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Syngenta and Bayer Sue EC

In late August, Syngenta and Bayer said they were taking legal action against the European Commission over its suspension of the use of insecticides it blames for killing bees. The two companies, which announced their challenges separately, said they were bringing their cases before the European Court of Justice in Luxembourg. "We would prefer not to take legal action but have no other choice given our firm belief that the Commission wrongly linked thiamethoxam to the decline in bee health," Syngenta chief operating officer John Atkin said in a statement.

In Germany, a spokesman for Bayer said its agrochemical division Bayer CropScience had submitted its legal complaint in the middle of the month and wanted clarity for the sake of future investment. The European Commission announced

in May that it was temporarily banning the use of Syngenta's thiamethoxam, which is also sold under the name Cruiser®. The EC simultaneously banned two pesticides produced by Bayer (imidacloprid & clothianidin), and expanded the ban last month to a fourth pesticide (fipronil) made by another German company, BASF. Syngenta and the other companies have insisted their products cannot be blamed for a very sharp decline in the bee population.

"The Commission took the decision on the basis of a flawed process, an inaccurate and incomplete assessment by the European Food Safety Authority and without the full support of EU Member States," said Syngenta. After the company's announcement, European Commission officials said the body "takes note" of the Syngenta statement and said it had based its measures on scientific information. But the challenge would not affect the ban's implementation, the officials said. Syngenta said the EU suspension was causing deep concern among farmers, who once the two-year-ban takes effect in December will need to replace "an extremely effective, low dose product (with) much less sustainable alternatives." (*Expatica*, 8/27/13).

Fire Ant Fungicide

Studies by U.S. Department of Agriculture (USDA) scientists in Stoneville, MS, have shown that certain alkaloid compounds in the venom of fire ants termed piperideines and piperidines can hinder the growth of the crop pathogen *Pythium ultimum*. Fungicides, delayed planting, and crop rotation are among methods now used to control *P. ultimum*, which causes damping-off diseases that decay the seed or seedling of vegetable and horticultural crops. Despite such measures, damping-off remains a costly problem, and new approaches are needed, according to Jian Chen, an entomologist with USDA's Agricultural Research Service (ARS).

Chen is coinvestigating the potential application of fire ant venom to manage soilborne pathogens like *P. ultimum* in collaboration with ARS microbiologist Xixuan Jin, and Shezeng Li of the Institute of Plant Protection in Baoding, China. The studies, conducted at the ARS Biological Control of Pests Research Unit in Stoneville, used sophisticated extraction techniques to obtain purified amounts of piperideine and piperidine from the venom glands of both red and black imported fire ants, which are considered invasive pests and a dominant species on more than 320 million acres in the South as well as in other states and Puerto Rico.

In petri dish trials, the researchers exposed *P. ultimum*'s threadlike mycelium to various concentrations of the alkaloids and monitored the effect on the pathogen's colony size. Its spore-forming structures, sporangia, were similarly exposed include significant reductions in the growth and germination of the pathogen's mycelium. Both alkaloids performed equally well and retained their activity against *P. ultimum* for up to 12 weeks when stored at room temperature. Additionally, more than 90 percent of sporangia failed to germinate when exposed to the alkaloids. Synthetic versions of the alkaloids, called analogs, have also inhibited several cultured human fungal pathogens. (USDA ARS, 8/2/13).

Chinese Ag-Chem in the U.S.

The shift to Chinese pesticide manufacturing has led to more than half of the agricultural chemicals used in the United States being made in China, according to Telisport Putsavage, a pesticide industry expert and environmental counsel at the Sullivan & Worcester law firm in Washington, D.C. In 2010, China's chemical production output surpassed that of the United States for the first time, and pesticide companies played a key role in driving that growth.

The next step in China's bid to increase market share of the industry will see Chinese companies attempting to sell their own brands of products in the United States. "What's happening, and the evolution we see coming in the future, is that gradually the bigger Chinese producers are going to try to move up the value chain and create their own brand presence here in the U.S.," Putsavage said. "The larger companies, which are well into the hundreds of millions in revenue, are beginning to explore, and in some cases actually making moves into the U.S."

One sign of this expansion came in 2011, when ChemChina - China's largest generic ag-chem company with $31.97 billion in annual sales - acquired the world's largest generic ag-chem producer, Israeli firm Makhteshim Agan Industries, for $2.4 billion. The Makhteshim Agan deal not only expanded ChemChina's production capabilities but also helped position the Fortune 500 company to enter the American pesticide market.

Makhteshim Agan has built themselves as the largest supplier of generic ag-chem because of their aggressive marketing and also because of their inroads into the American market, which is very hard to get into. Chinese companies are currently opening pesticide-producing plants across the United States. There are 450 ag-chem production establishments pursuing registrations to come into the United States, only about 15 of which have actually obtained them, Putsavage said. But many of the rest likely won't be far behind.

