AGRICULTURAL BIOTECHNOLOGY

HERBICIDE-RESISTANT PLANT EFFORTS CONDEMNED

WASHINGTON, D.C.—Both in its title, "Biotechnology's Bitter Harvest: Herbicide Tolerant Crops and the Threat to Sustainable Agriculture," and in its recommendations, the newly issued report from the Biotechnology Working Group (BWG) takes an unwavering critical stance. A heretofore low-profile and loose confederation of 18 environmental, farm, church, and consumer organizations scattered throughout the country, BWG sharply criticizes research efforts to develop herbicide-resistant crops and forest trees. Representatives of biotech companies fault the report, saying it omits key facts about a technology that is compatible with sustainable agriculture and a reduced use of chemicals in the environment.

The working group received symbolic backing from Senator Patrick Leahy (D—VT), who is drafting legislation to block federally sponsored research in this area. Leahy calls the

current federal policy that encourages such research "short-sighted and misguided." He is currently drumming up support for the new legislation, and anticipates introducing his bill shortly.

Among other things, the BWG report recommends an end to state and federal support for such research as well as an end to federal tax credits for companies working in this area. It also calls for the Environmental Protection Agency to regulate the use of such plants "as pesticides," and urges several other steps to discourage any commercial or even recreational use of such plants.

Twenty-seven companies and more than 21 other public university and research centers, many with federal support through the U.S. Department of Agriculture or with state funds, are conducting research to develop herbicide-tolerant plants, according to the BWG report. Some 58

research projects involving at least 30 species are the subject of such research, which has absorbed more than \$10.5 million in public funds and much more in private funds during recent years.

"The public hasn't had much say in charting the direction of this technology, even though it's paid for it," says Jack Doyle of Friends of the Earth and the Environmental Policy Institute (Washington, DC), who spoke at a BWG-sponsored press conference. "The crops and forest trees being altered...affect the public, threatening environmental quality, safety, and health."

"This [research] is a giant step backwards," adds Jane Rissler of the National Wildlife Federation (Washington, DC), who is one of the four principal authors of the report. The availability of herbicide-resistant plants will encourage greater dependence on "toxic chemicals—linked to farmer illnesses and the destruction of habitats," she says. "Industry is saying the new generation of herbicides is 'environmentally benign.' The argument is that they're 'low dose,' but these herbicides are packing more killing power." Rissler also suggests that wide use of crop plants with herbicide-resistant genes could lead, through interspecies gene exchanges, to the unintended creation of herbicide-resistant superweeds.

Other critics say that the commercial introduction of herbicide-resistant crop plants will be bad for farmers, driving up costs for seeds and chemical treatments. They say that the federal money going into such research should instead be spent on "sustainable, low-input agricultural research." In addition, critic Jay Hanson of the United Methodist Churches asserts that herbicide-resistant plants represent a "false alternative....I don't believe this technology will solve hunger problems. I don't think this is one of the best applications [of biotechnology]."

The BWG report is flawed because of its many omissions, says Alan Goldhammer of the Industrial Biotechnology Association (Washington, DC). Much or all of the commercial work being done on such plants involves herbicides that can be used in reduced amounts because of their high target specificity. Moreover, such herbicides generally show low toxicity and rapid degradability in the environment, he notes. "There are clear benefits to this technology."

—Jeffrey L. Fox

PLANT MOLECULAR BIOLOGY

BIOTECH TOOLS FOR BREEDERS

WASHINGTON, D.C. and IRVINE, Calif.—The cost of using molecular biology to study and breed plants is dropping. Not using such new technologies could mean lost research opportunities and slower progress, according to a group of traditional scientists studying crop plants. They are developing plans to revamp plant science and related academic departments—many of them at land grant universities and tied in with agricultural research stations, where much of that research is being conducted. In the vanguard, a committee of the American Society for Horticultural Science (ASHS, Alexandria, VA) is preparing a report that recommends fully integrating biotechnology-based approaches with traditional plant breeding. As well, biotech can complement other similar research challenges in the plant sciences, such as studying plant physiology.

"The key question is what can be done at various levels to integrate the discipline-oriented sciences into horticultural departments," says Jaleh Daie, the acting head of the crop sciences department at Rutgers University (New Brunswick, NJ) and the chairwoman of the ASHS committee drafting the report. The administrative task entails convincing not only members of those departments, but also deans of agriculture and university presidents, that such changes are scientifically warranted and will be

cost effective.

"One of the myths is that lab-oriented science is more expensive than field-oriented studies," Daie says. She and others point out that equipment and other resources needed for conducting traditional field studies can be just as expensive to buy and operate as are the instruments and chemicals used in a typical molecular biology lab. Following nationwide surveys and other less formal studies, members of the ASHS committee concluded that the cost of a biotechnology research program "may even be cheaper," says Robert Griesbach of the U.S. Department of Agriculture (USDA, Beltsville, MD).

The survey information is proving helpful in convincing old-guard department members and administrators that recruiting molecular biologists could augment rather than drain resources, according to Jerome Miksche, a research program administrator at USDA. Although the start-up costs to outfit laboratories may seem high, "by the time they settle in, they get outside [grant] money and begin providing overhead," he points out. With the President's recent budget calling for substantial increases in USDA competitive grants programs to further support such investigators, opportunities for horticulture, crop science, and related departments to benefit from grant-fed cash infusions could increase significantly. —JLF