

WG4 iPlanta Meeting

**Brussels, COPA-COGECA Headquarter – European
Parliament**

MINUTE

OCTOBER 17-18TH, 2018



Grosshans H, *Filipowicz W. Nature. 2008*

The aim of the meeting was to create links with stakeholders, inform them of the RNAi technology, introduce some pipeline results, open the discussion on the potential use of these new plants/products and how to solve problems related to public acceptance and product development.

The meeting lasted one and a half days from the morning of Wednesday 17th to the morning of Thursday 18th, and was followed by a meeting of the Core Group of the action.

MORNING SESSION - Wednesday 18TH

The morning session took place at the COPA-Cogeca headquarters in Brussels. The event had a large participation of stakeholders from industry, grower associations, cooperatives, private research institutions (in total about 30 representatives).

The meeting was opened by a welcome and short introduction on the aims of iPLANTA Action and of the meeting by Prof. Bruno Mezzetti, Chair of the Action, and Prof. Jeremy Sweet Vice-Chair of the Action and moderator of the morning session.

Dr. Ioanna Stavridou, Science Officer of the COST Association presented The European Cooperation in Science and Technology (COST) its mission in providing funding for the creation of research networks and the main benefits on R&D capacity in EU derived by these activities.

Then, with the goal to present the specific RNAi technology, its applications and the activity of the different WGs composing the Cost Action, 6 brief presentations were presented (9.00-11.00)

The first by Bruno Mezzetti, introduced the iPlanta network and then described some highlights of gene silencing technology in agriculture and its advantages. He reported some case studies of successful improvements of plants through RNAi solutions (tomato with enhanced shelf life, arctic apple, resistance to chewing insects), underlying the fact that these innovative methods can provide solutions for the emerging problems that European agriculture is facing (e.g. *Xylella fastidiosa*).

The second speaker was Huw Jones, with a presentation titled: RNAi, cisgenesis and gene editing: what roles in plant improvement. He highlighted the fact that modern breeding methods are a natural consequence of the rapid increase in understanding of genomics. This leads naturally to the possibilities to improve crop quality and pest/disease resistance via in planta and topically applied RNAi, gene editing etc. The key message was that innovation in modern breeding methods is a natural consequence of our rapidly advancing understanding of genes and their function.

The third presentation was by Olivier Christiaens (together with Guy Smagghe and Clauvis Tanning, University of Gent, Belgium) on RNAi and insects, the fourth speaker was Michel Ravelonandro (in collaboration with Piet van der Meer), presenting their experience within the Honey Sweet Consortium in preparing an EU market dossier for an RNAi mediated virus resistant plum tree. Then, Salvatore Arpaia (together with Antje Dietz-Pfeilstetter) presented an analysis of the biosafety issues associated with RNAi (HIGS – SIGS).

Finally, Vera Ventura presented the main activities of the working group on socio economic impact of RNAi based innovation, showing a potential increase in consumer's preferences towards RNAi

products when compared to traditional biotechnologies, the target market for RNAi based solutions and its potential evolution due to the presence of highly innovative start-ups and some patent data revealing the lack of competitiveness of EU in this specific innovation sector, in contrast with the dramatic increase of US and Chinese R&D in this field.

From 11:00 to 12:30 the morning session continued opening the discussion with industries, SMEs and stakeholders, with an introduction by Katja Schlink (Syngenta Group), presenting an industry perspective on RNA based biocontrols. Dr. Schlink reported that Syngenta is developing a new line of biocontrols based on RNA. The biocontrol can be designed to be very selective so that it only affects the target pest(s). So when it is sprayed onto the plant the biocontrol targets a crop pest such as the Colorado Potato Beetle: initial data indicate that beneficial insects and even closely related species are not harmed. The RNA-based biocontrol is then broken down in the environment and does not affect the plant. She displayed a video showing an example of dsRNA biocontrol activity, available at <http://www.rna.syngenta.com>.

Then, the main points raised during the discussion were:

- A stakeholder asked for the main shortcomings of RNAi solutions, including the risk of resistance. An Expert answered that the risk of resistance depends on the specific target and the level of exposure.
- A maize growers representative said that farmers would prefer stable expression in plants, rather than topical application, much easier to use, no need for treatment at field level.
- One of the major issues raised is the regulatory context in which RNAi products for topical application will be included (biopesticides, biostimulants?)
- Stakeholders asked for the costs of these new solutions and the duration of the effect in case of spray application.
- Case by case evaluation of RNAi products requires case by case communication
- many stakeholders expressed their interest towards this innovative solution especially as a potential solutions of farmers' needs.

In summary, the meeting at COPA-Cogeca offered the possibility to exchange knowledge now available on RNAi technology, application, biosafety and socio-economic impacts. All stakeholders attending the meeting showed a high interest in the work done and on how it was presented.

