



by Marianne Loison

Courtesy of M. Loison

# The Biopesticides World: Getting Bigger, still fragmented

The 6th Biocontrol industry meeting ABIM took place Oct 24-26th in the beautiful venue of the KKL in Lucerne, Switzerland. During three days, new trends in the global market were discussed in 35 presentations. 520 delegates coming from 260 companies and organizations from all over the globe exchanged experience and information on biocontrol. New Ag International was there as the official partner magazine of the event. The 7th Annual Biocontrol Industry Meeting (ABIM-Lucerne) will be held again at the KKL Lucerne on October 22nd-24th 2012.

With 200 members throughout the world, IBMA has become in ten years a strong worldwide organization for biological crop protection, sustainable soil management, animal health and public hygiene. The sixth meeting and conference held in Lucerne (24-26th October 2011), discussed about sustainable production and regulatory environment. Companies have also released new promising technologies to control fungi, bacteria and pests.

## SUSTAINABLE USE, STEP-BY-STEP

In several European countries, a shift is visible inside the political and regulatory environment. For instance, Denmark has launched since 1996 a 'Green Growth Action Plan' which aims to double the organic food production from 2010 to 2020 and to minimize residues in conventional food. The plan includes the use of more alternative plant products, training of distributors and new

pesticides tax. "As Denmark lacks technical solutions for organic producers, a grant program has been decided to find new applications for biocontrol," explains Henri Brodsgaard from the Danish EPA. "The program lasts 6 years with financial support to applicants. Among 8 applications, 2 were accepted in the first call, with a grant program of 1.6 million euros. The new call will take place in February 2012". France has also decided to reduce "if possible" by 50% the use of pesticides from 2008 to 2018, by transfer to good practices. "Already 20% or 30% seem to be achievable" says Marie Luccioni from the French Ministry of Agriculture. "We have a demonstration farm network on 1,000 farms and 21 regional networks in France. A personal Certiphyto is delivered to farmers, in order to certify the farmer's knowledge in the use of plant protection products. And another program is in action for tropical countries in the French

DOM territories". These 2 European governments have taken some advance in regulation. The situation is sometimes different for other nations. Bernard Blum, Vice-President of IBMA, thinks that "the public should be more involved in national action plans". To support safer plant protection, organizations representing civil society such as Pan Europe (see footnote), are also very effective. "We represent civil society in many policy forums, with a support for biocontrol and other biorational services: a best practices manual", says Stephanie Williamson from Pan Europe. CAP reform in 2014-2020 will be a unique opportunity for IPM measures with a part of 'greening component'. Pan Europe is also exploring the idea of an award given for biorational products or a related project. It could give recognition to pioneer farmers and help to share good experiences. Out of Europe, the shift to



Courtesy of M. Loison

biopesticides is also supported by consumers' organizations. In North America, BPIA is gathering information on biopesticides and guiding principles to follow. "We have 3 challenges in sustainability: productivity, food quality and reduced impact." says Bill Stoneman. In ACP countries, a cooperation is established by COLEACP to promote IPM and good practices and to support harmonization of PPP regulations. "We support research on hot spots: control of fruit fly and anthracnose on mango, diseases on pineapple, alternatives to sulphur fumigation", says Sabine Helbig of COLEACP.

### MANY NEW MICROBIAL BIOCONTROL AGENTS

There is plenty of promising work going on in the use of natural microbials. Many natural microorganisms are found in the soils. new microbial agents - bacteria or fungus-based- with fungicide effect on cultivated plants were described in Lucerne this year. The Company Biopreparaty launches Polyversum, a fungicide formulated with the soil fungus, *Pythium oligandrum*. It controls

several pathogens - botrytis, fusarium, sclerotinia and others- by induced resistance. Polyversum's active molecule influences plant gene defenses. Its other effects are to stimulate foliar and root growth. "Three weeks after application, the effect on roots is visible." says Jiri Uher from Biopreparaty. Polyversum is to be sold in the USA, in Germany and Austria. The Spanish company Futureco has formulated Actinovate, already registered in the USA. This large-spectrum biofungicide can control rhizoctonia on potatoes, fusarium on vegetable and flower crops, and other foliar diseases such as alternaria, botrytis, oidium.... "Actinovate can be mixed with a large number of conventional fungicides. It will be a good tool for IPM." says Carolina Fernandez from Futureco. In Europe, Actinovate is waiting for registration. Futureco also develops the biofungicide Tricover, already on annex 1 in the EU. It shows efficacy on many soil-borne pathogens. The Spanish company is also testing a fungicide on grape powdery mildew, formulated with *Ampelomyces*, a beneficial fungus acting as powdery mildew parasite.