One goal for the Chinese companies, Putsavage explained, is to sell directly to farmers rather than "be at the mercy of" the 12 distributors in the U.S. ag-chem market today. Such a shift may eat away at the revenue of the American producers, but it will also result in greater competition, which could bring the benefit of lower prices for farmers. Another positive side effect of Chinese pesticide firms focusing on the American market over the coming years is that the Chinese government is being forced to pay more attention to environmental concerns, Putsavage pointed out. "Any chemical manufacturing plant that's making a product for sale and distribution in the U.S. has to be registered with the U.S. Environmental Protection Agency as a producing establishment," he said. (*International Business Times*, 8/2/13).

Residential Ornamentals May Harm Honeybees

A report released in mid-August reported that more than half of the nursery plants studied contained residues of nicotinoid pesticides. The groups releasing the study also delivered a petition signed by some 175,000 people to major retailers, urging them to stop selling nicotinoid-treated plants.

The class of insecticides are systemic, water-soluble substances that can travel throughout a crop via its roots, remaining within the plant. Today, nicotinoids make up the most common class of pesticide in the world, including treatments for nearly all commercially sown grains in the United States. Recent scientific evidence is suggesting that low levels of exposure to could be making honey bee populations more vulnerable to a host of other problems, including parasites and a changing climate, or even simply making it through the winter months.

The study is touted to be the first to try to gauge the use of these substances in home and industrial ornamental gardens. The report notes that "many of the seedlings and plants sold in nurseries and garden stores across the U.S. have been pre-treated with neonicotinoids at much higher doses than are used on farms." The study sample was very small, just 13 plants known to be highly appealing to pollinators, and the researchers are calling for more extensive research. The plants were purchased at three nationwide retailers in three areas of the United States and then analyzed by an independent laboratory. More than half the plants sampled were found with some level of nicotinoid concentration, ranging from 11 to 1,500 PPB. Some plants were found to be carrying two or even three types of nicotinoids. A spokesperson for Home Depot said that it had not reviewed the new study yet. "But we certainly appreciate the importance of the bee population," he said, "so we'll be reaching out to the study groups to learn more."

In July, U.S. lawmakers introduced national legislation aimed at taking emergency interim measures to safeguard U.S. beehives, after some 50,000 honey bees reportedly died following an ornamental application of nicotinoid pesticide in a business parking lot. If passed, the bill would halt the use of nicotinoids until the EPA undertakes a scheduled reappraisal of the pesticides in 2018. (*North America InterPress Service*, 8/14/13).

Field Testing of GM Insects

Oxitec has applied to Spanish regulatory authorities for permission to carry out a netted field evaluation of its olive fly strain: a novel approach to controlling one of Europe's most damaging agricultural pests. If approved, the study would be the first outdoor trial of a GM insect in the EU. The olive fly (*Bactrocera oleae*) is the single major pest for olives, causing widespread crop damage and significant financial losses to Europe's olive farmers. It is extremely difficult to control using existing methods. John Vontas, Associate Professor of Biotechnology and Applied Biology, University of Crete, Greece, a leading international authority on insecticide resistance, explains the problem: "The control of olive fly has been largely based on the use of chemicals, but the intense use of insecticides has led to the development of insecticide resistance, which makes control problematic. In addition, the new European Union pesticides legislation means that a large number of efficient insecticides have been or are being phased out, or their use is dramatically restricted. Alternative control methods, such as pheromones, traps and biological control have also been employed, but their effectiveness is much less."

Oxitec's olive fly strain carries a genetic modification. In Oxitec's pest control approach, the company's engineered males are released to mate with wild females, resulting in the death of all the female offspring. In earlier in-door caged trials Oxitec's approach was able to completely eliminate wild-type olive flies in less than two months.

Oxitec's approach ensures that only the olive fly is targeted. Leading the trial, Dr. Martha Koukidou of Oxitec explains, "Olive flies only mate with olive flies. Our approach is aimed not only at controlling the olive fly, but also to avoid harming other species. By using our form of genetic sterility our flies are designed to eliminate the pest and not to stay in the environment. Also, unlike any other control approach, ours contains a marker making monitoring of our flies very accurate and simple."

Oxitec's approach has already been successful in trials with mosquitoes. Dengue fever is a growing global threat and is transmitted by the bite of an infected mosquito (*Aedes aegypti)*. A recent trial in Brazil carried out in an urban environment achieved a 96% suppression of this dengue mosquito. Oxitec has now applied to the Catalan regulatory authorities for permission to conduct a field evaluation of its olive fly strain, in accordance with EU regulations. Only when the national biosafety commission has evaluated the application following a period of public comment, and written permission has been received from the Catalan authorities, can any release take place.

Many olive farmers, such as Paul di Calabiana Willan, have also expressed their support for the Oxitec approach, "I am an olive farmer in Como, northern Italy. On the mountain terraces here, agriculture depends on the success of olive plantations, but in recent years the olive fly pest has wiped out several harvests. The main weapon against the olive fly is a chemical which has been banned in some countries. Nothing else is effective. In my view the use of GM insects to eradicate this pest is a necessary step towards achieving zero pesticide use." (*PR Newswire*, 9/4/13).

