

The current Corona pandemic is influencing all aspects of our life and work and makes it impossible to organise face-to-face meetings in the near future. It almost seems that the 77<sup>th</sup> IIRB Congress held in February 2020 took place in a different world. Thanks to its excellent established network, IIRB will maintain its activities and will keep up the scientific exchange by organising virtual study group meetings for an interim time. We remain confident that after the Corona crisis, IIRB will be able to organise face-to-face meetings, seminars and congresses as before. This newsletter gives you an overview of the recent IIRB meetings, a seminar and the 77<sup>th</sup> IIRB Congress.

## SG GENETICS & BREEDING MEETING, HELD JOINTLY WITH AG BETARÜBEN/GPZ

16-17/09/2019, Norwich (UK)

Virus yellows on sugar beet was the main topic of this meeting. Two speakers of the John Innes Centre in Norwich and Wageningen University had been invited to inform about the population genetics of the green peach aphid *Myzus persicae*, the main vector of yellowing viruses, and about virus manipulation of tritrophic interactions between the plant, vector and virus. Several breeding companies presented their current activities to achieve virus and insect resistance. With several viruses causing yellowing of sugar beets, resistance breeding remains challenging and time consuming. The institutes IRS, IRBAB and BBRO explained



*IIRB study group Genetics and Breeding and the Neonic project group meeting at Norwich Research Park*



*BBRO variety trials showing different degrees of yellowing after artificial inoculation with virus-infected aphids.*

their aphid monitoring activities in 2018/19, the recommendations for insect control and current virus resistance trials in sugar beet. The group had the opportunity to visit BBRO and SESVanderHave variety field trials the second day.

## NEONIC PROJECT GROUP

17/09/2019, Norwich (UK)

The project group exchanged information on monitoring activities of insects that now can no longer be controlled by neonicotinoid seed treatments in most European countries. To prevent an increase of virus yellows in sugar beet, aphid monitoring is especially important. The group aims to coordinate trial activities and regularly discusses the aphid and virus yellows situation in each represented country. The meeting was used to coordinate a session for the 77<sup>th</sup> IIRB Congress 'Growing sugar beet in a post-neonic world'.

## SG SEED QUALITY & TESTING

04-05/11/2019, Eschwege (D)

Meeting at Suet Saat und Erntetechnik, the group was presented the company and had the opportunity to visit the seed pelleting facilities. During the group meeting, the state of knowledge on the seed-borne bacterium *Curtobacterium flaccoflavians*, causing silvering of beets and significant yield losses, was reviewed. The non-renewal of fungicide registrations, e.g. Thiram (TMDT), impacts commercial seed production; chemical and thermal alternatives were discussed. Current concerns of the International Seed Testing Association on seed testing protocols were reported.



## SG WEED CONTROL

02/12/2019, telephone conference

The Weed control group is closely monitoring the imminent losses of herbicide active ingredients in the member countries and continues setting up joint position papers of sugar beet research institutes to provide scientifically based information on the importance of single active ingredients. These are forwarded to stakeholders in agriculture and politics.

## SG PLANT & SOIL

16/12/2019, Bedburg (D)

Presentations at this meeting covered a range of topics: the impact of leaf canopy architecture and plant spacing in the field on yield, a report on recent experiences with the cultivation of ALS-tolerant beets, and presentations on humus conservation in the soil as well as crop rotation and catch crop effects on soil organic carbon, soil structure and nitrogen use of beets. The meeting was linked to the IIRB seminar 'Sensors and digital technologies' held the next day.

## IIRB SEMINAR 'SENSORS AND DIGITAL TECHNOLOGIES IN SUGAR BEET PRODUCTION'

17/12/2019 Jülich (D)

Innovative technologies are increasingly implemented in agricultural practice and applied in smart farming, precision farming and plant phenotyping. The IIRB seminar gathered experts from digital technologies and smart farming and delegates from the sugar beet sector to present and discuss the opportunities, challenges and research demands for an implementation of digital technologies in sugar beet.

The 120 participants were informed in three sessions about innovative technologies for breeding and cultivation, crop management and plant protection, as well as precision harvesting and quality assessment. A stimulating talk on smart farming was given by Dutch grower Jacob van den Borne who readily discussed advantages and challenges



Site visit at IBG 2 in Jülich during the IIRB Seminar

of smart farming, but also admitted the reluctance of some of his farmer colleagues towards digital technologies.

To complete the seminar, sixteen companies, startups and breeding companies presented their use of optical sensors, gis/gps, remote sensing, robotics, and machine learning. As the seminar was organised at Research Centre Jülich, the participants were able to see the impressive facilities and research opportunities at the Institute of Bio- and Geosciences / Plant Sciences during a guided tour. The combination of talks and demonstrations at the seminar was widely appreciated; a repetition of a similar seminar on the topic in a few years was suggested to follow up on the developments in this sector.



