increase in frequency and duration of prolonged spring and summer drought.

Collapse of cow numbers is the largest and most immediate threat to this landscape. The key economic sector is the owners with fewer than five cows. See Table 3, indicating trends in numbers, and Table 4, showing low average herd size; over 55% of applicants for payments have fewer than 5 cows:

Table 3: Number of cows in the 8 communes of Tarnava Mare area

Commune	Year/Cow numbers registered in Town Halls	
	2008	2009
Bunesti	1764	1450
Saschiz	602	420
Vanatori	520	377
Danes	740	500
Apold	623	550
Albesti	600	422
Laslea	1647	1077
Biertan	430	374

Table 4: Applications for land payments and agri-environment payments analysed by number of cows owned

Cow numbers	Bunesti	Saschiz	Vanatori	Danes	Apold	Albesti	Laslea	Biertan	Total
≤5	69	33	30	33	48	20	67	17	317
5-10	31	6	5	8	12	13	40	8	123
10-50	26	9	9	7	13	13	37	5	119
50-100	2	1	0	3	1	0	3	3	13
>100	0	1	1	1	0	0	1	0	4
Total:	128	50	45	52	74	46	148	33	576

4. Community-Based Environmental Conservation: integrated conservation measures in a semi-Natural landscape

The most immediate threats can only be countered by working with local communities to continue traditional management. The key question the project faced was: how to create economic incentives to encourage local people to maintain current landscape management in the Târnava Mare pSCI. The area can be protected in the long term only if its conservation is shown to have an economic value to its inhabitants and is linked directly to economic regeneration, such that each supports the other. The grasslands, the greater proportion of which are HNV meadow and pasture, must yield definite benefits to farmers – whether as subsidized economic incentives or commercial income.

To protect biodiversity through economic regeneration, ADEPT is involved in a range of activities with farming communities, which have gained the support of local people and local administrations:

4.1 Scientific surveys to build up data, to allow management guidelines and monitoring and evaluation methodology

- Biodiversity field surveys. ADEPT has carried out and co-ordinated field surveys of biodiversity, in collaboration with colleagues from University Babeş-Bolyai Cluj; University Lucian Blaga Sibiu; University of Medicine and Pharmacy, Târgu Mureş; and the wildlife NGO Milvus Group. Many of the field surveys have concentrated on the grassland flora. Others have concentrated on macro-fauna, freshwater ecology and woodland vegetation. The information gathered has been assembled on the Romanian Natura 2000 website (http://n2000.biodiversity.ro/) and will be disseminated in Romanian and international scientific publications. But more importantly, the information gathered was also used to help design Romania's grassland management agri-environment measures (see below) so that they specifically target the conservation of the important grassland flora, fauna and habitats of the area.
- Public information and consultation. ADEPT and Environment Protection Agencies held meetings in all eight communes, explaining that Natura 2000 offered few restrictions for local development, and on the other hand offered both direct income (access to agri-environment grants that would not otherwise be the case) and indirect income in terms of formally creating an area with a natural identity and a natural brand which can add value to products. ADEPT also printed brochures in Romanian, aimed at regional and local Târnava Mare audiences, explaining Natura 2000 in clear terms (Figure. 2).

In 2008, the area was accepted by the Romanian Government as the country's largest *continental region* (broadly speaking, non-mountain and non-coastal) Natura 2000 potential Site of Community Interest (pSCI).

Figure 2: Brochures on Natura 2000 for local and regional public information

4.2 Agri-environment

- Traditional grassland management grants. In 2005, ADEPT agreed with the Romanian Ministry of Agriculture & Rural Development (MARD) that the Târnava Mare are could become a pilot area for SAPARD 3.3 agri-environment grants. In 2006, 170 farmers signed grassland management agri-environment agreements for an area of 1800 ha - the only such agreements in Romania. ADEPT continues to assist small-scale farming communities to gain access to the traditional grassland management agri-environment payments available under the National Rural Development Programme 2007-2013. These payments have been targeted specifically at conserving the HNV grassland areas of Romania, and refer to traditional management (restrictions on fertilizer use, mowing dates and stocking rates) but not to organic management.
- Assisting farmer access to EU funds**.** In 2007 ADEPT was invited by the MARD to be part of small team delivering agri-environment courses for farmers in 12 different locations around the country, including one in the Târnava Mare area.
- Organic farming**.** There are currently no support measures for organic conversion or management under the National Rural Development Programme 2007–2013.

4,3 Farm incomes

- Adding value through branding**:** ADEPT has established a strong 'Târnava Mare' brand for marketing quality products from local farms. This is being used on local product labels and has

helped producers obtain higher prices and sales volumes for their products. Producers can see with their own eyes that a natural image adds value. The role of organic branding will also be important for adding value (Figure. 3). Although organic food sales account for only 1% of total food sales in Romania, growth is steady: for example, organic food sales in 21 supermarkets owned by Carrefour increased 15- to 20-fold in the first six months of 2009 compared to the same period in 2008.

Figure 3: Târnava Mare logo is creating an area identity, for locals and visitors. Organic branding will also help to add value

- Finding profitable markets for local products: ADEPT has instigated farmers' markets in Bucharest and Brasov, which have boosted sales of local and traditional products. Farmers' Markets in other countries have demonstrated that it is essential, for continued public interest and confidence, that the food is high quality, clean and safe, and genuinely sold by the producers themselves as part of the buyers' experience. This is also an excellent way of publicising the benefits of such nature-branded marketing – the markets have received considerable coverage from national and local TV, radio and newspapers.

- The threat of EU's food safety regulations to small producers. A significant threat to Romania's rural economy is the exaggerated application of EU food safety regulations to small producers. In early 2008, ADEPT, WWF-DCP and the Romanian nature conservation NGO Milvus Group published a booklet on Minimum Food Hygiene Conditions - this important clarification will significantly reduce the burden on small producers (Figure. 4).

Figure 4: Booklet on Minimum Food Hygiene Conditions for Small Producers

4.4 Diversification

The Târnava Mare landscape offers other forms of economic return, beyond food. In order to build prosperous communities, many farms will require a second income. This is the case in other parts of Europe, and will be even more important in Romania where farm sizes are so small, on average 1.5 ha (plus communal grazing rights). The potential for Târnava Mare is for a broad spectrum of ecotourism.

- Agro-tourism and food hygiene course. We have designed a practical and relevant agro-tourism and food hygiene course for applicants throughout the Târnava Mare area. These courses are much enjoyed by participants, and are giving them confidence to open their own guest houses.

Figure 5: Food and Culture Trail brochure

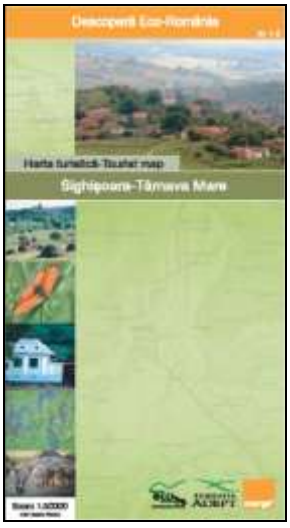


Figure 6: Walking map of area

- Food and Culture Trail: ADEPT has developed a 12-page brochure on traditional local foods and activities, ready for printing for the 2008 tourist season (Figure 5). This is the first step to creating a 'food and culture trail', a tool to increase numbers of tourists who stay in the area, visit artisan food and craft producers and buy their products. ADEPT has also printed a 1:50.000 walking map

of the Sighisoara-Târnava Mare area, one of the most advanced and detailed maps available in Romania (Figure. 6).

4.5 Community

- School environment classes: in November 2007 ADEPT signed an agreement with the Saschiz schools director under which Milvus Group, a local conservation NGO with experience in school classes on environment, will give their "model class" programme to the five classes in Saschiz commune that have children in grades V-VIII. The model classes deliver one hour each month, for 12 months, to each class, plus a summer camp. Classes began in December 2007. We hope to create ecology clubs in the communes, which will carry out small projects (building bird boxes, cleaning streams, etc.)
- 'The Historic Countryside of the Saxon Villages of Southern Transylvania' was published in English and Romanian (Akeroyd 2006), for the ADEPT Foundation, promoting understanding of importance of the area for biodiversity and nature conservation (Figure 7).

Figure. 7: Book written for ADEPT Foundation in English for visitors and Romanian for schools


VATRA SASCHIZANA

Apă pentru Saschiz

Veste bună pentru saschizeni!!!

Sărbătoarea „Fiii Satului" 2007

Figure. 8: Popular commune newsletter for general news, awareness-raising

- A monthly community newsletter**,** which ADEPT designed and initially paid for printing, has been a great success (Figure 8). It is delivered each month to every house in Saschiz commune. The newspaper has local news, plus announcements, advertisements, even a lonely hearts column! The newspaper also has a series of articles explaining the new rural development programme, and aspects of environmental good practice for farmers. It has been produced in the Town Hall, since December 2007, ensuring its longer-term viability

5. The link between biodiversity, High Nature Value and Organic.

It is worth examining the link between biodiversity conservation, and the concepts of High Nature Value and Organic.

Agri-environment grassland measures in Romanian have been specifically designed for conservation of the biodiversity of Romania's HNV grasslands. These – if applied properly – will be effective in their target, conservation of important grassland flora, fauna and habitats. Organic certification is different, it is driven primarily by food quality and long term fertility of farmland; biodiversity conservation is only a by-product of this. It seems surprising that organic agriculture is not supported by the Romanian National Rural Development Programme (NRDP). However, it can be argued that from a biodiversity conservation point of view, the Romanian government was correct to give priority to traditional grassland management payments under the NRDP. Organic (conversion and management payments), if and when applied later, will be useful to help agri-environment (traditional) farmers to brand the products they make, and to maximize the positive link between biodiversity and income.

Thus HNV is an important concept, in that it focuses policy-making primarily onto biodiversity-conservation in farmed landscapes; and organic certification is an essential link because it helps give a value to the products biodiversity-friendly farming.

6. Conclusions

The ADEPT project works in a semi-natural landscape of European biodiversity importance, in which conservation of the area depends not only on community support, but also on active community participation in the form of continued traditional management of the landscape. Without community participation the area cannot be conserved; conservation practitioners can never replicate artificially the mowing, grazing and general management of tens of thousands of hectares of mosaic landscape.
Under these circumstances, the community must rediscover commercial and moral incentives to continue to manage the area traditionally. The role of scientists and conservation NGOs is, in this case, to help local people understand the importance of the landscape in which they live and take an interest in why it works as an ecosystem, and to help give them the capacity, and long-term economic incentives, to continue to conserve it themselves.

The importance of the area from a biodiversity point of view is clear. The inclusion of the Târnava Mare area within the EU's Natura 2000 network offers perhaps the best means to protect the landscape in the face of economic and social pressures, especially since Natura 2000 will take into account the interests of local people, and make them eligible for special grants and funding.

But it is also clear that this is not a wilderness conservation project, but essentially an agri-environmental one. We are seeking prosperous small-scale farming communities in sustainable and diversified rural economies. Local people are therefore at the heart of these processes. They created this landscape, and only their continued management can preserve it.

In the project, all methods are being explored by which the biodiversity importance of the landscape can be given a market value, which would bring local benefits and therefore create positive, long-term, market incentives for conservation.

EU payments for habitat and species conservation (under Natura 2000) and for agri-environment (HNV grassland management payments) are not a long-term solution, but they do give time and financial opportunity to establish those essential long-term commercial incentives.

Adding value to food and other local products, through area branding and through organic certification and branding, are key to this longer term process.

7. Acknowledgements

We are grateful to Orange Romania, the UK's Darwin Initiative and Environment for Europe Funds, the Norwegian Government's Innovation Norway fund and the Romanian Ministry of Environment's Fondul de Mediu for sponsoring the ADEPT project, to the Romanian Ministry of Agriculture and Rural Development for their excellent support and cooperation, and to the many local people who have supported ADEPT with such enthusiasm.

8. References

Akeroyd, J.R., 2002. Protecting Romania's Lost World. Plant Talk, 30: 19–24.

Akeroyd, J.R., 2006. The historic countryside of the Saxon Villages of southern Transylvania. Fundatia ADEPT, Saschiz, Romania. pp. 86.

Akeroyd, J.R., 2007. The floral riches of southern Transylvania. The Plantsman, NS, 6: 152–156.

Akeroyd, J. R. ans Page, N., 2006. The Saxon Villages of southern Transylvania: conserving biodiversity in an historic landscape. In Gafta, D. & Akeroyd, J.R., (Eds.), 2006: Nature Conservation: Concepts and Practice, pp. 199–210. Springer Verlag, Heidelburg, Germany.

Allen, T.D. 1995. Environmental benefits from grassland farming. In Pollott, G.E. (ed.) Grassland in the 21st century, pp.135–142. British Grassland Society.

Cerovsky, J. 1995. Endangered plants. London: Sunburst Books.

Jones, A. 2008. The challenge of High Nature Value grasslands conservation in Transylvania. Transylvanian Review of Systematical and Ecological Research, 4: 73–81.

Mountford, J. O. and Akeroyd, J.R. 2009. Village grasslands of Romania – an undervalued conservation resource. In Ivanova, D. (ed.), Plant, fungal and habitat diversity investigation and conservation. Proceedings of IV Balkan Botanical Congress, Sofia, 20–26 June 2006, pp. 523–529. Institute of Botany, Sofia.

Puscaru-Soroceanu, E. (ed.) *et al.* 1963. Pasuni si fînetele din Republica Populara Romîna. Academiei Republicii Populare Romîna, Bucureşti.

Smith, P., Powlson, D., Glendining, M. & Smith, J., 1997. Potential for carbon sequestration in European soils: preliminary estimates for five scenarios using results from long-term experiments. Global Change Biology, 3: 67–79.


DEVI
DEVI

Contribution of Organic Farming to Georgia's Agrobiodiversity

Berishvili, T.[a], Dundua, T.[b], Jorjadze, M.[c]

[a] Department of Agrobiodiversity and Biological Farming Association Elkana, Georgia
Email: biofarm@elkana.org.ge,
[b] Biological Farming Association Elkana, Georgia
Email: manager@elkana.org.ge
[c] Biological Farming Association Elkana, Georgia
Email: director@elkana.org.ge

ABSTRACT

The paper presents the recent experience of the Georgian non-governmental organization – the Biological Farming Association Elkana, in reintroduction of endangered indigenous crop varieties in farmer fields. Through a GEF/UNDP supported project a model of crop conservation has been implemented since 2004 in the region of Samtskhe-Javakheti in cooperation with farmers, regional and central governmental structures, scientists, NGOs and businesses representatives. The paper presents main approaches used by the project and focuses on presently achieved results in conservation of several legume crops through introduction of organic farming and building up a value chain for targeted crops.

1. Introduction

Georgia is well-known for its diverse environment - its wide range of climates, soils, and vertical belts, and high variability in cultivated plants. This region belongs to the Western Asian centre of origin of cultivated plants, so called Fertile Crescent. During the long history of Georgian agriculture, farmers carefully selected plants and seeds, and developed numerous farmer-selected varieties well-adapted to local conditions in the three major groups of crops: field crops, vegetables and perennials.

The reduction of agricultural diversity has been a process observed globally since the 20th century and has severely affected Georgian agriculture as well. Not only has plant diversity been reduced but indigenous crops are used less frequently. Until recently such cereal crops as Italian millet, millet, rye, and endemic wheat varieties were still cultivated widely. Legume crops included chickpea, lentil, beans and pea vine. Oil and fiber plans included flax. Today these crops have been excluded in local farming. Instead, maize and wheat as well as haricot beans are grown instead. These radical changes are having a drastic effect on diets, especially in rural areas.

The UNDP/GEF project on Recovery, Conservation, and Sustainable Use of Georgia's Agrobiodiversity was launched in 2004 - the project has been implemented by the Biological Farming Association Elkana in South Georgia – Samtskhe-Javakheti region. It was developed to remove some of the important impediments to sustainable conservation of local agrobiodiversity. These impediments included scarcity of seeds and planting materials, unfamiliarity of the farmers with the importance of agrobiodiversity, poor access by farmers to markets, poor information on production technologies for indigenous crops and an absence of links between farmers and researchers.

2. Agricultural biodiversity significance in Georgia

Georgia lies on the southern boundary of Europe, between the Greater and Lesser Caucasus and the Black Sea, an area defined by Conservation International as one of 25 biological "hotspots" on earth. Georgia, with its 23 soil-climatic zones in only 69,700 km2, possesses unique plant diversity and species composition.

Georgian agriculture can be traced back to the 5th or 6th millennium BC, when Kartvelian (east Georgian) tribes began to domesticate basic crops such as wheat, barley, oat, rye and legumes such as pea, chickpea, lentil and faba beans. They cultivated plum, cherry, quince and the common grape as well as other varieties.

Georgia has a rich flora, both in terms of wild species (more than 4,200) and crops (about 100 families and 350 local species of grain crops). There are numerous endemic cultivated taxa, such as *Triticum karamyschevii, Staphylea colchica, Triticum carthlicum, Triticum timopheevii, Staphylea pinata, Vitex agnus-castus, Triticum macha,* and *Triticum zhukovskyi*. The list of valuable crop genetic resources in Georgia also includes *Secale ketzchovelii, S. Moharium and S. segetale*.

The rich diversity of fruit trees is composed of more than 100 species of seed and stone fruit-trees, nuts and wild berries. Among others these include *Amygdalus communis, Cerasus mahaleb, Malus pumila, Pyrus communis,* and *Cydonia oblonga*. There are about 500 local varieties of grape recorded, but only 300 still exist in live collections in scientific-research institutes and local farms.

3. Root causes of agrobiodiversity loss in Georgia

The Georgian agricultural sector was well developed during the communist period when products were exported to other Soviet republics and countries of the world. Within the Soviet inter-republic distribution of responsibilities, Georgia was mainly a producer of high quality fruits and tea. This specialization had a negative impact on indigenous crop varieties.

Within a period of 70 years varieties introduced from outside of Georgia predominated in family plots and collective farms while the endemic, rare, and threatened varieties were restricted mainly to research and agricultural extension centers. Consequently, information about local varieties became restricted to the technical staff of research and extension centers and the few families that kept indigenous crop varieties.

The process of agrobiodiversity loss became even more intensive after the collapse of the former USSR since the state breeding stations that had kept indigenous crop varieties for experimentation and selection fell into ruin. Valuable collections and stocks of endemic varieties quickly began to disappear. Simultaneously, farmers found themselves with formerly marketable varieties for which they suddenly were unable to purchase necessary agrochemicals or to irrigate. Research and state breeding stations had not considered the option of assisting farmers to adopt local varieties for *in-situ* preservation. Even though local varieties would have performed much better than introduced ones in conditions of reduced agrochemical and water inputs, they were not available for planting.

4. Local initiatives to preserve indigenous crop varieties

The first activities for the preservation of indigenous crop varieties in Georgia started in 1996 as a joint effort of scientists from the Institute of Botany (Department of Cultivated Flora) and the Biological Farming Association Elkana[10] to maintain the seed collections of the Institute of Botany through reproduction on plots of Elkana member farmers. This cooperation of farmers, scientists and extension workers has been successful not only in maintaining seed collections but also in making local farmers interested in the crops of their ancestors. The experiences of the cooperation triggered the creation of a farmer-based programme for the preservation of indigenous crop varieties in Georgia. This concept was then financed by the Global Environmental Facility through the United Nations Development Programme.

