

European Coexistence Bureau

Summary of conclusions of the 2nd meeting of the Technical Working Group for Soybean

**13 - 14 February 2014,
Seville, Spain**

The 2nd Meeting of the Technical Working Group for Soybean (TWG Soybean) of the European Coexistence Bureau (ECoB) took place from 13 to 14 February 2014 in Seville, Spain. Experts from the following Member States (MS) and European Commission (EC) services were represented:

- Austria (AT), Bulgaria (BG), Croatia (HR), Germany (DE), France (FR) (by videoconference link), Hungary (HU), Netherlands (NL), Slovakia (SK), Spain (ES) and United Kingdom (UK);
- Directorate General for Health and Consumers (DG SANCO) (by videoconference link);
- 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. Presentation of Canadian Identity Preserved Recognition System (CIPRS) and coexistence between GM and Non-GM soybean in Canada (presentations by Canadian Soybean Council, Grain Farmers of Ontario and Canadian Grain Commission);
2. Review and analysis of the TWG Soybean contributions to the Background Document as a part of Best Practice Document (BPD) for coexistence in soybean production;
3. Information about analytical protocol for extraction and detection of GM presence in soybean harvests and honey;
4. Review and analysis of the TWG Soybean proposals for Best Practices for coexistence between GM and Non-GM soybean;
5. Priorities for ECoB work program 2014-2016.

Short introduction of the ECoB secretariat briefly presented the mission of the ECoB with emphasis on the ongoing activities of the TWG Soybean.

DG SANCO welcomes the participants of the 2nd meeting of TWG Soybean, underlining the importance of ECoB for utilization and development of coexistence concept in EU legislative framework for GMO and briefly presented:

- the next steps for adoption of Commission's proposals for the amendment of Council Directive 2001/110 after its endorsement by European Parliament in a vote on 15th of January 2014;
- the current state in authorization pipeline for GMO cultivation in EU.

1. Presentation of Canadian Identity Preserved Recognition System (CIPRS) and coexistence between GM and non-GM soybean in Canada

Two experts from Canada were invited for an open session of the ECoB meeting.

The presentation of the Canadian Soybean Council, Grain Farmers of Ontario covered identity preservation systems and coexistence between GM and non-GM soybean in Canada. The main topics which highlighted were:

- Canadian soybean industry;
- Non-GM identity preserved soybean production;
- Costs and returns;
- IP contract requirements;
- Seed and variety selection;
- Sowing;
- Cultivation and growing season;
- Harvest and seed dispersal;
- Drying, transport and storage.

With the conclusion that organic, GM, and non-GM production systems coexist in Canada and coexistence provides opportunities for farmers to add value through a production system of their choice. The coexistence approach is effective because there are incentives (price premiums) to produce non-GM crops and organic crops. Grain that doesn't meet non-GM/IP standards has a fall-back market in the commodity stream.

In the presentation of Canadian Grain Commission about CIPRS: successful coexistence between GM and non-GM soybeans in Canada were covered the following topics:

- Background: Canadian grain commission and Canada's GM regulatory system;
- History of CIPRS;
- How CIPRS works;
- Successful coexistence conditions;
- IP and Closed loop IP systems;
- Risk assessment & mitigation measures.

The IP requirements on farm level were summarized as for: certified seeds; approved isolation distances; records for history use of field; cleaned planting & harvesting equipment; cleaned & labeled storage bins; cleaned trucks/trailers. And it was concluded that the price incentives keep IP systems self-regulating and grain that doesn't meet IP/non-GM standards can be sold in GM markets

2. Review and analysis of the TWG Soybean contributions to the Background Document as a part of Best Practice Document (BPD) for coexistence in soybean production.

The ECoB secretariat presented review of the contributions of members of the TWG Soybean to the Background part of Best Practice Document (First draft 16/12/2013) based on the comments received from: AT, DE, ES, FR, HR, HU, LT, SK, NL, UK and JRC-IHCP. The key points in member contributions for the highlighted topics in BD are:

❖ *Soybean biology*

- Soybean is cleistogamous (the flowers of soybean open after fecundation) and generally considered as autogamous at more than 99%;
- Typically for most legumes, flower petals of soybean enclose almost entirely male and female organs;
- Papers on yield increases in honey-bee-pollinated in comparison to self-pollinated soybean fields: there is no clear data on the factors determining (whether is cross-pollination and/or selfing);
- Cross-pollination rates decrease to less than 1.5% beyond one meter from the pollen source and rapidly decrease with greater distances from the source;
- The highest outcrossing rate is reported for specific mutants and male sterile varieties and cross-pollination does not occur at these levels over long distances;
- Even that the mean size of soybean pollen is 30.4-27.3 μm , the size of soybean bush and structure of soybean flowers restricted significantly its transportation by wind for long distances (Fehr, 1987 and Yoshimura, 2011).
- Soybean is a quantitative short day plant and hence flowers under short day conditions;
- Day length influences the physiological development of the soybean plant and differs between varieties;
- Photoperiodism and temperature response are important for determination of the areas for cultivar adaptation and temporal segregation of different soybean cultivars;
- Appropriate for EU conditions soybean cultivars are from 000 to II maturity groups.

