

iPLANTA Webinar 8:

The Contribution of RNAi to more sustainable and resilient food systems

Meeting with Stakeholders and Policymakers

04 March 2021 09.30 am (CET)

Summary notes

iPlanta Chair *Bruno Mezzetti* opened the webinar and introduced the iPlanta webinar series to the participants.

Morning session

Introduction:

The moderators of the webinar was *Vera Ventura*, chair of the iPlanta Working group 4 on socio economic impacts of RNAi based solutions. She introduced the event explain that it will be focusing on the contribution off RNAI for more sustainable and resilient food systems. The event was structured with two sessions: in the morning the focus was to meet and open the discussion with stakeholders to look at the challenges of modern agriculture from the producers perspective and how RNAi technology can contribute in providing solutions for these challenges. The afternoon session is dedicated to policymaker's with a focus on regulation policies and strategies for driving EU agriculture towards sustainability and innovation.

Morning session

Bruni Mezzetti- Overview of RNAi technology and advantages, RNAi applications (stable expression and spray), possibility to silence gene expression for shelf life enhancement, nutritional improvement, pathogen and diseases resistance.

Horizon 2020 PRIMA Medberry project- RNAi for sustainable strawberry production Elena Baraldi, Università degli Studi di Bologna, as an example of a project that can help to promote rnaI based strategies for crop protection. Focus on strawberry crops and fungal diseases, researchers selected transformant to silence the fungal gene and obtained plants in the greenhouse to be tested for botrytis susceptibility. Sigs: developed constructs at advanced stage: plants are sprayed and tested the best

concentration for using double stranded rna to reach resistance, results outlined quite comparable effect than traditional fungicide treatment. RNAi strategy are a very good candidate to substitute toxic pesticides for controlling important disease in strawberries.

Regulatory and Market challenges for RNAi products in the EU Nick Vangheluwe, member of the Public Research Speciality Crops Approval Association (PRESCAA) presented some insight about the regulatory challenges for honey sweet rna based PPV resistant plants, as stable expression of RNAi double stranded molecules. Outlined the path for submission of Honey Sweet dossier for approval for cultivation.

Green Deal or Green Dream? Alessandro Dalpiaz, Presented the point of view of Assomela, the Italian apple producer association. Increasing concerns about pesticide use, producers are concerned about the way authorities are proceeding, they feel that something need to be corrected in order to reach the goals of the new policies. Assomela represents the 75% of Italian apple producers, and the 18% of the European. EU Targets needs to be preceded by an impact assessment, which is still lacking in the action of EU authorities, need to analyse feasibility of solutions. The state of play of integrated pest management and phytosanitary management, example of scab: at this moment there are three active substances, one has not been renewed, it was used in the 92% of the apple area, before harvest, with two to four treatment. the other two under discussion, with possible limitation for use in greenhouse only. Very severe consequences on the IPM protocols, no new active substances already available as potential substitutes. Economic impact: results from an assessment to show how severe can be the consequences of taking out of the market this active substances: without one molecula in Italy estimate a loss of 20% in yield, an important loss for the producing sector, need of impact assessment: Direct economic impact, indirect effect: loss in working places, social impact, territorial degradation, environmental implication all these aspects need to be taken into account in the new policies. To correct this direction: advanced technologies are needed, precision farming, and new solution for biopesticides, Rnai is among the pesticide evolution, producers happy to implement them.

Round Table - Market perspective for RNAi products. Chair: Bruno Mezzetti, Università Politecnica delle Marche

Mirco Montefiori – New Plant. Italian consortium that identify and select new fruit cultivars, focused on the tools for the fruit industry. It takes 12 to 15 years to bring new fruit varieties to the market. The fruit industry evolved in the last years introducing innovation, to respond to consumers demand and also for pest and disease control. The challenges of the European Green Deal are nice targets, can be an opportunity but what sustainable agriculture starts sustaining the operators, make sure that they can still produce. So breeding, not a fast tool, new agronomical practices and new

tools like RNAi, producers need more science to develop and promote the tools for the industry.