The project, entitled Recovery, Conservation, and Sustainable Use of Georgia's Agrobiodiversity, was developed to remove barriers against the sustainable use of agricultural biodiversity through a combination of *in-situ* and *ex-situ* measures. It has been implemented since 2004 with the financial support of GEF/UNDP and co-financing partners from Germany (EED and Misereor) and, from the Netherlands (OxfamNovib, Cordaid, and Avalon) as well as from Switzerland (SDC- Swiss Development Cooperation and HEKS/EPER).

[10] Elkana is a Georgian non-governmental organization established in 1994 with the aim to improve socio-economic conditions in rural areas of Georgia through organic farming development and encouragement of self-help activities.

5. Methodology

The project could not protect the entire spectrum of important agricultural plants that are threatened with extinction. Rather, the project's approach is to develop a replicable model of agricultural biodiversity protection for selected local varieties in one region of Georgia. This will be used as a strategy in other regions or for other crops and varieties. The project started by testing different approaches and tools needed to recover and preserve selected species in the Samtskhe-Javakheti region of southern Georgia.

The project focused on conservation and sustainable use of threatened crop landraces that had a potential market and/or high adaptation to local soil and climatic conditions. These landraces included local varieties of wheat, flax, lentil, grass pea, chickpea, cow pea, and faba beans. They were well adapted to organic techniques – they show stable harvests without agrochemical inputs and are resistant to biotic and a-biotic stresses such as disease, extreme temperatures, lack of moisture, etc. Therefore these plants have potential for contributing significantly to farmers' food security. The project also covered local fruit trees and grape varieties, however perennial crops require more time for showing tangible results.

Before beginning this project Elkana field teams interviewed local farmers in the target region. They identified main constraints for the preservation of local varieties and the necessary improvements to enhance their sustainable use. They also identified farmers who were interested in growing traditional varieties and wanted to cooperate with the project.

To address the threats and root causes of agricultural diversity loss in the Samtskhe-Javakheti region Elkana concentrated its technical and financial resources on four main directions:

1. Establishing sources of primary seed and planting material for the selected landraces

The project identified seed material stored in the Institute of Botany and established a demonstration and seed multiplication plot in the target region. Office and farm infrastructures were developed at the site and necessary machinery and equipment were purchased. The seed material obtained from the collection of the Institute was reproduced in the plot and distributed to interested farmers. Also, seeds were stored in the seed depository at Elkana's head office in Tbilisi and an inventory of landraces and wild relatives was carried out.

2. Strengthening the capacities of a local farmers' association as main producer and distributor of seed material and for sharing experience

Farmers involved in the project created a farmers' association called Farezi, to facilitate seed multiplication and distribution for targeted landraces. They agreed to participate in a seed multiplication system by returning 1.5 times the original amount of seeds distributed to them. One unit of the returned seed material was used for incorporating new farmers and/or for further multiplication, while the remaining part was stocked as a security fund in case of poor harvests in future. In order to ultimately run the production and distribution of seed material of selected landraces the farmers' association members have been trained by Elkana in seed fund management and record keeping.

3. Assisting farmers in accessing markets

A study was made to identify markets, and five legume landraces were proposed for sale. Farmers and farmer groups interested in commercial production of selected landraces were identified and linked with a local distributor which sells their crops to supermarkets. The company pays farmers directly, at a 10% higher price than the regular market price on beans. This is made possible through skipping the middleman and maximizing price returns at the farm level.

4. Supporting cooperation between farmers, scientists, local authorities and State, as well as private plant selection establishments which exchange best methods and practices

Elkana has made considerable information available at all levels and through different media. Advisory handouts for each crop were prepared and distributed to farmers. Information workshops, farmers' days and promotion events were organized regularly. High quality promotional materials,

including recipe books, calendars and other publications were produced and distributed. A database and web-page was established and are regularly updated.

6. Project outcomes

The project has achieved considerable success in several aspects:

Important landraces have been identified in cooperation with researchers, and a seed multiplication and demonstration plot has been established. The plot is used for research, education and extension purposes. Seeds maintained in collections are regularly renewed in the seed multiplication plot. Today up to 250 accessories are preserved in the Elkana organization seed depository. Seed material for 17 cereals and five legume crops have been exchanged with the National Seed Bank.

Through the project the following landraces have been reintroduced to farmers' fields: –Cereals: *Triticum carthlicum Nevsky, Triticum aestivum L.,* and *Hordeum vulgare var. nudum.;*

Legume crops: *Cicer arietinum L., Vicia faba L., Lens culinaris Medic., Vigna unguiculata L.Walp., Linum usitatissimum L.,* and *Lathyrus sativus L.*

Prior to the project, seed material of local landraces was not available to farmers. The project has established a seed multiplication system to encourage local farmers to join the agrobiodiversity program. Having started with 12 farmers in 2004, today the project unites about 200 families directly involved in on-farm conservation program. These farmers are actively engaged in their regional farmers' association "Farezi".

The farmers' organization has meant local farmers have become actively engaged in implementing the project. It is also an efficient tool for strengthening the capacity and skills of local farmers. The institutional capacity of the organization Farezi has been strengthened through participation in the project.

The use of land races which produce good harvests without expensive chemical inputs, which are tolerant to drought and resist local crop pests and diseases will significantly reduce farmers' exposure to risk. Investment is low and the crops are ideally suited to their growing conditions.

Most farmers use local crops for their own consumption also. By reintroducing these traditional landraces the nutritional intake of farmers has been improved, and the families have a greater range of pulses. Local farmers appear to prefer these landraces for their own subsistence; some farmers even sampled the initial seed material before deciding to plant.

Several groups of farmers have already emerged that sell their produce on local market. Although yields might be lower for landraces, they attract a higher price.

The project collected and documented traditional knowledge on indigenous crops. A recipe book was published and widely distributed to raise consumer awareness and dishes prepared from local varieties were promoted through food tasting events and media. As a result, the demand for indigenous varieties is growing at local markets.

7. Conclusions

Although the project didn't imply protecting the entire spectrum of plants that may be important to agriculture and that are threatened with extinction, it has developed a replicable model of agricultural biodiversity protection for a group of selected local varieties in one region of Georgia. This can be used as a strategy in other regions or for other crops and varieties.

Four years of project implementation have shown that the sustainable use of agrobiodiversity requires several components: A community-driven, *in-situ* and on-farm approach should be supported with supplies of seed and planting materials, knowledge dissemination, marketing efforts, publicity, and cooperation with research and governmental structures. The approaches and instruments developed by the project are presently being tested in two other regions of Georgia.

8. References

Russel A. Mittermeier, Norma Myers, Cristina Goettsch Mittermeier. 1999. *Hotspots – Earth's Biologically Richest and Most Endangered Terrestrial Ecoregions*; CEMEX, S.A.

Hanelt, Peter, and Beridze R. 1991. "The Flora of Cultivated Plants of the Georgian SSR and its Genetic Resources", *Flora et. Vegetatio Mundi*, No. 9: 113:120.

V.L. Menabde (Pshenitsi Gruzii, Tbilisi, 1948)

Taiul Berishvili. *Forgotten Crops*. 2008, Elkana Publication.

Francis Hurst, Mariam Tsereteli. 2007. *Recovery, Conservation, and Sustainable Use of Georgia's Agrobiodiversity Project.* Project: # 00037324. Mid Term Evaluation Report

High Nature Value or Organic?
Conserving Farmland Biodiversity in Transition Countries

Redman, M.H.

Independent Environmental Consultant, United Kingdom
Email: redman.consultancy@gmail.com

ABSTRACT

This paper aims to provoke discussion about the relationship between organic and high nature (HNV) farming in the context of the transitional economies of central and eastern Europe. It responds to the growing evidence from western Europe of the positive benefits of organic farming for biodiversity, but points out that: a) there is very little information on the biodiversity benefits of organic farming compared with small-scale, low-intensity HNV farming systems, and; b) there has been concern for many years about the extent to which organic farming can protect and conserve valuable wildlife habitats when farmers are very commercially-orientated and operating in an expanding market.

1. Introduction

The intensification and expansion of modern agriculture is considered to be one of the greatest current threats to worldwide biodiversity (Tilman *et al.*, 2001).

In Europe, dramatic declines in both the range and abundance of many wildlife species associated with farmland have been reported over the last 30-40 years leading to growing concern over the sustainability of current intensive farming practices. For example, a wealth of evidence now points to agricultural intensification as the principal cause of the widespread reductions that have been observed in European farmland bird populations (e.g. Donald *et al.*, 2001) and the abundance and diversity of numerous plant and invertebrate taxa (e.g. Wilson *et al.*, 1999).

It is not surprising therefore that public and political support for less intensive farming systems such as organic farming has been steadily growing in Europe, particularly since it is now widely accepted that organic farming methods *are* more favourable for biodiversity conservation than conventional, intensive farming methods. For example, the UK Government's statutory advisors on wildlife conservation have stated that they welcome *"....an expansion of organic farming because there is reliable evidence that it has evolved into a well-defined modern system of agriculture that is broadly beneficial to the environment and to wildlife"* (English Nature, 2003).

This statement is well supported by a solid body of scientific research that has been undertaken in recent years (e.g. Hole *et al.*, 2005). However, it cannot be assumed that an expansion of organic farming (particularly where driven by market demand for specific high value products such as fruits and vegetables) would *per se* be a good thing for biodiversity conservation in all regions of Europe.

There are two reasons for this:

1. Firstly, the available literature comparing organic with "conventional" (non-organic) agriculture remains focused upon the more intensive, larger-scale, lowland farming systems that are commonly found in western Europe. But there is actually a huge variation in the intensity of agricultural production in Europe and many small-scale, low-intensity farming systems predominate in other regions (e.g. Baum, 2008), especially in the more marginal farming areas of central, southern and eastern Europe where agricultural development is limited by a variety of social, economic and environmental factors.

This small-scale, low-intensity farming is very important for biodiversity conservation and is attracting growing interest from environmentalists and policy-makers. Commonly referred to as "high nature value" (HNV), such farming systems support a variety of wildlife habitats and are increasingly recognised as central to the maintenance and protection of many wildlife species of local, national and

international importance. Bignal and McCracken (1996), for example, suggested that more than 50% of Europe's most highly valued biotopes occur on low-intensity farmland. This includes traditional livestock farming systems in mountain areas which have both created, and continue to maintain, large areas of species-rich semi-natural vegetation (McCracken and Huband, 2005).

There is very little information available on the biodiversity benefits of organic farming compared with HNV farming systems and it therefore seems appropriate to consider to what extent organic and HNV farming are actually compatible.

2. Secondly, there has been concern for many years about the extent to which organic farming can protect and conserve valuable wildlife habitats and species when farmers are very commercially-orientated and responding to a rapidly expanding market. Most doubts are focused upon the conversion period when technical and financial pressures upon farmers are greatest. Two main concerns have been expressed, especially about farmers that are particularly motivated by the commercial opportunities of organic farming (including the availability of organic support payments from the government):

   - the low level of environmental awareness of many farmers converting to organic methods, and;
   - the risk that they will be tempted to plough areas of semi-natural vegetation, including high nature value pastures or wet meadows, in order to expand their organic arable or horticultural crop rotations or to plant new organic orchards or vineyards.

This paper aims to provoke some preliminary discussion about these issues in the context of the transitional economies of central and eastern Europe.

2. High Nature Value (HNV) Farming

HNV farming systems were first described by Baldock *et al.* (1993) as *"....predominantly low-intensity systems which often involve a relatively complex inter-relationship with the natural environment. They maintain important habitats both on the cultivated or grazed area (for example, cereals steppes and semi-natural grasslands) and in features such as hedgerows, ponds and trees, which historically were integrated with the farming systems"*.

Drawing on a definition developed by Andersen *et al.* (2003), HNV farming in Europe is commonly defined as occurring in those areas where:

- agriculture is the dominant land use;
- agriculture supports (or is associated with) a high diversity of wildlife species and habitats and/or the presence of species of European/national/regional conservation concern, and;
- the conservation of these wildlife habitats and species is dependent upon the continuation of specific agricultural practices.

HNV farming systems vary greatly across the EU Member States, but according to various authors (including Beaufoy and Cooper, 2008) they are typically characterized by a combination of:

1. Low intensity land use - biodiversity is usually higher on farmland that is managed at a low intensity. The more intensive use of machinery, fertilizers and pesticides and/or the presence of high densities of grazing livestock greatly reduces the number and abundance of wildlife species on cropped and grazed land.

   The typical characteristics of low intensity farming systems that tend to create conditions favouring a larger range of wildlife species (compared to intensive farming systems) are:
   - Survival of well established management practices e.g. transhumance, traditional meadow management (hay-making etc.);
   - Very limited use of fertilizers and pesticides;
   - Low stocking densities (this will vary according to local conditions);
   - Use of traditional breeds that are adapted to the local environment (e.g. poor quality forage and harsh grazing conditions), although certain non-native breeds may also be successfully used;

- Low degree of mechanization;
- Use of large areas of public/communal land;
- High levels of labour input.

2. Presence and/or utilisation of semi-natural vegetation – the biodiversity value of semi-natural vegetation, such as unimproved grasslands that are used for grazing, is significantly higher than intensively-managed agricultural land. Plus the presence of natural and semi-natural landscape features such as mature trees, shrubs, uncultivated patches, ponds and streams, rocky outcrops etc. greatly increases the number of ecological niches for wildlife to co-exist in alongside the farming activities;
3. Diversity of land cover and land use – biodiversity is significantly higher when there is a "mosaic" of land cover and land use, including low intensity cropland, fallow land, semi-natural vegetation and numerous landscape features. This creates a much wider variety of habitats and food sources for wildlife and therefore supports a much more complex ecology than the simplified landscapes associated with intensive agriculture.

It is not necessary for all three of these characteristics to be present within one farming system for it to be considered as HNV, instead the three characteristics can be considered to interact as illustrated in Figure 1. The dominant characteristic is "low intensity land use". Also essential is a significant "presence of semi-natural vegetation", however in some situations this may also be found in combination with areas of low intensity cropland to create a mosaic landscape with a greater "diversity of land cover than simply semi-natural vegetation.

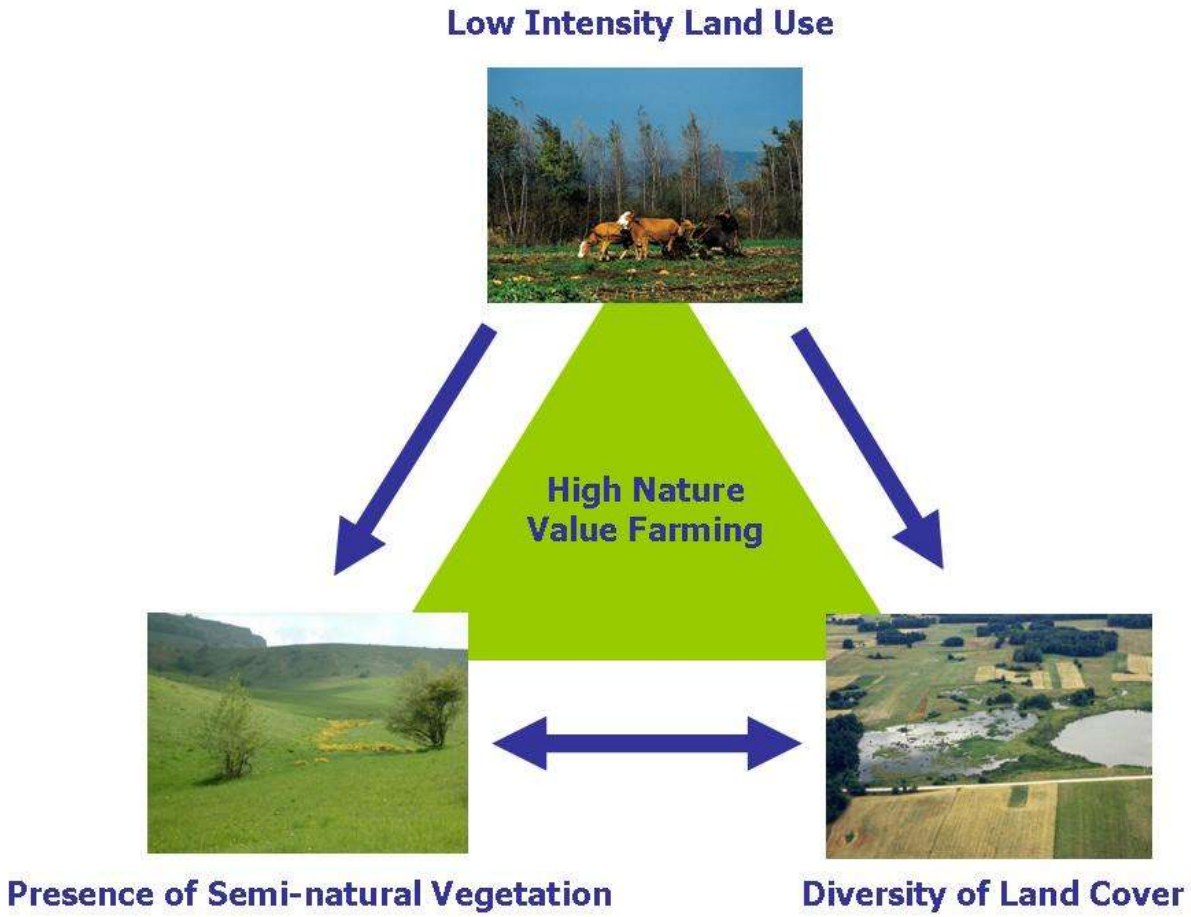


Figure 1: The three characteristic of high nature value farming

This interaction gives rise to three main types of HNV farmland that were first described by Anderson *et al.* (2003), with further discussion and modification by EEA/UNEP (2004) and Paracchini *et al.* (2008). These are:

Type 1 Farmland with a high proportion of semi-natural vegetation, such as species-rich grassland.

Type 2 Farmland with a mosaic of low intensity agriculture and semi-natural and structural elements, such as field margins, hedgerows, stone walls, patches of woodland or scrub, small rivers etc.

Type 3 Farmland (including intensively managed crops and grassland) supporting rare species or a high proportion of European or World populations.

This typology is a very useful aid to identifying HNV farmland on the ground. However, the three types of HNV farmland are not intended to be precise categories with a sharp boundary between them. Rather they should be viewed as a "continuum" ranging from farmland with a higher proportion of semi-natural vegetation and lower intensity use (Type 1) through a mix of semi-natural vegetation and low intensity crop land (Type 2) to more intensively managed farmland that still supports species of conservation value (Type 3).

The European Environment Agency (EEA) has estimated that around 15–25% of the total agricultural area of the European Union can be considered as some form of HNV farmland. However, as Figure 2 shows this is not evenly distributed and much larger concentrations are found in the more peripheral regions of the EU, especially in southern and eastern Europe including Bulgaria and Romania.

