

Working together – farmer field schools in Hungary

Over the last 15 years a new pest has been threatening maize production across Europe. To tackle this problem participatory training of farmers has been introduced in the region. **Judit Papp Komáromi, István Terpó and Miklós Tokaji** report on an approach that is strengthening farming knowledge and alliances.

In 1992 the owner of a small 0.5 hectare monoculture maize field near Belgrade airport (Serbia) noticed his maize plants (*Zea mays*) had fallen over. Their roots had been eaten by soil-dwelling larvae of the Western Corn Rootworm (*Diabrotica virgifera virgifera* LeConte; WCR) heralding the unwelcome arrival of this pest in Europe¹.

Before this time WCR was largely confined to the US Corn Belt where crop rotation is an integral part of its management^{2,3}. However, recently in the US WCR females have begun laying eggs in other crops (mainly soybean). This means that if maize is grown immediately after soybean in a rotation it is attacked. So far there is no sign of this rotation-resistant variant in Europe⁴.

By 2006 WCR had been found in 18 countries across Europe⁵. It is vital that farmers meet the challenge of this WCR invasion with management options that will avoid the development of resistant varieties and without increasing use of pesticides.

Challenges ahead

In the broader political and socio-economic context, the agricultural sector in Central and Eastern European is in transition. In regard to maize there are changes in management practices, people's role in maize production, and their access to the market⁶. Farmers in Eastern Europe have less experience of the free market and need as much information as possible. Farmers used to consider chemicals to be one of the most suitable ways to control WCR⁷. It is vital that farmers are made aware of a range of pest management options and their abilities to communicate, co-operate, and make decisions needs to be developed.

A significant amount of scientific information on WCR has been generated in the past twelve years in Europe. However, the value of this knowledge depends on how fast it reaches farmers, and how much of it they implement in their daily farming practice. Farmers are not closely connected to ongoing research and there is a lack of information transfer making farmers reluc-

tant to accept alternative strategies⁸. Farmer Field Schools (FFS) are a tool to overcome this. They focus on educating farmers using non-formal participatory methods. They aim to enhance farmers' knowledge encouraging them to consider several pest management solutions taking account of the whole agro-ecosystem, and to increase their trust and dependence on alternative sources of IPM information.

Management of WCR

The continuous spread of WCR and the build-up of its populations across south-eastern Europe has helped generate broad regional cooperation. Projects, funded by the Food and Agriculture Organization of the United Nations (FAO), the European Union and the Hungarian government tracked the spread of WCR and investigated its basic biology under European conditions⁹. The information generated is significant but can only reach its full value if used by farmers. To encourage this a three year (2003-2006; now extended to a fourth year) regional project was started in seven Central and Eastern European countries (Bosnia and Herzegovina, Bulgaria, Croatia, Hungary, Romania, Slovak Republic and Serbia) funded by the Italian Government and coordinated by the FAO. The main goal was to develop IPM strategies that farmers could implement against WCR, based on an understanding of the local agro-ecosystem and the protection of local biodiversity.

FFS in Hungary

Prior to project implementation, pilot activities were conducted supported by FAO funds from 2000-2002. This resulted in three Farmers' Field Schools (FFS) being established in Hungary in 2002.

Prior to the main FFS programme in Hungary a 'Training of Trainers' (ToT) was conducted for facilitators and farmer facilitators. Additional ToT meetings were held during the first FFS season to discuss the process and for trainers to share experiences. During the five project years (2003-2007) a total of 10 ToT meeting were held with the participation of 26 facilitators or



Involvement of the young generation in FFS activities, Gyomaendrod, Hungary, 2005

Photo: J. Kiss

facilitator candidates, 12 farmer facilitators and three facilitators from abroad (Romania, Slovak Republic). During the FFS season facilitators were in continuous contact with each other, the project leader team, the National Training Coordinator, and the National Project Leader.

Altogether 15-20 FFS groups ran in each year between 2003 and 2007. A total of 26 different FFS groups were established and 247 farmers were trained. Most of the groups ran for more than one year. One FFS group held five to eight meetings annually. A total of 513 FFS meetings were held during the five-year period. Fourteen national and eight regional training meetings were conducted.

