



Chemically Speaking

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Triazoles & Resistant Fungi

Crop spraying on British farms could be aiding a life-threatening fungus suffered by tens of thousands of people in the UK each year. New research by British and Dutch scientists has found that *Aspergillus* – a common fungus that attacks the lungs and is found in soil and other organic matter – has become resistant to triazole fungicides in parts of rural Yorkshire. It's the first time a link has been made in the UK between drug resistance in *Aspergillus* and fungicide used on crops.

The results raise serious implications for transplant patients, those with blood disease and people who suffer from severe asthma. In the three-year study, researchers from The University of

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Manchester and Radboud University in the Netherlands compared resistance profiles in 230 fungal samples, collected from rural areas in West Yorkshire which were treated with fungicides, to 290 air and soil samples from inner city sites across Greater Manchester. They found no resistance from the sites in Greater Manchester compared to 1.7% resistance detected in West Yorkshire, implicating fungicide use in agriculture. Dr. Michael Bromley, Lecturer at The University of Manchester and study leader commented, "Given the frequent finding of resistance across northern Europe, it is not a surprise to see resistance in the UK. However, the clear association with triazole fungicide usage is very worrisome, as some unlucky people at risk will breathe in untreatable *Aspergillus*, with potentially dire consequences."

Diseases caused by *Aspergillus* affect millions of people worldwide, causing high morbidity and mortality. The only oral antifungal agents (triazoles) for human use are similar in structure to certain agricultural fungicides. The use of certain compounds in agriculture, notably difenoconazole, propiconazole, epoxiconazole, bromuconazole and tebuconazole are particularly likely to lead to resistance. There is a very limited range of antifungal compounds to treat fungal diseases, and some fungi are multi-resistant. The emerging antifungal resistance in human pathogenic fungi is causing a huge threat to patients, especially to those with weakened immune systems and this study emphasizes that there may be even a greater problem in treating such diseases. Previously such resistance has been observed in a few other countries (Netherlands, Denmark, Belgium, Germany, France, India, China, Iran, Tanzania and a few others) raising great concerns among clinicians. No new classes of antifungal agent are currently in clinical development. (*Science20.com*, 7/14/14).

Late Blight Resistant Potato

The National Potato Council's board of directors has officially endorsed the safety and usefulness of genetically modified technology, as well as voluntary labeling of GMO products. But unofficially, industry leaders retain concerns about how companies advancing GMO potatoes, such as J.R. Simplot, will segregate their biotech tubers and how foreign markets will react. Officials with the U.S. Potato Board were also involved in writing the position statement on behalf of the industry. The NPC President, Randy Hardy, an Idaho grower, said having a common, written position on GMOs adopted by both national potato organizations will enable industry leaders to offer a consistent message to the public and media.

The NPC also submitted public comment with a guarded endorsement of J.R. Simplot's proposed Innate line of potatoes, which would reintroduce GMO traits to the potato industry. Simplot's chairman, Scott Simplot, addressed NPC members about Innate during their recent meeting in Sun Valley. In NPC's comments on Innate, Executive Vice President and CEO John Keeling said the industry supports innovation that improves efficiency and benefits both the environment and consumers and believes biotechnology will be a tool to expedite variety development. But Keeling also voiced concern about the potential for GMO technology to disrupt potato exports valued at more than \$1.6 billion. His letter emphasizes the importance of identity preservation of GMO potatoes and controlling volunteer seedlings. It also references past market disruptions caused by NewLeaf, a Monsanto GMO potato that's no longer grown. "Based on the previous experience of the

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U.S. potato industry, we suggest that approval of biotech derived products in all major international markets is needed to prevent significant market disruptions," Keeling wrote.

The second Innate public comment period closed June 30, drawing 367 comments, including strong support from crop researchers and industry and criticism from activists. Simplot expects approval of Innate, which incorporates traits from other potato genes, later this year and commercial planting next season. Innate spuds will bruise 40 percent less, won't turn brown when cut, will endure cold storage without elevated sugars, resist blight and have 70 percent less acrylamide, which may contribute to cancer. (*Capital Press*, 7/18/14).

Glyphosate Detected in Breast Milk

Questions about glyphosate (Roundup®), the world's most popular herbicide, are being posed to the EPA by mothers, scientists, activists and others who say they are worried about Roundup residues found in breast milk. A meeting near Washington D.C., followed a five-day phone call blitz of EPA offices by a group called "Moms Across America" demanding that the EPA pay attention to their demands for a recall of Roundup. "This is a poison and it's in our food. And now they've found it in breast milk," said Zen Honeycutt, founder of Moms Across America. "Numerous studies show serious harm to mammals. We want this toxic treadmill of chemical cocktails in our food to stop."

