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EPA's Perspective on Herbicide Resistance in Weeds



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Discussion Topics



- Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)
- EPA's Approach to Managing Resistance
 - Current
 - Future

Legal Authority Under FIFRA

- EPA registers pesticides under FIFRA (Federal Insecticide, Fungicide, Rodenticide Act) - a risk and benefit statute
 - Risk of resistance may be considered part of the regulatory decision
- EPA licenses the pesticide for use on conventionally bred or genetically modified crops
 - USDA/APHIS/Biotechnology Regulatory Services makes deregulation decision on genetically modified crops

Approach to Managing Resistance

- EPA's goal is to extend the useful life of registered products used for pest control by slowing the development of resistance to fungicides, herbicides, and insecticides
 - Effective resistance plans should retain flexibility for growers
- Fungicides, Herbicides, and Insecticides
 - Some registrants have specified practices for resistance management

Approach to Managing Resistance

- Heightened concern for herbicides used on herbicide resistant crops
- EPA has developed a new approach which was first imposed for Enlist Duo (a product containing 2,4-D and glyphosate) registered last year for corn and soybeans – allows later applications
 - Label directions
 - Training and educational information
 - Early identification, investigation, and remediation of likely resistant weeds
 - Registrant must report resistant weeds to EPA and stakeholders
 - Opportunity to adjust after 5 years should resistance develop

Approach on Herbicide Registration for Herbicide Resistant Crops -- Label Elements

- Label must contain Mechanism of Action
- Include generally agreed upon best management practices
- Because early identification of problem is critical to managing resistance, the following items will be placed with the directions for use so that they are clearly visible:

User or consultant:

- Scout before application to identify weed and size
- Scout after application to determine if application was effective
- Report of poor performance/likely resistance to registrant or their representative

Approach on Herbicide Registration for Herbicide Resistant Crops -- Best Management Practices

- BMPs are included on the label
- Developed by the Herbicide Resistance Action Committee, Weed Science Society of America, CropLife America
- Most elements of the BMPs describe cultural and mechanical practices to slow the spread of resistant weeds

Approach on Herbicide Registration for Herbicide Resistant Crops -- Best Management Practices

- **Some examples of BMPs:**

- Herbicides - plan to use multiple products with different mechanism of action
- Mechanical practices - cover crops, mulches, weeding
- Cultural practices - cultivar selection, row widths, seed rates, crop rotation
- Plant into weed-free fields and plant weed-free seed
- Scout and monitor fields and report problems

Approach on Herbicide Registration for Herbicide Resistant Crops – Terms of Registration

- Develop a Stewardship Program for resistance management
- Develop Training and Education materials
- Investigate cases of non-performance
 - Use Norsworthy et al. 2012 criteria for determining likely herbicide resistance
- Develop a Remediation Plan for use if resistance is suspected
 - Registrant must take immediate action to control likely resistant weeds

Approach on Herbicide Registration for Herbicide Resistant Crops – Terms of Registration

- Annual reporting of likely and confirmed resistance to EPA
 - Enough information to describe nature and extent of infestation
 - Early notification is important
- Reporting of likely and confirmed resistance to other stakeholders
- Work to develop a rapid diagnostic system for resistance

Registration Review and Resistance Management

- EPA conducts Registration Review for health, safety, and environmental risk of registered pesticides every 15 years
- EPA will require resistant management plans similar to that for Enlist Duo for other herbicides used on herbicide resistant crops as these pesticides undergo re-evaluation: includes glyphosate and glufosinate