PRICE
PRactical Implementation of Coexistence in Europe

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Practical Implementation of Coexistence in Europe

Justus Wesseler, Professor Agriculture and Food Economics, Technische Universität München, is leading the PRICE project. We asked him to explain what the PRICE project will be adding to the results of previous coexistence research.

Coexistence has been discussed in the EU for more than ten years now. What makes coexistence such an important issue?

"Coexistence refers to the conditions under which genetically modified (GM) and non-GM agricultural products can be grown in the same territory, transported and marketed side by side, preserving their identity in accordance with the relevant labelling rules and purity standards. Coexistence can become important under certain market conditions to ensure that different options for agricultural practices with and without GM remain open and viable".

Coexistence has been explored in previous EU research projects. What exactly is the added value of PRICE?

"Coexistence is still a controversial topic within the EU. Member States, farmers, and operators within the food chain have expressed an interest on the implications of different coexistence policies on costs, feasibility of achieving segregated supply chains, as well as implications for labeling and traceability. While a number of issues have already been addressed in previous projects (*see 'Previous projects' in this Newsletter*), information about feasible and cost-effective coexistence measures at farm and supply chain level is still missing.

PRICE investigates the cost of coexistence practices in a number of Member States including the innovative solutions chosen by farmers to reduce coexistence compliance costs. We seek to identify the best coexistence practices to capture the benefits from both GM and non GM production without jeopardizing their respective incentives.
We think that a user-friendly decision-support software tool can help farmers with planting decisions, grain traders and feed producers with segregation measures, and assist authorities with keeping oversight and we are working together with them to satisfy their requirements".

What is needed for such a decision-support software tool?

"First of all, we need information about the costs of current coexistence practices and GM farmers' best practices in Europe. Bt maize is planted in six member states where farmers apply practices to comply with coexistence policies that differ from one country to another. We are identifying benefits and costs of these farmers' practices in the Czech Republic, Portugal, Spain and Romania. We have sent surveys to those farmers and their neighbours. Additional surveys have been sent to farmers growing oil seed rape, maize and sugar beet in the UK.
PRICE assesses organisational and contractual measures by identifying collaboration (contracts) among neighbours and innovative strategies chosen by farmers to reduce coexistence compliance costs.

Figure 1: Normal maize tassels are loaded with pollen (left). CMS maize, however, is pollen free (right) (Courtesy: Co-extra)

Second, we need information about the effectiveness of different biological and physical containment methods. Differences in flowering in combination with physical buffer zones are a promising strategy which are validating under different field conditions in Germany, Spain and the Czech Republic. We also assess the contribution of Cytoplasmic Male Sterility (CMS), which has been widely practiced in hybrid seed production and is also available for maize, as a practical biological containment method. Different CMS Lines are tested for limitation of outcrossing in various climates, farming practices and landscapes of Germany, Spain and the Czech Republic.

Third, we need accessible data about geneflow and environmental impact. A geneflow database was already developed in a previous EU-funded research project SIGMEA (2004-2007) which includes more than 100 datasets. It will be completed with additional datasets collected from field trials and commercial releases in Spain, Germany, Portugal and Switzerland, so we get an updated dataset containing information about geneflow for maize, oilseed rape, sugar beet and potato. SIGMEA also resulted in predictive geneflow models at the landscape level.

Then we also need cost-effective sampling strategies to assess whether non-GM fields comply with a given threshold for adventitious presence of GM material. We design sampling methods based on geneflow model predictions.

Finally, coexistence on and near the farm is one thing, without effective segregation in the EU and international supply chain identity preservation might be difficult. Therefore we also have to identify coexistence costs, structure and relevant governance aspects of GM and non-GM food and feed supply chains and evaluate implications of coexistence and segregation on these supply chains. We are doing this for maize and soya, based on the case of maize bread in Portugal and GM free milk in Germany and Switzerland. ”

It sounds as if you are still working with rather complex models. How will you make sure “This is certainly not an easy task. We have to cope with a wide range of climatic and geographical conditions, different crops, different sets of regulations, complex multi field situations and transport routes. We also have to link data from different sources. We have designed an overall procedure that will be tested for different scenarios and we are implementing a statistical analysis tool for calculating the probability of a certain level of adventitious presence. We aim for a GIS-based support tool that can manage full geo-graphic databases, centralize field related information (weather, environment) and exchange with external information systems that stakeholders may have developed to support decision-making, databases and field computers (GIS on PCs or PDAs).