AFTERNOON SESSION - WEDNESDAY 18TH

The afternoon session (15.00-16.30) took place at the European Parliament, Room Altiero Spinelli, moderated by Kit Greenop (RPP Group) highlighting that Members of the Agriculture Committee, though not present because of previous commitments, have shown high interest in the event.

Ioanna Stravidou introduced the session presenting to MEPs the European Cooperation in Science and Technology (COST) its mission in providing funding for the creation of research networks and the main benefits on R&D capacity in EU derived by these activities. Prof. Bruno Mezzetti introduced the gene silencing technology, together with the applications of RNAi which can create new specific products for plant protection, as alternatives to pesticides. Prof Mezzetti concluded repeating the

aim of the meeting with stakeholders and policymakers, which is to create a common discussion in order to identify of the appropriate methods to develop and apply this new technology. He mentioned that, the morning session had discussed the need to know how these new highly specific new molecules will be classified in the existing EU regulation system (i.e. chemicals, bioregulators, biostimulants or biopesticides). This is a major issue when RNAi is applied as spray. We accept that in case of stable in planta expression, the product falls into GMO regulation, but with high benefits and less biosafety issues in comparison with the traditional GMO systems.

Intervention of the representative of Romanians' maize farmers (Alina Cretu): farmers are consumers of inputs for agricultural production. In EU in the last years new challenges, new questions for farmers, what is the future of farming in Europe? Europe has one of the strongest regulation in the world for food safety issue, but the risk is to be less competitive. Farmers need answers and solutions, RNA tech could help in Romania, these kinds of new product can help in improve quality (i.e. protein content) and to improve sustainable agriculture in Europe, European agriculture needs innovation.

How could RNA tech support more sustainable agriculture? Intervention of Dr. Piovan Deborah (Confagricoltura, president of the national federation for oil and protein crops), several changes are happening in the farming sector, facing a CAP reform with sharp decrease in funding and greater importance of environmental issues. Also, several active ingredients have been denied renewal, meaning that farmers have fewer choose, creating a dangerous situation, and higher risks of resistance development. Also, climate change with long periods of drought, risk of floods, dramatic changes in temperature. If we want to keep feeding the population, we need more resilient plants. Then also consider influences of the markets, volatility of the commodity market, and increasing demands of consumers. She painted a Portrait of an extremely complex situation. Farmers, researchers and politicians evaluate and decide which tools can be used. Farmers ask for open access to all the tools available in the innovation toolbox, including biotechnologies, free research and open-field testing, completely new communication to the public. She said it is crucial to involve society in the discussion and provide clear and reliable information to avoid the risk of not choosing innovation. The ultimate goal is more sustainable agriculture.

Cristina Chonga, Romanian maize grower's association talked about the soybean situation in Romania: sustainability needs to include economic sustainability. Soybean is imported in large amounts from GM cultivating countries. Romanian production is exported to other EU countries. Nowadays, there is a 200 euros/hectare subsidy for soybean cultivation, is this sustainable in the long run? The whole of society is paying for this. CRISPR-Cas and new solutions for plant improvement; farmers are asking for the application of these new techniques.

Intervention of MeP Richard Ashworth from the UK, member of the agriculture committee. He, is convinced that technology is the key for the future of agriculture and its productivity. Within the 751 members of the EP making decisions on these issues, those representing farmers represent 5 million people, the rest represent 495 million consumers (the EP vote is not proportional). There is a need to fight against the emotional element which is driving distrust in science and food. However, do not underestimate it, the strategy must be to sell the benefit first (e.g. apple more tasty, cheaper).

Intervention of Dr. Salvatore Arpaia, overview on the environmental impacts of this technology: two issues on bee safety, first this technology can be made very specific, able to design specific pesticides. Second, RNA seen as relevant tool in bee curing (Varroa mite, small hive beetle). Ideally, new opportunity to fight bee parasites and diseases. Specific benefit that could be of high interest for consumers.

Paolo Zucchi for Sant'Orsola Cooperative of small fruit growers. This Technology is powerful and specific and can be truly sustainable from the environmental and economic aspect. If properly communicated and accepted to consumers, private SMEs could be very interested. Consumers scared about issues that science do not perceive as scary. Good communication is needed.

Closing remarks from Prof. Mezzetti: we are half way with this project and hope to continue the discussion defining together a strategy with scientists available to discuss solutions with stakeholders, and with consumers to reduce the knowledge gaps. Next year we will try to repeat the event but with an enlarged network of stakeholders in order to and strengthen our communication capacity.

MeP, Richard Ashworth referred to the existing political concerns about climate change. Agriculture and food production are considered the bad guy, contributing to climate change. This could be the opportunity to be seen as part of the solution, showing the benefits of RNAi based approaches. His main message was to 'show the benefits first'.

LIST OF PARTICIPANTS

	Name	Surname	Affiliation	Country
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37			Other representing MEP	