Anna Aldrighetti – Sant’Orsola. In Berries production the challenge is to produce high quality products with low chemical residues, problems with climate change and changing conditions, being a small part of the agricultural sector not interesting from the economic point of view, low research. New policies have tremendous impacts on new products development, registration development costs doubled and 11 years for registration. Moreover, Biopesticides are increasing, too many products on the market, no clear regulation, most of them are not selective and sometimes not effective and competing each other. Further critical point: farmers not accepting innovation, skepticism, agriculture is a very slow machine. RNAi tech can be helpful, but what about public concerns? Compatible with other practices, accepted by the supply chain?

Peter Melis – PCF Research Centre Hoogstraten, pest and diseases in Belgium, intensive IPM strategy, RNAi can be a very nice addition. Expect solutions from this techniques, because it’s selective and fit perfectly in a IPM strategy.

The webinar ended with an extended section of responses to the many questions brought forward by the participants.

Afternoon session

Welcome, Dominique Vandekerchove, COST Association - European Cooperation in Science and Technology. Introduction to Cost as a chance to provide networking opportunities in all areas of science and technology, promoting excellence.

RNAi and EU sustainability goals Bruno Mezzetti. Presentation of the position document: Does RNAi-based technology fit within EU sustainability goals?

Crop Improvement at FAO, Chikelu Mba, Food and Agriculture Organization of the United Nations (FAO) - Plant Production and Protection Division. FAO Works in food insecure country, however the solutions and products developed in food secure countries can fall into the FAO toolbox. He presented the statistics on food security and nutrition in the world and the Obstacles that we need to overcome to produce enough food without damaging planet health. Plant production and protection division work to enable the transition to sustainable crop production, intensification and diversification. Problems: more than 90% of all seeds used in developing country lack any level of quality assurance, how to reverse this trend? There are no good crops without good seeds. Need to develop strategies and new tools and guidelines for developing national strategies and policies supporting countries.

EU Plant Health Research & Innovation, Gisela Quaglia, Research Programme Officer
- European Commission, Directorate-General for Agriculture and Rural Development

Research and Innovation unit of DGagri, the policy context and the agricultural research strategy to accelerate the transition toward sustainability and the new research program Horizon Europe. Farm to fork:

- Reduce by 50% the overall use and risk of chemical pesticides and reduce use by 50% of more hazardous pesticides by 2030
- Reduce nutrient losses by at least 50% while ensuring no deterioration in soil fertility ; this will reduce use of fertilisers by at least 20 % by 2030
- Reduce sales of antimicrobials for farmed animals and in aquaculture by 50% by 2030
- Achieve at least 25% of the EU's agricultural land under organic farming by 2030
- Bring back at least 10% of agricultural area under high diversity landscape features by 2030

New research program Horizon Europe, focus on pillar 2 societal challenge and European industrial competitiveness, cluster 6, intervention area7 is about agriculture, forestry and rural areas. She invited scientists to stay tuned, first calls to be published very soon.

The use of micro-organisms as active substances in plant protection products, Domenico Deserio, Policy Officer Pesticides - European Commission, Directorate-General for Health and Food Safety. He presented the use of microorganism as active substances in plant protection products, as a further example of finding sustainable alternatives for agriculture. He explained the protocols for new active substances approval. He explained that the number of biological pesticides has increased over years, the biggest part is represented by microorganisms. The main effort is focusing on the revision of the data requirement and evaluation. He said that Rnai is under the attentions because highly promising but at the moment DG Sante is focusing on other biological alternatives.

EFSA's activities on the risk assessment of RNAi-based GM crops. Paolo Lenzi, European Food safety Authority (EFSA). Agreement to consider not scientifically justified the request for animal studies for risk assessment of dsRNA toxicity based on current scientific knowledge.

PRIMA, a partnership towards Resilience, Impact and Sustainability in the Mediterranean, Omar Amawi, deputy director – PRIMA foundation. He presented the opportunity of the new PRIMA call for proposals, one of the priorities is agriculture. Prima impacts includes social, economic and environmental aspects. He then presented the PRIMA structure and the evaluation procedure.

Round table: the implementation of the Green deal core policies: the role of RNAi.

Chair: Jeremy Sweet, Vice-chair of the iPlanta Cost Action

Participants: all the speakers of the afternoon session and Nevena Alexandrova, FAO.

The webinar ended with an extended section of responses to the many questions brought forward by the participants.

Participants to the webinars: 137 between the two sessions

The video of the webinar is available at:

<https://www.iplantawebinars.com/event/5fe1f1f952a27f1f072c9ca1>

<https://iplanta.univpm.it/node/86>