Session chair Ronald Euben and Jacob van den Borne discussing with delegates

## SG COMMUNICATION TECHNIQUES

10/02/2020, Brussels (B)

Stimulated by an invited talk from a farmer actively engaging in social media, the group discussed the results of a survey among sugar beet farmers on their use of Internet and social media, that allows them to get relevant information for their crop. Tools like 'Beet Yield Challenge', an approach used by BBRO in the UK to improve grower's yields, were discussed.

## 77<sup>TH</sup> IIRB CONGRESS

11-12/02/2020, Brussels (B)

The 77<sup>th</sup> IIRB Congress 'Maximising sugar beet performance in a changing climate' welcomed 270 international delegates. Current topics of sugar beet cultivation were presented in seven plenary sessions and 90 posters, shown during two poster sessions.

The title of the congress and its opening session reflects the current political atmosphere: It refers both to the fundamental meteorological and the political climate changes we are likely to face in the coming decades. Invited speakers Carolyne Dürr of the French INRA, and Elisabeth Lacoste (CIBE) set the scene. Carolyne Dürr presented the effects of global warming on sugar beet resulting from a climate simulation study, while Elisabeth Lacoste summarised the influences of changes in the availability of plant protection products generated by a changed political climate.

The following presentations highlighted the different strategies of maximizing sugar beet performance in this new setting,



be it by breeding, improved water use efficiency of sugar beet, a modified weed control or the cultivation of organic sugar beet.



*Opening session of the 77<sup>th</sup> IIRB Congress*

In the following technical sessions, different topics were looked at in more detail. Session 2 'Tools and Technologies', chaired by Jan Willem van Roessel (IRS), presented new tools that may help to improve sugar beet production. The digital tools presented at the recent IIRB seminar 'Sensors and digital technologies in sugar beet production' were summarised by its chair Anne-Katrin Mahlein (IfZ). Further monitoring and benchmarking tools were presented.

IIRB Congresses also offer the possibility for networking and informal knowledge exchange e.g. during breaks. Here, 90 posters were presented in two coffee break poster sessions, which delegates made use of for intensive discussions with poster authors on the research they presented on their posters. For the first time, IIRB awarded a poster prize after the second poster session to value the work presented in posters. The prize was awarded to Madeleine Nilsson (Swedish University of Agricultural Sciences) and co-workers for their poster 'Pressure mapping sugar beets', based on the clarity of their data presentation, scientific robustness of data and its value to the sugar industry.



*Scientific Advisory Committee chair Mark Stevens and vice-chair Vincent Laudinat awarding Madeleine Nilsson the IIRB poster prize*

The first day closed with Session 3, 'Maximising future establishment for sugar beet', chaired by Rémy Duval (ITB). The three speakers outlined different factors influencing the early growing phases of sugar beet, germination and seedling establishment.

One major topic was presented in Session 4 'Growing sugar beet in a post-neonic world'. The project group on this topic, chaired by Mark Varrelmann (IfZ), had been initiated in 2018 and had since met repeatedly. Researchers involved in this project group gave an overview on the state of research and possible effects of the loss of neonicotinoid seed treatments on different pests and aphid-transmitted virus diseases.

This was complemented by a talk on the necessity of resistance management strategies required for aphid control.



*Session 4 'Sugar beet in a post-neonic world'*

The focus of presentations in session 5 was on one of the major leaf diseases, *Cercospora beticola*, and its control. Both genetic and plant protection approaches based on disease thresholds were presented.

Breeding may deliver solutions to numerous problems in crops, especially with view to pest and disease resistance. Session 6 'Breeding for future challenges in sugar beet cultivation' was laid out as a panel session and offered representatives of breeding companies the opportunity to outline their breeding approaches and discuss these possible breeding solutions for the future with the delegates.



*Vincent Laudinat chairing panel discussion with breeders*

In the Open session chaired by Herbert Eigner (ARIC) agronomic topics of tillage and storage were highlighted. Without considering factors that influence storage, all earlier efforts in achieving excellent yields may be diminished.

The congress was widely appreciated by the participants who valued the quality of presentations, the opportunities for meeting colleagues and networking, and the welcoming atmosphere. The next congress, scheduled for June 2022, can hopefully be held in the same way, after a release of the restrictions imposed by the Corona pandemic.

## IIRB MEETINGS AGENDA

AC meeting	28/4/2020, video conference
SG Weed Control	19/5/2020, video conference
SG Pests & Diseases	17-18/9/2020, Einbeck (D)
Further group meetings	Dates to be confirmed
IIRB seminar 2020	Will have to be postponed

