



# Certified Crop Advisors' Perspectives on Pesticide Resistance

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# Past Research

- Corn and soybean farmers are limited in their IPM adoption by...
  - Individualism
  - Techno-optimism/fatalism
  - Farm size and labor availability
  - Visibility/intensity of pest
  - Sources of information


# Methods

- Center for Survey Statistics and Methodology – Survey Research Services at Iowa State University
- Sample from ASA list of US-based Certified Crop Advisors
  - 2000 randomly selected
- Survey and reminders sent in December 2022
- 367 completions—20.2% response rate





# Research Questions

- How concerned are crop advisors about resistance?
    - What influences this concern?
  - What makes it hard to bring up resistance?
  - Role of retailers and manufacturers
  - What are customers constrained by?
  - What needs to change?
  - What are the most effective options?
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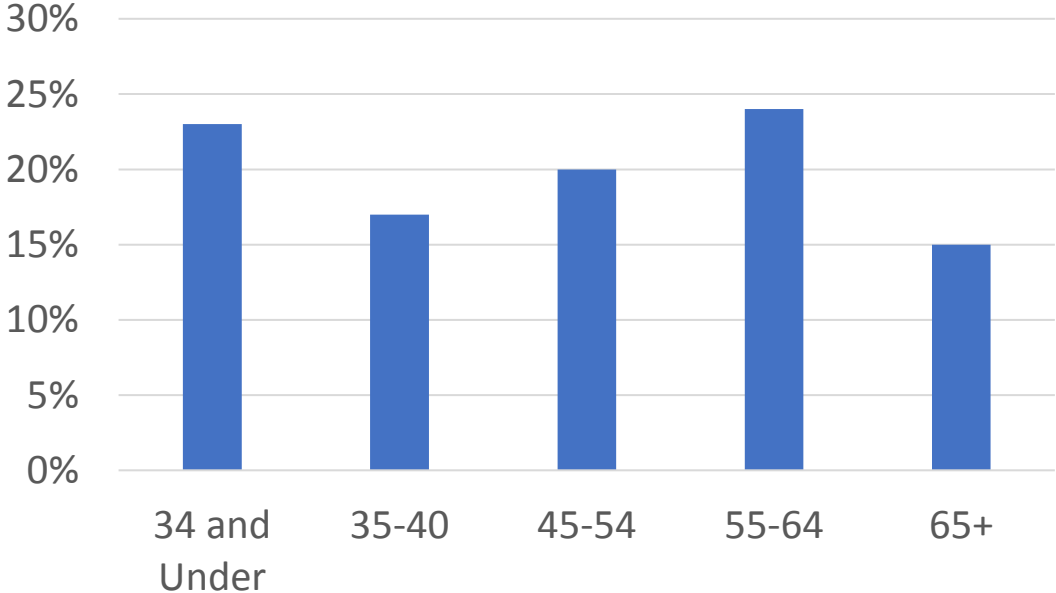


# Demographics

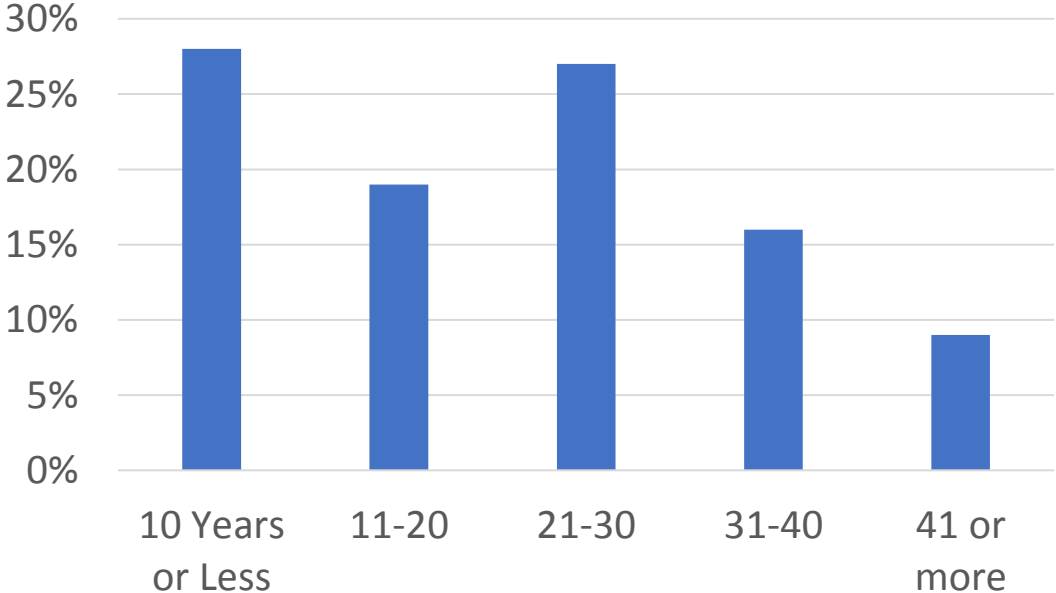
- 60% independent; 40% associated
- 3% Resistance Management Specialty (RMS) Certified
- Responses from all 50 states
  - California, Iowa, Minnesota, and Ohio most frequent states
- Gender: 90% men, 7% women, 3% prefer not to respond
- Race: 98% white

