NORTHEAST SARE Sustainable Agriculture Research & Education

Webinar Series: Unifying Resistance Management Education

Pre-webinar poll results

November 30, 2015 – 71 respondents

1. How would you rate your current knowledge of RM?

a. Poor	1%
b. Below Average	18%
c. Average	42%
d. Above Average	25%
e. Excellent	1%
No Answer	11%

2. Resistance is a genetic change in a pest causing a decrease in its sensitivity to a pesticide that occurs as a result of the pest being exposed to the pesticide.

a. True	70%
b. False	**18%**
No Answer	11%

Explanation: Pesticide exposure does not create a genetic change in an individual that causes a change in its sensitivity to the pesticide, but rather it selects for individuals that have this genetic change due to mutation.

3. What are some of the reasons that resistance develops in insects (check all that apply)

a. Short generation time	34%
b. Large numbers	24%
c. Selection pressure	31%
d. Pre-adaptation	13%
e. all of the above	**59%**
No Answer	11%

Explanation: Short generation time and large numbers (as in high reproductive output) allow for a rapid build-up in populations founded by the surviving resistant individuals. Large numbers also increase statistical probability of resistant mutations. Selection pressure ensures that only

resistant genotypes survive, thus dramatically increasing their frequency in an affected population. Pre-adaptation to dealing with natural toxins means that physiological mechanisms already exist, and a small change may be sufficient for making them effective against human-made toxins as well.

4. Understanding the mode of action of a pesticide is important when (check all that apply):

a. Tank mixing	35%
b. Rotating pesticides	**86%**
c. Establishing refugia	25%
d. None of the above	1%
No Answer	13%

Explanation: Insects are more likely to develop cross-resistance to insecticides with similar modes of action, thus rendering their rotation pointless. If we do not understand modes of action, then we are more likely to rotate pesticides with similar modes of action. This will increase the probability of insects developing resistance.

5. High-dose refuge approach works if (check one):

a. Resistance is indeed inherited as an incompletely dominant trait	3%
b. There is sufficient movement between untreated refuge and adjacent treated area	13%
c. Resistant and susceptible individuals mate with each other	14%
d. All of the above	**54%**
No Answer	17%

Explanation: High dose-refuge approach is based on the idea that susceptible populations persist within untreated areas and mate with any newly resistant genotypes that arise in adjacent treated areas. However, a number of assumptions need to be met for this strategy to succeed. First, resistant alleles should be recessive, so that insecticides kill heterozygous offspring of resistant and susceptible individuals that are less resistant than their homozygously resistant parents. Secondly, resistant and susceptible individuals actually need to meet each other in order to mate.

6. When should RM practices be implemented (choose one)?

a. After resistance has been detected on the farm	4%
b. After resistance has been detected in the region	7%
c. After one year of using a product	11%
d. At first application	**75%**
No Answer	13%

Explanation: The goal of resistance management is to delay development of resistance rather than to manage resistant biotypes after detection.

7. A pathogen isolate resistant to one class of fungicides is considered less likely to develop resistance to another class of fungicides?

a. True 15%
b. False 70%
No Answer 14%

Explanation: Mutations for resistance to different fungicides are typically unrelated and not mutually exclusive. There usually is not a fitness cost to the pathogen of having the resistant traits in the absence of selection pressure (fungicide not being used). Resistance to more than one fungicide class (correlated resistance) can occur when a resistant trait for one fungicide is widespread in a pathogen population at the time of selection pressure from using the other fungicide, or when the same resistant mechanism functions for the two fungicide classes.

8. Which best defines your job position?

a. Extension 54%
b. Academic 3%
c. Industry 7%
d. State Government 4%
e. Federal Government 11%
f. Private Consultant 6%
g. Crop Advisor 3%
No Answer 13%

9. What is your area(s) of professional expertise?

a. Weed Science 10%
b. Entomology 11%
c. Plant Pathology 11%
d. Pest Management 24%
e. Farm Business/Economics 3%
f. Sustainable Agriculture 13%
g. Regulatory 11%
No Answer 17%