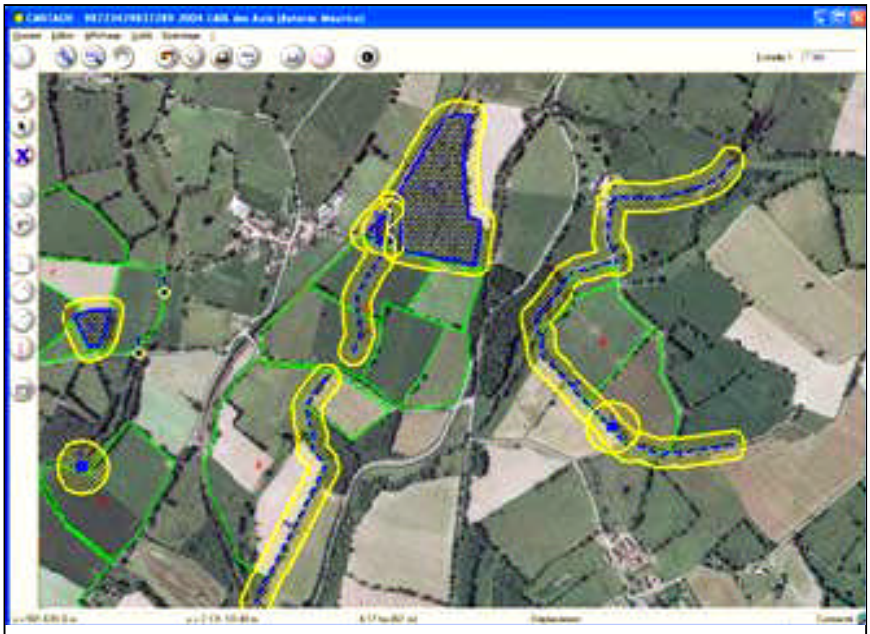

Figure 2: Imaginary GIS based map showing buffer zones (between yellow lines) of potentialGM crop fields (continuous blue lines), GM harvest product transportation routes (dotted blue lines), GM crop specific handling sites (blue dots), and non-GM crop fields (between green lines).

To make sure we will end up with a user-friendly tool, stakeholder organisations which are in charge of practical implementation, such as farmers, advisors and cooperatives, are involved in the design process. The support tool will be validated based on a real maize study in Spain for which pollen flow and adventitious presence are monitored over two seasons.”

You started by stating that coexistence is still a controversial topic in the EU. Stakeholders have different views on coexistence. How is PRICE dealing with the controversy?

“We believe the research will provide relevant information for the shaping of coexistence guidelines. We therefore seek to communicate with farmers, seed producers, regional traders, policy makers and consumer and environmental organizations and engage them in adjusting our research activities. We are open for constructive feedback. This is why we decided to organize three workshops for stakeholders to provide comments on the approach chosen by our consortium. “

Previous coexistence research projects

PRICE builds on knowledge, data and tools developed in previous coexistence research projects such as Co-extra, SIGMEA and TRANSCONTAINER. All three projects had a strong technical orientation and provide important information about technical options to control pollen flow for regulatory policies as part of coexistence policies. Also economic issues have been addressed within the three projects.

The main objective of Co-Extra (http://www.coextra.eu/) was to provide the different stakeholders of the food and feed chains with fit for purpose tools and methods allowing them to practically implement coexistence and traceability required by the current and forthcoming EC regulations and demanded by European consumers. By studying and validating biological containment methods and modeling supply chain organizations the project was designed to provide the technical tools needed to keep GM and non-GM crops separate on the farm, in transport and on production lines. Fit-for-purpose methods for sampling and detecting GMOs were developed and proposals for reliable, complete and cost-effective traceability information management throughout the food and feed chains were produced.

The main objective of SIGMEA (http://www6.inra.fr/sigmea) was to bring together the different threads needed to create a tool kit for evaluating the ecological and socio-economic impacts of GM crops. A structured database containing information about gene flow from GM crops was developed. These data can be fed into a Landscape Generator designed to integrate geographically referenced information into models of gene flow from GM crops. Accurate gene flow data across different farming practices have been analysed to provide practical advice for various scenarios and stakeholders. In Spain, the Seed Producers Association published a Guide of Good Practices (GGP) based on SIGMEA results.