Glyphosate is a herbicide developed and sold by Monsanto since the 1970s, and used in agriculture and home lawns and gardens. Glyphosate is under a standard registration review by the EPA. The agency has set a deadline of 2015 for determining if glyphosate use should continue as is, be limited or halted. The agency expects to have a preliminary risk assessment completed late this year, said EPA spokeswoman Cathy Milbourn. She had no comment about the meeting. Critics say glyphosate is accumulating in the environment and is effecting human health. In 2011, U.S. government scientists said they detected significant levels of glyphosate in air and water samples. The use of glyphosate in agriculture has jumped dramatically since the mid-1990s after Monsanto started introducing crops genetically engineered to withstand direct sprays of Roundup®, so farmers could more easily kill weeds without harming their crops. Glyphosate is sprayed on most of the corn and soybean crops in the United States, as well as over sugar beets, canola and other crops. Last year, the EPA agreed to raise the permitted tolerance levels for glyphosate residue in food. The agency said at that time that toxicity data and studies it reviewed shows glyphosate is not a cancer risk and is generally safe at the approved levels. The U.S. Department of Agriculture routinely tests food for chemical residues to make sure they are within approved tolerance levels, but does not routinely test for glyphosate, citing budget restrictions and the lower health risks associated with glyphosate. (*Reuters*, 5/27/14).

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Pesticide Registrations and Actions

Food Related Actions

- On June 18, the Florida Department of Agriculture and Consumer Services (FDACS) registered the herbicide mixture of pyroxasulfone + flumioxazin (Fierce®) for residual control and/or suppression of certain weeds in field corn, fallow land, non-crop areas around farms, orchards and vineyards and to maintain bare ground on non-crop areas (food use). The EPA registration number for the Valent USA Inc. product is 59639-193. (FDACS PREC Agenda, 7/3/14).
- On June 16, the EPA notified FDACS that the section 18 specific exemption for the use of Firewall® (streptomycin sulfate) on grapefruit to control citrus canker was approved. The exemption will expire on 6/12/15. (FDACS letter of 7/3/14).
- The special local needs registration for the use of mandipropamid (Revus®) was approved on June 25 for the control of phytophthora root rot in non-bearing citrus grown in greenhouses (SLN 140008). (FDACS letter, 6/30/14).
- The special local needs registration for the use of spirotetramat (Movento®) was approved on June 25 for the control of Asian citrus psyllid on citrus during bloom period (SLN 140004). (FDACS letter, 6/30/14).

Non-food Actions

- On June 18, the FDACS registered the herbicide mixture of pyroxasulfone + flumioxazin (Piper®) for residual control and/or suppression of certain weeds in non-crop areas (non-food use). The EPA registration number for the Valent USA Inc. product is 59639-193. (FDACS PREC Agenda, 7/3/14).

Pesticide Potpourri

- Citing the “breadth, severity, and persistence” of losses of honeybees and other pollinators, President Barack Obama has ordered more than a dozen federal agencies to develop a plan for restoring pollinator populations. The new federal strategy could lead to changes in pesticide regulations. Environmental groups and pesticide manufacturers alike are welcoming the President’s June 20 action. They are pleased that he acknowledges the multiple factors linked to declining pollinator health, including parasitic mites, poor bee management, inadequate nutrition from loss of forage lands, and pesticides. All of these make honeybees more susceptible to disease. But some environmental groups are continuing to zero in on pesticides, particularly a class of insecticides called the neonicotinoids, saying use of these chemicals needs to diminish to protect pollinators. In a memorandum to federal agencies, Obama ordered EPA to assess the impact of all pesticides, including neonicotinoids, on pollinator health. EPA

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had already begun that assessment, but it now has a deadline of 180 days to complete the work and begin any necessary regulatory action. The President also ordered EPA to expedite its review of new pesticide products that target pests, such as mites, that are harmful to pollinators. Obama directed the Department of Agriculture to increase both the acreage and quality of pollinator habitat in its conservation programs. Pollinators—bees, birds, bats, and butterflies—are disappearing from the environment, Obama’s directive says. “The problem is serious and requires immediate attention to ensure the sustainability of our food production systems, avoid additional economic impact on the agricultural sector, and protect the health of the environment,” it says. The pesticide industry CropLife America “is hopeful that this level of federal cooperation will help generate practical, science-based solutions for improving pollinator health,” says Jay Vroom, president and CEO of the organization. Vroom adds, “Ongoing research and field studies have consistently found no adverse effects on bee colonies when pesticides are applied according to label directions.” Some environmental and consumer advocacy groups, however, are pressuring EPA to ban neonicotinoid pesticides because of their potential toxicity to bees. The White House announcement “is on the right track, but assessment and habitat building alone won’t save our pollinators,” says activist Larissa Walker, “We need decisive action on pesticides.” (*C&EN*, 6/23/14).

