

European Coexistence Bureau
Summary of conclusions
of the 1st meeting of
the Technical Working Group for Soybean

16 - 17 May 2013,
Seville, Spain

The 1st Meeting of the Technical Working Group for Soybean (TWG Soybean) of the European Co-Existence Bureau (ECoB) took place from 16 to 17 May 2013 in Seville, Spain. Experts from the following Member States (MS) and European Commission (EC) services were represented:

- Austria (AT), Croatia (HR), Germany (DE), France (FR), Hungary (HU), Lithuania (LT), Netherlands (NL), Slovakia (SK), Spain (ES), Sweden (SE) and United Kingdom (UK);
- Directorate General for Health and Consumers (DG SANCO);
- Joint Research Centre (JRC), Institute for Prospective Technological Studies (IPTS);
- Joint Research Centre, Institute for Health and Consumer Protection (IHCP).

The main topics for discussion were:

1. Review of the European framework for coexistence.
2. Introduction of the European Coexistence Bureau:
 - Scope of ECoB;
 - Blueprint – working together;
 - Internet data exchange tools – ECoB web page and other.
3. Proposal for structure of Best Practice Document for soybean.
4. Review of methods for detection and quantification of genetically modified soybean presence.
5. Discussion on work program of TWG Soybean of ECoB.

The welcome presentation of the ECoB secretariat briefly introduced the structure and mission of the JRC, with emphasis on the activities of the IPTS, which hosts the ECoB.

1. Review of the European framework for coexistence

Since it was the first meeting of the group, DG SANCO reviewed the European framework for Co-Existence including: the regulatory framework for GMOs and for co-existence; Commission activities in the field; the Commission Recommendation on Co-Existence; the ECoB Mandate.

2. Introduction of the European Coexistence Bureau

The ECoB secretariat introduced the ECoB to the new experts in this working group.

The main tasks of the ECoB are: organisation of the exchange of technical-scientific information on the best agricultural management practices for coexistence; development of crop-specific

guidelines for coexistence measures based on the consensus of the group; and support to the MS in the development or refinement of national or regional approaches to coexistence.

The scope of the ECoB's work is on: technical agricultural management practices for coexistence; crop production - from sowing, harvesting, transport, storage, up to the first point of sale; GM crops authorised for cultivation in the EU; and measures to ensure the compliance with the coexistence threshold.

The work of the ECoB is organized on the basis of crop-specific technical working groups. For the moment two groups have been established: the TWG Maize (with experts from 19 Member States) and the TWG Soybean (with experts from 14 Member States). In the near future the creation of a TWG for potato and a TWG for sugar beet is foreseen.

The TWG Maize developed three best practice documents (BPDs) for: coexistence of GM crops with conventional and organic farming; monitoring efficiency of coexistence measures in maize crop production; and coexistence of GM maize and honey production.

The BPD for Soybean will cover commonly agreed, scientifically and technically justified measures to ensure coexistence between GM, conventional and organic soybean crop production in the EU.

The interactions of the TWG Soybean will take place via meetings and inter-sessional periods. The BPD will be drafted by the ECoB Secretariat on the basis of information and contributions provided by the TWG Soybean members. The members of the TWG Soybean will submit information using templates provided by the ECoB. The templates for each round of data collection/consultation will be made available via the existing data exchange platform on the ECoB website or via the common e-mail of the ECoB.

The members of the TWG Soybean reached a consensus, based on the experience of the TWG Maize that the data exchange will be mainly done via the common e-mail of the ECoB:

JRC-IPTS-ECOB@ec.europa.eu

Where necessary, the data exchange platform on the ECoB website will also be used.

The web page of the ECoB (<http://ecob.jrc.ec.europa.eu/>) consists of two parts: one which is publicly accessible and one which is dedicated specifically to the members of the TWGs. The area restricted to the TWG members is designed on the platform for Basic Support for Cooperative Work (BSCW). Access to the BSCW space requires a login and password granted by the web administrator. The BSCW tool allows users to store documents and follow discussions.