The goal of the TRANSCONTAINER project was to "develop efficient and stable biological containment systems for genetically modified plants such as plastid transformation, the prevention of flowering, and controlling transgenic transmissions through pollen and seed." The project included an environmental assessment that targeted the efficiency of containment schemes, as well as the potential impact of the new genes that will be employed on non-target organisms, such as the wild relatives of domesticated crops, beneficial organisms, as well as their effects on human health. TRANSCONTAINER focussed on a number of representative crops, such as oil rapeseed for seed plants, tomato and aubergine for fruit, as well as sugar beet, rye grass, red fescue, poplar and birch for vegetative plants.

More information about previous coexistence research carried out under the EU's 6th Framework Programme is available in a brochure produced by the European Commission:
ftp://ftp.cordis.europa.eu/pub/fp7/docs/coexistence-brochure-final.pdf

Video portraits presenting stakeholders

The PRICE Consortium wants to communicate actively with stakeholders and a wider audience. Apart from a dedicated project website (www.price-coexistence.com), a newsletter and several Together, these videos give a representative impression of the wider socio-economic context of coexistence and the issues PRICE is dealing with. So far, 3 video portraits have been finalized. The opinions expressed in these films do not necessarily reflect those of the European Commission and the PRICE project.
The films were produced by Barend Hazeleger from Agrapen and can be watched at the PRICE website: http://price-coexistence.com/film_portraits_price

1. The Bt maize grower

Stěpan Cízek, manager at Mořina cooperative, grows Bt maize. The cooperative uses about 7,000 hectares for livestock and crop production, 500 hectares is planted with Bt maize. This produces healthy silage for approximately 500 dairy cows, Cízek explains. The cooperative's fields are surrounded by 30 farmers. They all have to be informed about projected Bt maize plantings, both before and after planting. Also local and national authorities have to be informed and information has to be stored for 5 years.
A buffering zone of 70 meter or 35 rows of conventional maize and a refuge of 20 per cent of the acreage of Bt maize is required. Cízek thinks these buffering zones are quite useful and not a problem.

According to Daniel Froňek of the Czech Ministry of Agriculture this is a demanding administrative burden for farmers, which puts them off from growing more genetically modified crops.

2. The Portugese organic sector

Pablo Casallo Mantecon is an organic maize grower. His neighbour, who plants GM Bt maize, plants the first 500 meters with conventional maize. This keeps his organically grown maize from being contaminated. His yield is sent to a dedicated organic processor at 200 kms distance, which costs him an additional 20 Euros per tonne.

At the facilities of Herdade do Carvalhoso, an organic feed producer, the maize is sampled and the samples are sent to a certified lab for GMO analysis. The company accepts contamination up to the legal threshold of 0.9 percent. Fernando Gaga Nunez supplies Herdade do Carvalhoso with organic maize. If his maize contains more than 0.9% GM material, the feed producer cannot accept his maize. In that case, the question is what the damage is -both direct, in Euros, and indirect in

terms of image- and who is liable. “In the case my maize is contaminated with GM maize, I will loose approximately 1,000 Euros per ha. I will also loose my organic certificate and it may take a while to reconvert my farm to organic again. That would be the end of the farm as an organic farm”, Pablo Casallo Mantecon says.

Margarida Silva from the Portugese GMO-free Coalition explains that GM farmers pay about 4 Euros per seed bag for a compensation fund. They will never be liable beyond the 4 Euros.

The Portugese also grow traditional maize varieties such as Amiúde and Fandango that are used for maize bread. Although these traditional varieties give lower yields, they need less chemicals and fertilizers, which makes them cheaper to grow. “If you grow hybrid maize next to a field of traditional white maize, you see contamination”, says Pedro Mendes-Moreira of the Participatory Breeding Breeding Program of the Polytechnic Institute of Coimbra. “This will accelerate the disappearance of traditional varieties and you may loose a gene poll that is interesting in terms of stress and resistance to diseases and pests.”