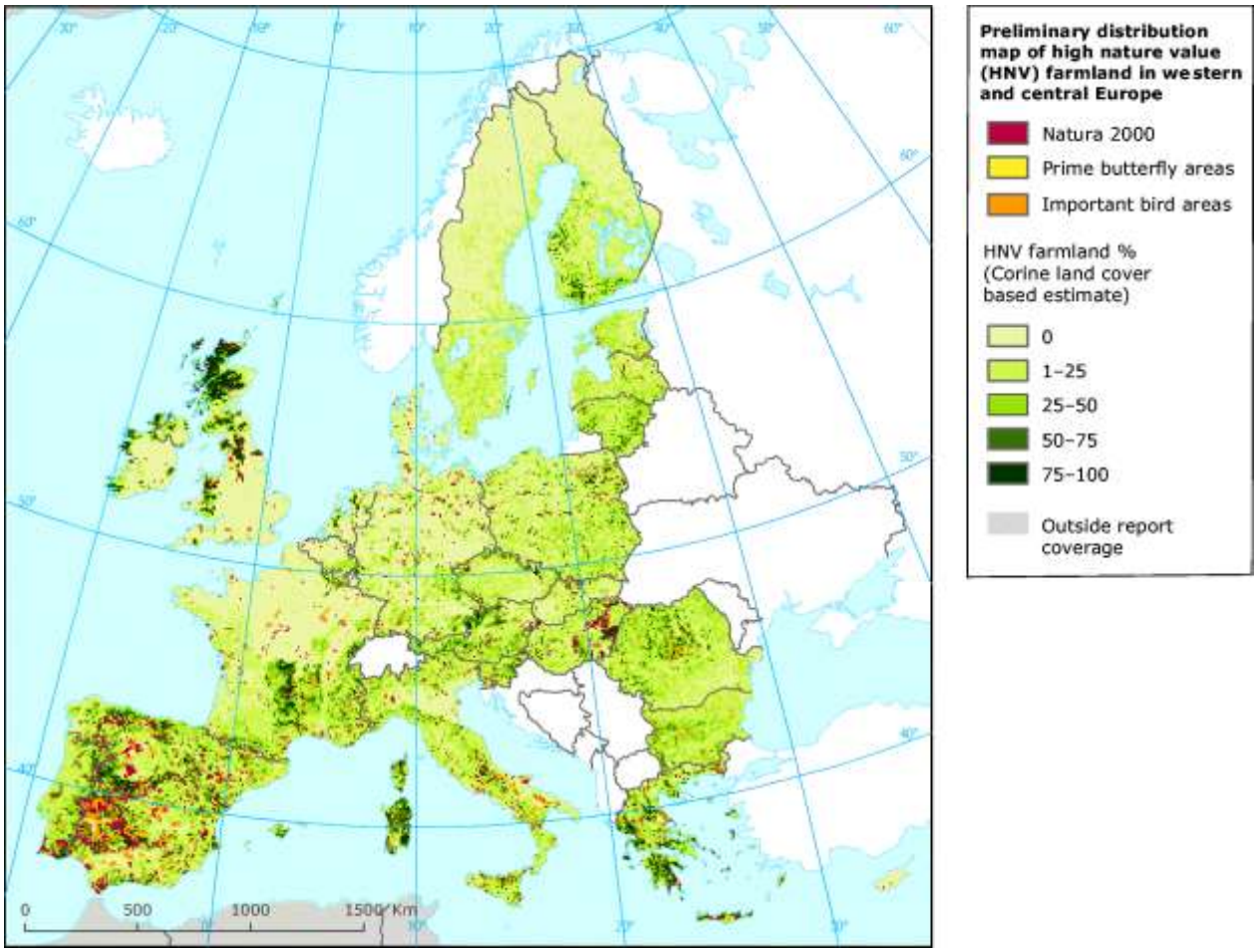


Figure 2: Preliminary distribution map of High Nature Value (HNV) farmland in western and central Europe (EEA, 2007)

3. Organic Farming and Biodiversity

Organic farming is a well-defined food production system that aims to develop and promote sustainable relationships between the soil, plants, livestock and ecosystems to produce healthy food while protecting and enhancing the environment. Organic farming is NOT defined solely by production standards and certification protocols (IFOAM, 2004), but these are a fundamentally important foundation for the on-going development of organic farming – especially where the organic farmer and the consumer are separated by a long, often anonymous, distribution and marketing chain.

Organic production standards are based upon a number of important guiding principles which lead to the encouragement of certain key management practices (e.g. Lampkin, 2002). These include:

- Prohibition of synthetic fertilisers and plant protection products;
- Prohibition of genetically modified organisms (GMOs);
- Limited use of permitted (largely 'naturally derived') off-farm nutrient sources and plant protection products;
- Crop rotations, including the use of legumes, as the basis of crop nutrition, weed and pest control;
- Animal husbandry and housing to ensure welfare and behavioural needs of livestock are met, typically prohibiting permanent housing and confinement and involving access to grazing outdoors;
- Livestock feeding based on organic feed ingredients with limited supplementation;
- Livestock health achieved through good husbandry with limited use of permitted veterinary inputs.

An important characteristic of most organic farming systems is therefore that they: a) operate as far as possible within a "closed system" and within the natural constraints of the environment, and; b) aim to make optimum use of natural biological cycles and processes within the farming for the nutrition and protection of crops and livestock. By avoiding the use of external inputs as much as possible, organic farming systems are therefore commonly of *lower* intensity than conventional farming systems.

In a comprehensive review of 76 scientific comparative studies (i.e. directly comparing organic and conventional farms), Hole *et al.* (2005) clearly identify that organic farming has important benefits for biodiversity and that there are a wide range of wildlife species, including birds, mammals, invertebrates and arable flora, that benefit from organic management practices through increases in abundance and/or species richness.

A full description of these benefits is beyond the scope of this paper, but the full paper by D.G. Hole and his co-authors includes an excellent analysis of the farming practices that are characteristic of organic farming systems and their likely impacts on biodiversity. In particular, they identify three broad management practices that are largely intrinsic to organic farming and which are especially beneficial for farmland wildlife:

1. Prohibition/reduced use of synthetic fertilisers and plant protection products - controlling pests and weeds with organic rotations, biological and mechanical methods removes the direct and indirect effects of pesticides on wildlife;

2. **S**ympathetic management of non-cropped habitats – for example, the establishment of uncultivated field margins and mid-field strips in organically-managed arable crops : a) encourages the development of much larger and more populations of invertebrates; b) provides over-wintering sites and refuge for a wide variety of species following harvest; c) supports a more diverse arable flora; c) provides nesting and feeding habitats for many species of birds and small mammals;

3. Preservation of mixed farming – the maintenance of arable crops, pasture and livestock in close proximity with each other increases the variability of available habitats and feeding sources for many different wildlife species compared to more specialised, monocultural farming systems in which crops and livestock are very clearly separated in time and space. Crop rotations within the organic farming system also introduce additional habitat diversity and provide a much wider range of breeding and feeding opportunities for many farmland wildlife species, especially birds and invertebrates.

However, the review by Hole *et al.* (2005) also concludes by drawing attention to five key issues:

a) Although the farming practices noted above are intrinsic to organic farming they are *not* exclusive to organic farming and may also be characteristic of, or utilised by, conventional, non-organic farming systems (e.g. preservation of mixed farming systems or the sympathetic management of non-cropped habitats);
b) It remains unclear whether the "holistic" whole-farm approach of organic farming provides greater benefits to biodiversity than carefully targeted prescriptions applied to relatively small areas of cropped and/or non-cropped habitats within conventional agriculture – for example, agri-environment payment schemes;
c) Many of the comparative studies reviewed had significant methodological problems which limit their ability to draw quantitative conclusions;
d) Knowledge of the impacts of organic farming in pastoral and upland/mountain agriculture remains very limited;
e) There remains a need for further "system-level" studies in order to address these issues and to fill in the gaps in knowledge of the impacts of organic farming before a full appraisal of its potential contribution to biodiversity conservation can be made.

4. Relationship between Organic and HNV Farming

According to Bosshard *et al.* (2009) one of the key guiding principles in organic farming is the *"...enhancement of biodiversity and its use to promote better livelihoods"*. This principle is clearly reflected in many different management practices on organic farms and there seems little doubt that organic farming systems can be significantly better for biodiversity (both on-farm and off-farm) than more intensively managed, conventional ones.

Whether this *"enhancement of biodiversity"* goes far enough for organic farming to be considered as a specific example of HNV farming remains debatable. There are many potential overlaps between the intrinsic characteristics of organic and HNV farming, most notably regarding the low intensity of production and common tendency towards a diversity of land cover and land use. Equally just as HNV farming encompasses a broad "continuum" of farming systems and farmland types, then so does organic farming.

However, despite the clear environmental benefits of organic farming significant doubts have been expressed at various times about the *inherent* ability of organic farming to protect and conserve some of the more important wildlife habitats and landscape features – including semi-natural vegetation. Bosshard (2003), for example, pointed out that whilst the organic farmer *"...has a particular agronomic interest in a functioning, stable and diverse ecosystem of beneficial organisms....with regard to biodiversity issues and nature conservation this is not sufficient. Additional measures are necessary"*.

In the United Kingdom similar doubts had already arisen in the late 1980s and early 1990s and focused particularly upon the conversion period when technical and financial pressures upon organic farmers are greatest. In 1990 a report on behalf of the World Wide Fund for Nature (WWF UK) and another leading environmental strongly criticised organic farming stating that:

"Because of the financial penalties associated with the conversion period, organic farmers wishing to expand their operations may be tempted to utilise areas of semi-natural vegetation such as unfertilised grassland, moorland or wetland, which have high environmental value, for their farming operations..." (Jenkins, 1990).

Such criticism undoubtedly contained some validity and there were several reported cases at the time of accidental, or even deliberate, environmental abuse by organic farmers in the pursuit of commercial gain. Indeed the UK's leading organic certification body, the Soil Association, had already begun to address these issues in 1987 when it began consulting with a wide range of environmental organisations over the improvement of conservation management practices on organic farms. The result of this consultation was the introduction in 1989 of the first *Soil Association Environment and Conservation Husbandry Standards*, accompanied in 1990 by expanded *Guidelines for Conservation*.

The broad aim of the *Soil Association Environment and Conservation Standards* was to maintain features of the farm that were of conservation value. They therefore included specific recommendations and restrictions regarding:

- the management of traditional field boundaries and hedges;
- the management of old-unimproved pastures;
- heathland, moorland and other areas of semi-natural vegetation;
- trees and woodland management;
- buildings and archaeological sites.

The *Environment and Conservation Standards* also included some important prohibitions, making the Soil Association the first organic certification body in the world with the ability to withdraw an organic production licence on the grounds of environmental abuse. The prohibited practices introduced were:

- hedge trimming, ditch and dyke clearance between the end of March and early September;
- ploughing of unimproved pastures agreed to be of conservation interest;
- annual trimming of all hedges;
- new or improved drainage affecting areas of significant conservation value;
- levelling of ridge and furrow fields and cultivation of sites of ancient monuments, archaeological sites and earthworks.

The Soil Association's introduction of *Environment and Conservation Standards* was widely praised at the time. Although it was still recognised that the full value of these additional "bolt-on" standards might not be realised because of other factors (Redman, 1992):

"Organic farmers, like any other type of farmer, often lack labour, time and capital. In some cases, 'commitment' to environmental management may also be a limiting factor. There is no positive financial support for compliance with the Soil Association environment and conservation standards and organic farmers have the choice of registering with other less environmentally stringent certification bodies.....

This is particularly applicable: a) to those farmers starting organic conversion for the first time, when the technical challenges of organic production may appear daunting enough without the imposition of further standards; and b) as producer's attention increasingly focuses upon the comparative cost of certification with different bodies"

In a 1998 review of EU co-financed agri-environment payments, the European Commission also stressed the importance of additional standards/measures for enhancing the biodiversity benefits from organic farming support schemes with the comment that:

"...consideration should be given to adding measures to protect landscape features and certain habitats (e.g. wet areas) to organic support programmes, to create a more comprehensive 'organic +' approach and thus enhance the already substantial benefits of organic systems. Some proponents of organic farming already regard such measures as integral to the organic concept. However, no such obligations appear in Community legislation on organic farming which is focused on assuring product standards" (EC, 1998).

And as a final indication of the importance of additional biodiversity-related standards for organic farming, IFOAM has also been working on the development of global biodiversity and landscape standards since 2002 and recently published the *IFOAM Guide to Biodiversity and Landscape Quality in Organic Agriculture* (Bosshard *et al.*, 2009). This comprehensive document presents a variety of examples of organic farming (and other management) practices from around the world that *"...that are able to substantially enhance biodiversity and sensual landscape quality within the economic and agronomic restrictions of a farm"*.

5. Conclusions

The principles/practice of organic farming, plus the concept of HNV farming, both bring important new perspectives to our understanding of the relationship between agriculture and nature conservation. Instead of simplistically assuming that agriculture is always bad for biodiversity or that nature conservation is somehow only concerned with the management of protected sites for the maintenance of rare or endangered wildlife species, it is increasingly acknowledged that many farmers actually have a very important role to play as custodians of our natural heritage.

Organic farming has many important benefits for biodiversity and is a good example of a profitable and "nature friendly" alternative to conventional, intensive agriculture. It also has a strong linkage to a dynamic market with a huge potential for growth.

However, organic farming does not support the same levels of biodiversity that are associated with the high nature value (HNV) farming systems commonly found in the transitional economies of central and eastern Europe. It is also possible that the expansion of organic farming (particularly where driven by market demand for specific high value products such as fruits and vegetables) may not always be compatible with the conservation of HNV farmland.

Under certain circumstances it is even possible that organic farmers might damage and/or destroy valuable wildlife habitats in the interests of exploiting market opportunities for specific crops. This might be a *direct* effect, for example by cultivating semi-natural grasslands to increase the area of arable or horticultural land under organic management, or an *indirect* effect such as the increased irrigation of organic soft fruit in a semi-arid environment putting pressure upon local wetlands of nature conservation significance.

Where organic farming is actively promoted in marginal areas dominated by low-intensity agriculture (in other words, where there is high probability of HNV farmland occurring) it is therefore very important that much greater attention is given to the potentially negative effects of organic production upon local natural values. This includes the need for awareness-raising and training of farmers, selection of appropriate production standards and sympathetic project/business development. In some cases it may be that the introduction or expansion of an organic farming business may simply not be appropriate to the local context.

6. References

Andersen, E., Baldock, D., Bennet, H., Beaufoy, G., Bignal, E., Brower, F., Elbersen, B., Eiden, G., Godeschalk, F., Jones, G., McCracken, D.I., Nieuwenhuizen, W., van Eupen, M., Hennekes, S. and Zervas, G., 2003. *Developing a High Nature Value Farming Area Indicator*. Consultancy report to the EEA, European Environment Agency, Copenhagen.

Baldock D., Beaufoy G., Bennet, G. and Clark, J., 1993. *Nature Conservation and New Directions in the Common Agricultural Policy*. Institute for European Environmental Policy, London.

Baum, S., 2008. *Socio-economic, Demographic and Agricultural Patterns of Rural Areas in the New Member States*. Deliverable 3.2 of the SCARLED (Structural Change in Agriculture and Rural Livelihoods) Project (SSPE-CT-2006-044201) – retrieved from: http://www.scarled.eu/uploads/media/SCARLED_D3.2_final.pdf (2 January, 2010).

Beaufoy, G., 2008. *HNV farming – explaining the concept, interpreting EU and national policy commitments*. European Forum on Nature Conservation and Pastoralism – retrieved from: http://www.efncp.org/download/EFNCP-HNV-farming-concept.pdf (2 January, 2010).

Beaufoy, G. and Cooper, T., 2008. *Guidance Document to the Member States on the Application of the High Nature Value Impact Indicator* (developed from an original report for the European Commission undertaken in 2007). Institute for European Environmental Policy (IEEP), London.

Bignal, E. & McCracken, D., 1996. Low-Intensity Farming Systems in the Conservation of the Countryside, *Journal of Applied Ecology* **33**, 413-424.

Bosshard, A., 2003. Actual and Potential Role of Organic and Traditional Agriculture for the Conservation of Biodiversity. **In:** *The Potential of Organic Farming for Biodiversity* (Eds. Stolton, S., Metera, D., Geier, B. and Kärcher, A.), 67-78. Landwirtschaftsverlag, Munster.

Bosshard, A., Berend, R.R. and Taylor, S. (Eds.), 2009. *IFOAM Guide to Biodiversity and Landscape Quality in Organic Agriculture*. International Federation of Organic Agriculture Movements, Bonn.

Donald, P.F., Green, R.E. and Heath, M.F., 2001. Agricultural intensification and the collapse of Europe's farmland bird populations, *Proceedings of the Royal Society of London Series B-Biological Sciences* **268**, 25–29.

EEA, 2007. Map available from: http://www.eea.europa.eu

EEA/UNEP, 2004. *High Nature Value Farmland: Characteristics, trends and policy challenges*. EEA Report No. 1, European Environment Agency, Copenhagen/UNEP Regional Office for Europe, Geneva.

EC, 1998. *State of Application of Regulation (EEC) 2078/92: Evaluation of Agri-environment Programmes*. Working Document No. **VI/7655/98**, DG VI (Agriculture), European Commission, Brussels.

English Nature, 2003. *Position statement on organic farming (December 2003*). English Nature (now Natural England), Peterborough.

Hole, D.G., Perkins, A.J., Wilson, J.D., Alexander, I.H., Grice, P.V. and Evans, A.D., 2005. Does organic farming benefit biodiversity? *Biological Conservation* **122**, 113-130.

IFOAM, 2004. *Position on the full diversity of Organic Agriculture: What we call Organic*. Press release and position paper (30 December, 2004) from the International Federation of Organic Agriculture Movements – retrieved from: http://www.ifoam.org/press/positions/full-diversity-organic-agriculture.html (2 January, 2010).

Jenkins, T.N., 1990. *Future Harvests: The Economics of Farming and the Environment - proposals for action*. Report to the Council for the Protection of Rural England and World Wide Fund for Nature (UK), London.

Lampkin, N., 2002. *Organic Farming* (2nd Edition). Old Pond Publishing, Ipswich.

McCracken, D.I. and Huband, S., 2005. Nature Conservation Value of European Mountain Farming Systems. **In:** *Global Change and Mountain Regions* (Eds. Huber, U.M. *et al.*), 573-582. Springer, Netherlands.

Paracchini, M.L., Petersen, J.E., Hoogeveen, Y., Bamps, C., Burfield, I. and van Swaay, C., 2008. *High Nature Value Farmland in Europe: An estimate of the distribution patterns on the basis of land cover and biodiversity data*. Joint Research Council (JRC) Scientific and Technical Report, Office for Official Publications of the European Communities, Luxembourg.

Redman, M. (Ed.), 1992. *Organic Farming and the Countryside*. British Organic Farmers/Organic Growers Association in collaboration with the Soil Association, Bristol.

