Old skills and new ideas in Macedonia

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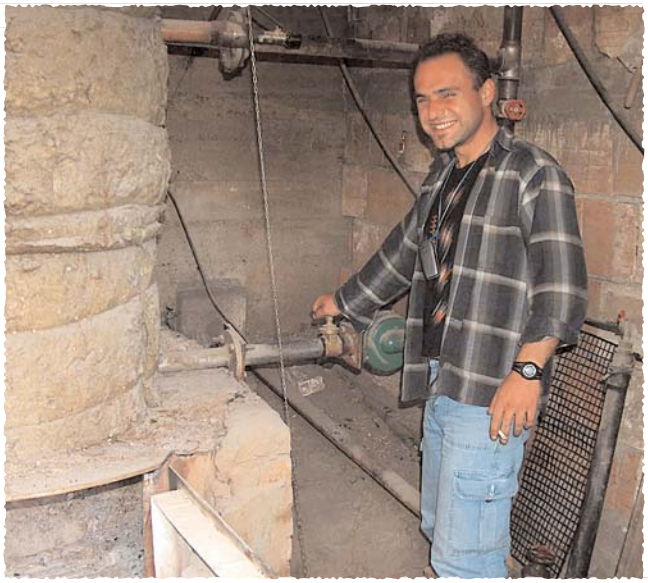

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Mr. Kocevski showing his heating system.

Every year a course in sustainable agriculture is held in Bari, Italy, for in-service professionals from the Mediterranean region. Participants from as far afield as Mauritania, Morocco, Egypt, Palestine, Turkey and the Balkan states gather together at the *Istituto Agronomico Mediterraneo* (CIHEAM), an agronomic institute dedicated to regional development. I am from Macedonia, and in 2004 was fortunate enough to be invited, together with a handful of others from the former Yugoslavia. What I learnt about new approaches to research and extension intrigued me – and especially the two day module on farmer innovation. Could a "farmer innovation approach", I asked myself, be a partial answer to the research and extension problems of my home country? My two months of field work led me to the firm conclusion that the answer is "yes".

My home country is landlocked, mountainous and located in the centre of the Balkans, in south-central Europe. One of the six republics of the former Yugoslavia, the Republic of Macedonia became independent in the early 1990s, seeing itself as a democratic country in transition, with a market-oriented economy. Agriculture is still an important component of the country's economy. More than 80 percent of all arable land is cultivated by small farmers, with an average farm size of one to three hectares. Most land is irrigated, and wheat, maize, tobacco and vegetables are the main crops.

Since independence, the whole country has gone through drastic changes, and these have naturally affected agricultural production. The old model, based on large cooperatives, has been replaced by one which aims to completely privatise all land and agricultural services. Agricultural extension, previously provided free of charge –and even guaranteed by the Constitution– has gradually acquired a private service status, which farmers are asked to pay for. Policies oriented at the "modernisation" of agriculture focus on higher yields and on increasing exports.

Which way to go?

Different studies are currently being carried out, analysing the historical transformation of the research and extension system since independence and its current situation, thus contributing to defining future policies. These have found that farmers are not benefiting much from the research and extension services for different reasons. One reason is that farmers "don't have the habit of paying", another is because farmers find it difficult to afford – with low incomes resulting from low yields, and high prices asked for every visit. At the same time, experts are mainly found in or near the bigger towns, far from rural areas, while governmental extensions agents are poorly paid, and so not really motivated to travel far.

For several decades, agricultural production was strongly influenced by the Green Revolution and, as was traditional in socialist countries, a very intensive and centralised agricultural system developed (with the State providing all necessary information). At the same time, the governmental extension service was modelled on the Transfer of Technology approach. But the changes seen in the last decade have led to new or different difficulties. For example, research information is not readily accessible to producers other than through personal contact and a few extension seminars. Research is still mostly oriented towards large scale operations rather than based on the needs of the much larger community of small scale farmers. According to FAO's Regional Office for Europe, project experiences trying out alternative models have been positively assessed, but continuation and scaling-up lack funding, awareness, and perhaps also commitment.

All these difficulties have led agricultural scientists to explore new approaches to extension, many of which hinge on farmer participation. And that is where my training in Bari fitted in. I wanted to see to what extent farmer innovation was a reality in Macedonia. Are men and women constantly experimenting and putting the results of their experiments into practice to solve their production difficulties? My fieldwork, in the south eastern part of the country, confirmed that this really was the case.

Innovators everywhere

My fieldwork led me to the region of Gevgelija, Valandovo and Strumica with the specific purpose of finding out whether farmers are in fact innovating. This area is famous for its vegetables and fruit, including vineyards, fig and pomegranate plantations, and even tobacco fields. In order to discover whether farmers are developing new production techniques, I simply arranged several meetings with local farmer organisations, and asked for names of members who are known for trying new things out.

Within a few days I had several names and addresses. I visited and interviewed every farmer suggested, finding out what they do which makes them different to others, when did they start, how did they develop these new ideas, and what problems were solved. Even though there were general difficulties with the word "innovation", the results were surprising. Most would not define themselves as innovators, as they were not using new seeds, a new machine or a new irrigations system. But, as the examples here show, it was very clear that most farmers are innovating in order to improve their agricultural production.

