Best Management Practices to Control and Combat Resistance

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Weed Science Society of America

• Major focus on herbicide resistance prevention, management, and mitigation

• Education, research, and outreach efforts

• Close working relationship with relevant stakeholders – federal agencies, industry, commodity organizations, NGOs

• WSSA-sponsored EPA Subject Matter Expert

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Federal Agency Concerns/Interactions

- Environmental Protection Agency – pressure to “do something” has led to questions regarding regulations or alternatives thereof

- USDA Animal and Plant Health Inspection Service – role of resistance management in approving new biotech crops

- USDA Natural Resources Conservation Service – impact of herbicide resistance on conservation systems
Collaborations/Initiatives

With EPA
- Development of Herbicide Product Label Language
  - Mechanism of Action Group number display
  - Text associated with Mechanism of Action Group
  - Resistance Management Plans

With USDA-APHIS
- Reports:
  - I Summarizing current state of resistance
  - II Best management practices and obstacles to adoption

With USDA Natural Resources Conservation Service (NRCS)
- Concerns about impact of Herbicide Resistance on conservation
  - Collaborative meetings leading to
  - Adoption of best management practices
  - CAST Issue Paper developed and released

With Industry, Commodity Groups
- Resistance Education/Training Modules
2nd APHIS Herbicide-Resistant Weeds Report

1. Introduction – setting the stage
2. State of the art in Best Management Practices
3. Degree of adoption of BMPs
4. Factors impacting adoption
5. Recommendations on how to accelerate adoption
Herbicide Resistance – Best Management Practices

• Understand the biology of the weeds present.

• Use a diversified approach toward weed management focused on preventing weed seed production and reducing the number of weed seed in the soil seedbank.

• Plant into weed-free fields and then keep fields as weed free as possible.
Herbicide Resistance –
Best Management Practices

• Plant weed-free crop seed.

• Scout fields routinely.

• Use multiple herbicide mechanisms of action (MOAs) that are effective against the most troublesome weeds or those most prone to herbicide resistance.
Herbicide Resistance – Best Management Practices

• Emphasize cultural practices that suppress weeds by using crop competitiveness.

• Use mechanical and biological management practices where appropriate.

• Prevent field-to-field and within-field movement of weed seed or vegetative propagules.
Herbicide Resistance –
Best Management Practices

• Manage weed seed at harvest and after harvest to prevent a buildup of the weed seedbank.

• Prevent an influx of weeds into the field by managing field borders.
WSSA Position Paper Recommendations

- Reduce the weed seedbank through diversified programs that minimize weed seed production.

- Implement an herbicide MOA labeling system for all herbicide products and conduct an awareness campaign.

- Communicate that discovery of new, effective herbicide MOAs is rare and that the existing herbicide resource is exhaustible.

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WSSA Position Paper
Recommendations

• Demonstrate the benefits and costs of proactive, diversified weed-management systems for the mitigation of HR weeds.

• Foster the development of incentives by government agencies and industry that conserve critical herbicide MOAs as a means to encourage adoption of best practices.
WSSA Position Paper Recommendations

• Promote the application of full-labeled rates at the appropriate weed and crop growth stage. When tank mixtures are employed to control the range of weeds present in a field, each product should be used at the specified label rate appropriate for the weeds present.

• Identify and promote individual BMPs that fit specific farming segments with the greatest potential impact.
WSSA Position Paper
Recommendations

• Engage the public and private sectors in the promotion of BMPs, including those concerning appropriate herbicide use.

• Direct federal, state, and industry funding to research addressing the substantial knowledge gaps in BMPs for herbicide resistance and to support cooperative extension services as vital agents in education for resistance management.
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