



## 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>b. False</b>	<b>18%</b>
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%
<b>e. all of the above</b>	<b>59%</b>
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





# Webinar Series: Unifying Resistance Management Education



## Webinar 2 –Fungicide RM poll results

December 3, 2015 – 67 respondents

1. *When it takes several mutations in a pathogen biotype for it to become fully resistant to a fungicide, continual use of the fungicide will eventually select a biotype that is fully resistant and not controllable with the fungicide.*

- |              |           |
|--------------|-----------|
| a. yes       | 66%       |
| <b>b. no</b> | <b>3%</b> |
| c. not sure  | 18%       |
| No Answer    | 13%       |

Explanation: Practical (full) resistance may develop, but not necessarily. DMI (FRAC 3) fungicides have continued to provide control of several diseases despite increased insensitivity in the pathogen.

2. *Type of resistance described in Question 1 is called*

- |                        |            |
|------------------------|------------|
| a. Quaternary          | 1%         |
| <b>b. Quantitative</b> | <b>27%</b> |
| c. Correlated          | 6%         |
| d. Qualitative         | 15%        |
| e. Not sure            | 34%        |
| No Answer              | 16%        |

Explanation: Look at the root of the word 'quantity', referring to several.

3. *After a pathogen has developed resistance to one fungicide, it has demonstrated it is prone to developing resistance, thus resistance will develop to other fungicides, in particular those classified as having high risk.*

- a. True 43%
- b. False 25%**
- c. Not sure 18%
- No Answer 13%

Explanation: This is generally true, but not an absolute. For this to be a true statement, “likely” needs to be added before “develop”.

4. *Product labels often have suggestions of how to use the fungicide to minimize selection for resistance.*

- a. True 66%**
- b. False 12%
- c. Not sure 6%
- No Answer 16%

5. *Applying fungicides at highest label rate will kill all individuals in the pathogen population that are sensitive to the fungicide and also those that are insensitive to a low rate.*

- a. True 40%
- b. False 33%**
- c. Not sure 0%
- No Answer 16%

Explanation: If spray coverage was perfect, the answer would be true, but likely there will be a few “escapees”.



# Webinar Series: Unifying Resistance Management Education

## Webinar 3 –Insecticide RM poll results

December 7, 2015 – 35 respondents

*1. Resistance to insecticides is a significantly smaller problem than resistance to fungicides and herbicides.*

- |                 |            |
|-----------------|------------|
| a. True         | 3%         |
| <b>b. False</b> | <b>46%</b> |
| No Answer       | 51%        |

*2. Resistance can develop to:*

- |                            |           |
|----------------------------|-----------|
| a. biological control      | 0%        |
| b. insecticides            | 12%       |
| c. crop rotation           | 0%        |
| d. mechanical control      | 0%        |
| <b>e. all of the above</b> | <b>6%</b> |
| No Answer                  | 51%       |

*3. Fitness of insecticide resistant insect is usually*

- |                                    |            |
|------------------------------------|------------|
| a. impossible to determine         | 11%        |
| <b>b. reduced</b>                  | <b>20%</b> |
| c. increased                       | 9%         |
| d. the same as susceptible insects | 6%         |
| e. none of the above               | 0%         |
| No Answer                          | 54%        |

*4. Cutting insecticide rates to save money will*

- |                                 |            |
|---------------------------------|------------|
| a. delay resistance             | 6%         |
| <b>b. expedite resistance</b>   | <b>29%</b> |
| c. have no effect on resistance | 9%         |
| d. be technically impossible    | 0%         |
| e. none of the above            | 6%         |
| No Answer                       | 51%        |







# Webinar Series: Unifying Resistance Management Education

## Webinar 4 – Herbicide RM poll results

December 10, 2015 – 40 respondents

1. *What are some cultural or herbicide best management practices that can be used to slow the development of herbicide resistance?*

- |   |            |
|---|------------|
| a. Applying multiple mechanisms of action | 3%         |
| b. Scouting                               | 0%         |
| c. Crop rotation                          | 0%         |
| d. Cultivation                            | 0%         |
| e. Hand weeding                           | 0%         |
| <b>f. All of the above</b>                | <b>83%</b> |
| No Answer                                 | 15%        |

2. *The single most important factor leading to the development of herbicide resistance is overreliance on a single herbicide.*

- |                |            |
|----------------|------------|
| <b>a. True</b> | <b>78%</b> |
| b. False       | 3%         |
| No Answer      | 20%        |

Explanation: Using either the same herbicide or rotating among herbicides with the same mode of action will select for resistant individuals within a population.

3. *Which of the following could indicate herbicide-resistant weeds?*

- |  |            |
|--|------------|
| a. Weeds that are normally controlled by the herbicide at the applied rate survive | 5%         |
| b. Surviving weeds mixed with controlled individuals of the same species           | 0%         |
| c. A spreading patch of non-controlled weeds of a particular weed species          | 0%         |
| <b>d. All of the above</b>   | <b>75%</b> |
| No Answer  | 20%        |

Explanation: Many conditions such as poor activation, or a low herbicide rate, and missed areas in a field could all result in problems. However, the survival of weeds after a postemergence

spray or a preemergence application at the right rate, with proper activation, and complete coverage can indicate resistance. The presence of these weeds does not mean that resistance is certain but may be an indicator of resistance.

4. Herbicide \_\_\_\_\_ is the inherent ability of a species to survive and reproduce after herbicide treatment. This implies that there was no selection or genetic manipulation to make the plant this way.

- a. Tolerance**      **70%**
- b. Resistance      10%
- No Answer        20%

Explanation: This is the standard definition from the Weed Science Society of America for Tolerance. "Treflan does not control galinsoga and never did. That weed is not listed on the label."

5. Herbicide \_\_\_\_\_ is the inherited ability of a plant to survive and reproduce following exposure to a dose of herbicide normally lethal to the wild type. In a plant, this may be naturally occurring or induced by such techniques as genetic engineering or selection of variants produced by tissue culture or mutagenesis.

- a. Tolerance            10%
- b. Resistance**        **70%**
- No Answer            20%

Explanation: This is the standard definition from the Weed Science Society of America for Resistance. "This herbicide always used to control this weed but now it does not".