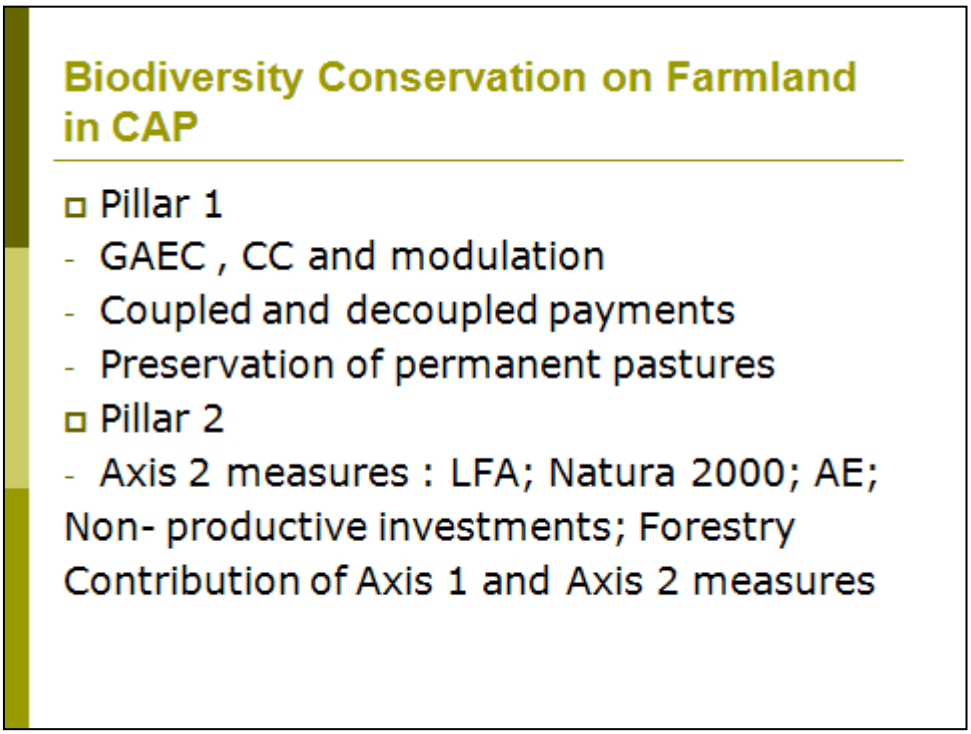
Tilman, D., Fargione, J., Wolff, B.D., Antonio, C., Dobson, A., Howarth, R., Schindler, D., Schlesinger, W.H., Simberloff, D. and Swackhamer, D., 2001. Forecasting agriculturally driven global environmental change, *Science* **292**, 281–284.

Wilson, J.D., Morris, A.J., Arroyo, B.E., Clark, S.C., Bradbury, R.B., 1999. A review of the abundance and diversity of invertebrate and plant foods of granivorous birds in northern Europe in relation to agricultural change, *Agriculture Ecosystems & Environment* **75**, 13–30.

Organic Farming and Biodiversity: EU and Bulgarian Policies and Practices

Viara Stefanova

Department of Agroecology, Ministry of Agriculture and Food, Bulgaria
Email: viara_mail@dir.bg

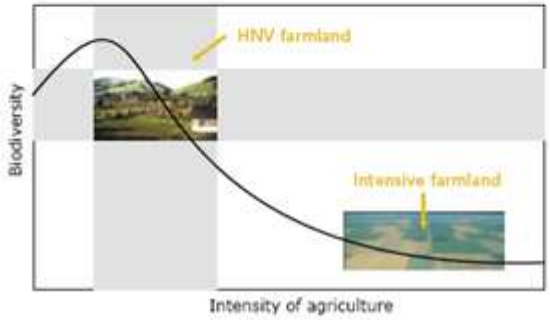


EAFRD Strategic Guidelines

- "To protect and enhance the EU's natural resources and landscapes in rural areas, the resources devoted to Axis 2 should contribute to three EU-level priority areas: biodiversity and the preservation and development of high nature value farming and forestry systems and traditional agricultural landscapes …."
- In 2007 - 2013 RDPs, Member States will need to have measures in place to maintain HNV farming and forestry systems and Traditional Agricultural Landscapes (TAL).

What is High Nature Value Farming?

- Typically, HNV farming systems are low intensity, low input systems with high structural diversity.
- Utilisation of semi natural vegetation by livestock, often in combination with the presence of other semi-natural features, is a key characteristic of these systems.



Organic farming in CAP

- Regulation on OF (834/2007 and 889/2008)
- EU action plan for Organic food and farming
- Could be supported by Pillar 2, Axis 1 and Axis 2 payments

How is OF contributing to biodiversity conservation (Europa website)

- Practices that contribute to high levels of biodiversity are often the result of **good faming practice**, as well as of EU organic farming regulation
- When the term biodiversity is used in OF, it doesn't just mean more plants and animals but also **more of the plants and animals native to a particular area grow in a natural way**

- Organic farming is one of several complementary instruments applied in EU for conservation of biodiversity

and

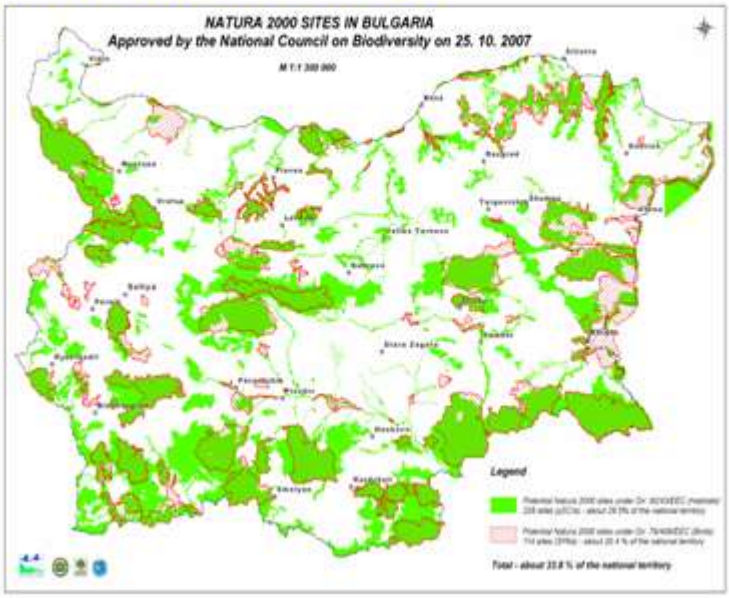
- the results for biodiversity conservation depend on how it is applied

Bulgarian context

Measures in RDP 2007 -2013 targeted to biodiversity conservation:

- Natura 2000 payments
- Agri – environment
  - HNV Farmland including traditional orchards and pastoralism
  - OF
  - preservation of rare breeds

Natura 2000 sites in BG



Natura 2000 sites in BG

- 114 SPAs (Bird directive) – 20,4% of the national territory
- 228 psCIs (Habitat directive) -20,4% of the national territory
- Total – about 33,8% of the National territory,

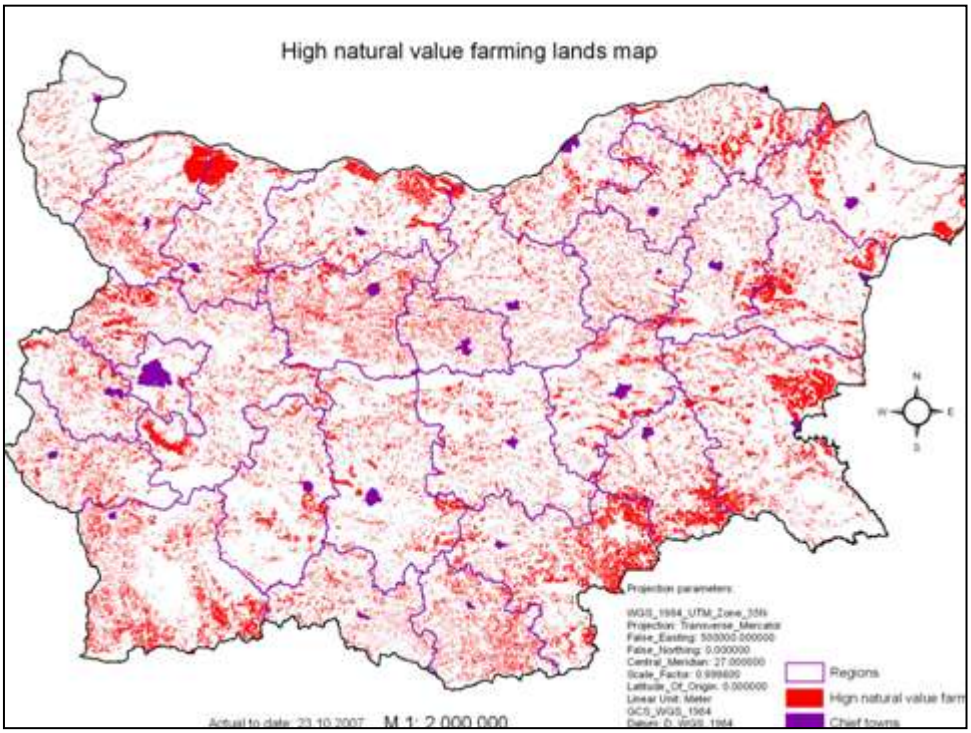
But Orders for designations only for 90 SPAs so far…

HNVF – present situation in Bulgaria

- Bulgaria adapted the approach used by the EEA by using several databases for biodiversity situation:
  - CORINE land cover 2000;
  - Natura 2000
  - IBAs
  - Grassland inventory
  - Habitats of triton, souslik, marbled polecat, Romanian hamster, trotoise and butterflies

HNVF – present situation

- The layers were then overlapped with the database for the physical blocks in the LPIS as per September 2007.
- The following codes for land utilization were used for the map
  - Arable land – 359 116 ha
  - Permanent crops – 401 555 ha
  - Permanent grassland- 951 256 ha
  - Mixed utilization – 279 013 ha
- As a result 1 630 035 ha – defined as HNVF



Steps of elaboration of the Action Plan for Organic Farming

- **Creation of an Expert Group and drafting the Plan**
  October 2004 – May 2005
- **Six regional consultations** (more than 1 000 participants)
  May 2005
- **Adoption by the Ministry of Agriculture and Forestry**
  November 2005
- **Approval of the financial justification of the Plan with external institutions**
  March-December 2006
- **Adoption by the Council of Ministers**
  March 2007

Strategic objectives of Bulgarian National Plan for Development of Organic Agriculture

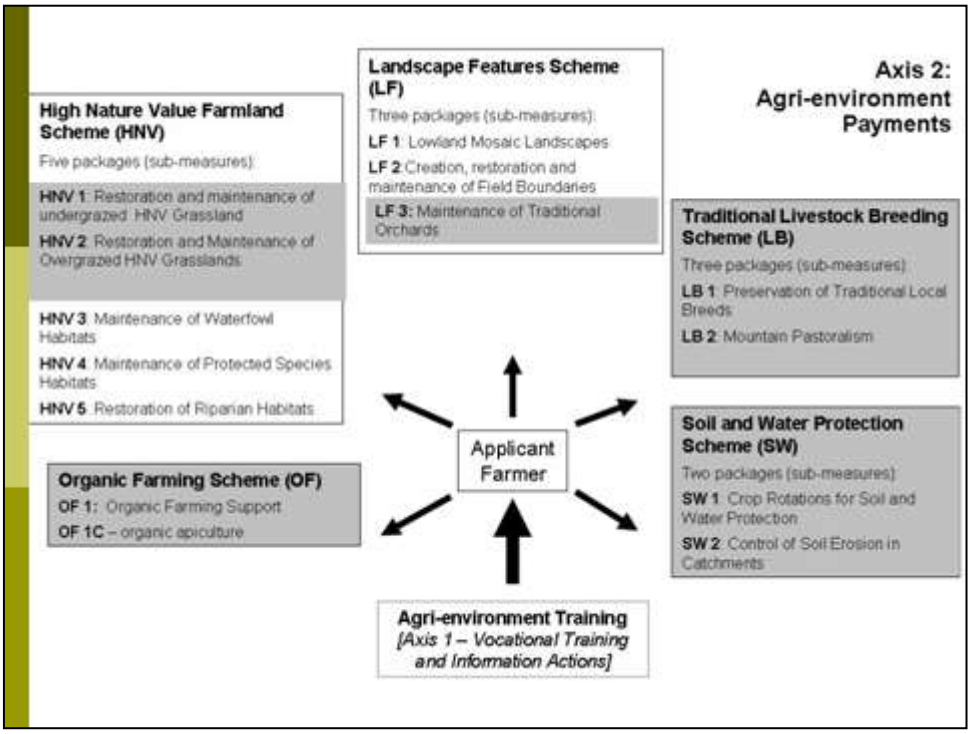
- Development of internal market for organic produce;
- 8% of the UAA should be managed under organic production methods by the year 2013;
- Effective legislative framework, supporting the development of organic agriculture, should be in place by the year 2007;
- Scientific research in the area of organic agriculture should be orientated towards actual practices; training and education systems, and consultancy capacity in organic agriculture should be available by the year 2010;
- Effective system for control and certification of organic products should be established.

Budget of the Plan

- Total budget: 164 Million BGN (~ 83 MEuro)

Sources of funding:

- EU funds (½ of the budget)
  - SAPARD Programme (2000-2006)
  - European Agricultural Fund for Rural Development (2007-2013)
- National budget (½ of the budget)

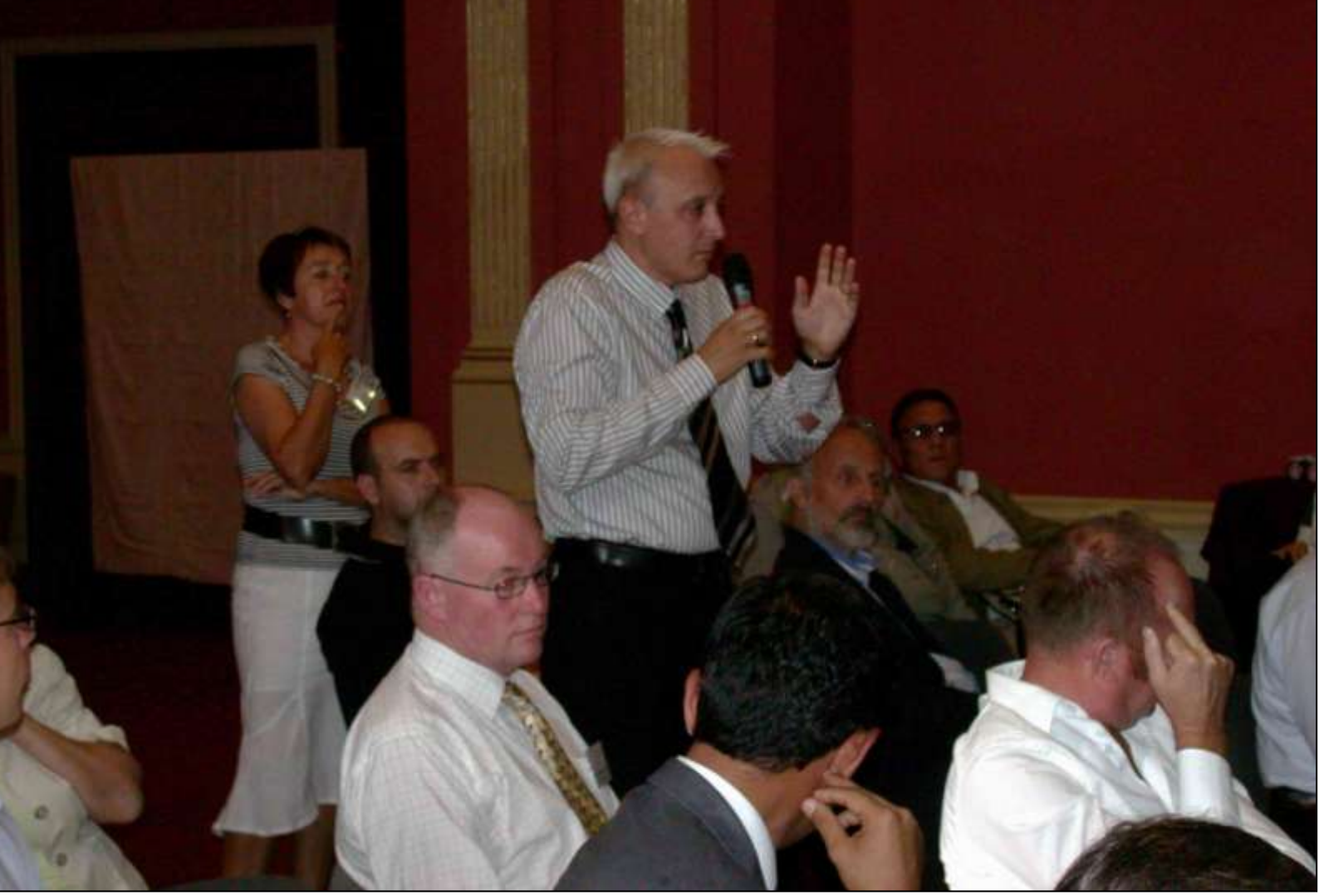


Results for the 1st year of implementation of support

- HNVF under AE support -32981 ha
- Organic farming – 3573 ha
- Organic beehives – 17244
- Mountain pastoralism – 1272 ha
- Traditional orchards – 26 ha

Thank you for your attention!