# Demographics

Age

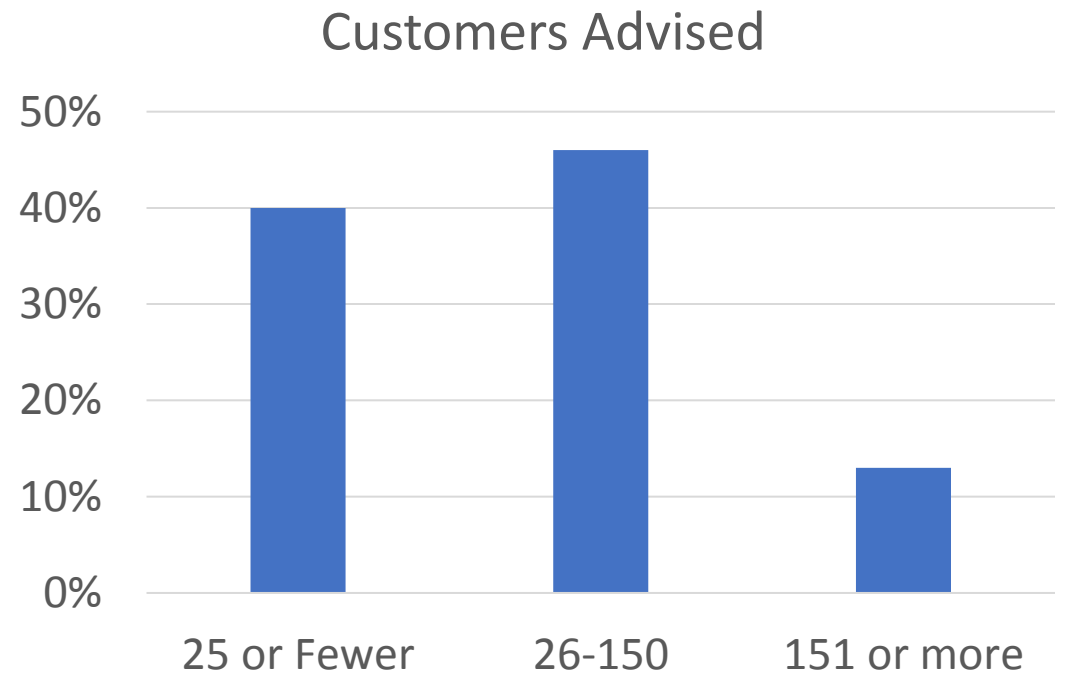
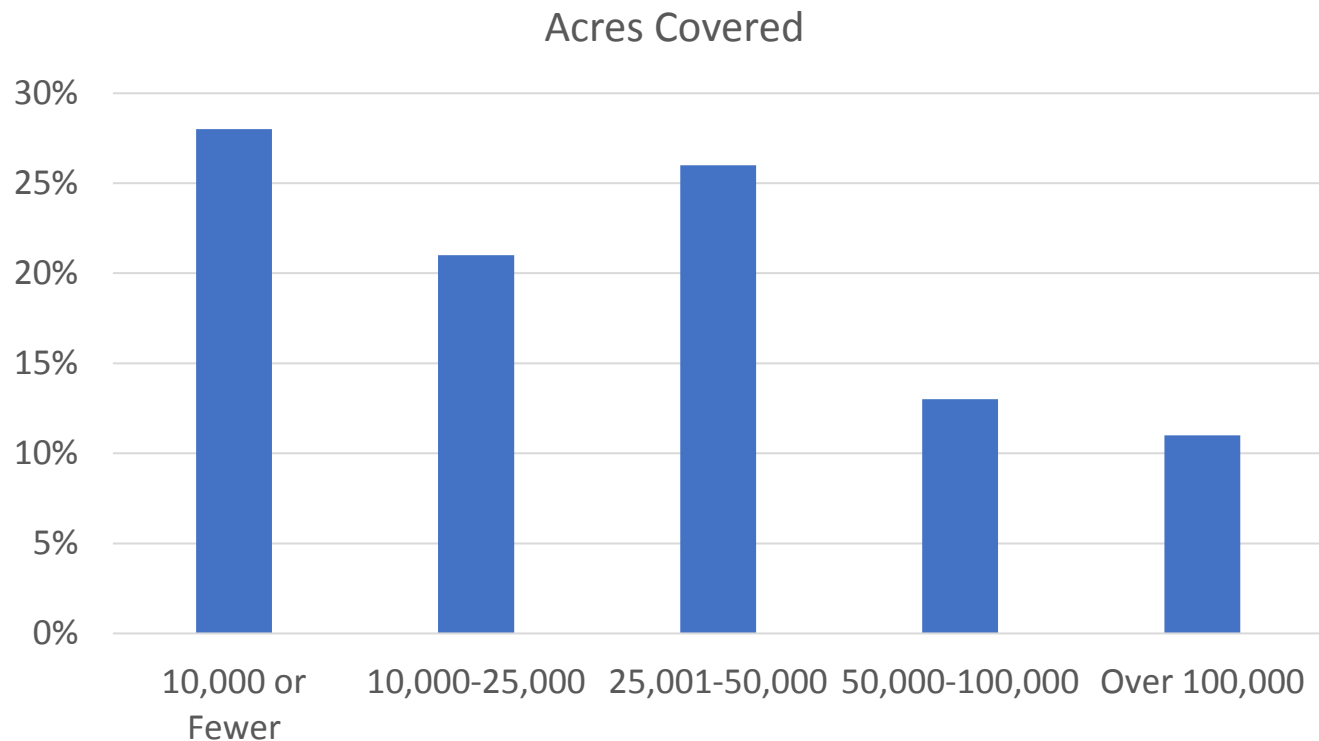


