

Greenpeace campaign prompts Philippine ban on *Bt* eggplant trials

A court in the Philippines has ordered scientists to halt field trials of *Bacillus thuringiensis* (*Bt*) eggplant, over concerns that the genetically modified (GM) crop poses a risk to human health and the environment. On May 17, 2013, the Philippine Court of Appeals issued a cease-and-desist order to scientists running the field trials, a ruling that, if upheld, could set a precedent that may affect other biotech crops in development locally, such as the Golden Rice and GM papaya and abaca under development in the country.

Greenpeace has been calling for a ban on *Bt* eggplant since 2010, when a political wrangle erupted in India over a local variety of *Bt* brinjal, as it is known there, developed by Mumbai, India-based Mahyco and St. Louis-based Monsanto. The unrest led to a 10-year moratorium on *Bt* eggplant in India (*Nat. Biotechnol.* **28**, 296, 2010). The moratorium is still in place, and some observers question whether India and now the Philippines are the first in a growing number of countries in emerging markets prepared to reject GM technologies.

In the Philippines, the case was brought by Greenpeace Southeast Asia, Filipino farming development network MASIPAG and 14 individuals. In April 2012, they petitioned the Philippine Supreme Court to stay nine field trials conducted by the University of the Philippines Los Baños.

The GM eggplant contains the crystal protein gene *Cry1Ac* from the soil-dwelling *Bt* bacteria. The Cry toxin is a naturally occurring pesticide, and GM *Bt* eggplant is toxic to the fruit and shoot borer. A 2007 study by PhilRice, the Philippine's national Rice Research Institute, in Nueva Ecija (*Philippine J. Crop Sci.* **32**, 3–14, 2007) estimated that *Bt* eggplant technology could reduce the need for spraying with pesticides and cut production costs by 16%. Because it is the first *Bt* food crop, it has attracted much international attention. In the Philippines the combined campaign of nongovernmental organizations and citizens persuaded the three-judge panel to ban field trials, which were already complete by the time of the ruling, arguing in part that existing biosafety protocols did not include sufficient citizen consultation. "We don't want to see a safety testing wherein the parameters are selected by proponents only," says MASIPAG's national coordinator Chito Medina. MASIPAG has asked for feeding tests and pollen control before the resumption of field trials.

The court issued a Writ of Kalikasan, a legal tool intended to protect Filipino citizens' right to a healthy natural environment, and passed the case to the Court of Appeals. The presiding justice, Isaias P. Dicedican, wrote in the ruling that even "the best science and the best technology do not translate

IN brief

Forma skips tech transfer brokers

A deal struck between Forma Therapeutics of Watertown, Massachusetts, and Cancer Research Technology (CRT) of London in July aims to short circuit the usual process of technology transfer by feeding lead compounds directly from academia into fully funded virtual companies. The agreement, focused on protein homeostasis, sees CRT—the commercialization arm of Cancer Research UK—providing access to five principal investigators working on proteases that regulate ubiquitin-dependent pathways in cancer. Targets discovered by the researchers will be screened by Forma to find inhibitors of these deubiquitinating enzymes. The resulting compounds will be spun into asset discovery and development companies (ADDCos), which Forma will fund. The structure allows academic collaborators to access capital and "attain financial returns mirroring their contribution," says Rob Sarisky, Forma's chief business officer. For Keith Blundy, CRT's CEO, the agreement overcomes one of the main barriers in translating research funded by Cancer Research UK, which is that of converting novel biology to chemistry with potential for commercialization. "Forma has high-throughput screening and big libraries and the capacity to screen lots of targets in a way we can't do," Blundy says. "When we get chemistry we will take it forward on the basis of a joint decision, in which we will have an equal say," says Blundy, noting Forma previously signed a deal with Celgene of Summit, New Jersey, around deubiquitination. Compounds in ADCCos may feed into that collaboration, or be spun out into independent companies. *Nuala Moran*

IN their words



"Great drugs build great franchises, but great franchises don't necessarily build great drugs." Roger Perlmutter, chief of R&D for Merck, commenting on the tendency of companies to try to repeat success

rather than look for new drugs. (*Forbes*, 11 August 2013)

"Any businessperson would look at this and say, 'You can't make a business off this.'" Susan Desmond-Hellman, chancellor at UCSF and former head of development at Genentech. *Forbes* reports that companies spend \$5 billion to develop a new drug. (*Forbes*, 11 August 2013)



Greenpeace protests over GM eggplant in the Philippines.

to absolute safety” and that field trials should not proceed until *Bt* talong, the local term for eggplant, could be “categorically declared as safe for humans.” He did not specify how scientists or the court should obtain such evidence in the absence of field trials.

The anti-*Bt* eggplant campaign “was a success because there was more organization” among GM crop opponents than among proponents, says New York University plant biologist Michael Purugganan, who was born and raised in the Philippines. The same approach ten years ago failed to get *Bt* maize banned, notes *Bt* eggplant researcher Desiree Hautea of the University of the Philippines in Los Baños. *Bt* maize, which Filipino farmers have been growing as animal feed for over a decade, has had “real benefits” says Hautea, and “no verifiable harm to human health and environment,” she says.

Former president of the Philippines National Academy of Science and Technology

in Manila Emil Q. Javier wrote a response calling the ruling a “perverse application of the Writ of Kalikasan” and noting that if farmers do not get access to the pesticide-producing gene, they will continue spraying eggplant crops with pesticides instead, which costs more and can harm the environment.

Several universities, the Philippines Department of Agriculture and the International Service for the Acquisition of Agri-biotech Applications (ISAAA) and other government agencies have appealed the court’s most recent decision. “I’m concerned that all of this will have an impact on the release of Golden Rice,” a GM variety fortified with vitamin A, Purugganan says. For now, work on Golden Rice is proceeding at the International Rice Research Institute in Los Baños, says spokesperson Aileen Garcia. The May ruling applies only to *Bt* talong, though some farmers have already shown resistance to Golden Rice by tearing up field

trials (“Bicolano farmers uproot golden rice,” *Remate*, August 8, 2013).

Biotech-overseeing agencies, including the Philippine Food and Drug Administration (FDA) and its biosafety agency, issued statements in support of biotech crops. The FDA statement notes that “it is not possible to make general statements on the safety of all GM foods” but that those approved for the commercial market “are as safe and nutritious as the food derived from conventional crops.”

The statements may be too little, too late, Purugganan says. Yet Filipino proponents of GM crops may be learning the power of communicating from Greenpeace and other opponents. Filipino newspapers began to fill with anecdotes of farmers calling for *Bt* eggplant commercialization and stories of biology students decrying the field trial ban. Most scientists, Purugganan says, “are loath to step into these debates [but] I think that’s changing.”

Lucas Laursen Madrid

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