- California regulators violated the law by approving expanded use of pesticides that have been shown to hurt honeybees needed

for pollinating key American crops, according to a lawsuit filed against the state by activist groups in early July. The lawsuit seeks an injunction prohibiting the state Department of Pesticide Regulation from approving any new neonicotinoid products or new uses of those products unless it completes a required re-evaluation of the pesticides. The environmental and food safety non-profit groups also seek to overturn the department's recent approval of expanded use of Venom® Insecticide, manufactured by Valent USA, a unit of Sumitomo Chemical Co Ltd, and Dinotefuran 20SG, made by Mitsui Chemicals Agro. The Center for Food Safety, Beyond Pesticides and the Pesticide Action Network North America, filed the lawsuit in Alameda County Superior Court. The Department of Pesticide Regulation, Valent USA and Mitsui Chemicals Agro did not respond to requests for comment. The new insecticides are part of a controversial class of pesticides known as neonicotinoids, or "neonics," that have become a subject of scrutiny in Europe and the United States as concern has mounted that they harm honeybees and other pollinators, which are crucial to food production. Neonics are sold by agrichemical companies to boost yields of staple crops such as corn, but they are also widely used on annual and perennial plants in lawns and gardens. Over the past few years, bees have been dying at a rate the U.S. government says is economically unsustainable. (*Reuters*, 7/8/14).

- A Hawaiian judge granted a preliminary injunction in early July regarding genetically engineered papaya that resists the devastation ring spot virus. The order in 3rd

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Circuit Court allows the county to maintain a registry of genetically modified organisms, but prevents information that could identify papaya growers from being released publicly. Two growers of GMO papaya, Ross Sibucan and an unnamed plaintiff, challenged the requirement that they register with the county, arguing it would expose them to vandalism or other forms of economic harm. One of the concerns was that the county lacked clear rules regarding what information it would release to the public as part of the program. The injunction notes the need for a comprehensive policy addressing this issue. In regard to disclosure, it says releasing the specific locations of papaya farms would not “protect farmers of nongenetically engineered crops” because of the “limited risk” of cross-pollination and because GMO papaya is not prohibited. The registry is part of a law the county adopted in December banning the open-air use and testing of GMO crops. Papaya farmers, who mostly grow varieties modified to be resistant to the ringspot virus, and others already growing modified crops are exempted from the open-air ban. Kohala Councilwoman Margaret Wille, who introduced the bill the county adopted, said she is satisfied with the ruling, noting that the registry can continue. “It addresses the concerns without undermining the right-to-know laws,” she said. Wille noted the general location of farms could still be made public. A separate lawsuit filed in U.S. District Court in Honolulu is challenging the county’s restrictions on GMO crops. (*West Hawaii Today*, 7/9/14).

- Hawaiian papaya and banana growers have joined cattlemen and floral producers to

fight a ban on open-air growing and testing of genetically modified crops imposed by the Hawaii County Council. The ban exempts existing papaya crops and growers.

However, no new acres can be planted, according to the case filed June 9 in federal court. Hawaii County includes the entire Island of Hawaii. A scheduling hearing is set Sept. 8. Growers say the ban known as Bill 113 conflicts with state and federal laws and is unconstitutional, according to the case filed by the Hawaii Papaya Industry Association (HPIA) and the Big Island Banana Growers Association. Other plaintiffs joining in the case include the Hawaii Cattlemen’s Council, the Pacific Floral Exchange and the Biotechnology Industry Organization. The Hawaii County Council approved Bill 113 in December with a 6-3 vote. It requires existing GMO growers to annually register and pay a \$100 fee. In another court action, a judge recently ruled the county cannot make public growers’ personal information and specific field locations collected in the registry (see above). Growers challenged publication of the registry saying it would encourage vandalism, which has previously resulted in crop destruction. Hawaii’s papaya industry was nearly destroyed by ringspot virus in the early 1990s, and development of the Rainbow variety was the industry’s answer. The Rainbow variety passed federal review and was first planted in 1998. According to court documents, at least 85% of the papaya crop grown on Hawaii Island is Rainbow. “Bill 113 has stigmatized HPIA members by conveying a false message that (GMO) crops and plants harm human health and the environment and has imposed other costs on HPIA,” according to the lawsuit. Banana

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growers, including Richard Ha who is a plaintiff in the federal case, contend they need the option to test and possibly plant GMO bananas to mitigate threats from bunchy top virus and other diseases. Cattlemen on the island want to grow additional animal feed, including genetically modified corn, to combat increasing costs of importing feed or shipping their animals to the mainland for finishing, according to the complaint. The county flatly denied all allegations in its answer to the federal case, stating it intends to rely on the defense of “public necessity.” County Councilwoman Margaret Wille sponsored Bill 113 last year. Among those speaking in favor of the GMO ban at public hearings was actress Roseanne Barr who lives on the island and identified herself as an organic farmer. (*The Packer*, 7/17/14).



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