In California, Marrone Bioinnovations is very active in screening new compounds, coming from natural microbials. Their new biofungicide Regalia maxx is dedicated to major crops (corn, soya, potato). Regalia maxx can be used to strengthen a conventional fungicide and lower its dose. Says Julie Versman from Marrone: "This foliar compound has an effect on plant growth and crop yield. Also, Regalia maxx stimulates root growth and roots weight. We have observed that it helps to produce more roots on tomato and strawberries." Marrone will also soon develop two new wide-spectrum bio-insecticides. They are both based on microbials. One is active on coleopter beetles and the second one on a wide range of insects pests. "Novozymes BioAg also works on microbials and develops a new biofungicide based on a strain of *Bacillus subtilis*. After 4 years of trials, it has been successfully tested on soil-borne diseases (phytophthora, fusarium), foliar disease (mildew) and bacteria such as *Ralstonia*." says Hugh Frost from Novozymes BioAg. It has been successfully tested on many vegetable crops. This broad spectrum compound is going to be registered under the name of

Taegro in North America first and later in Europe. Two other projects described at the ABIM conference focus on the use of carbovirusine on oriental fruit moth. This moth, very close to apple codling moth, is present in many countries. Trials conducted by Arysta Life Science in Italy and France, but also by Andermatt Biocontrol show good efficacy, especially with a new isolate produced by Andermatt.

### MACROBIALS AND PEST STERILIZATION

"In the last years, 165 species have been widely used for pest biocontrol, and 250 are to be used in 2011. We know we cannot solve all problems with biological control. But when natural biological control works well, it works for ever." notes Joop Van Lanteren from Wageningen University in the Netherlands. The problem of *Tuta absoluta* on tomato, is bound to be solved by parasitoids. A new parasitoid has been found in Brazil at the University of Lavras. "We have compared different parasitoids - *Orius*, *Geocoris*- but a better one, able to move on the tomato stems and plants, has been identified". reveals Vanda Bueno from Lavras University. The future will tell if it is the best candidate. "There is a shift in the use of macrobials, as the regulation pushes to use native natural enemies rather than exotic ones." adds Joop Van Lanteren. Other ways of lowering pests populations can bring alternative solutions. Sterilizing insect populations is an interesting technology for big masses of insects, difficult to control with macrobials, by spraying or by pheromones diffusion. This is the case of the Mediterranean fruit fly, which is aggressive on olive-



Courtesy of M. Loison

tree and many other orchards. The company Oxitec has tried insect male sterilization by irradiation. A new alternative is now developed by introducing a sterilizing gene (RIDL) in male populations. These are placed in the fields and when treated males mate with fertile wild females, their eggs do not develop. 10 weeks after males are spread, the total pest population is lowered. This technology is patented. It will be used against fruit fly, but it could also be adapted to pest such as pink ballworm or *Tuta absoluta*. On a broader scale, it could also help to control mosquitos and flies transporting

dangerous viruses for human beings. How is the technology RIDL using a mix of insect and non-insect genes considered by regulating structures? Martha Koukidou from Oxitec says it is declared as “environmentally preferable”.

### **PHEROMONES AND SEMIOCHEMICALS**

The Japanese company Shinetsu Pheromones has introduced Isolure, a new generation of monitoring lures and traps. They are already available with their partner CBC Europe, for monitoring of tomato pest *Tuta absoluta* and for *Lobesia botrana*.

Future developments are expected on Apple codling moth (*Cydia pomonella*) and other damaging insects.

UK based company Exosect works on technology such as Entostat. This is used as a lure for male moths, which are contaminated with a pheromone blend. Receptors become overloaded and contaminated males can't detect pheromone plumes of calling females. The confusion effect spreads throughout the population leading to mating disruption. The lure is developed against rice yellow stem borer, with 80 tablets/ha dispensing pheromones in a single application. Field studies in India gave good results in 2006 to 2010, with better efficiency than the control in 80% of the trials. “Exosect YSBtab offer equivalent control compared to up to three chemical applications. A single application of lure at the start of the season can give 120 days of control with low labour inputs” said Mark Blatt from Exosect.

