IIRB NEWS 1/2018

These IIRB news give a review of IIRB's recent activities as well as outlook on the 76th IIRB Congress.

SEMINAR 'CONTROLLING WEEDS WITH ALS-INHIBITORS IN ALS-RESISTANT SUGAR BEET'

14/12/2017, Malmö (S)

The 2017 IIRB seminar on the opportunities and challenges of the new Conviso® Smart System in sugar beet attracted 120 participants from 17 countries. The seminar, which was chaired by Barbara Manderyck (IRBAB) and introduced by Jens Nyholm Thomsen (NBR) as chair and past chair of the IIRB Weed Control study group, presented results of international tests on the efficacy and selectivity of the system due to be launched in sugar beet. It also focused on the importance of resistance management as ALS herbicides are used also on other crops and weed resistance to ALS herbicides already occurs.

Dr. Carsten Stibbe (KWS SAAT SE) introduced the Conviso® smart system. It is based on the combined use of an ALS-inhibiting herbicide with modern herbicide-resistant sugar beet hybrids. By screening 1500.000.000 individuals, a natural variation of the endogenous gene encoding the enzyme acetolactate synthase (ALS) was found. This variation resulted in the tolerance to ALS inhibiting herbicides contained in the Conviso® One product. With classic breeding methods Conviso® Smart varieties have been further developed. They promise a higher flexibility in the timing of herbicide applications, improved weed control, less weed competition and a reduced phytotoxicity.

Dr. Martin Wegener (Bayer AG) further reported on the registration of the herbicide Conviso® One which was registered in the Northern and Southern zone already, and is expected in the central zone from 2019 onwards. Recommended applications, alone or in mixtures, are 1.0 l/ha as a single spray or two treatments of 0.5 l/ha at the 1-3 (-6) leaf stage of weeds (CHEAL). The high level weed control, also against weed beet, with strong selectivity could result in a reduced number of herbicide applications and reduction of phytotoxic effects, allowing to fully exploit the yield potential of sugar beet. A proactive weed resistance management is recommended.

Four talks presented results of different European research institutes on the efficacy and selectivity of the system. According to Dr. Philipp Götze (IfZ) the long lasting soil activity of Conviso® One can enhance flexibility. The development stage of *Chenopodium album* (CHEAL) should determine the timing of the application. Environmental conditions mainly influenced the efficacy, indicating the necessity of site specific case-by-case strategies. While the single Conviso® One applications could be highly effective, combinations with standard herbicides both as tank mix or in subsequent spraying often increased efficacy. Some difficult weeds (MERAN, AETCY, POLAV) still remain to be investigated further, and an effective resistance management is most important.

Barbara Manderyck (IRBAB-KBIVB) reported on Belgian and COBRI trial results. The selectivity of the Conviso® Smart System was high and better than with standard treatments, but the difference depends on the type of standard and test conditions. CHEAL proved to be the key weed to determine application timing: at maximum BBCH12 for split and at BBCH 14 for single applications. Split applications with oil were highly effective towards CHEAL, and two applications provided good security in the most conditions and environments. For total weed and resistance management in difficult weeds (e.g. VERAG) a herbicide mixture is required, while the system provided good efficacy on most other weeds.

An interesting and engaged panel discussion at the seminar

French trials presented by Cédric Royer (ITB) confirmed a mixed strategy of Conviso® one with different herbicide partners. The ALS system alone did not always obtain very good efficacy with a high risk of resistance selection. A combination with traditional herbicides with different modes of action increased efficacy, simplified applications and can reduce the treatment frequency index and the number of treatments and therefore provide a sustainable weeding strategy.

Dr. Julian Ayala of the Spanish institute AIMCRA analysed the Conviso efficacy in trials with *Beta maritima* as study case. While a yield gap of Conviso varieties compared to standard varieties currently still remains, the higher selectivity of split Conviso one applications partly made up for this. In the case of *Beta maritima* resistant to classic herbicides, a split application of Conviso one increased sugar yields by 16%. A proactive, practical and effective management tactic to prevent resistance selection is recommended.

Dr. Nicol Stockfisch (IfZ) presented aspects of a comprehensive analysis of herbicide strategies with Conviso® One. Conviso® One provides an innovative opportunity for some problems in sugar beet cultivation: a more flexible application timing, higher efficacy against difficult to control weeds and a possible reduced intensity of weed control measures. Environmental risk indicator values will be calculated with the SYNOPS model to be compared with risk values for the current herbicide strategies. IfZ will continue to estimate effects on farm level (costs, labour) in more detail.

In his talk on resistance avoidance and management Dr. Christophe Délye (INRA France) classified ALS-tolerant crops as effective but fragile tools. These should not be used alone to control heavy weed infestations, but combined with non-chemical practices (IWM) and with herbicides with other modes of action. The inclusion of ALS-tolerant crops in the rotation should be carefully considered to avoid 'all-ALS' rotations.

Dr. Alberto Collavo (Bayer AG) explained the Conviso® Smart stewardship programme of Bayer AG which evaluates how the system fits in sugar beet production within the existing cropping systems. To prevent any ALS resistance selection, the efficacy of the herbicides, regardless the dose, should be kept at the registered full dose to avoid any survivors. An in depth understanding of the cropping system is fundamental to know about overlaps of weed species in sugar beet and rotational crops, about the presence of sugar beet weeds with a pre-disposition for ALS resistance and the presence of alternative measures of resistance prevention, e.g. soil cultivation. The risk for an ALS resistance selection by Conviso® Smart is seen to be rather low due to a limited overlap of (grassy) weed species in sugar beet and its rotational crops.

According to Professor Per Kudsk, Aarhus University, ALS-tolerant sugar beets and the corresponding herbicide are a significant addition to the arsenal available to farmers to manage weeds. Used wisely they fit nicely into an IWM strategy. On the contrary the risk of weed resistance in sugar beets has never been higher and risk mitigation measures should be considered by all farmers to prolong the life of the technology.

76TH IIRB CONGRESS 2018
5-7/6/2018 , Deauville (F)
The congress will be organised 5-7/6/2018 in cooperation with the French ITB at the Centre International Deauville. IIRB congresses are the international platform for knowledge transfer and networking in the sugar beet sector. An international audience of 400 people is expected to attend the interesting 3-day programme. It comprises five technical and two poster sessions with more than 120 posters presenting current research in sugar beet. The beautiful setting in Deauville contributes to the congress' attractiveness.

Online registration is possible until 15th March 2018. For further information see www.iirb.org.

Pre and post congress tours in the Paris and Normandy area and an accompanying persons programme allow to explore famous French sites of touristic interest.

IIRB MEETINGS AGENDA

SG Communication techniques	6/2/2018, Tienen (B)
AC/SAC meeting	22/2/2018, Düsseldorf (D)
Joint SG Weed Control & Agricultural Engineering	15/5/2018, Zollikofen (CH)
76th IIRB Congress	5-7/6/2018, Deauville (F)