US EPA ARCHIVE DOCUMENT

United States Environmental Protection Agency
Office of Research and Development
Washington, DC 20460

EPA /600/F-05/007
April 2005

PESTICIDE RESEARCH AT THE WESTERN ECOLOGY DIVISION

Finding New Ways to Determine Risks from Herbicide Drift to Non-Target Crops and Ecosystems

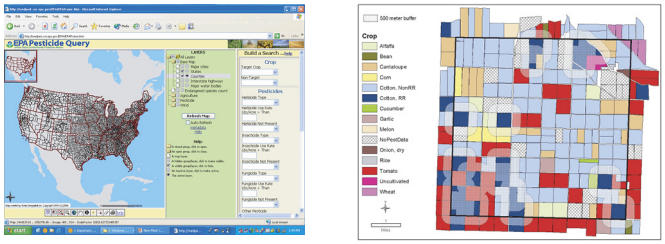
US EPA ARCHIVE DOCUMENT

Plants at Risk

EPA is responsible for registering and labeling pesticides for all uses in the United States. The agency is charged with making sure that the chemicals do not pose unreasonable risks to humans or the environment. Recent problems from pesticide drift of low-dose, high-toxicity herbicides heightened awareness of the need to improve our ability to predict possible environmental harm. Historically, protection of natural vegetation from possible effects of herbicide drift has not been directly addressed. Instead, the agency has looked at data from tests conducted on a few agricultural species and assumes they protect native plants as well as all crops. At the Western Ecology Division (WED), we are developing ***Regional Analysis and Interpretation Methods*** to select appropriate native plants and crops for testing. We also are designing improved ***Plant Toxicity Tests*** that can be used by chemical producers during the registration review process or for investigation of potential adverse non-target effects in the field.

Regional Analysis and Interpretation

WED is developing a website that uses an electronic mapping system (known as GIS) to indicate plants and animals potentially at risk from pesticide use in different regions of the country. The website includes information on pesticide use, crop production, native vegetation, threatened and endangered plant and animal species, and wind speed and direction to look for possible drift impacts and to produce maps of U.S. counties potentially



WEDPest – maps of pesticide risk

affected. The website will spatially locate plant species that may be at risk from use of a new or existing product. We will use additional information on the life history of native plants, such as whether they flower during times of pesticide applications, along with spray-drift models and information about how sensitive various plants are to pesticides, to predict which parts of the country are most vulnerable to environmental effects of herbicides. As part of this effort, we will estimate changes in the plant communities in response to herbicide use. We can use this information to predict effects of herbicide use on wildlife through changes in their habitats.

Plant Toxicity Tests

We are refining experimental tests that determine toxicity of herbicides to plants other than the targeted weeds. This includes developing new measures of herbicide effects such as seed or tuber production. We are also checking to make sure that the tests will work for native plants as well as crops. In addition, we are developing tests to monitor herbicide drift and determine what the effects are on

Plant toxicity tests

natural plant communities. Other research in our laboratory is being conducted to take advantage of the rapidly developing field of genetics. We are developing biochemical and genomic tools that will help us predict how all plants (not just those that are tested) will respond to herbicides. These methods will also be very useful in monitoring for effects once pesticides are registered and are in use.

Our research will allow the EPA to make better decisions about which pesticides to register. Using these tools, we can protect our natural ecosystems while still meeting the needs of agriculture.

For more information, contact:

David Olszyk
Project Leader

olszyk.david@epa.gov
(541)754-4397

Western Ecology Division, NHEERL, US EPA
200 SW 35th Street
Corvallis, OR 97333
http://www.epa.gov/wed/