

## Standing Up for GMOs

ON 8 AUGUST 2013, VANDALS DESTROYED A PHILIPPINE “GOLDEN RICE” FIELD TRIAL. OFFICIALS AND staff of the Philippine Department of Agriculture that conduct rice tests for the International Rice Research Institute (IRRI) and the Philippine Rice Research Institute (PhilRice) had gathered for a peaceful dialogue. They were taken by surprise when protesters invaded the compound, overwhelmed police and village security, and trampled the rice. Billed as an uprising of farmers, the destruction was actually carried out by protesters trucked in overnight in a dozen jeepneys.

The global scientific community has condemned the wanton destruction of these field trials, gathering thousands of supporting signatures in a matter of days.\* If ever there was a clear-cut cause for outrage, it is the concerted campaign by Greenpeace and other non-governmental organizations, as well as by individuals, against Golden Rice. Golden Rice

is a strain that is genetically modified by molecular techniques (and therefore labeled a genetically modified organism or GMO) to produce  $\beta$ -carotene, a precursor of vitamin A. Vitamin A is an essential component of the light-absorbing molecule rhodopsin in the eye. Severe vitamin A deficiency results in blindness, and half of the roughly half-million children who are blinded by it die within a year. Vitamin A deficiency also compromises immune system function, exacerbating many kinds of illnesses. It is a disease of poverty and poor diet, responsible for 1.9 to 2.8 million preventable deaths annually, mostly of children under 5 years old and women.†

Rice is the major dietary staple for almost half of humanity, but white rice grains lack vitamin A. Research scientists Ingo Potrykus and Peter Beyer and their teams developed a rice variety whose grains accumulate  $\beta$ -carotene. It took them, in collaboration with IRRI, 25 years to develop and test varieties that express sufficient quantities of

the precursor that a few ounces of cooked rice can provide enough  $\beta$ -carotene to eliminate the morbidity and mortality of vitamin A deficiency.‡ It took time, as well, to obtain the right to distribute Golden Rice seeds, which contain patented molecular constructs, free of charge to resource-poor farmers.

The rice has been ready for farmers to use since the turn of the 21st century, yet it is still not available to them. Escalating requirements for testing have stalled its release for more than a decade. IRRI and PhilRice continue to patiently conduct the required field tests with Golden Rice, despite the fact that these tests are driven by fears of “potential” hazards, with no evidence of actual hazards. Introduced into commercial production over 17 years ago, GM crops have had an exemplary safety record. And precisely because they benefit farmers, the environment, and consumers, GM crops have been adopted faster than any other agricultural advance in the history of humanity.

New technologies often evoke rumors of hazard. These generally fade with time when, as in this case, no real hazards emerge. But the anti-GMO fever still burns brightly, fanned by electronic gossip and well-organized fear-mongering that profits some individuals and organizations. We, and the thousands of other scientists who have signed the statement of protest, stand together in staunch opposition to the violent destruction of required tests on valuable advances such as Golden Rice that have the potential to save millions of impoverished fellow humans from needless suffering and death.

– Bruce Alberts, Roger Beachy, David Baulcombe, Gunter Blobel, Swapan Datta, Nina Fedoroff, Donald Kennedy, Gurdev S. Khush, Jim Peacock, Martin Rees, Phillip Sharp

\*B. Chassy *et al.*, “Global scientific community condemns the recent destruction of field trials of Golden Rice in the Philippines”; <http://chn.ge/143PyHo> (2013). †E. Mayo-Wilson *et al.*, *Br. Med. J.* **343**, d5094 (2011). ‡G. Tang *et al.*, *Am. J. Clin. Nutr.* **96**, 658 (2012).

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# Science

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