Vyara STEFANOVA
Ministry of Agriculture and Food
Agri-Environment and LFA Department
Phone: ++ 359 2 98511 408
Fax: ++ 359 2 980 38 54
E-mail: vstefanova@mzh.government.bg

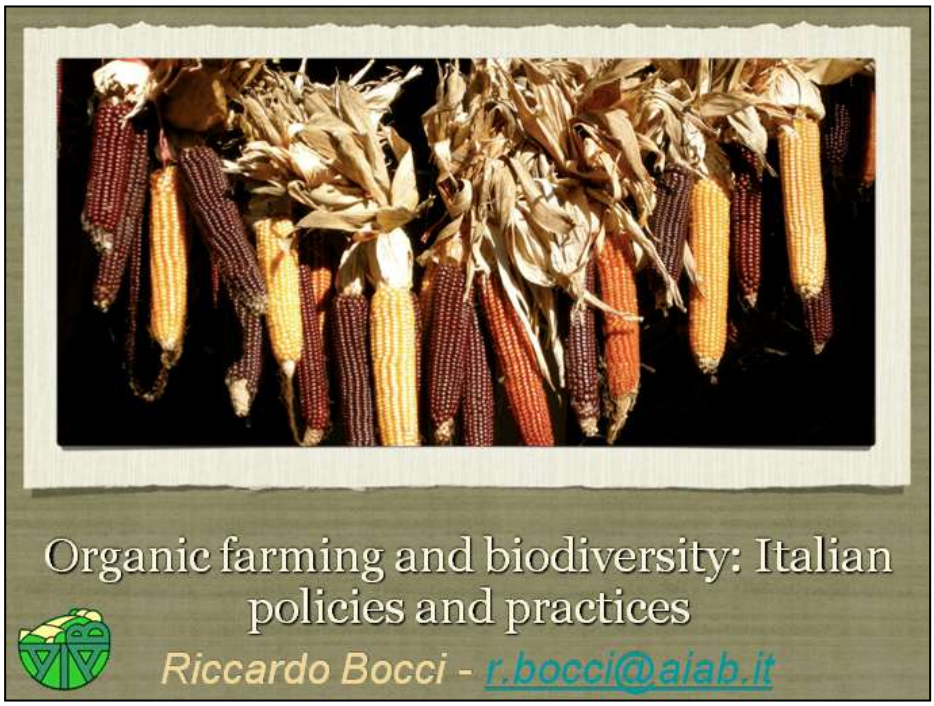


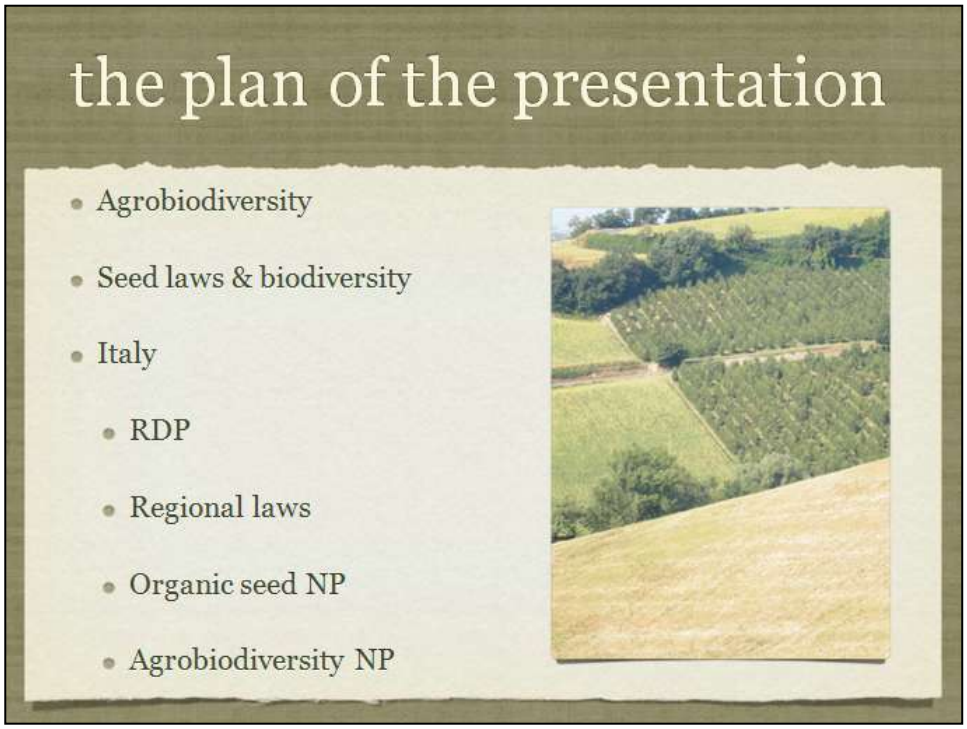

KTBG
KTBG

Organic Farming and Biodiversity: Italian Policies and Practice

Riccardo Bocci

IAAB- Italian Association for Organic Agriculture, Italy
Email: r.bocci@aiab.it






BIODIVERSITY
Agro-biodiversity
Mixed agro-ecosystems
Crop species/varieties
Livestock and fish species
Plant/animal germplasm
Soil organisms in cultivated areas
Biocontrol agents for crop/livestock pests
Wild species as landraces or with breeding
Cultural & local knowledge of diversity


how to cultivate diversity??
many constraints:
seed laws
ag policies
market standardization
food processing
consumers' preferences
.....

EU BIODIVERSITY ACTION PLAN FOR AGRICULTURE

- 4.3.2. Seed legislation
- 79. The conservation and improvement of in situ/on farm plant genetic resources also depends on the effective possibility of sustainable uses and hence on legislation which makes it possible to market diversified genetic materials.

http://ec.europa.eu/agriculture/envir/biodiv/162_en.pdf

Seed laws in Europe, the state of the art

☑ DUS criteria → Official Catalogue

☑ VCU for agricultural plant species

Official Catalogue → UPOV plant variety protection

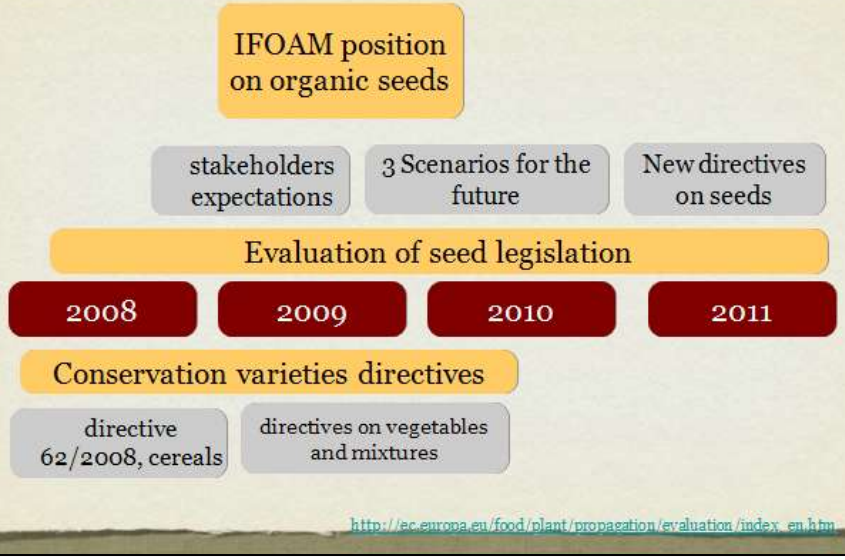
Official Catalogue → Market

Organic seed needs a second certification!

what about organic agriculture?

Wolfe et al. (2008) "[...] varieties adapted to organic conditions that do not yield sufficiently well under conventional conditions cannot be registered. And, of course, without registration, the exchange and the production of seeds is forbidden. Another current question concerns the potential heterogeneity of, for example, populations, that are not integrated into the legislation. Indeed, varieties that do not comply with DUS cannot be registered. It is urgent that legislation at the European level evolves to take into account the new demands".

Seeds in Europe, new needs and objectives



Conservation varieties

PGR Conservation ⟷ Seed legislation

The directive is an important step forward because it implicitly acknowledges that seed regulations since the 1960s have contributed to the genetic erosion of agricultural diversity and so must be amended somehow.

Organic seeds

- new needs:
  - organic varieties,
  - landraces or populations

→ niche market

- new objectives:
  - conserving agrobiodiversity in the field
  - protection of the environment (low input agriculture)

Food Chain Evaluation Consortium suggests "that the two different systems of the large commercial breeding companies and the smaller market or regional breeders and producers could run side by side because they are targeting completely different markets"

Italy, between tradition and modernization

- Farms with more than 50 ha =2.2%
- average size 7.4 ha
- farms larger than 16 UDE = 9.5%
- farmers older than 64 years = 41.4%
- 175 GIs in 2008

It is also important to stress that the largest portion of the agro biodiversity and the traditional knowledge associated is usually preserved by the group of farms not listed as "enterprises" (<8UdE) and managed by people older than 65 years. For this reason, it is of paramount importance to adopt policies to tackle these structural weaknesses by avoiding loss of know-how and seeds due to generation gaps and to promote economical, social and cultural conditions where these farms can continue to operate. In fact, the global market is not within the reach for these farmers that, without the much-needed protections, are doomed to disappear with their particular knowledge and seeds.

"Living the fate of soil and people to the market would be tantamount to annihilating them" (Polanyi, 1957).

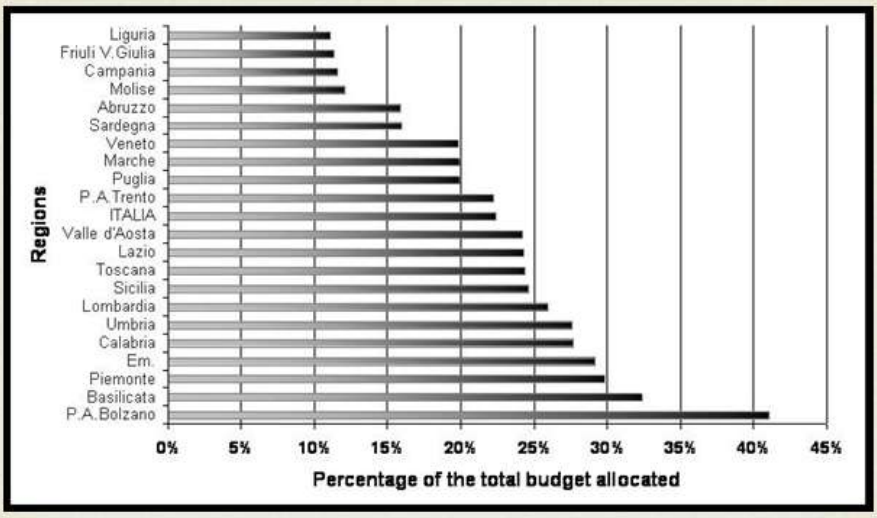
regional laws for the conservation of local varieties and races

1. regional catalogues
2. characterization of GR
3. regional seed banks

rural development plans

Specific measures for the conservation of plant and animal genetic resources

RDPs provide two kinds of incentive for conservation of agricultural biodiversity, namely direct and indirect. The former takes the shape of payments made to farmers for growing or raising a specific breed or variety at risk of genetic erosion (measure 214 in the Axis 2). The latter are indemnities to encourage a farming approach that is more respectful of the environment and less intensive and which, generally speaking, makes use of agricultural biodiversity.

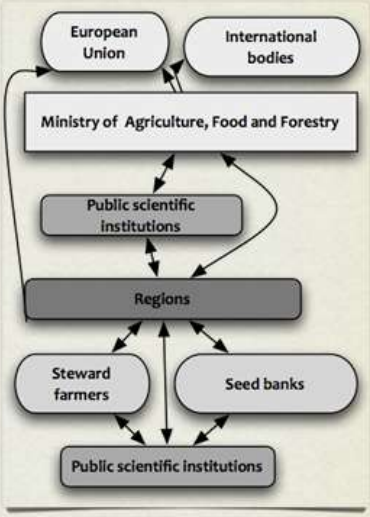


Graph 2 – Overall regional expenditure for measure 214 on the total public expenditureSource: Mipaaf data processed by this author based on the "Rural Development Plans 2007-2013".

CBD ITPGRFA

The national plan for agrobiodiversity

Identify the descriptors for the various species;Define the investigative and characterisation methodologies for local breeds and varieties;Define the guidelines for proper conservation in situ/on farm and ex situ;Define the risk of genetic erosion by means of specific indicators.



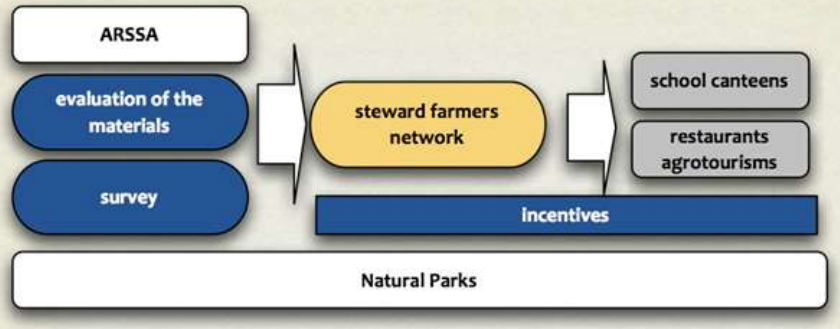
Organic seed national plan

Increase the production of organic seeds

Provide adapted varieties to organic farmers

Set up a pilot project on PPB

The Abruzzo conservation system - a case study

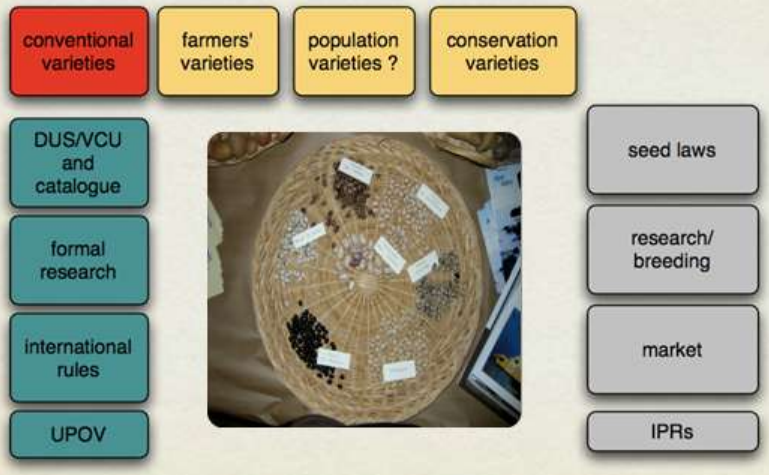


"The challenge in this project lies in bringing back old varieties which have been conserved thanks to the tenacity and stubbornness of a few to become the new heritage of all"Dalla Ragione et al. (2004)

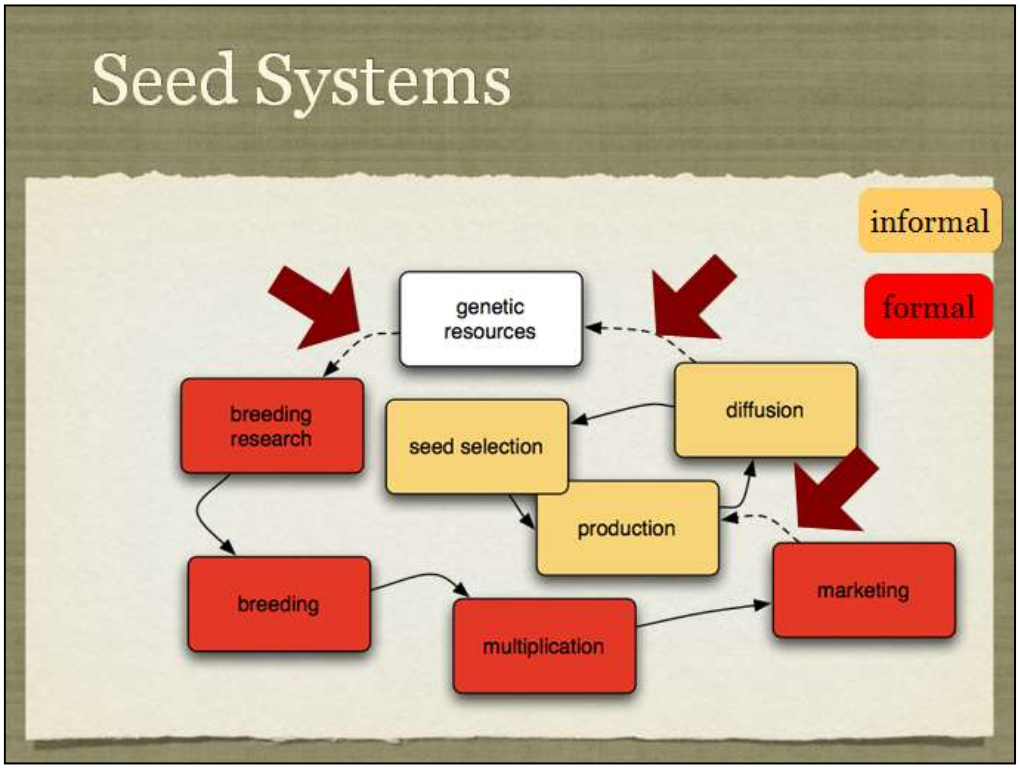
conclusions...?

Experience proves that sustainable use of agricultural biodiversity can develop into the premise on which to base a more general programme that includes the moral development of an entire territory. Indeed, the final result of the activities described show that it was not only keeping certain local varieties in cultivation or supporting on-farm conservation but creating the conditions for continuing to farm and therefore maintain the complex system of values and relations without which agricultural biodiversity would no longer make sense and simply disappear.

different varieties for different markets with different innovation systems



Seed Systems



The man made by corn produces the corn. The man created by the corn substance and the colour makes a crib for corn, covers it with fertile land, weeds the field, waters it and says words of love. And when the corn grain is grown, the corn peoples grind it on a stone and rise it and applaud it and lie it on top of the fire and eat it so the corn peoples might continue growing the corn and it will not die on the earth (E. Galeano, Palabras andantes)

The man made by corn produces the corn. The man created by the corn substance and the colour makes a crib for corn, covers it with fertile land, weeds the field, waters it and says words of love. And when the corn grain is grown, the corn peoples grind it on a stone and rise it and applaud it and lie it on top of the fire and eat it so the corn peoples might continue growing the corn and it will not die on the earth (E. Galeano, Palabras andantes)

Thanks!

14 - 15 October 2009 Marseille

International Conference

Presentation of the outcomes of the European Project FSO

North/ South exchange on experiences on seed laws

Farmers' forum with farmers involved in the field trials

FarmSeedOpportunities

Farm Seed Opportunities (FSO), a specific targeted research project in the FP6 European programme (2007-2009), was conceived to support the implementation of seed regulations on conservation varieties (directive 98/95/EC and new directive 2008/62/EC for agricultural species).

For information please contact: r.bocci@aiab.it

Organic Farming, Biodiversity and Food

Stoilko Apostolov

Bioselena and Coalition "Pure Food - Fair Living", Bulgaria
Email: s.apostolov@bioselena.com

Processing in a farm and direct sales

A chance for Bulgarian farmers

Dr. Stoilko Apostolov,

чиста храна
честен поминък

The problem

- Bulgarian small farmers are in very unfavourable situation
- On one side they can not apply to different European programmes because of normative restrictions or because they do not will to do it
- On the other side they can not sell their own production – they can not reach the market
- The worst situation is for small farmers, breading cows for milk

чиста храна
честен поминък

The problem

- There are 117 796 farms, registered in Bulgaria, breeding cows for milk, divided into 3 groups, in accordance with requirements for milk quality and cow-sheds
- The first group includes 2403 farms, which suit all requirements
- The second group includes 882 farms, which do not suit for milk quality or building requirements
- In the last group are the rest 114 511 farms, (97 %),which do not suit any requirements

чиста храна
честен поминък

The problem

- These 117 796 farms are not allow:
  - to apply for subsidies for milk
  - to apply for additional milk quota from the National reserve
- Dairies pay lower price for the milk from these farms
- These farms have a deadline to cover all requirements until 31st of December, 2009, otherwise they will lose the milk quota
- Until now there is not any official information that any of these farms convert to first group

чиста храна
честен поминък

The problem

- These 117 796 farms are not allow :
  - to apply for subsidies for milk
  - to apply for additional milk quota from the National reserve
- Dairies pay lower price for the milk from these farms
- These farms have a deadline to cover all requirements until 31st of December, 2009, otherwise they will lose the milk quota
- These farms have a deadline to cover all requirements until 31st of December, 2009, otherwise they will lose the milk quota

чиста храна
честен поминък

The problem

- The problem is worst in the mountain and distant regions as Rhodope, Strandja and Western Old mountain
  - in these regions the dairies refuse to buy the milk even at lower price
  - farmers feel abandoned by the Government and they are negatively disposed towards the European Union
- These regions have a high nature value
- The existence of herbivorous animals in these regions is a very important premise for biodiversity preservation and keeping the traditional living of the local people

чиста храна
честен поминък

What to do?