Pesticide Registrations and Actions

Food Related Actions

- On July 30, the Florida Department of Agriculture and Consumer Services (FDACS) conditionally registered the fungicide fluazinam (Secure®) to control diseases on golf courses only. The EPA registration number for the Syngenta product is 71512-20-100. (FDACS PREC Agenda, 9/5/13).

- On August 4, the FDACS registered the fungicide picoxystrobin (Approach®) to control diseases in food crops. The EPA registration number for the DuPont product is 7969-302. (FDACS PREC Agenda, 9/5/13).

- Based on a request by K-I Chemical U.S.A., tolerances have been granted for residues of the herbicide pyroxasulfone (Zidua®) in wheat, cotton seed and cotton gin by-products. (*Federal Register*, 7/31/13).

- Based on a request by BASF, a tolerance has been granted for residues of the herbicide imazapic (Plateau®/Cadre®) in sugarcane cane. (*Federal Register*, 8/16/13).

- Based on a request by BASF, tolerances have been granted for residues of the herbicide topramezone (Frequency®) in freshwater and saltwater fish, crustaceans, and mollusks. (*Federal Register*, 8/7/13).

Other Actions

- Oregon's Governor John Kitzhaber signed a state bill in August banning the commercial production of canola in the region until at least 2019. The law is supposedly necessary to maintain the region's organic vegetable seed industry. The canola controversy emerged after a decision by the Oregon Department of Agriculture (ODA) last year to temporarily allow the planting of GE canola in areas of the Willamette Valley. At the time, ODA Director Katy Coba stated that, "Since canola has been deregulated by USDA, ODA does not differentiate between conventional and [GE] canola or treat them differently." The new rules spurred a lawsuit, filed by the groups Center for Food Safety and Oregon-based Friends of Family Farmers, in conjunction with Oregon specialty seed producers Universal Seed, Wild West Seeds, and Wild Garden Seeds. Shortly after the announcement, the Oregon Court of Appeals granted the plaintiffs a temporary halt to canola planting. In response, ODA agreed to hold two public comment periods, one in November 2012 and another in January 2013. Public opposition did not compel ODA to withdraw the proposal and in February 2013 the department officially approved a spring 2013 planting of the canola in the Willamette Valley Protected District. Oregon's legislature acted swiftly to advance HB 2427, which now in effect overturns ODA's previous rulings. Apart from the moratorium, the law also requires Oregon State University to conduct a study to determine whether the canola is compatible with other crop production within the protected planting district of the Willamette Valley. A previous Oregon State University report, "Outcrossing Potential for Brassica Species and Implications for Vegetable Crucifer Seed Crops of Growing Oilseed Brassicas in the Willamette Valley," confirms that canola has the ability to hybridize with brassica seed crops such as radish, cabbage, broccoli, cauliflower, brussels sprouts, kohlrabi, collards, and kale. (*Processing Magazine*, 8/16/13).

Pesticide Potpourri

- A team of Australian and New Zealand researchers are harnessing bacteria as a possible new bio-insecticide to control crop pests. The team, which includes Michael Landsberg, Ph.D., from The University of Queensland's Institute for Molecular Bioscience, investigated the workings of *Yersinia entomophaga*, a bacteria that kills a range of insect species that damage crops. In the process, the researchers discovered an entirely new way in which cells produce and store toxins. The team "showed that the bacteria manufactures a giant, hollow protein shell that encapsulates the toxin, much like a protective canister that is only opened when specific environmental conditions are encountered," Landsberg said. "This explains how the bacteria can produce toxins without harming themselves - the toxins are secured in the protein shell and released at an appropriate time, which is what kills the insect. Dr. Landsberg said the bacteria's 'blueprint' for producing this canister uses a repeating protein sequence

that is found in large numbers in other bacteria and animals. "While the sequence encoding the shell is conserved across species, the toxins or other encapsulated molecules can be quite different," he said. "Our studies suggest we may have found a molecular assembly manual that bacterial and animal cells alike use to manufacture a generic canister for the protection of toxic or sensitive molecules." The bacterium was originally discovered in the native New Zealand grass grub by Mark Hurst, Ph.D., from AgResearch, but it was the discovery that it also affected insects such as the diamondback moth, which damages crops worldwide, that piqued the team's interest. (*AGProfessional*, 8/8/13).

- In response to the problem of pollution, the United Nations Development Program worked with the local municipalities in Macedonia to set up solar-powered monitoring systems (SMS) for insects in 2005. However, the timeliest method to get pest updates to farmers was by posting flyers in the town square. The solution came in the form of an SMS system developed by the Faculty of Computer Science at the University of Cyriland Methodius in Skopje that sends updates to farmers. The system also posts the information to the Farmers' Association Facebook page, which provides extra information to the farmers. A recent SMS sent to farmers reads: *Apple trees in the area of the village of Rajca have been infected by the codling moth. The apple trees should be treated in the next 10 days.* Up-to-date data on pests can go a long way in reducing when and how much is sprayed. Pesticide use in the area has decreased by 30 percent because of the availability of up-to-date information. The cheap and simple implementation of the system makes it attractive for replication in other communities, and innovation continues as the development team works on ways to improve the system and add another layer to the communications in the future. (*Transitions Online*, 8/19/13).

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