### **VEGETAL EXTRACTS AND ANTI-NEMATODE CROPS**

The Requiem applications from Agraquest are constantly growing. Formulated with terpene constituents based on the extract of *Chenopodium ambrosioides*, it is also marketed under the name of Metronom. It has been sold in the USA during the last two years mainly for controlling thrips and whiteflies in peppers and tomatoes. Metronom is also available in the Israeli market since July 2011 after four years of positive development work. This natural bioinsecticide controls all stages of key sucking insects such as mites, thrips, whiteflies and others. It is safe to beneficials and can be used in IPM programs, helping for resistance management. Metronom is exempt from tolerance with no residues in

### **News in Brief....**

#### **Killing Pests by Disrupting Hibernation**

IT WAS NOT presented at ABIM Lucerne but this is another example of how inventive this industry can be! New synthetic hormones can indirectly kill the corn earworm by disrupting its winter sleep habits. Researchers have developed synthetic hormones that disrupt the winter sleep of the corn earworm, an insect that ravages crops in the United States, according to a study in the Proceedings of the National Academy of Sciences. The new technique could be used to control the agricultural pest without relying on traditional pesticides. When it gets cold, the adult corn earworm typically burrows underground for an extended winter slumber called diapause, which enables them to survive the frosty weather. The new compounds mimic the hormones that control diapause, causing the insects to stay forever trapped in sleep, awaken prematurely in the dead of winter, or never enter it in the first place. As a result, they may be more vulnerable to frigid weather conditions and die off. The new method could one day be used to control a wide range of pests. One possibility, the researchers note, is to create transgenic plants that express the synthetic hormones.

harvested crops and no MRL concerns. It is under approval for use in exports of crop produce to the EU and under registration process in Europe. Another plant extract, Soleo, used

### **GOOD NEWS....**

#### **IBMA AND BPIA JOINING FORCES**

THE 6th ANNUAL ABIM event was chosen by IBMA to expand the outreach with BPIA (the American Biopesticide Industry Alliance) which had started with a meeting in December 2010. A joint brainstorming meeting was held where both associations set actions for 2 joint initiatives. As both associations have mandated the initiative of setting up food chain partners groups and the food chain involves many global players it made sense for them to approach the task together. Details of who from both organisations will set up the team to establish this group will be made soon. The group is expected to use events of importance to the food chain for activities such as Fruit Logistica held annually in early February.

When establishing any group with the food chain the other joint initiative will also play a significant role. That is the creation of a toolbox displaying all biocontrol tools available for use in plant protection. The use of the term toolbox is important as the Biocontrol toolbox that

IBMA / BPIA are assembling will fit into toolboxes being prepared by OECD and in use with GLOBAL GAP. In its creation discussions with these bodies and IOBC will be important to ensure as much compatibility and use of the toolbox can be made. However, it is stressed that the main use is for the entire food chain from farmer to food retailer are able to look easily within to find appropriate tools available and ones that are available to growers in another country for use against the particular pest or disease on a specific crop. IBMA see this as an exciting start for closer co-operation between it and its sister association in North America and feel the industry should see it as a glimpse of future joint activities that benefit both organisations and require one rather than 2 investments of resources. Global activity of the biocontrol industry is best served by strong regional associations working closely together with common aims and objectives.

as a plant strengthener, has been described by the Spanish company Daymsa. Its composition is a mix of natural Rutaceae plant extracts. It protects the crop against phytopathogenic fungi, especially botrytis and powdery mildew. Its use can be extended on post-harvest for fruits and vegetables. According to David Bernad : “Soleo used as a complement to fungicides, helps to lower the number or the dose of applications. It can be an alternative to chemical fungicides during the harvesting period and in organic agriculture.”

A last example of biocontrol was given with a plant species used to stop the cycle of potato cyst nematode. The Branston Group gathers many potato growers in the UK, and manages crops with environment friendly techniques. Potato cyst nematode is still a problem on the crop. But as nematicides show negative environmental impact and low efficacy, another solution has been found with Foil-sis (*Solanum sysimbrifolium*) used as green manure. The specially grown crop acts as a completely risk free trap crop for PCN by triggering hatch in the soil but preventing completion of the pests' life cycle.

Biocontrol is an innovative segment of the Agriculture inputs industry. Probably one of the most innovative ones in this industry! However, will the size of this business grow very quickly to the number of billions of dollars that some experts are predicting? When the most optimistic analysts view in the increasing involvement of the major agrochemical companies a reason to believe that it will definitely grow very big quickly, others question the real motivation of the “big guys” and have some doubts about the future size of the business for a number of reasons: difficult

legislation, demanding technique in terms of training, weak structure of most distribution networks, and, last but not least, a still prevailing huge fragmentation of this industry.

*Foot Note: Pesticide Action Network (PAN) was founded in 1982 and is a network of over 600 non-governmental organizations, institutions and individuals in over 60 countries worldwide working to minimize the negative effects and replace the use of harmful pesticides with ecologically sound alternatives. PAN Europe was founded in 1987 and brings together consumer, public health, and environmental organizations, trade unions, women's groups and farmer associations from across 19 European countries. ■*