- Most of the existing farmers organizations see the problem solution only in a financial support by the Government
- In the beginning of the year few Bulgarian NGO were gather together and discussed the problem (Bioselena, Bulgarian society for birds protection, Bulgarian national consumer association, Slow food – Bulgaria)
- Based on our experiences and contacts with our partners from few European countries (mainly France, Italy, Hungary and Romania) we suggested a solution – allowing processing in the farms and direct sales

чиста храна
честен поминък

Coalition "Pure food – fair living" – the beginning

- Changes in the National legislation – development of Regulation for direct sales
- Declaration and contacts with the Ministry of agriculture and food
- Publicity of the initiative – Publicis Consultants | MARC have engaged to organize a free public presentation of the coalition
- First official letter to the Minister of agriculture and food – 17.02.2009 (no answer until August)

чиста храна
честен поминък

First press conference

- 15th of February 2009 – BTA, Sofia
- 8 TVs, 3 of them National
- 2 National radios
- 3 informational agencies
- 4 newspapers, 3 magazines
- 26 web-sites published articles about the subject

чиста храна
честен поминък

Coalition's initiatives

- 25th of April, 2009 – exhibition – testing products from farms – hotel Rila , Sofia
- 19th of May, 2009 – lunch with products from farms

- Mrs. Meglena Plugchieva – a Deputy Prime Minister
- European ambassadors (England, France, Austria),
- Chief editors of leading Bulgarian media

- 23rd of June, 2009 – Round table with experts from Slow Food – Italy, the Ministry of agriculture, Veterinarian control, media

чиста храна
честен поминък

Exhibition of farm' products – Sofia

- 25th of April, 2009 – exhibition – testing products from farms – hotel Rila , Sofia
- 19th of May, 2009 – lunch with products from farms

- Mrs. Meglena Plugchieva – a Deputy Prime Minister

- European ambassadors (England, France, Austria),
- Chief editors of leading Bulgarian media

чиста храна
честен поминък

First sings of change – after parliamentary elections

- 7th of August, 2009 – a new letter addressed to the Minister of agriculture – Dr. Naydenov
- 19th of August, 2009 – convoke a working group to develop the Regulation for processing in the farm and direct sales
- 11th of September, 2009 – first meeting of the working group
- A positive attitude by the staff of the Ministry of agriculture and food
- All chances for success of this initiative look real

чиста храна
честен поминък

Coalition "Pure food - Fair living" members

- Bulgarian National Consumer Association (BNCA)
- Foundation for Organic Agriculture BIOSELNA
- Slow food Bulgaria
- Bulgarian Society for the Protection of Birds (BSPB)
- WWF Danube-Carpathian Programme in Bulgaria
- Association "Bioproduct BG"
- Association of sheep-breeders from Western Balkan
- Association for breeding Bulgarian Rhodope cattle and Jersey
- Association for breeding indigenous breeds in Bulgaria
- Bulgarian society for preservation of biodiversity "Semperviva"
- Association "Mountain milk"
- Bulgarian veterinary union

чиста храна
честен поминък

Coalition "Pure food - Fair living" – next steps

- **Draft regulation – until 15th of October, 2009**
- **Publishing new regulation–until 31stof December, 2009**
- **A lot of work to be done for training farmers, farm investments and help for direct sales of farm products**

"The food we eat has change more for the last 40 years, than for the last 40 000 years!"
Erik Shloser

Our mission is to safe at least part of the traditional Bulgarian food-staffs and living of local people.

чиста храна
честен поминък

Thank You for Your attention!

Dr. Stoilko Apostolov

Coalition "Pure food – Fair living"

Foundation Bioselena

www.bioselena.com

чиста храна
честен поминък


EXIT

How can Industrial Partners Help to Maintain Agro-Biodiversity?

Andreas Ellenberger

Weleda, Switzerland
Email: AEllenberger@weleda.ch

Size and Products

- Weleda is a small "global player": worldwide 2,000 employees in 51 countries
- 100 products for body care
- 2,500 medicinal products, 42 OTC medicaments
- 6,000 individually mixed medicaments
- Weleda Switzerland: 240 employees
- Three main production centres for global production: France, Germany, Switzerland
- 700 natural substances

WELEDA

Weleda products sold in Bulgaria

WELEDA

Scope of Plant based Raw Materials

- Fresh plants
- Dried Plants (Drogen)
- Wild Berries (for Juice and Oil)
- Essential Oils
- Fatty Oils, waxes
- Ethanol, Glycerine
- Sugar, Starches
- Others (Emulgators, Organic thickeners)

WELEDA

Medicinal and Cosmetic Plant Sourcing – Scope of origins

- Company-owned bio-dynamic cultivation of MAPs (300 species on over 30 hectares)
- Growing number of wild species taken into cultivation
- Collection of wild plants by our trained employees
- Promotion of organic cultivation projects
- Long-term partnerships with growers and collectors worldwide
- Emphasis on "protection-by-tending" projects (including research on wild plant populations)

WELEDA

Our responsibility in the use of MAPs and their ecosystems

- An estimated 70,000 species of plants are used around the globe for medicinal purposes (incl. cosmetics, aromas, nutritional supplements)
- 3,000 of them traded on a larger scale
- 80% of the world's population rely on healing plants for their healthcare

WELEDA

Trade with Medicinal Plants

- 467,000 tons with a value of CHF 1.6 billion per annum
- Europe: 2,000 species are traded
- No transparency in the market
- Great differences in net added value (Japan: CHF 26,000/t, Switzerland: CHF 10,100/t, India: CHF 1,900/t, Mexico: CHF 480/t

WELEDA

Medicinal Plants in Need of Help

- MAPs on CITES list: 348 species
- TRAFFIC estimates the number of endangered species at 15,000 (around 20%)
- Increasing demand for natural cosmetics and medicines
- Destruction of natural habitats.
- Limited knowledge of provenances, no declaration, no labels

WELEDA

Weleda: Sustainable Partnerships

- Sustainability and transparency as main sourcing priorities.
- Promotion of organic and bio-dynamic cultivation methods
  (Share of organic raw materials: 70% of total sourcing).
- Socially responsible and fair trade relations.
- Signatory company of the Bonn CBD Declaration "Business and Biodiversity"

WELEDA


SALAMITA
demetar

glance at a few projects

- Arnica from the Carpathian Mountains
- Birch leaves from Czechia
- Damascus Roses from the Valley of Isparta and from Manolovo
- Lavender from
- Rhatany from Peru

WELEDA

Arnica from the Carpathian Mountains

- "Protection-by-Tending" project in the Apuseni Mountains, since 2004
- Cooperation with the WWF and the Universities of Freiburg (Germany) and Cluj (Rumania)
- Establishing a cooperative of farmers and collectors on site
- Financing of a drying plant to safeguard quality
- Training/education of farmers and collectors

WELEDA


Drying and storing facilities

Birch leaves from Czechia

- Wild collection since 1994 with local partner
- Bio-Certification of large areas, export of dried leaves
- New crops
- Production of birch leaf-extract by local partner since 2001

WELEDA

Damascus Roses from Turkey

Project in the Valley of Isparta

- Started 2002 in Isparta, Turkey.
- Training of local advisors for organic cultivation
- Guaranteed purchase quantities and prices
- Contract for long-term relationship

WELEDA

Project in the Valley of Isparta

2002: 30 farmers from 3 villages join the project. 20 ha are converted to organic

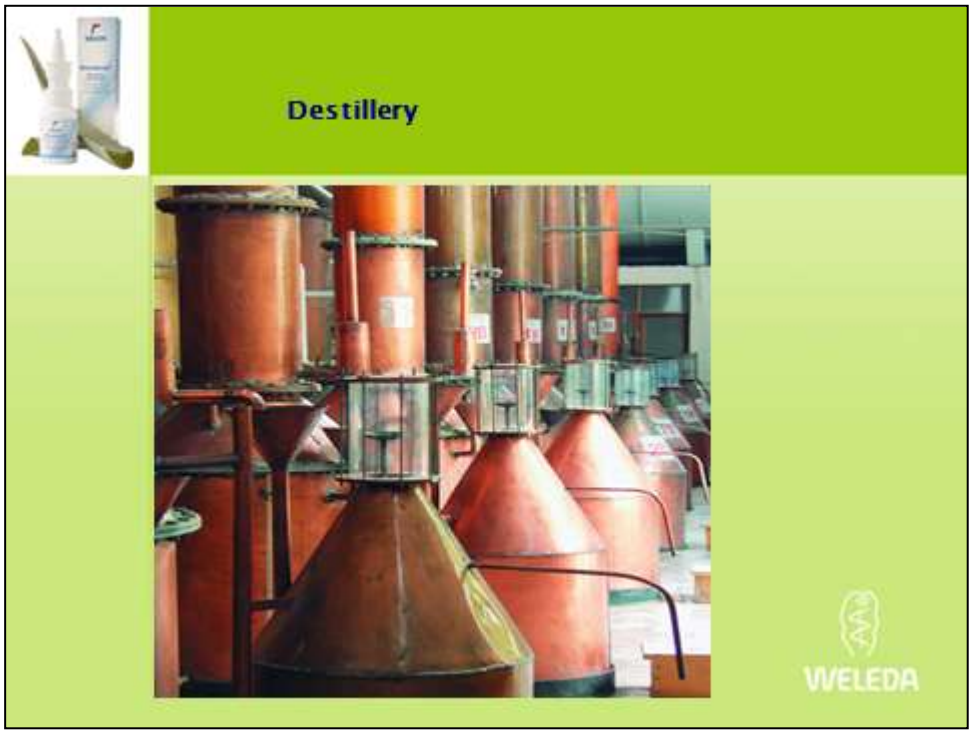
2003: delivery of the first 50 kilos of "Rose Absolue"

2003–2005: annual doubling of area and quantities

Today: 290 farmers in 7 villages with 120 hectares under cultivation

WELEDA


Before Distillation
WELEDA


Destillery
WELEDA

Lessons Learned from the Project

- establishing a basis of trust and loyalty, long-term relationship, pulling/acting effects as an example for neighbours.
- imparting know-how on site promotes competence.
- checking up on efforts made, internally (QM system) and externally (bio-certification according to EU organic regulations).

WELEDA

Manovolo / Bg

WELEDA


WELEDA


Rhatany Project in Peru

Rhatany Roots from Peru

- Since the 1990s the problem of over-use has become apparent.
- Project including the German GTZ, the Peruvian Nature Conservation Agency INRENA, collectors and traders beginning in 2002.
- German researchers and Arequipa University are investigating the cultivability of the plant.
- Studies on reasonably accurate estimate of population as a basis for a sustainable harvesting rate.
- Simple collection method established, with simultaneous re-sowing in situ .

WELEDA

Lessons Learned from the Rhatany Project

- Knowledge of plant biology is necessary for a valid sustainability strategy
- Project develops thanks to scientific investigations and good on-site partners
- Relatively simple solution with re-sowing/ rejuvenation of population
- Methodology applicable for various wild-crafted MAPs
- Uncertainties due to political and social situation!

WELEDA

What is Weleda's Impact on Biodiversity?
(Land use related to Sourcing)

• Organic and bio-dynamic Cultivation (Fresh plants and Dried Herbs, Essential Oil Plants)	ca.	4'000 ha
• Wild collection (MAPs, Birch leaves, Berries)	ca.	30'000 ha
• Wild collection (Essential Oils)	ca.	2'000 ha
• Fatty Oils, Waxes (mostly organic)	ca.	2'000 ha
• Ethanol, Glycerine (mostly organic)	ca.	1'000 ha
• Sugar, Starches (mostly organic)	ca.	500 ha
• Others (Emulgators, Organic thickeners)	ca.	500 ha

WELEDA

Conclusions

- Organic sourcing improves biodiversity
- On-the-spot-support is indispensable
- Achieving transparency creates trust and reliability
- Even a small "global player" like Weleda can influence a lot

WELEDA

Sustainability is Possible!

Sustainability is not a new idea: "If we interfere with nature, we have to take the greatest care to restore her balance" (Heraclitus, 550–480 B.C.)

Further information available on our website

Thank you for your attention!

WELEDA

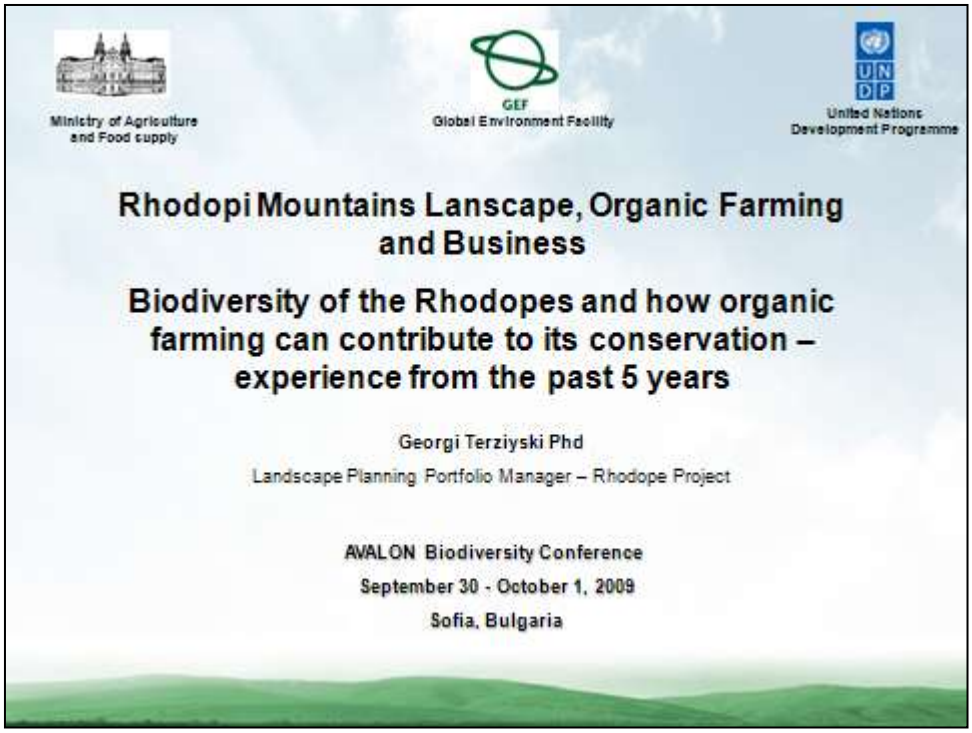

WELEDA

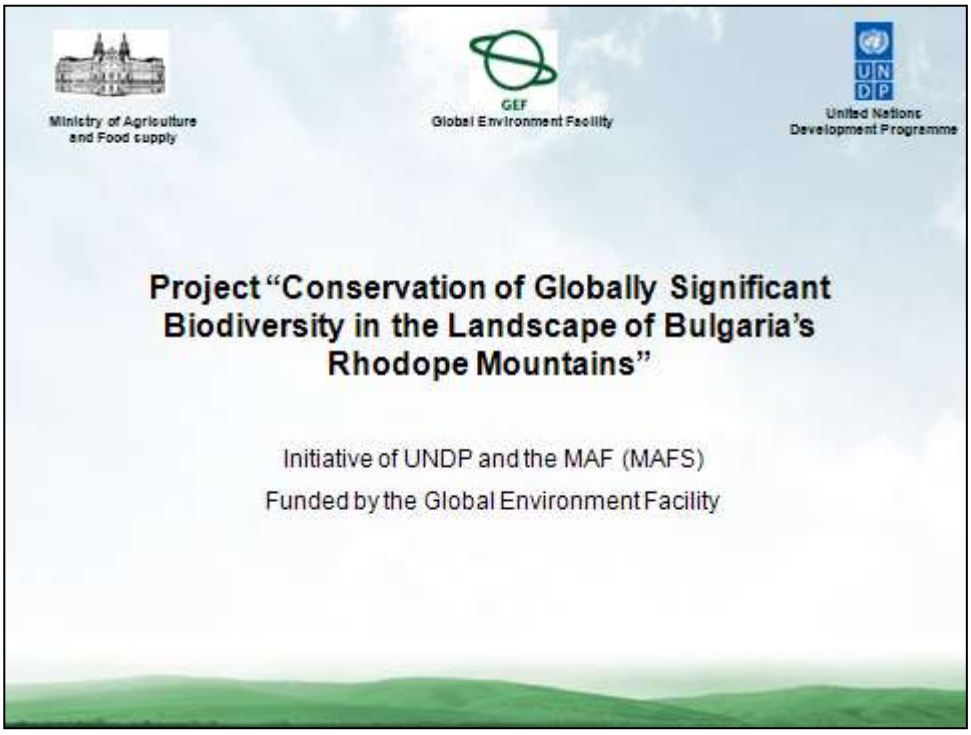

Identification of the issues and weaknesse
Problems: scarce information and lack of
Activity: 2005. A database with national po
Activity: 2006. At municipality policy level
Development plans with regard ta
Activity: 2006-2007. Initiation of regional tr
Rhodopes
Activity: 2006-2007. Detailed survey on all
Activity: 2007. Practical trainings on "Manu
Activity: 2007. A series of trainings on Agro
(PDRA)
2007-2008. A Programme for Demo
(300 000 USD). 6 project funded di
2008. Due to the growing interest
farming are organized
2008. Study tour for farmers from
2009. Two model farms keeping in

Rhodopi Mountains Landscape, Organic Farming and Business

Georgi Terziyski

GEF/UNDP Rhodope Project, Bulgaria
Email: georgi.terziyski@rodope.org





Ministry of Agriculture and Food supply

GEF
Global Environment Facility

United Nations Development Programme

Project Philosophy

Economic development of the region

Integrated approach

Biodiversity conservation

Ministry of Agriculture and Food supply

GEF
Global Environment Facility

United Nations Development Programme

Ministry of Agriculture and Food supply

GEF Global Environment Facility

United Nations Development Programme

Project goal

Integration of the aims linked with the biodiversity conservation into nature resource management, policies and practices for economic development in Eastern and Western Rhodopes while supporting the environmental sustainable development of the region

Project activities

- Raising public awareness on nature conservation issues;
- Broaden the baseline knowledge of the regions habitats and species;
- Undertake specific small scale conservation actions;
- Integrate biodiversity conservation into economic development policy, practices and planning;
- Pilot alternative livelihood approaches (in addition to traditional regional economic activities) ;
- Provide entrepreneurship training and small business support to stakeholders;
- Identify funding mechanisms to enable people to finance alternative livelihood entrepreneurship.