❖ *Soybean Cultivation in the EU: demand and crop production;*

❖ **Existing segregation systems in soybean production;**
- **Soybean seed production in the E;**

The provided update for national data about scale of soybean crop and seed production and national breeding programs will be included in BPD

- **Case study of Coexistence of GMO and non-GMO soybean in France;**

In the next draft it should be clearly stated that the temporal isolation in a given region cannot be effective, because the varietal choice is limited to one group or close groups of precocity.

- **Canadian Identity Preserved Recognition System (CIPRS);**

It will be updated with the information presented by Canadian Soybean Council, Grain Farmers of Ontario and Canadian Grain Commission in this meeting

❖ **Review of the available information on adventitious GM presence in soybean crop production;**

- **Seed impurities;**

The BPD should make clear distinction between the two pieces of EU legislation dealing with seed impurities:

- botanical purity, defined in annex II of the Council Directive 2002/57/EC, that basic seeds must have a varietal purity not less than 99.5% and certified seeds - not less than 99.0%;

- the adventitious presence of GM seeds in non-GM seed lots, Directive 2001/18/EC. No tolerance threshold for adventitious GM admixture in seeds exists.

• **Pollen mediated gene flow**

Recommended editorial improvements

• **Volunteers**

The contributions propose more precise wording about emergence of volunteers in the next year that cannot be completely excluded

- **Sowing**
- **Cultivation**
- **Harvesting and seed dispersal**
- **Drying, transport and storage**

All technological processes must be presented together with identification of the critical points in whole production process.

❖ **Occurrence of soybean material in honey**
- **Soybean attractiveness for honeybees**

- **Soybean material in honey**

Due to best of our knowledge there are not available reliable literature information about the possible transfer and occurrence of GM soybean pollen in honey. The tree main sources cited in present draft of background document are from presentations on different conferences¹. This section will be re-drafted.

3. Information about analytical protocol for extraction and detection of GM presence in soybean harvests and honey

JRC-IHCP briefly summarised that on the web page of European Union Reference Laboratory for GM food and feed (EU-RL GMFF) are listed several validated quantitative PCR methods for detection of different GM soybean events (<http://gmo-crl.jrc.ec.europa.eu/StatusOfDossiers.aspx>).

For the extraction and analysis of the pollen DNA present in honey, the EU-RL GMFF reported in 2012 verification protocol for an intra-laboratory assessed method (http://gmo-crl.jrc.ec.europa.eu/doc/GM_Honey_REPORT.pdf)

The effectiveness of currently available immunoassay methods for detection presence of GM seeds in seed samples of non-GM soybean, depending of the trait can go down even to 0.1%². Mazzara at al., 2013³ recently demonstrated detection properties of at last 0.033% GM contamination.

In addition, will be confirmed the conversion factor of numbers of seed impurities to DNA quantity in the case of cross-pollination of a non-GM soybean with the GM one.

4. Review and analysis of the TWG Soybean proposals for Best Practices for coexistence between GM and Non-GM soybean

The ECoB secretariat presented a summary of TWG Soybean proposals for Best Practices for coexistence of GM soybean crop production with conventional and organic farming based on the contributions and comments of 9 Member States (MS): : AT, DE, ES, FR, HR, HU, LT, SK and NL. The main highlights are:

1. The isolation distances are feasible and effective coexistence measures to reduce adventitious presence of GM soybean in conventional and organically produced soybean even if they are the only measure applied (worst case scenario). All available information from literature and pre-existing segregation systems shows that for limitation of

¹ Siede R., Büchler, R. (2001). Detection of transgenic material and pollen identification in honey by PCR, Association of Institutes for Bee Research Report of the 48th seminar in Bad Neuenahr/Ahrweiler 27-29 March 2001, *Apidologie* 32, 466; Gallez, L. M., Andrada, A. C., Valle, A. F., Gil, M. E., Continanza, F. G. (2005). Polen de soja (Glycine max L.) en mieles del centro-oeste pampeano [Soybean (Glycine max L.) pollen in honeys from west-central Argentina's Pampas]. 28° Congreso Argentino de Producción Animal, Bahía Blanca, 19 - 21 de octubre de 2005. Actas OD 154. Editor Asociación Argentina de Producción Animal; Vides-Borrell, E. and Vandame, R. (2013). The concept of coexistence at interspecific level: GM soybean pollen in honey as a case study. Oral presentation during the sixth International Conference on Coexistence between GM and non-GM based Agricultural Supply Chains. Lisbon, Portugal, November 12-15, 2013.