3. The researcher

Gemma Capellades is working as a researcher in Mas Badia agricultural field station, Spain, where coexistence is being researched. She explains that there is no regulation in Spain that controls the coexistence between GM and conventional maize. There is only a good practice that has been developed by the seed industry, which is printed on every bag of seeds. “You’ll have to have a difference in sowing of 4 weeks in April and 2 in May, or you have to sow 12 rows of non-GM maize in the border next to your neighbour’s field”, Lluís Font, a Pioneer sales agent explains.These good practices are tested in real agronomical fields. Gemma shows how samples are taken and a dip-stick test is used to check whether a farmer complies with the 12 buffer rows of non-GM maize. Of the conventional fields samples are also taken at several distances from the edge before harvesting. These samples are analysed in the lab with PCR, which tells the exact GMO content of the samples. The first analyses indicate that out crossing is far below the 0.9% threshold for conventional non-GM sales. In another field Gemma shows how a difference in sowing of 4 weeks in April results in a separation of flowering, so the GM maize and the non-GM maize cannot cross-pollinate

Salvador Puig is a conventional farmer who cooperates with the agricultural field station. He would like to grow maize organically, but is not able to do so because none of the farmers in his region follows the good practices. There is no incentive to take coexistence measures because the product is not differentiated. GM and non-GM maize get mixed after harvesting, so it makes no sense to avoid contamination in the field.

This is confirmed by Pere Ballart, manager of a cooperative in Fortià that collects, dries, cleans, stores and sells the maize of 100 members. “Practically all maize in the region is GM maize”, he says. “If a buyer wants non-GM maize, that can be done, but the problem is that you have to have two completely separated lines, two dryers, two storehouses….. That makes it complicated and expensive.”

Non-GM Brazilian soy for European food and feed

In May 2013, twelve groups representing trade, feed industry and retail in Germany, Austria, Belgium, Portugal and Switzerland signed the Brussels Soy Declaration in which they declare their full support of the continued, and even expanded, production of GMO-free soy in Brazil. "This should provide European consumers with GMO-free food products, thereby giving them the option to exercise their right to individual food sovereignty", the groups state in their declaration. They appeal to all interested parties in Brazil which are involved with the GMO-free soy production in that country, including seed production, farming, storage and processing, as well as with the transportation and export of soybeans and soy meal. The twelve groups jointly endorse and support a number of measures to ensure a supply of conventional, i.e. of GMO-free soy. These measures should enable and encourage farmers to produce conventional soy, the continued and widespread availability of segregated storage systems and IP systems necessary for delivering certified non-GMO soy commodities to international markets, provide segregated logistics for transportation to the export facilities in seaports and segregated storage and loading space in port facilities.
http://proterrafoundation.org/files/Brussels-Soy-Declaration-EN-May-2013.pdf

USDA launches consultation on coexistence

In September 2013 US Agricultural Secretary Tom Vilsack announced that the Department of Agriculture (USDA) Consultation on coexistence recently launched by the APHIS of USDA will soon publish a notice in the Federal Register asking the public to comment on how agricultural coexistence in the United States can be strengthened. "The Advisory Committee on Biotechnology and 21st Century Agriculture (AC21) recommended that USDA support agricultural coexistence by strengthening education and outreach on this vital issue," said Secretary Vilsack. "In response, with this notice, we are asking all those with a vested interest in coexistence to help us learn more about what coexistence means to them, how they are already contributing to it, and what more is needed to achieve coexistence. With this input, we can continue the dialogue begun by the AC21 group and find practical solutions that will help all sectors of American agriculture be successful."

The comment period begins upon publication of the notice in the Federal Register and will be 60 days.

The AC21 published a report on coexistence in November 2012:
http://www.usda.gov/documents/ac21_report-enhancing-coexistence.pdf

Coexistence literature and events

Devos, Dillen and Demont (2013). How can flexibility be integrated into coexistence regulations? A review (Sept 2013) http://onlinelibrary.wiley.com/doi/10.1002/jsfa.6358/full

Huffman and Strzok (2013). The Economics of Organic and GMO Farming Systems (in the US): Interactions and How They Might Co-exist (May 2013)

Daniela, Zambrano and Falck-Zepeda (2013). Socioeconomic considerations in biosafety decisionmaking, IFPRI, http://www.ifpri.org/publication/socioeconomic-considerations-biosafety-decisionmaking

Masip *et. al.* (2013). Paradoxical EU agricultural policies on genetically engineered crops, Trends in Plant Science, http://www.sciencedirect.com/science/article/pii/S1360138513000575

Vigani and Olper (2013). GMO standards, endogenous policy and the market for information, Food Policy 43, http://ageconsearch.umn.edu/bitstream/126443/2/Vigani%20%26%20Olper%20IAAE%202012.pdf

Areal, Riesgo, Gómez-Barbero and Rodríguez-Cerezo (2012) Consequences of a coexistence policy on the adoption of GMHT crops in the European Union, Food Policy 37 (4), pp 401-41, http://www.sciencedirect.com/science/article/pii/S0306919212000462