Ministry of Agriculture and Food supply

GEF Global Environment Facility

United Nations Development Programme

Sustainable use of biodiversity

- Identification of main sectors utilizing biodiversity assets (project-wise)

Forestry, Agriculture, Tourism

- Distribution of responsibilities for planning and control

Municipality authorities, Governmental agencies, District authorities, Ministries

- Rhodope Project and the Integration of biodiversity conservation concern in planning process

Surveys *(socioeconomic, biodiversity, nature resources and services etc.)*

Trainings *(focused on sustainable use of biodiversity in the three main sectors plus specialized)*

Document preparation/support *(manuals, guidelines, charters etc.)*

Services and data provision *(distribution of biodiversity data, GIS data, expert help)*

- **Protected areas management**

Establishment of new protected areas, development of Management plans

Ministry of Agriculture and Food supply

GEF Global Environment Facility

United Nations Development Programme

Project intervention targeting the organic agriculture as a tool for biodiversity conservation

Identification of the issues and weaknesses in the sector of organic agriculture

Problems: scarce information and lack of capacity at local level, lack of funding and initiative

Activity: 2005. A database with national publications regarding organic agriculture is prepared

Activity: 2006. At municipality policy level are revised and updated 8 Municipality Strategic Development plans with regard to biodiversity conservation and agriculture

Activity: 2006-2007. Initiation of regional training seminars on organic agriculture throughout the Rhodopes

Activity: 2006-2007. Detailed survey on all farms keeping indigenous breeds in the region

Activity: 2007. Practical trainings on "Management of organic farm"

Activity: 2007. A series of trainings on Agro-ecology and preparation of projects for funding (PDRA)

Activity: 2007-2008. A Programme for Demonstrational Projects launched by Rhodope Project (300 000 USD). 6 project funded directly related to organic farming

Activity: 2008. Due to the growing interest additional trainings on Agro-ecology and organic farming are organized

Activity: 2008. Study tour for farmers from Rhodopes to 5 organic farms in Bulgaria

Activity: 2009. Two model farms keeping indigenous breeds supported to develop business plans

Ministry of Agriculture and Food supply

GEF Global Environment Facility

United Nations Development Programme

Programme for Demonstration Projects - PDP

SUSTAINABLE AGRICULTURE – supported activities

- Initiation of organic agriculture;
- Conservation and restoration of rare and indigenous breeds;
- Development of products and services diversifying the activity of the farms;
- Development of Agri-evnironment plans and support for their implementation;
- Maintenance and management of pastures by grazing and renewal of withering agricultural practices;
- Wild herbs – cultivation, processing and marketing;
- Development of new products linked with eco-tourism.

Ministry of Agriculture and Food supply

GEF Global Environment Facility

United Nations Development Programme

PDP Projects – case study 1

Pilot farm for production of organic honey – Nedelino

Aim

Establishment of apiary and cultivation of herbs for production of organic bee honey

Results

- Established apiary with 20 bee hives kept according to the requirements in organic manner
- A plantation of 0.2 ha is established with oregano and mint to act as a feeding ground
- Certification of the bee keeping and organic honey production
- Prepared brochure advertising the organic honey production

Ministry of Agriculture and Food supply

GEF Global Environment Facility

United Nations Development Programme

PDP Projects – case study 2

Establishment of karakachan sheep herd aiming at conservation and restoration of rare traditional for the region breed - Yagodina

Aim

To integrate activities toward biodiversity conservation in central Rhodopes

Results

- Established herd with 120 karakachan sheep
- Increased the areas target managed for biodiversity conservation
- Prepared Agro-environment plan for sustainable use of the pastures in the region of Yagodina
- A strategy for linking the farm products with alternative forms of tourism is developed

Ministry of Agriculture and Food supply

GEF Global Environment Facility

United Nations Development Programme

PDP Projects – case study 3

Conservation of the population of indigenous breed – Rhodopean short-horned caw in eastern Rhodopes - Madzharovo

Results

- Established herd with 20 short-horned cows (certified) and a barn following the old traditions
- Increased the areas target managed for biodiversity conservation - 20 ha
- Prepared Agro-environment plan
- An open farm day is organized and the results are promoted among 40 farmers

Ministry of Agriculture and Food supply

GEF Global Environment Facility

United Nations Development Programme

PDP Projects – case study 4

Model farm for cultivation of organic Aronia - Plovdivci

Aim

Setting a model farm for cultivation of organic Aronia

Results

- Increased area for cultivation of Aronia
- Certified organic cultivation
- Increased interest among local farmers for cultivating organic products
- Increased production of organic Aronia for the market

Ministry of Agriculture and Food supply

GEF Global Environment Facility

United Nations Development Programme

PDP Projects – case study 5

Small farm in the valley - Madzharovo

Aim

Development of organic agriculture and diversification of products in a family farm

Results

- Certified agriculture land and started organic agriculture at a family farm
- Establishment of walnut plantation, fence with dog-roses and brambles and area sown with alfalfa
- Two karakachan horses with all needed harnesses are acquired for the farm

Ministry of Agriculture and Food supply

GEF Global Environment Facility

United Nations Development Programme

PDP Projects – case study 6

Cultivation of alfalfa - Madzharovo

Aim

To find alternative of tobacco cultivation

Results

- A family has guaranteed income for 4 years from organic agriculture
- Produced 25 000 kg or alfalfa
- Increased land managed in organic way with 5 ha

Ministry of Agriculture and Food supply

GEF
Global Environment Facility

United Nations Development Programme

Concluding remarks

- Organic agriculture can be successfully developed in the mountainous areas of Bulgaria
- Organic agriculture can contribute to sustainable use of land and biodiversity conservation
- Organic agriculture is an option for diversification of the sources of income for local people, especially when linking it with alternative forms of tourism
- Organic agriculture can be used as substitute of not feasible agriculture practices

Further steps

- Efforts to popularize the organic farming as income generation practice is still needed
- Capacity building should be continued
- Qualitative marketing studies and activities should accomplish all other efforts
- Efforts to establish a network of organic farmers could also be very beneficial

Thank you for your attention!

For more information

Georgi Terziyski PhD

Rhodope Project

www.rodope.org

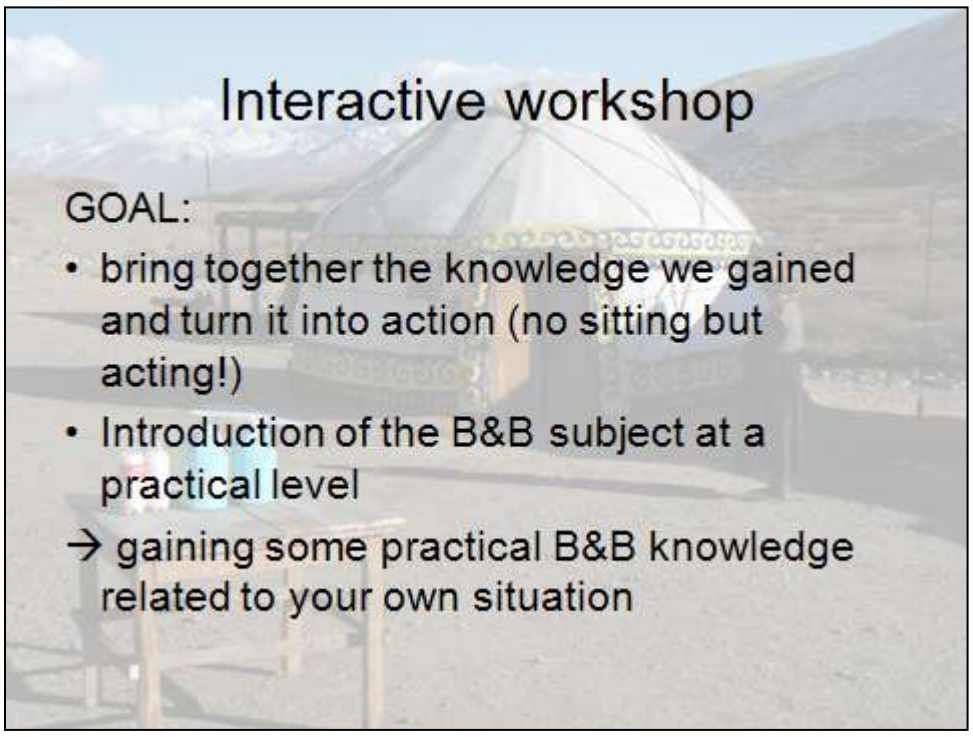
georgi.terziyski@rodope.org


KTBG
KTBG

Organic farming and biodiversity business opportunities: Workshop introduction

Nico van der Werf

Avalon, the Netherlands
Email: nico.vanderwerf@avalon.nl

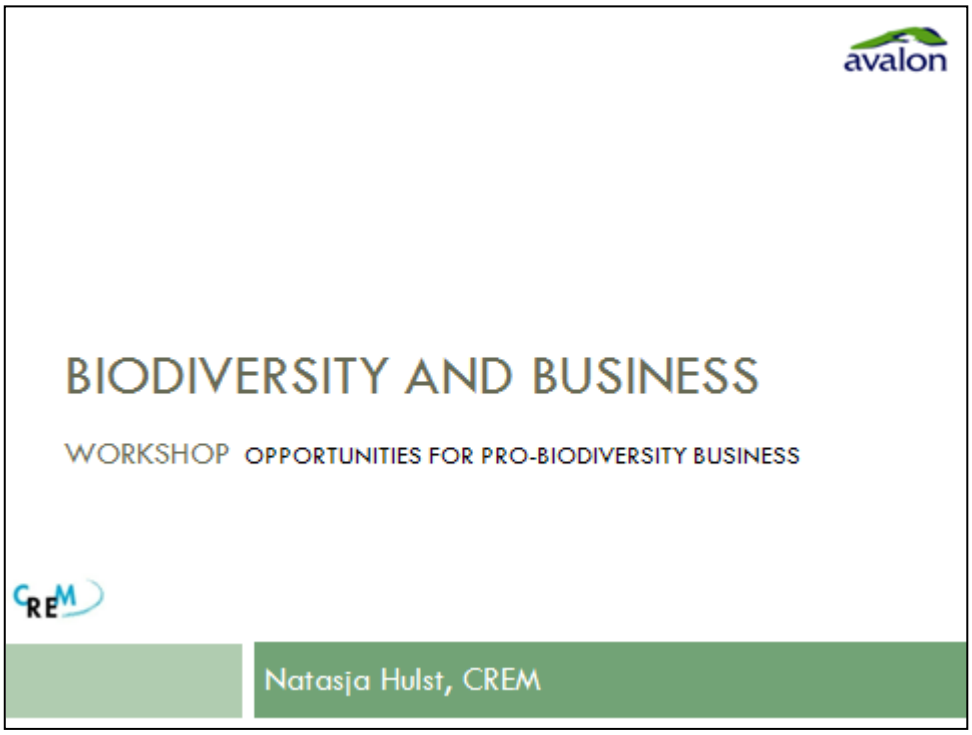



Workshop Organisation
• Two groups 50/50 English vs Russian
• Two locations, Crem and MR
• Coffee break at fixed time
• Final plenary presentations of tiny little business plan that you prepared yourselves

Business and Biodiversity: an Opportunity for Organic Farming

Natasja Hulst

CREM, the Netherlands
Email: n.hulst@crem.nl



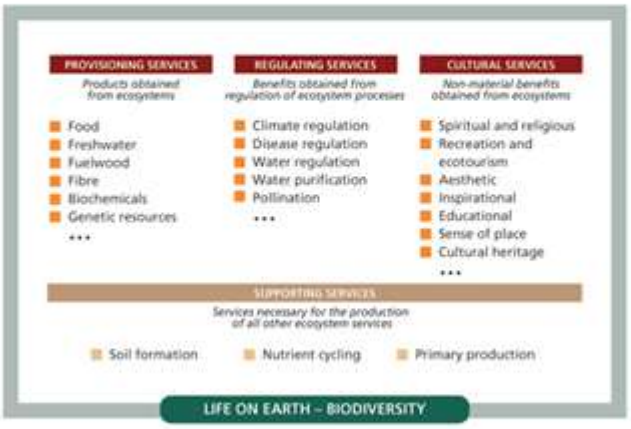
Biodiversity

The variability among living organisms from all sources, including terrestrial, marine, and aquatic ecosystems, and the ecological complexes of which they are part:

This includes diversity within species, between species and of ecosystems' (CBD, 1992).



Ecosystem Services



Background: International Context and Policy

Biodiversity's contribution to Earth's life support systems and to poverty reduction has been recognized at the highest levels.

In 2006, the United Nations General Assembly decided to include the 2010 biodiversity target in the Millennium Development Goals.

Background: International and European Context and Policy

Pro-biodiversity Business contributes to:

- EU's target 2010-halting the loss of biodiversity
- The EU sustainable development strategy
- The environmental, social and economic targets of the EU Lisbon Strategy
- Business and Biodiversity declaration during CBD COP in Bonn, 2008 (UN)
- 2010: United Nations 'international year of biodiversity'

Background: European Context and Policy

- The maintenance of the biodiversity and therefore of many ecosystems in Europe depends directly on traditional types of agricultural land use (HNVF).
  - Extensively managed agricultural systems of great value for native agro-biodiversity and biodiversity
  - One of primary objectives of Agri-environment schemes in the EU is the promotion of biodiverse and cultural landscapes

Financing biodiversity conservation

Over the last decades the financing of protection of biodiversity has mainly come from public or not-for-profit sources.

Problems with this approach include:

- insufficient and/or unreliable funding;
- especially in biodiversity-rich developing regions;
- weak links between consumer willingness-to-pay for biodiversity and financial mechanisms;
- some cases also inefficient use of available funding.

Private Investment in Biodiversity

"The main reason to focus on biodiversity business is the enormous capacity of markets to drive change, as well as their potential to leverage new investment."

"The most promising way to mobilise siginificant private investment in biodiversity is by making conservation a viable business proposition."

What is pro-biodiversity Business?

Definitions:

1. A **Pro-Biodiversity SME** is dependent on biodiversity for its core business and contributes to biodiversity conservation through that core business (Dickson et al, 2007)

   SME= Small and Medium- sized Enterprise

2. A commercial enterprise that generates profits via activities which conserve biodiversity, use biological resources sustainably, and share the benefits arising from this equitably (Bishop et al, 2008)

Pro-biodiversity business

- What are to your knowledge the main threats to biodiversity?
  - List 3 together with neighbour
- What are potential pro-biodiversity business opportunities?
  - List 1 sector/ specific products on individual post its
  - Cluster

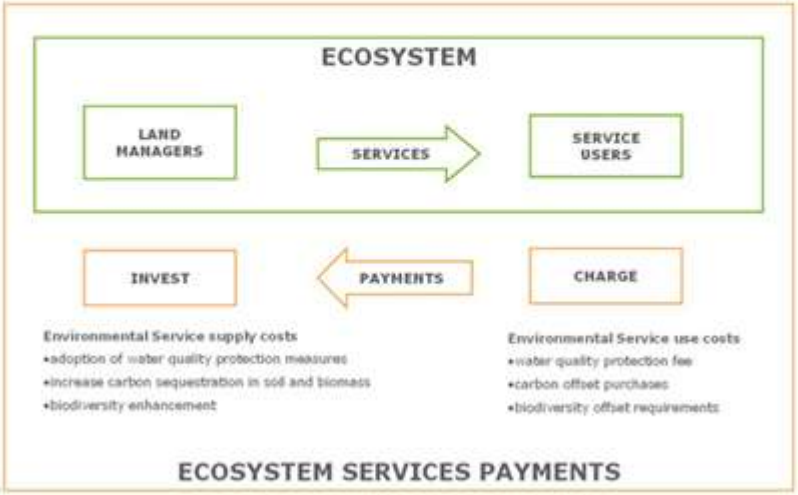
The business case for biodiversity

- Enhance competitive position (and profitability)
- Generate net positive cash flow by delivering specific biodiversity benefits or services
- either as a stand-alone product or together with the supply of other goods and / or services.
- Modest initial returns (but can be niche markets!)

The conservation case for business

- Businesses have the potential to generate new and additional investment in conservation activities.
- Businesses possess:
  - biodiversity relevant knowledge
  - technical resources
  - management skills which can be used to better manage biological resources.
- Contribution to Natura 2000 sites and network

Payments for Ecosystem Services



Types of businesses and sectors

Biodiversity conservation can be an opportunity for *all* industries.

Potential pro-biodiversity business:

- Agriculture (biodiversity friendly/ organic)
- Biomass (second generation)
- Ecotourism
- Fisheries and Aquaculture
- Wild collection (Non Timber Forest Products, NTFP)

3 examples:

: Example 1: Agriculture

Links between biodiversity and farming practices are complex:

- In general, intensively managed systems have a more negative impact on biodiversity than extensively managed systems
- Extensively managed agricultural landscape systems are of value for conserving threatened species
- Intensification, but also land abandonment and the consequence loss of traditional management of extensive farming systems can lead to reduced (agro)biodiversity

Example 1: Agriculture

Opportunities for biodiversity **and** business:

- Through (organic/extensive) farming the biodiversity of the region can be conserved, while using natural resources
- Supports the economic as well as environmental well being of the region

Threats to biodiversity **and** business:

- (Large scale) conversion and fragmentation of natural habitats
- Pollution (through intensive use of pesticides, fertilizer and manure)
- Desiccation through unsustainable water use/management (e.g. drainage, irrigation)
- Impoverishment of native agro-biodiversity (cattle and crops)
- Emissions of greenhouse gasses (carbon and methane)

Example 2: Non Timber forest Products (NTFP)

- **NTFP**= natural products other than wood derived from forests or wooded land

Examples: edible nuts, mushrooms, wild berries, fruits, herbs, spices, honey, gums and resins, cork, ornamental plants and flowers,

and an array of plant and animal products used for medicinal, cosmetic, culinary, cultural or other purposes

Forests provide important ecological functions and services: including timber, food, medicinal products, watershed protection and mitigation and adaptations against climate change

Example 2: Non Timber forest Products (NTFP)

Opportunities for biodiversity **and** business:

- Positive conservation impact on a landscape level
- Contribution to ecological networks and corridors at pan-European levels
- Ability to support rural livelihoods while contributing to conservation objectives

Threats to biodiversity **and** business:

- Overharvesting, extinction of species
- Area more accessible for other economic activities

Example 3: Ecotourism

- **Ecotourism**= responsible travel to natural areas that conserves the environment and improves the well-being of local people

- Growing rapidly
- Depends upon the conservation and sustainable use of natural environments

Recreational hunting and Sports fishing

:

Example 3: Ecotourism

Opportunities biodiversity and business:

- Giving an natural area economic value
- Positive financial and other contributions to conservation

Threats biodiversity and business:

- Conversion of natural areas into touristic areas (hotels etc.)
- Pressure on ecosystems and disturbance of wildlife
- Area more accessible for other economic activities
- Introduction of invasive species
- Use of water
- Discharge of wastewater: contamination
- Pollution
- Unsustainable consumption
- Carbon emissions (climate change)

Some more specific Pro-biodiversity business examples:

- Organic farming and extensification of existing intensive practices
- Breeding traditional or rare breeds of livestock/animal husbandry
- Sustainable fish farming
- Ecological management and consultancy services
- Forestry and wood processing
- Seed collecting
- Reed harvesting
- Plant oil production
- Organic wine production
- Grazing and mowing of grasslands
- Provision of educational facilities for nature pr

Pro-biodiversity business

- What are to your knowledge the main threats to biodiversity?
  - List 3 and compare with neighbour-
- What are most promising pro-biodiversity business opportunities?
  - List specific products on individual post-its
  - Cluster

Approach: How to start with pro-biodiversity business?