Years of Experience



# Advising

- 58% worked with 3-5 crops
  - Top crops were corn (60%), potatoes (16%), sugar beets (9%), wine grapes (9%), soybeans (8%), and wheat (5.8%)



## Related Characteristics

- Associated; more experience, higher number of customers and acres managed
- Independent; higher level of education, fewer years experience
  - More likely to be a woman





# Herbicide Resistance Concerns

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- Concern helping farmers manage resistance in the next 5 years
  - 25% slightly or not at all concerned
  - 35% moderately concerned
  - 40% very concerned
- **Positive:**
  - Working with corn, rice, beets
  - RMS certified
  - Southern US
  - Large scale
  - Independent
- **Negative:**
  - Working with fruit
  - Having alfalfa or soybeans as a secondary/tertiary crop

# Insecticide Resistance Concern

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- Concern helping farmers manage resistance in the next 5 years
  - 15% not at all concerned
  - 40% slightly concerned
  - 33% moderately concerned
  - 14% very concerned
- **Positive:**
  - Working with nuts, vegetables, or fruit
  - RMS certified
  - Large scale
  - West, Plains, and South
- **Negative:**
  - Working with corn, pulses, wheat, sorghum
  - More years' experience advising





# Fungicide Resistance Concern

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- Concern helping farmers manage resistance in the next 5 years
  - 19% not at all concerned
  - 44% slightly concerned
  - 29% moderately concerned
  - 8% very concerned
- **Positive:**
  - Working with nuts, veg, potatoes, beets, fruit, or wine grapes
  - RMS certified
  - Large scale
  - West and South
- **Negative:**
  - Working with wheat

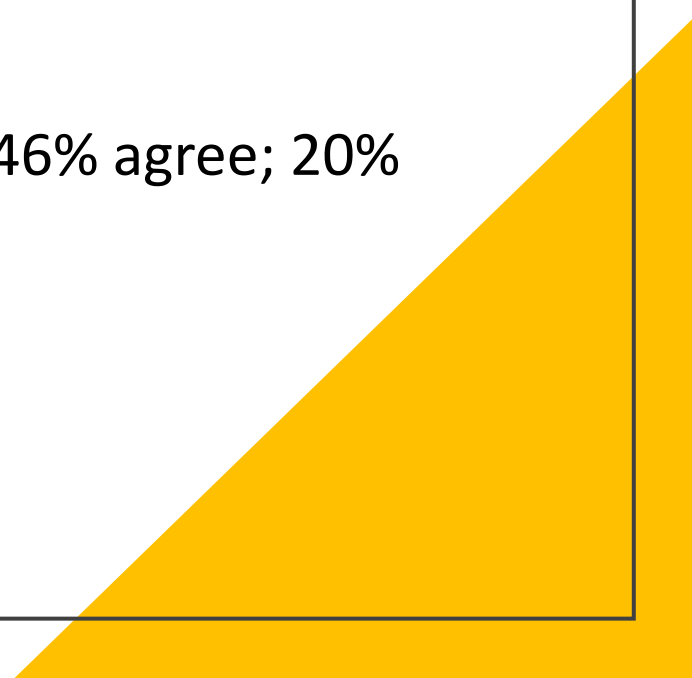
## Reasons Bringing Up Pesticide Resistance Can Be Hard

- Customers feel management is too difficult (28% agree or strongly agree)
  - **Positive:** IR concern, veg, canola
  - **Negative:** Nuts, beets, years advising, number crops
- Customers are tired of hearing about resistance management (22% agree or strongly agree)
  - **Positive:** IR concern, soybean, veg, peanuts, canola
  - **Negative:** Fruit, independent, years advising, number crops
