Economics of Pest Management: Present and Future Considerations

Leah Duzy
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Compliance Services International

- Regulatory consulting firm providing innovative solutions for organizations faced with regulatory and environmental challenges.
- Established in 1988.
- Female-owned business with 19 US employees and 10 employees in Scotland.
  - Have 9 associates in the US and Canada.
Outline

• Relationship between Economics and Crop Protection
• Consideration #1: Regulatory Uncertainty
• Consideration #2: Regulatory Developments in the Farm Bill
• Consideration #3: Resistance Management
• Consideration #4: Tight Margins
• Consideration #5: General Uncertainty in Agriculture
Every production decision you make on your operation is an economic decision.

Questions growers should consider when making pest management decision:
1. Efficacy: Will it control the pests in my crop?
2. Return: Is it competitive and does it give an economic return on my investment?
3. Convenience: Is the product easy to handle?
4. Safety: How safe is the product for the applicators, field workers, and consumers?
5. Rotation: How will it impact other crops in my rotation?
6. Resistance: How will it fit into my integrated pest management plan?

The decision by the industry to bring a new product to market is an economic decision.
Consideration #1: Regulatory Uncertainty

**Pesticide Regulation**

**FIFRA**
Federal Insecticide, Fungicide, and Rodenticide Act

Under FIFRA, the EPA governs the registration, labeling, distribution, sale, and use of pesticides in the US.

**FFDCA**
Federal Food, Drug, and Cosmetic Act

FFDCA gives the EPA the authority to set limits (MRLs) on the amount of pesticide residue allowed on food or animal feed in the US and gives the FDA the authority to enforce those limits.
Public Needs New Products

Product Label

Keeping it safe by following the label.

New Product

EPA Review

Acceptable Risk

New Product Development

Possible Products

AG CHEM INDUSTRY

Educate users on safe use; expand supporting data
Data compilation, risk assessment and peer review
Continuous validation and reevaluation
Internal or external identification of pest control need
Testing in relevant field sites and lab
Volume of Data Over Time

Understanding Data Development Components

Discover
Develop
Define
Register
Educate
Refine

Initial safety and delivery mechanism research
Data compilation, risk assessment and peer review
Educate users on safe use; expand supporting data
Continuous validation and reevaluation
Internal or external identification of pest control need
Testing in relevant field sites and lab
Consideration #1: Regulatory Uncertainty

- Once registered, EPA must review each registered pesticide at least every 15 years to determine whether it continues to meet the FIFRA standard for registration.

- They are in the process of reviewing pesticides, and they must complete registration review by October 1, 2022, for all pesticides registered as of October 1, 2007.

- New pesticide active ingredients will be added to the schedule so they will complete registration review within 15 years of their registration date.

- First step – open a registration review docket (this step has been completed for all conventional and antimicrobial pesticides for which EPA will review by October 1, 2022).

- Case Development – assess changes since last review, conduct new assessments if needed, open draft risk assessment up for public review, consult with NMFS and USFWS (the Services) about risks to Federally listed T&E Species.

- Proposed decision, interim decision, final decision

More information at: https://www.epa.gov/pesticide-reevaluation/registration-review-process#case%20development
## 2018-2019 Registration Review Schedule for Conventional Cases (as of 09/19/2018)

<table>
<thead>
<tr>
<th>Quarter 1, FY2019</th>
<th>Draft Risk Assessments</th>
<th>Proposed Interim Decisions</th>
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</tr>
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<tbody>
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<td>• Chlorpropham</td>
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<td>• Aliphatic solvents</td>
<td>• Diflubenzuron</td>
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<td>• Clopyralid</td>
<td>• Glyphosate</td>
<td>• Dichlobenil</td>
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<td>• Diflufenzopyr</td>
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<td>• Methomyl</td>
<td>• Prohexadion calcium</td>
<td>• Fluopicolide</td>
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<td>• Naphthalene</td>
<td>• Tebuthiuron</td>
<td>• Prometryn</td>
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<td>• Thiobencarb</td>
<td>• Trifloxystrobin</td>
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<td>• Thiodicarb</td>
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Source: [https://www.epa.gov/pesticide-reevaluation/registration-review-schedules](https://www.epa.gov/pesticide-reevaluation/registration-review-schedules)
Consideration #1: Regulatory Uncertainty

- **Why does this matter to the grower?**
  - Access to new products and continued access to current products.
  - Understand the amount of work that goes into developing new products and why it is so important to understand (and follow) the label.

- **What role does the grower play in the regulatory process?**
  - Comment, comment, comment
  - [https://www.regulations.gov/](https://www.regulations.gov/)
  - Clear, concise, example driven comments
  - Why is the product important? How do I use it on my operation? What are my other options if I don’t have access to this product?