² http://envirologix.com/artman/publish/article_324.shtml

³ Mazzara M., Paoletti C., Corbisier P., Grazioli E., Larcher S., Berben G., De Loose M., Folch I., Henry C., Hess N., Hougs L., Janssen E., Moran G., Onori R. and Van den Eede G, 2013, Kernel Lot Distribution Assessment (KeLDA): A comparative Study of Protein and DNA Based Detection Methods for GMO Testing, *Food Anal. Methods* (6), 210-220 (<http://link.springer.com/article/10.1007%2Fs12161-012-9407-5>)

adventitious GM presence, caused by cross pollination to 0.9%, 5m between the fields is enough and to achieve lower thresholds (0.1%), 10 m isolation will be efficient;

2. The replacement of isolation distances with temporary isolation achieved by planting of different maturity classes of soybean is hardly to be achieved in European conditions. It will not provide enough insurance to avoid flowering coincidence, because of the limited varietal choice to one group or close groups of precocity, suitable for particular region.

3. There is no empirical data to establish a statistical relationship between soybean pollen content in honey and distance of beehives to soybean crops.

The available data for presence of soybean pollen in marketed honey are categorised them as minor pollen (3-15% of total pollen), because of the low attractiveness of soybean nectar and pollen for honeybees. Taking into account also that the European Parliament recently endorsed draft rules defining pollen as a natural constituent of honey and not an ingredient it is very unlikely that presence of GM soybean pollen in honey can exceed 0.1%. The current practices in honey production and marketing in Europe are sufficient to ensure that adventitious presence of GM soybean pollen in honey is far below the legal labelling thresholds and even below 0.1 % as was concluded in Best Practice Documents for coexistence of GM maize and honey production (Rizov, I. and Rodriguez-Cerezo, E., 2013).

4. As reference method for analysis/detection/quantification of GM soybean presence including GM soybean pollen in honey should be used only quantitative PCR-based approaches such as an EU-RL GMFF validated methods.

5. As additional coexistence measures are foreseen best practice recommendations for handling of seeds, storage, cleaning of used machinery and equipment's. They could complement the isolation distances but not to substitute them.

5. Priorities for ECoB work program 2014-2016

The DG SANCO and ECoB secretariat presented the main outlines in ECoB working program:

Deliverables/calendar	Implementer	Indicative timing
2 nd meeting of the <u>TWG Soybean</u>	ECoB	1 st Q 2014
Request letter to member states to draw up list of experts to form <u>TWG Cotton</u>	ECoB/SANCO	1st Q 2014
Best Practice Document for coexistence in Soybean crop production	ECoB	2 nd Q 2014
1 st meeting TWG Cotton	ECoB	3rd Q 2014
Deadline for collection of the contributions of TWG Cotton members for development of Background document for Cotton crop production	ECoB	3 rd Q 2014

First draft of Background document for the development of best practices in Cotton crop production	ECoB	4 th Q 2014
2 nd meeting of TWG Cotton	ECoB	1 st Q 2015
Request letter to Member States to draw up list of experts to form <u>TWG Potato</u>	ECoB/SANCO	June 2015
Best Practice Document for coexistence in Cotton crop production	ECoB	3 rd Q 2015
1st meeting TWG Potato		4 th Q 2015
Collection of the contributions of TWG Potato members for development of Background document for Potato crop production	ECoB	4 th Q 2015
First draft of Background document for the development of best practices for coexistence in Potato crop production	ECoB	1 st Q 2016
2nd meeting of TWG Potato	ECoB	2 nd Q 2016
Best Practice Document for coexistence in Potato crop production	ECoB	June 2016

It was underlined that the potato is indicatively mentioned after the cotton and could be adjusted according the submitted applications in authorisation pipeline for cultivation in EU.

Working procedure for the BPD for coexistence in soybean production

After the extensive discussion on the background document and proposals for the best practices of members of TWG Soybean, it was agreed the road map for finalization of BPD for coexistence in soybean production.

The first draft of the BPD for coexistence in soybean production will be circulated among the members of TWG Soybean by the end of March. The consultation process will take place till end of April and if it will be needed the final consultation will be done in second half of May in a respect to submit the draft of BPD till 15th of June 2014 to DG SANCO.