



“AGENT ORANGE” CROPS: THE NEXT STAGE IN THE CHEMICAL ARMS RACE

AGRICULTURAL BIOTECHNOLOGY companies such as Monsanto and Dow Chemical have recently created new genetically engineered (GE) crops to be resistant to highly toxic herbicides, including 2,4-D, one of the main ingredients in Agent Orange, the deadly chemical defoliant used by the U.S. in the Vietnam War. The U.S. Department of Agriculture (USDA) is currently considering approval of two of these novel GE crops. If approved, millions more pounds of this hazardous chemical will be sprayed, polluting our food, water, and air. This is just the latest effort in the corporate chemical arms race, and it will cause serious harm to human health and the environment.

WHAT ARE GENETICALLY ENGINEERED CROPS?

Genetic engineering, also called genetic modification, is the manipulation of an organism's DNA using modern biotechnology, developed to overcome the natural limitations—such as the species barrier—of traditional breeding. With this new technology, biotechnologists have engineered organisms with genes not found in nature, such as corn with bacterial genes, “super” salmon with eel genes, rice with human genes, and thousands of other plants, animals, and insects. At an alarming rate, these laboratory experiments are patented and released into the environment and our food supply.

Eighty-four percent of the GE crops planted today are designed to withstand massive applications of herbicides without dying. As more of these “herbicide resistant” (HR) crops have been planted, the massive increase in herbicide use has triggered an epidemic of resistant “superweeds.” Now, in a misguided effort to fix the weed resistance problem created by first generation HR crops, biotechnology companies are

racing to genetically engineer new crops resistant to ever more toxic herbicides.

Dow Chemical Company is currently requesting USDA approval of the first of these new crops: GE versions of corn and soybeans that are resistant to 2,4-D. Commercial approval of Dow's corn and soy would trigger a large increase in 2,4-D use—and our exposure to this toxic herbicide—yet USDA has not assessed how much, nor analyzed the resulting impacts on public health, the environment or neighboring farmers. Instead, USDA has once again bowed to industry, by giving preliminary approval to yet more pesticide-promoting crops that will harm human health, the environment, and the farm economy.

HUMAN HEALTH CONCERNS

The scientific community has sounded alarms about the dangers of 2,4-D for decades. Numerous studies link 2,4-D exposure to major health problems such as cancer, lowered sperm counts, liver disease and Parkinson's disease. Studies have also shown that 2,4-D adversely affects the hormonal, reproductive, neurological, and immune systems.

Further, industry's own tests reveal that 2,4-D is contaminated with dioxins, a group of highly toxic chemical compounds that bioaccumulate up the food chain, potentially leading to dangerous levels of exposure. The U.S. Environmental Protection Agency (EPA) has reported that 2,4-D is the seventh largest source of dioxins in the U.S.

ENVIRONMENTAL IMPACTS

These new crops also pose serious environmental impacts. 2,4-D is an extremely potent killer of desirable plants as well

AGENT ORANGE: CHEMICAL WARFARE IN THE VIETNAM WAR

The first planned use of 2,4-D—to destroy Japanese rice fields in WWII—was preempted by the end of the war. Like many wartime biocides, 2,4-D was “repurposed” for domestic use—the war on weeds—only to realize its original mission two decades later in Vietnam. In what has been called the “largest chemical warfare operation in history,” the U.S. military dumped 11 million gallons of Agent Orange (a mixture of 2,4-D and the even more toxic 2,4,5T) over Vietnam from 1962-1971. The purposes of this chemical warfare were to destroy rice fields and rainforests to deny the Vietnamese food and cover. The Veterans Administration regards Agent Orange exposure as the cause of numerous diseases in Vietnam veterans: diabetes, neuropathy, Parkinson’s disease, heart disease, liver dysfunction, chloracne, numerous cancers, as well as birth defects in the children of exposed soldiers. According to one estimate, at least 3 million Vietnamese suffer serious health problems from Agent Orange exposure, including birth defects in children and grandchildren of those exposed.

as “weeds,” and can cause substantial damage to native plants via drift and runoff. Because animals depend so heavily on plants for habitat and food, herbicidal injury to plants can pose serious risks to their survival. The National Marine Fisheries Service found that even existing agricultural uses of 2,4-D are likely to adversely modify critical habitat of Pacific salmon, while the EPA found that 2,4-D is likely to adversely affect the endangered California red-legged frog and Alameda whipsnake. USDA’s proposed unrestricted approval of 2,4-D corn and soy would worsen these impacts, and likely threaten many other similar species. Yet USDA has refused to assess these impacts.

PESTICIDE DRIFT

Pesticide drift occurs when pesticides applied to one field drift onto another. 2,4-D is a volatile herbicide that is prone to drift beyond the field of application and damage neighboring crops and wild plants. In fact, 2,4-D drift is responsible for more episodes of crop injury than any other pesticide.

The introduction of 2,4-D crops will greatly increase drift injury to neighboring crops and wild plants over already high levels for several reasons: much higher rates of 2,4-D will be applied due to high-level 2,4-D resistance conferred by genetic engineering, much more acreage will be sprayed, and more spraying will take place mid-season when neighboring crops are more susceptible.

CHEMICAL ARMS RACE WITH WEEDS

Since 1996, Roundup Ready systems—HR crops resistant to glyphosate, the active ingredient in Monsanto’s weed killer Roundup—have been the mainstay of GE crop plantings. Scientists, environmentalists, and agricultural experts warned that reliance on the Roundup Ready system would create weeds that would build resistance to the herbicide, based on the same Darwinian principle by which overused antibiotics foster drug-resistant bacteria; that is precisely what has happened. Massive use of glyphosate with Roundup Ready crops has created an epidemic of glyphosate-resistant weeds. Now, farmers across the country are struggling to deal with these resistant weeds on over 10 million acres of cropland.

Dow Chemical is exploiting the situation by falsely hyping 2,4-D corn and soybeans as the solution to glyphosate-resistant weeds. Yet studies already indicate this approach will rapidly generate weeds with resistance to both herbicides. Dow and other pesticide firms understand this, and are busily developing new crops resistant to multiple herbicides. In fact, Dow plans to sell this GE 2,4-D corn and soy “stacked” with resistance to glyphosate and other herbicides. This would lead to still greater use of toxic chemicals and more weed resistance. This chemical arms race with weeds means more pesticidal pollution, environmental damage, higher production costs, and of course, increasing profits for firms like Dow and Monsanto that sell both GE seed and pesticides.

At a time when farmers, citizens, and government have worked hard to limit our use of, and exposure to, hazardous pesticides like dioxin-laced 2,4-D, approving these crops would take us backwards, seriously endangering human health and the environment.

WHAT YOU CAN DO

- Visit our website for campaign updates and join our True Food Network to receive action alerts and updates on this important issue: www.dow-watch.org
- Share this fact sheet with your friends, family, co-workers, and at your local co-ops and farmers markets.
- Buy non-GE foods as much as possible. Check out our True Food Shoppers Guide for help at: www.truefoodshoppersguide.org



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