More information at: [https://www.epa.gov/pesticide-reevaluation/registration-review-process#case%2odevelopment](https://www.epa.gov/pesticide-reevaluation/registration-review-process#case%2odevelopment)
Considerations #2:
Regulatory Developments in the Farm Bill

• **SEC. 10109. MULTIPLE CROP AND PESTICIDE USE SURVEY.**
  - Requires USDA, acting through the Office of Pest Management Policy (OPMP), to conduct crop and pesticide use surveys for a variety of crops for the use of risk assessment modeling and mitigation for active ingredients.
  - Intention is for the multiple crop and pesticide use surveys to be conducted frequently and in a timely manner to allow the OPMP sufficient time to respond to the EPA’s 60-day comment periods related to pesticide registrations.
  - Gather and accurately communicate to the EPA information regarding the agricultural community’s *actual use patterns and mitigations* in order for the EPA’s final decisions to be more probabilistic and therefore more accurate and data based.
Considerations #2: Regulatory Developments in the Farm Bill

- **SEC. 10111. REPORT ON PLANT BIOSTIMULANTS.**
- USDA, in consultation with EPA, States, and relevant stakeholders, to provide a report to Congress that identifies any potential regulatory, non-regulatory, and legislative recommendations, including the appropriateness of any definitions for plant biostimulant.
- Intend for the report to facilitate the regulatory framework for plant biostimulant products and ensure the efficient and appropriate review, approval, uniform national labeling, and availability of these products to agricultural producers.
Considerations #2: Regulatory Developments in the Farm Bill

• SEC. 10115. FIFRA INTERAGENCY WORKING GROUP.
  • Establishes an interagency working group to provide recommendations regarding the consultation process under ESA Section 7 for pesticide registration and registration review and to implement a strategy for improving the process.
    • Working group to include USDA, the Department of Commerce, the Department of the Interior, the Council on Environmental Quality, and EPA.
  • The goal is to make the ESA review process more efficient and predictable for the federal agencies involved and affected stakeholders.
Consideration #3: Resistance Management

- Efficacy of any pesticide is an exhaustible resource (Davis and Frisvold, 2017).
- $1 billion annual cost in US cotton, corn, and soybeans.
- No new commercial mode of action in more than 30 years.
Consideration #3: Resistance Management

• Growers are not the only decision makers for crop protection – crop consultants, custom applicators, custom machine operators, extension agents, the chemical industry, regulatory agencies, researchers – and the list goes on...

• Need to focus on the long-term benefits of resistance management.

• New solutions (2,4-D and Dicamba) are old technology.

• It is difficult with regulatory uncertainty – will older products still be available?
  • When growers don’t have access to cost-effective products in each pesticide class, it makes it more difficult to manage for resistance.
Consideration #4 – Tight Margins

- Price of crop protection (especially given our discussion about resistance management) and uncertainty surrounding pest pressure.
- Crop protection as a % of total costs of production
  - Crop protection expenses include all pesticides and application costs (machinery and labor).
  - Where does the cost of seed fit in?
- Understand economic thresholds and utilize precision technology if available.
- Unknowns about future price of pesticides.
  - The US imports and exports crop production products and the inputs used to produce them.
  - How the current trade environment will impact prices and availability is an unknown.

When tax time rolls around, it is not about the biggest yield, it is about profit.
For wheat, crop protection as a % of variable costs is almost 25% for conventional wheat and almost 19% for intensively managed wheat.

For crop protection with seed, those percentages increase to 36% and 31% respectively.

Source: http://agecon.uga.edu/extension/budgets.html
Consideration #5 – General Uncertainty in Agriculture

- Issues that could impact crop protection and the agriculture sector:
  - Where are short-term interest rates headed? Will higher short-term rates translate into higher longer-term rates? What about inflation?
  - US economy – Global economy concerns
    - Trade
    - Weather
    - Oil Prices

- For a full list of issues that could impact agriculture, see “Uncertainty Reigns Heading into 2019” by Brent Gloy and David Widmar at https://ageconomists.com/2019/01/07/uncertainty-reigns-heading-into-2019
Where does the United States import pesticides from? (2016)

Source: https://atlas.media.mit.edu/en/
Where does the United States export pesticides to? (2016)

Source: https://atlas.media.mit.edu/en/
Final Thoughts

- Keep an eye on the regulatory process and submit clear, concise, example driven comments when requested.
- Tight margins require increased awareness of variable costs.
- Respond to NASS surveys.
- Agriculture does not exist in a bubble – it is impacted by changes in the US and Global economy.
Thank you!

Leah M. Duzy
Principal Consultant/Agricultural Economist
Compliance Services International

7501 Bridgeport Way West
Lakewood, WA 98499
(706) 980-0999 – lduzy@complianceservices.com