- Might have to recommend a competitor's product (13% agree or strongly agree)
  - **Positive:** IR concern, rice, veg
  - **Negative:** Years advising, number crops

## Reasons Bringing Up Pesticide Resistance Can Be Hard

- Harder to make a sale (9% agree or strongly agree)
  - **Positive:** Rice
  - **Negative:** Independent, years advising, large scale, number crops
- Hurt relationship with customer (5% agree or strongly agree)
  - **Positive:** Alfalfa
  - **Negative:** Independent, years advising, large scale, number of crops
- Other:
  - Customers think it costs too much
  - Customers unaware or doubtful
  - No simple answers

# Retailers and Manufacturers

- Retailers sometimes talk my customers out of following my recommendations (45% agree; 7% strongly agree)
    - **Positive:** IR concern, potato, sorghum, independent
    - **Negative:** Wine grapes, West
  - Retailers make recommendations based on availability (46% agree; 20% strongly agree)
    - **Positive:** IR concern, sorghum, independent
    - **Negative:** Wine grapes, years advising
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# Retailers and Manufacturers

- Manufacturers/sales reps sometimes give my customers different info on resistance than they give me (28% agree; 7% strongly agree)
  - **Positive:** IR concern, nuts
  - **Negative:** HR concern, beets
- If customers get info from a different source it can be hard to change their minds (56% agree; 10% strongly agree)
  - **Positive:** Sorghum, South
  - **Negative:** Potato, years advising, education
- Customers receive different messages among advisors (60% agree; 8% strongly agree)
  - **Positive:** Large scale

# Sources of Information

## For Crop Advisors

- In-field experience
- University Extension
- Customers
- Commodity Groups

## For Customers

- Crop Advisors
- Retailers
- Other Farmers
- University Extension



# Customers are constrained by...

- Economics (36% very)
  - **Positive:** IR concern, pulses
  - **Negative:** RMS certified, years advising
- Management complexity (31% very)
  - **Positive:** Corn, large scale
- Supply constraints (26% very)
  - **Positive:** Cotton, pulses, rice, veg, wheat, alfalfa
  - **Negative:** South