Mr. Kiro Kocevski and his heating system

Kiro Kocevski, 48 years old, used to work as a mechanical technician in a local public enterprise near to the small village of Miravci, in the Gevgelija region, where he lives. He left his job 5 years ago and decided to be a farmer. In a small farmyard of only 1400 m^2 he installed a plastic greenhouse for early tomato and cucumber production. He also keeps some chickens and

goats like every village family. He lives with his mother, his wife and two sons, and everyone in his family has an important role in the everyday agricultural activities. During the planting season, the two boys' duty is to collect wood, he and his wife work in the greenhouse and his mother keeps animals. For several years he has been planting half of the greenhouse with tomatoes and half with cucumbers, noticing that his main problem was the price offered for his products on the market.

He soon found out that if he could start his vegetable production in March, two months before the other farmers in the area, he could earn up to three or four times more money. He decided therefore to make his own heating system using wood waste and other waste materials from his farm. He used his knowledge in mechanics and made a steamer that uses wood as fuel, which his two sons collect from the hills around their village during the winter. This heating system is unique around here.

Another of his innovations is that he decided to make his greenhouse smaller than the regular ones in this area. Normally, farmers build greenhouses which are up to 4 meters high, but he thought that it was not necessary to heat such a big volume of air. To decrease heating costs and make it easier to reach the adequate temperature, he made his greenhouse no higher than 2.2 m. As a result of his innovations, when I met him in April 2006, he had already collected tomatoes and cucumbers and sold them on the local markets. His small piece of land yields more than 10 000 kg of vegetables every year, resulting in an income of approximately 10 000 euros. He does not have any other source of income and this business is this family's only livelihood.

Ms Elena Petrovic and the production of a new Petunia
Elena Petrovic, 30 years old, is a young agronomist, who studied agronomy just as her father did. After her father lost his job and she could not find employment, they decided to start growing flowers, mainly petunia (fam. Solanaceae) and chrysanthemum (fam. Asteraceae), as these are species which can easily be sold in the market. They built an 800 m^2 nursery for the production of mother plants, as they found that in the whole of Macedonia it is very difficult to find petunia seeds. Furthermore, they started developing their own varieties, using *in vitro* production techniques. The most famous is the "pending Petunia", although they also made their own varieties of chrysanthemum and sold them very successfully.

Ms Petrovic is now recognised as a person with a lot of experience in flower production, and with their own small business, both Elena and her father have a good enough yearly income. What is most important, according to them, is that they do what they like, and do not rely on the government or an office job.

"EKOPRIMA" and their tomato pest management techniques
"EKOPRIMA" is a new private association of farmers, most of whom were part of the former cooperative "Agro–Izvorski". They work together producing vegetables (especially tomato and cucumbers), for which they bought 12 hectares with modern greenhouses from the cooperative near Bogdanci, 9 km from Gevgelija. Tomato production in this region, especially if it is harvested early in the year, can be very profitable. However, tomato plants are very sensitive to the tomato spotted wilt virus, a problem which appeared several years ago and is now widespread.

One of the main challenges for tomato farmers is controlling the incidence of this virus in a closed area such as a greenhouse. The tomato spotted wilt virus is transmitted by *Thrips tabaci*, a small insect which reproduces very fast. If a farmer can successfully control the population of this insect, the possibility of the virus spreading is reduced. The standard procedure is to spray all plants with insecticide, but this greatly increases the production costs and makes the final product less attractive to the consumers. The insect population is also controlled by a special yellow and blue adhesive tape (insects are attracted by bright flower colours), where insects get stuck and can then be counted, helping farmers to decide if spraying is necessary or not. However, this method is not always accurate, and farmers are not always able to get hold of the coloured tapes. So farmers in "EKOPRIMA" developed a simple method to avoid unnecessary spraying, and at the same time successfully control the population of *Thrips tabaci*. At the end of the season, after all the tomatoes have been harvested, they sow common beans in the greenhouses. The beans attract the insects that are inside the greenhouses, as bean plants are even more attractive than tomato plants or coloured tape. The result is that the virus gets into the bean plants, which can then be sprayed or not, according to the severity of the attack. As an additional benefit, bean plants help with nitrogen fixation.

Building knowledge

While it is true that farmers in this region have many difficulties in getting information, it was easy to see that knowledge is being built everywhere. Depending on the specific situation and needs, farmers are constantly finding ways to solve their problems, increase their production yields and generate better incomes.

My stay in the area of Gevgelija, Valandovo and Strumica showed me that there are no real pre-requisites for innovating. Farmers innovate regardless of their farm size, the crop they specialise in, or the time they have spent farming. My small survey showed that most innovators are between 35 and 45 years old, and that most have secondary or tertiary education, but this does not mean that innovators are not found outside these categories. In fact, innovators and innovations are found virtually everywhere.

Different reasons motivate farmers to start something new. In Macedonia, the transition period has meant that many people lost their jobs, so new ways of farming were tried in order to earn money, even by those who had not been farming previously. Another important reason is early production: in a region where vegetables are the main product, the only way to be competitive in the market is to produce as early as possible, and thus ensure higher prices. Most consider their innovations to be the result of their own ideas, though many also acknowledge the work of others (family members, neighbours) as a source of inspiration.

I believe that farmer innovation needs to be seen as the basic cornerstone of any research and extension system. But how do we go on from here? How can knowledge be built in this context? That is now the challenge, and one that I am committed to struggle with. The starting point is to win the hearts and minds of my colleagues and decision makers in Macedonia. So I have invited my former trainers from Bari to visit Macedonia in November 2006, to talk to a specially convened workshop. But talking alone won't convince, so a field day has been arranged when the participants –farmers and decision makers alike– can see for themselves. Where it goes from there only time will tell.

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