Outcomes

After the first year of training, farmers accepted the informal participatory approach to learning. They began to participate actively, accepting their value in the learning process. The success of the project relied heavily on this first step. First year FFS group activities focused on analysing the maize agro-ecosystem. Farmers learned the biology of WCR and other maize pests, such as European corn borer (*Ostrinia nubilalis*) and cotton bollworm (*Helicoverpa armigera*). Farmers' developed an awareness of the importance of natural enemies (beneficial insects).

In the second year farmers started to focus on non-chemical management and on agronomic practices (such as crop rotation, sowing time, ridging) to reduce WCR populations taking into account the socio-economic characteristics of the region (low or high maize production area). Those farmers who could afford, use crop rotation to manage WCR after the first year of FFS training.

In advanced FFS sessions (third year and above) farmers learned more detail of the biology, ecology and role of the most important beneficial arthropod species present in the maize eco-system and in surrounding flowering field-edges. Farmers integrated new information from field studies into their own farming systems. This



SFS activity, Ketegyhaza, Hungary, 2005

Photo: Judit Papp Komáromi

generated new questions that required the involvement of scientific experts and led to the implementation of participatory research.

Participatory research

At Ketegyhaza Agricultural Secondary School (Agricultural Secondary Education and Consultancy), farmers, extension communicators and researchers were involved in participatory research activities. Research focused on the impact of different soil tillage systems on the soil structure, soil biota (arthropod pests and beneficials), crop development and yield. The role of flowering field edges in a maize ecosystem was evaluated. This research resulted in new knowledge for researchers and for farmers and clearly indicated that extension communicators and researchers could work together with farmers. The research was followed by the establishment of Students' Field School (SFS) groups and by additional participatory research.

Since 2004 six SFS groups have been established in Hungary. In one group five to six meetings were held each year. In total 212 students, aged 14 to 18, were trained. The methodology used is based on FFS methods however group activities, learning by playing (such as the establishment of a maize labyrinth where agro-ecosystem analysis was conducted) are more intense in SFS groups. Students participating in SFS activities became more self-confident. They began to discuss openly with each other and with their teachers. Students shared their experiences and knowledge with their parents including knowledge of the existence of WCR, how to monitor it, its life cycle, and possible management options. SFS activities provided the first contact with the students' parents and, since many of these students will continue farming, with future farmers as well.

In parallel with the completion of the first participatory research activities an Agri-Environmental Protection Programme has been implemented by the Ministry of Agriculture and Rural Development in Hungary. The principles of

this are in line with the goals of sustainable agriculture, and its main aim is to compensate farmers for managing their land in a more environmentally-friendly manner. Farmers are interested but unsure of the feasibility of these programmes.

The additional participatory research linked the FFS programme aims and principles with the Agri-Environmental Protection Programme. It focused on the feasibility of IPM programmes in Hungary¹⁰. Farmers and researchers studied green manure production and the role of flowering field edges. The impacts of this approach and its economics were studied to measure the profitability of the IPM programmes. The research showed that IPM is feasible in Hungary, enhancing its acceptability to farmers.

Despite the fact that crop rotation is considered a primary management choice for WCR, profitability is vital. In some regions due to socio-economic factors farmers could not allow crop rotation in all their fields. In these regions WCR risk evaluation was undertaken and risk management studies carried out. This allowed farmers to evaluate which fields had the lowest/highest risk of WCR larval damage in the following year, helping them decide which management option to adopt in each field.

All the project activities enhanced the professional and personal skills of farmers and students (communication, decision-making, negotiation skills). Farmers actively participating in the programme adjusted their farming practice (used green manure, modified soil preparation) and focused more on the whole ecosystem while observing their fields (agro-ecosystem analyses) and in deciding how to manage WCR (risk management). WCR became only one element of the maize ecosystem for the farmers.

In addition, farmers have become conscious consumers in the marketplace. They can now place new information in context, and can ask pertinent questions of traders, sales managers, and private consultants.

Follow up activities

In 2006 after five years of collaboration among facilitators and farmers a WCR Facilitators Network was established at the national level from which a plan was developed for establishing an Association of Farmers and Facilitators. This association aims to integrate farmers and facilitators participating in this project. It is based on the experiences gained from the project to continue the activities with topics of interest to farmers in an institutionalized way.

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Root rating, as a part of risk management activity, Gyomaendrod, Hungary, 2005

Photo: J. Kiss

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