3. Proposal for structure of Best Practice Document for soybean

The secretariat of the ECoB proposed the following structure of the BPD for soybean:

- Overview of legislative and economic reasons for soybean cultivation and coexistence in crop and honey production in Europe;
- Review of the available information on management of adventitious GM presence in soybean crop production;
- Possibilities for detection of GM events in soybean crops and honey;
- Cost analysis of management practices;
- Cross-border issues;
- Best practices for coexistence measures in soybean crop production.

The mandate of the TWG Soybean of the ECoB is: development of consensually agreed best practices for coexistence in soybean crop production (GM, conventional and organic) as well as in honey production, which are intended to assist MS in the development or refinement of their coexistence legislation or voluntary standards for good agricultural practice.

The scope of the BPD was proposed to cover:

- the cultivation of GM soybeans up to the first point of sale, including on farm storage as well as coexistence of GM soybean and honey production;
- the BPD does not cover coexistence in soybean seed production;
- the thresholds for coexistence to be analysed are the legal labelling threshold (of 0.9%) and the limit of quantification (of about 0.1%), which are required by operators in some markets;
- the BPD refers to the methods for quantification of GM soybean presence in other crops and honey;
- the BPD only covers GM soybeans that contain a single transformation event.

The economic review highlighted that presently only 2% (0.8 million tonnes)¹ of EU-27 consumption of soybean meal is satisfied by EU production of soybean.

An overview of soybean biology was based on the Consensus document on the biology of *Glycine max* (L.) Merr. (Soybean) ENV/JM/MONO(2000)9 of the Working Group on Harmonization of Regulatory Oversight in Biotechnology of Organisation for Economic Co-operation and Development (OECD) (<http://www.oecd.org/science/biotrack/46815668.pdf>)

Five existing segregation systems in soybean production were discussed:

- In seed soybean production²;
- Coexistence recommendation for GM soybean cultivation of the High Council of Biotechnology of France³;
- Canadian Identity Preserved Recognition System (CIPRS);
- Segregation system and identity preservation (IP) of non-GM soybean introduced by Brazilian Association of Non Genetically Modified Grain Producers (ABRANGE);
- Danube Soya Declaration initiative.

Even though the segregation systems developed for seed production and identity preservation are not specifically designed for coexistence with GM production the measures for seed production are in line with the aims of the TWG Soybean. They require detailed study and could be considered for the development of BP recommendations for coexistence in soybean crop production based on the conclusions.

It was also underlined that the main practical experience for segregation measures in soybean cultivation is garnered in North and South America, and Asia since the only European producer of GM soybeans, Romania, suspended its production in 2007.

Typical soybean features for cultivation in European conditions were extensively discussed:

- Soybeans are an annual crop which is planted in Europe in late spring (April to June) according to the region and the maturity group of the variety;
- The symbiotic bacteria of soybeans are naturally absent from European soil. In new areas of soybean production an inoculation with *Bradyrhizobium japonicum* is necessary, for optimum efficiency of the nodulated root system;
- The seeding rate is variable, with a target population of between 300,000 and 600,000 plants per hectare;
- The seeds germinate when the soil temperature reaches 10°C and emerge in a 5-7 day period under favourable conditions;
- Pods develop in late summer (August) and harvesting is normally in September to October;

¹ Data for 2011 from the EU association that represents companies trading in cereals, oilseeds, feedstuffs, rice, olive oil and agro-supply (COCERAL)

² Ceddia M. G. and Rodríguez-Cerezo E., 2008, A Descriptive Analysis of Conventional, Organic and GM Crop and Certified Seed Production in the EU. Chapter for soybean (<ftp://ftp.jrc.es/pub/EURdoc/JRC45170.pdf>)

³ Le Ny, F., Angevin, F., Coléno, F., Lecomte, J., Messéan, A., 2011. Rapport d'expertise au conseil scientifique du Haut Conseil des Biotechnologies sur la coexistence des filières OGM / non-OGM, p. 132

- The length of the cultural cycle is 75 to 200 days, depending on the variety and the region in which it is cultivated;
- Soybeans are often rotated with crops such as corn, winter wheat, spring cereals, and dry beans;
- Cultivated soybean could potentially outcross with both the wild annual species of subgenus *Soja* and the wild perennial species of subgenus *Glycine*. Wild soybean species do not exist naturally in Europe.