# Customers are constrained by...

- Available tech (19% very)
  - **Positive:** IR concern , canola, sorghum, RMS certified
- Time (18% very)
  - **Positive:** IR concern, wheat, RMS certified, West, South
  - **Negative:** Nut, potato, years advising, education
- Idea of a silver bullet (18% very)
  - **Positive:** IR concern, corn, pulses, wheat, alfalfa, peanuts, large scale
  - **Negative:** Number of crops

# Customers are constrained by...

- Fear of declining farm viability (15% very)
  - **Positive:** IR concern, corn, cotton, fruit, rice, veg, wheat, wine grapes, alfalfa, Plains
  - **Negative:** Number of crops, education
- Mixed messaging (13% very)
  - **Positive:** IR concern, sorghum, large scale
  - **Negative:** Soybean, beets, Atlantic
- Farm size (12% very)
  - **Positive:** IR concern, pulses
  - **Negative:** Fruit, soybean, beets

# What needs to change?

- Farmers are going to have to change their mindset to effectively manage pesticide resistance (82% agree or strongly agree)
  - **Positive:** Cotton, years advising
  - **Negative:** Potato, education
- Customers don't understand how slow the process of pesticide discovery, development, and commercialization can be (73% agree or strongly agree)
  - **Positive:** Corn (almost), large scale
  - **Negative:** Sorghum
- Solution costs drive customer decisions (75% agree or strongly agree)
  - **Positive:** Corn, pulses, rice
  - **Negative:** Years advising, number crops

# Most effective options

- Farmers experiencing resistance firsthand (92% agreed it's somewhat or very effective)
  - **Negative:** Rice
- Crop advisors developing trusting relationships with growers (91%)
  - **Positive:** HR concern, fruit, large scale, South, Atlantic
  - **Negative:** Veg, canola
- Farmers seeing neighbors experience resistance issues (88%)
  - **Positive:** HR concern, fruit
  - **Negative:** IR concern, rice, canola, education

# Most effective options

- Farmers seeing neighbors successfully manage resistance (86%)
  - **Negative:** Rice, peanuts
- Developing consistent messaging (84%)
  - **Negative:** IR concern, education, West, South
- Private company investment and discovery of new MOAs (73%)
  - **Negative:** Corn, Atlantic
- Wider stakeholder collaboration to manage as a community (71%)
  - **Positive:** Pulses, South
  - **Negative:** Years advising

# Most effective options

- Reform regulations to allow broader range of pesticides (60%)
  - **Positive:** Cotton, sorghum, Plains
  - **Negative:** Corn, wine grapes, education
- Farmer collaboration to manage as a community (58%)
  - **Positive:** South
  - **Negative:** Years advising, education
- Promoting introduction, rotation, and marketing of new crops (52%)
  - **Positive:** IR concern, fruit, wheat, RMS certified
  - **Negative:** Soybean, nut, sorghum, years advising, education
- Introducing some level of regulation (e.g. Bt refuges) (40%)
  - **Negative:** Corn, beets, alfalfa

# Key Takeaways - Concern

- Concern high for all, but highest for herbicide resistance and lowest for fungicide resistance
- Resistance Management Specialty Certification significantly increases concern across all types of resistance
- Crop advisors serving more customers and acres are more concerned
- Concern highly dependent on crops advisors worked with



# Key Takeaways - Barriers

- Bringing pesticide resistance up with customers isn't especially hard except for insecticide issues and in some specific crops
- Retailer recommendations conflict with insecticide resistance; are more concerning for independent crop advisors
- Customers are constrained by economics, management complexity, and time

# Key Takeaways- Needed Changes

- Customer mindsets
- Customer understanding of speed of innovation (esp. for corn)
- Costliness of management options (esp. for corn)

# Key Takeaways- Effective Options

- Firsthand and secondhand experience of resistance issues (esp. for HR)
- Developing trusting relationships b/w advisors and customers
- Consistent messaging
- Community management seen as more effective in South where it has been done



Questions?