POSSIBLE NEXT STEPS:

- Best Practices
- Involving Stakeholders
- Financing
- Training education
- (Regional) Branding
- Commercial matchmaking (export)
- Creating Partnerships with (international) actors
- Creating cooperatives

Report 'Building Biodiversity Business' http://data.iucn.org/dbtw-wpd/edocs/2008-002.pdf

One group per product

- What are the main threats to establishing your pro-biodiversity business product ?
- What are the main opportunities for establishing your pro-biodiversity business product?

BIOSWOT

list the key:

- strengths
- weaknesses
- opportunities
- threats

to biodiversity and business for your product

Pro-biodiversity Business some of the issues ....

Certification and Guidelines: Agriculture

- Certification, Organic (www.ifoam.org)
- Certification, GlobalGAP agriculture (GAP = Good Agricultural Practices) (www.globalgap.org/cms/front_content.php?idcat=48)
- Certification, FLO, Fairtrade (www.fairtrade.net)
- Conservation Agriculture (CA) techniques (www.fao.org/ag/ca/)
- GACP (Good Agricultural and Collection Practices (for medicinal plants)) http://whqlibdoc.who.int/publications/2003/9241546271.pdf

Certification and Guidelines: Wild Collection (NTFP)

Non-organic Standards:

- Certification, International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP) (www.floraweb.de/map-pro)
- Certification, Fair Wild (www.fairwild.org)
- Certification, Forest management (like FSC) (www.fsc.org).
- WHO guidelines on GACP (Good Agricultural and Collection Practices (for medicinal plants)) (http://whqlibdoc.who.int/publications/2003/9241546271.pdf)

Certification and Guidelines: Wild Collection (NTFP)

Private organic Standards:

- Certification, Organic Wild Collection (http://www.imo.ch/imo_services_wildcollection_organic_en.html and www.ceres-cert.com/en_wild_collection.html).
- Certification, FOAM Basic Standards (www.ifoam.org)
- Certification, Standards for KRAV certified production (http://www.krav.se/sv/System/Spraklankar/In-English/Certification/)
- Certification, NASAA Organic Standard (http://www.nasaa.com.au/steps1.html)
- Certification, Naturland Standards on Production (http://www.naturland.de/standards.html)

Organic and other pro-biodiversity initiatives

Organic assumed to be the most pro-biodiversity

- Although some issues such as use of areal
- Niche market (still growing)

Sometimes other initiatives move faster than organic;

Other initiatives

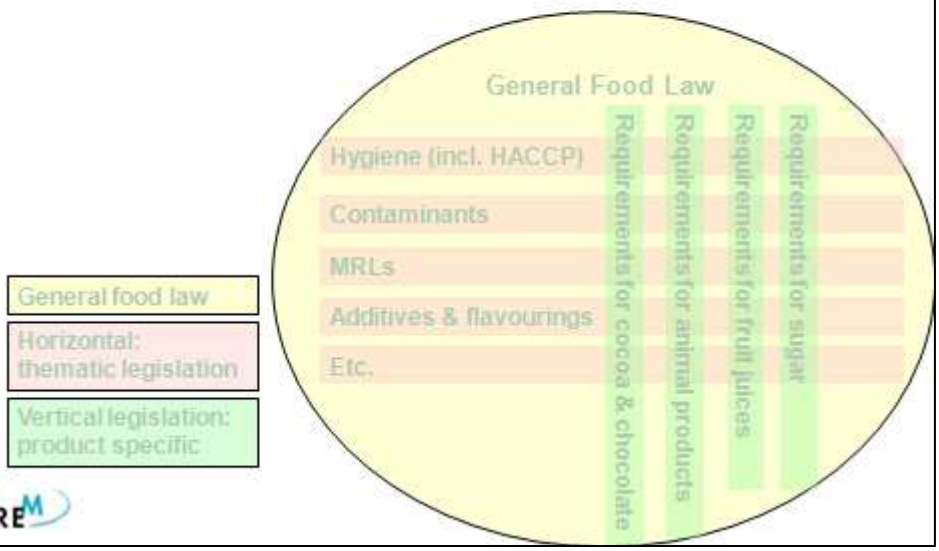
- From conventional to better (one step at a time)
- Criteria are less strong→ larger range
- Mainstreaming

Many different labels

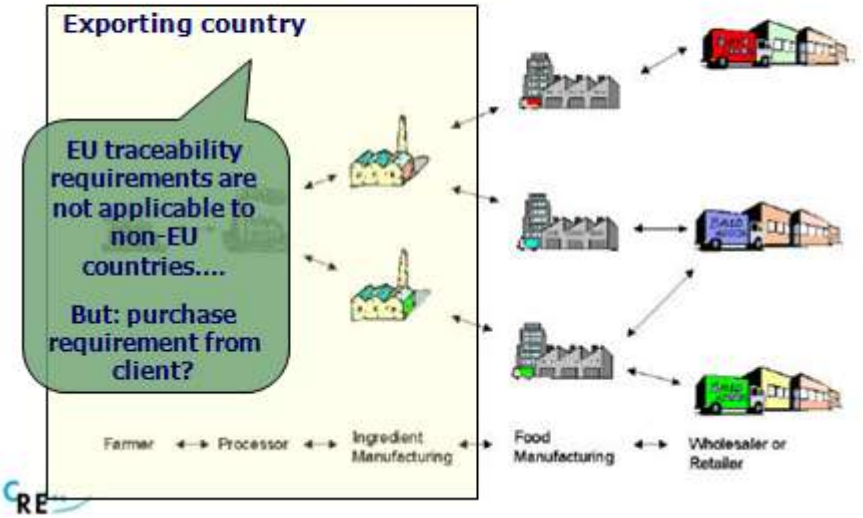
Marketing your pro-biodiversity products

- How to promote, market your pro-biodiversity products?
- Local or export market?

Export:
Market Access Requirements: EU food legislation



Export: Traceability



Marketing your pro-biodiversity products

- (Organic) Certification / No Certification
  - Is marketing possible if not certified (yet)?
  - How?
    - Strategic Partner? Which?
    - Joining existing systems?
    - (Develop) national initiative?
    - Who takes the lead?
    - Developing criteria?

In light of the issues, conditions, challenges, funding opportunities and in light of everything you have heard in the conference .....

Business plan for your biodiversity business

- Use the BIOSWOT's
- Set 2 SMART B&B goals (quantify the benefits)
- Set 2 activities to reach your goals

For example look at the:

- What are the first steps?
  - Partnerships
  - Branding and marketing
  - Financing
  - ???
- Certification yes or no? (how to get certified?)
- Local or export

Set 2 SMART B&B goals

	Major Term	Minor Terms
S	**Specific**	Significant Stretching, Simple
M	**Measurable**	Meaningful, Motivational Manageable
A	**Attainable**	Appropriate, Achievable, Agreed, Assignable , Actionable, Action-oriented, Ambitious
R	**Relevant**	Realistic, Results/Results-focused/Results-oriented, Resourced Rewarding
T	**Time-bound**	Time framed, Timed, Time-based, Timeboxed, Timely, Timebound, Time-Specific, Timetabled, Trackable, Tangible

Biodiversity Business Plan

Your Pro-Biodiversity Product:

- 2 SMART B&B goals
- 2 activities that will contibute to achieving your SMART B&B goals

More information?

www.avalon.nl

www.crem.nl

IUCN Report 'Building Biodiversity Business'
http://data.iucn.org/dbtw-wpd/edocs/2008-002.pdf

Natasja Hulst (n.hulst@crem.nl)

Martine van Zijl (m.vanzijl@crem.nl)

Nico van der Werf (nico.vanderwerf @avalon.nl)


FOREST FRUITS
AGRICULTURE
NUTS
HUNTING
MEDICINAL PLANTS
NATURAL OIL
HONEY
FSC TIMBER
ORGANIC WINE


PRODUCT:
2. SMART B2B GOALS:
2. ACTIVITIES THAT LEAD TO GOALS:
marketing (350.)
Certification (HACCP)
Promotion
MADE in AVON
Toast to Georgia!!!
GAUMARJOS!!!


FOREST FRUITS
AQUACULTURE
NUTS
msc fish
HUNTING
MEDICINAL PLANTS
NATURAL OIL
ARNICA
ginseng
medicinal plants
HONEY
FSC TIMBER
fsc timber
ORGANIC WINE
HONEY
- BIRD WATCHING
- CANOEING


KTBG


EXIT


THREATS
WIN

List of participants

country	name	position / title	organisation / company
Afghanistan	Mr. Barakatullah Rahmati	Chief Executive Officer	Afghan Red Gold Company, Heart
Afghanistan	Mr. Naiqbullah Salik	Horticulture Coordinator	HLp, Kabul
Afghanistan	Mr. Noor Akbari	Project Coordinator	Ministry of Agriculture, Kabul
Albania	Mr. Teofik Tafil Fugarinja	Executive Director	Permaculture & Organic Agriculture, Shkoder
Albania	Mr. Tom Ndoke Marku	Specialist	Permaculture & Organic Agriculture, Shkoder
Albania	Mr. Lavdosh Ferunaj	Executive Director	Organic Agriculture Association, Tirana
Albania	Mr. Ahmetaj Luan	President	AAOH Bioplant Albania, Tirana
Albania	Mr. Ali Coka	Board Member	AAOH Bioplant Albania, Tirana
Armenia	Dr. Nune Sarukhanyan	President	Green Lane Agricultural Assistance NGO, Yerevan
Armenia	Ms. Hripsime Makaryan	Agriculture Economist	Green Lane Agricultural Assistance NGO, Yerevan
Armenia	Dr. Dshkhuhi Sahakyan	Grants Manager	Environmental Survival, Yerevan
Armenia	Dr. Nune Darbinyan	President / Director	NGO Eco-Globe, Yerevan
Armenia	Nune Harutyunyan	Branch Office Director	REC Caucasus, Yerevan
Azerbaijan	Mr. Vugar Babayev	Chief of Program and Service Department	GABA (Ganja Agribusiness Association), Ganja
Azerbaijan	Mr. Elmaddin Namazov	Expert	GABA (Ganja Agribusiness Association), Ganja
Belarus	Dr. Lana Semenas	Board Member / Project Coordinator	Working Group in Organic Agriculture, NGO Ecodom, Minsk
Belarus	Ms. Iryna Sukhy	Chairperson	Ecodom, Komarovo
Bulgaria	Ms. Rumyana Todorova		Bulgarian Association of Herbs and Mushroom Gatherers
Bulgaria	Mr. Svilen Nikolov		Biohotel Moravsko Selo
Bulgaria	Ms. Ivelina Vassileva	Vice Minister	Ministry of EW
Bulgaria	Mr. Zlatanov Stojan		

country	name	position / title	organisation / company
Bulgaria	Mr. Vladislav Popov	Manager Avalon BG office	Avalon Bulgaria
Bulgaria	Ms. Ivanka Popova		Avalon Bulgaria
Bulgaria	Ms. Maryana Todorova Apostolova		ET Aposto-lov, Svilengrad
Bulgaria	Ms. Doriana Hristova Milenkova	Agricultural Assistant	Royal Netherlands Embassy, Sofia
Bulgaria	Dr. Viara Stefanova		Ministry of Agriculture and Food, Sofia
Bulgaria	Dr.Lyudmila Nikolaevna Nikolova	Scientist	Institute of Fisheries and Aquaculture, Plovdiv
Bulgaria	Ms.Zdravka Dimitrova Smilenova	Manager	Amititsa OOD, Kresna
Bulgaria	Mr. Ivan Borisov Djabirov	Member	NGO Ecosouthwest, Blagoevgrad
Bulgaria	Mr. Stoilko Nikolov Apostolov	Manager	FOA Bioselena, Karlovo
Bulgaria	Mr.Georgi Dimitrov Terziyski	Landscape Planning Portfolio Manager	Rhodope Project, Sofia
Canada	Mr. Matthew McCandless	Project Manager	International Institute for Sustainable Development, Winnipeg, Manitoba
Croatia	Ms. Sonja Koroglan Todorovic	Director	Ecologica, Zagreb
Croatia	Ms. Marija Sevar	Head of Dept. of Integrated + Organic Agriculture	Croatian Agriculture Extension Institute, Zagreb
Croatia/The Netherlands	Dr. Darko Znaor	Associated Expert	Avalon, Wommels
Croatia/The Netherlands	Prof. Branko F. M. Bosnjakovic	Member Supervisory Board	Avalon, Wommels
France	Mr. Claude Aubert	Consultant	Paris
Georgia	Dr. Kakha Tariel Nadiradze	President	Association for Farmers Rights Defense (AFRD), Tbilisi
Georgia	Ms.Tea Chitadze	Regional Office Manager	Biological Farming Association Elkana, Tbilisi
Georgia	Mr. Zurab Karbelashvili	Coordinator of Training Centre	Biological Farming Association Elkana, Tbilisi
Georgia	Ms. Mariam Jorjadze	Director	Biological Farming Association Elkana, Tbilisi
Germany	Mr. Bernhard Jansen	Chairman	EkoConnect e.V., Dresden

country	name	position / title	organisation / company
Germany	Mr. Guido Haas	General Manager	Organic AgroExpertise Consultancy, Bad Honnef
Germany	Mr. Tobias Bandel	Managing Partner	Sekem / Soil & More, Waddinxveen
Germany	Mr. Eberhard Gross	Country Manager	Weleda Group / Weleda AG , Schwäbisch Gmünd
Germany	Mr. Rainer Krell	Environment Officer	Food and Agriculture Organization, Rome
Hungary	Prof. Tamás Sándor Németh	Secretary General	Hungarian Academy of Sciences, Budapest
Italy	Dr. Riccardo Bocci	Seed Policy Expert	AIAB, Rome
Kazakhstan	Mr. Aslanbek Tulegenovich Zhakupov	Coordinator	Public Foundation of Continuous Education, Ust Kamenogorsk
Kyrgyz	Mr. Myrzabai Dooranov Bagyshevich	Director	Public Association ULGU, Kerben
Lithuania	Mr. Virgilijus Skulskis	Head of Division	Lithuanian Institute of Agrarian Economics, Vilnius
Lithuania	Ms. Zivile Gedminaite-Raudone.	Junior Researcher	Lithuanian Institute of Agrarian Economics, Vilnius
Lithuania	Mr. Aurelijus Narbutas	Director	Environmental Valuation Projects, Vilnius
Macedonia	Mr. Gordgi Hadzi-Kotarov	Executive Director	Macedonian Organic Producers Federation, Skopje
Macedonia	Mr. Goran Kolev	Member of the Management Board	Macedonian Organic Producers Federation, Skopje
Macedonia	Mr. Fidanco Hristov	President	NGO Aronija, Delcevo
Moldava	Mr. Boris Pavel Boincean	Head of Department	Selectia, Balti
Moldova	Mr. Viorel Gherciu Petru	President	NGO ProRuralInvest, Chisnau
Netherlands	Mr. Fokko Erhart		Free Nature
Netherlands	Mr. Gert J. den Hollander	Senior Project Manager	Avalon, Wommels
Netherlands	Ms. Marianne Hut	Personal Assistant	Avalon, Wommels
Netherlands	Ms. Aukje Eisma	Financial Administrative Assistant	Avalon, Wommels
Netherlands	Ms. Linda Huisman-de Jong	PR and Communications	Avalon, Wommels

country	name	position / title	organisation / company
Netherlands	Mr. Jelle Wiersma	Financial Manager	Avalon, Wommels
Netherlands	Mr. Martien Lankester	Executive Director	Avalon, Wommels
Netherlands	Mr. Nico van der Werf	Executive Director (Projects)	Avalon, Wommels
Netherlands	Ms. Tatjana Razumovsky	Network Manager	Avalon, Wommels
Netherlands	Mr. Volkert Engelsman	Chief Executive Officer	EOSTA, Waddinxveen
Netherlands	Mr. Frank Zanderink	Foreign Projects Coordinator	ARK Nature, Velp
Netherlands	Ms. Natasja Hulst	Senior Consultant	CREM, Amsterdam
Netherlands	Mr. Meindert Brouwer	Founder	Meindert Brouwer Partner in Communications, Bunnik
Netherlands	Ms. Martine van Zijl	Consultant	CREM, Amsterdam
Netherlands	Mr. Herman van Wissen	Agricultural Counsel	Royal Netherlands Embassy, Bucharest
Netherlands	Ms. Lia van Wissen		
Netherlands	Mr. Martijn Elgersma	Deputy Head of Mission	Royal Netherlands Embassy, Sofia
Netherlands	Prof. Jan Diek van Mansvelt	President	Mans \ Consultancy, Broek in Waterland
Poland	Dr. Anna Izabella Szafirowska-Waledzi	Senior Researcher	Research Institute of Vegetable Crops, Skierniewice
Poland	Dr. Irena Zofia Babik	Senior Researcher	Research Institute of Vegetable Crops, Skierniewice
Romania	Mr. Ben Mehedin		Adept Foundation
Romania	Mr. Razvan Daniel Popa	Agro-Environment Team Leader	Fundatia ADEPT Transilvania, Saschiz
Romania	Dr. Ion Toncea	President	Romanian Association for Sustainable Agriculture, Fundulea
Romania	Mr. Imre Albert	Director Executive	Organic Farming Association Of Romania Bioterra, Luna de Sus
Romania	Mr. Raluca Barbu		WWF Danube-Carpathian Programme
Russia	Ms. Iryna Bezgina	Vice-President	Agrarian Science and Practice, Poltava

country	name	position / title	organisation / company
Russia	Dr. Elena Smirnova	Deputy Director	Transparent World, Moscow
Russia	Prof. Dmitriy Kavtaradze	Head of Laboratory	Faculty of Public Administration, Moscow State University, Moscow
Russia	Ms. Alina Kolesnkova	Commercial Director	KFH IP \ Baksheev D.I., Belgorod
Switzerland	Mr. Andreas Ellenberger	Environmental Manager	Weleda AG, Arlesheim
Switzerland	Ms. Helena Ellenberger		Himmelried
Switzerland	Mr. Markus Peter Arbenz	Executive Director	IFOAM, Bonn
Turkey/U.S.A.	Ms. Gizem Altin Nance	Communications and Strategy Manager	Bugday Association, Istanbul
U.S.A.	Prof. Rattan Lal	Prof. of Soil Science, SENR Director, OARDC/FAES Former President	Carbon Management and Sequestration Center, , Soil Science Society of America, Columbus, Ohio
U.S.A.	Mr. Tokya Dammond	President	Symbio Impex Corp., Woodstock
Ukraine	Ms. Olga Viktorovna Getya	Manager of Ecological Projects	Association of Rural Development of Poltava Region, Poltava
Ukraine	Ms. Viktoriia Vasilievna Tsiupko	Scientist	Institute of Animal Science, Kharkov
Ukraine	Mr. Sergey Olegovych Shapovalov	Vice Director	Institute of Animal Science, Kharkov
United Kingdom	Ms. Kathleen Hewlett	Policy Officer	Soil Association, Bristol
United Kingdom	Dr. Mark Redman	Associated Expert	Avalon Associated Expert
United Kingdom	Mr. Robert Kynaston	Vice Chairman	NGO LEAF, Stoneleigh Park, Warwickshire
Uzbekistan	Ms. Lilya Arturovna Vakhitova	EfSD Expert	Eco-forum of NGO's of Uzbekistan, Tashkent