The cross-pollination rates in soybean crops were discussed too. The presented data originated from Brazil⁴ and the USA⁵. Such information is available also from Japan and South Korea, but not - for Europe.

It was also mentioned that even though the soybean is considered self-pollinating, and not a beneficiary of insect pollination, some authors reported the occurrence of cross-pollination in this species attributed to the action of insect pollinators^{6,7}.

Furthermore, honey bees can produce substantial honey crops when they visit soybean flowers⁸.

Information was also presented to show that volunteers of soybean are likely to be killed by frost during the autumn or early winter of the year they were produced. In the event that they appear, volunteers do not compete well with the succeeding crop, and can easily be controlled mechanically or chemically.

The starting adventitious presence of GM soy seeds in seed lots is a key factor for final adventitious presence in harvests and should be considered in the further analysis for coexistence measures in the farm.

The discussion about machine management practices during sowing and harvesting of soybean also took place.

For the cost analysis of the management practices, the main challenge was identified as the lack of sufficient experience in cultivation of GM soybeans in Europe. The only available, limited data are from Romania, before 2007 (FP6 coexistence projects SIGMEA and Co-Extra).

It was also assumed that it is unlikely that cultivation of GM soybeans can cause cross-border issues because the data show a drastic decrease in cross-pollination rates within distances of a few metres.

After an extensive discussion of all presented information it was agreed that in the background part of the BPD there will be a separate section on coexistence with honey production.

4. Review of methods for detection and quantification of GM soybean presence

The IHCP presentation for detection and quantification methods for GM soybean presence reviewed:

- Availability of Reference Methods;

⁴ Schuster Iv., Vieira E., Santana H., Senhorati D., da Silva R. and de Oliveira M., 2007, *Pesq. agropec. bras.*, Brasília, v.42, n.4, 515-520

⁵ Ray JD, Kilen TC, Abel CA, Paris RL., 2003, *Environ Biosafety Res.*, 2(2):133-8.

⁶ Erickson, E. H. and Garment, M. B. (1979), Soya-bean flowers: nectary ultra-structure, nectar guides, and orientation on the flower by foraging honeybees. *Journal of Apicultural Research*, 18 : (1), 1-11.

⁷ Chiari, W. C. et al., 2005, Pollination of Soybean (*Glycine max* L. Merrill) by Honeybees (*Apis mellifera* L.) *Brazilian Archives of Biology and Technology*, 48 (1), 31-36

⁸ Erickson, E.H., Berger, G.A., Shannon, J.G. & Robin, J.M. 1978. 'Honey Bee Pollination Increases Soybean Yields in the Mississippi Delta Region of Arkansas and Missouri'. *Economic Entomology*, 71: 601-603

- EU database of Reference Methods for GMO analysis;
- Methods in the EU-RL GMFF pipeline (all event-specific qPCR);
- Other methods' databases;
- Availability of Certified Reference Materials;
- Reproductive biology of soybeans;
- Zygoty and conversion factor copy/copy to mass/mass;
- Traditional vs. digital real-time PCR;
- Digital Array Chip: integrated fluidic circuit;
- Sampling.

5. Discussion on work program of TWG Soybean of ECoB

After a general discussion about the availability of data sources concerning coexistence in soybean crops and honey production, it was decided that the ECoB secretariat will circulate a detailed template (according to the agreed structure of the BPD) among the members of the TWG Soybean requesting a contribution of background information at the end of May and the deadline for submission is the end of August 2013.

After that the ECoB secretariat will prepare the first draft of the background document for consultation in the TWG Soybean by the end of November.

After the finalization of the consultation process, the second plenary meeting of the TWG Soybean is foreseen for the first quarter of 2014.