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Safety, restrictions, and precautions for spraying fungicides on corn

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Safety, restrictions, and precautions for spraying fungicides on corn

Abstract

In the next month, there may be an unprecedented amount of fungicides being applied to field corn in Iowa. While herbicides and insecticides are commonly used by Iowa farmers, fungicides are not. Like herbicide and insecticide labels, reading through a fungicide label will give you most of the needed information concerning safety for both yourself and others while spraying field crops.

Keywords

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Safety, restrictions, and precautions for spraying fungicides on corn

by Daren Mueller and Alison Robertson, Department of Plant Pathology

In the next month, there may be an unprecedented amount of fungicides being applied to field corn in Iowa. While herbicides and insecticides are commonly used by Iowa farmers, fungicides are not. Like herbicide and insecticide labels, reading through a fungicide label will give you most of the needed information concerning safety for both yourself and others while spraying field crops.

Safety

Personal protective equipment: With a few exceptions, fungicides labeled for use on field crops have minimal requirements for personal protective equipment, namely wearing the following:

- long-sleeved shirt and pants,
- shoes plus socks, and
- chemical-resistant gloves.

Table 1. Required personal protective equipment, according to the label.

	Long-sleeved Shirts and Pants	Shoes plus Socks	Chemical-resistant Gloves	Protective Eyewear	Coveralls	Chemical-resistant Clothing
Headline®	x	x	x	x	x	x
Quadris®	x	x	x			
Quilt®	x	x	x			
Stratego®	x	x		x		
Tilt®	x	x	x	x		

The Worker Protection Standard (WPS)

The WPS is a federal regulation designed to protect agricultural workers and handlers. If the pesticide that you are using has an "Agricultural Use Requirement" statement in the "Directions for Use" section of the label, you must comply with the WPS. The most recent information about the Standard may be obtained by checking the September 2005 updated WPS How to Comply manual. A helpful Web site that has information about the WPS is the [Worker Protection Standard for Agricultural Pesticides](#).

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The following Iowa State University Extension publications may be purchased or viewed by contacting [Iowa State University Extension Distribution](#):

PM 1663a [Understand label precautions](#)

PM 1663b [What to do when clothes are soiled with pesticide](#)

PM 1663c [Wear the right gloves](#)

PM 1663d [Wear coveralls and aprons](#)

PM 1663e [Use eye and lung protection](#)

PM 1878 [For Pesticide Work Guard Your Hands with Gloves!](#)

Restrictions

Restricted-Entry Interval (REI): All agricultural pesticides labeled after April 1994 are required to have an REI stated on the label. REIs for fungicides, like other pesticides, are established to reduce pesticide exposure and are based on the product toxicity. In general, workers may not enter a treated area during a Restricted-Entry Interval unless they are wearing all the personal protective equipment required on the product label. Early entry that will result in contact with surfaces treated with pesticides is permitted in only three work situations:

- Short-term tasks that last less than one hour and do not involve hand labor.
- Emergency tasks that take place because of an agricultural emergency.
- Specific tasks approved by EPA through a formal exception process, which includes additional pesticide training for the worker.

Preharvest Interval (PHI): These intervals state the minimum amount of time that must pass between the last pesticide application and the harvesting of the crop, or the grazing or cutting of the crop for livestock feed. Some fungicides have restrictions based on growth stages instead of a specific number of days--e.g., fungicides cannot be applied "after silking."

Table 2. Restrictions for fungicides labeled for corn.

Product	Rate (fl oz/acre)	REI (hours)	PHI (days)
Headline®	6-12 fl oz	12 ^a	7
Quadris®	6-15.5 fl oz	4a	7
Quilt®	7-14 fl oz	24a	After brown silk
Stratego®	7-12 fl oz	24a	After silking
Tilt®	2-4 fl oz	24a	After silking

^aREI is 7 days for bare-hand detasseling activity.

Precautions

Fungicide resistance: Indiscriminate use of fungicide this season may have consequences that are not immediately apparent. Fungicides like Headline® and Quadris® are strobilurin fungicides. The strobilurin fungicides have been characterized as being at "high risk" for fungicide resistance occurring; fungicide resistance has been documented in several fungal pathogens that cause diseases of different crops.

After 30 years of glyphosate use, the development of glyphosate-resistant weeds has been

documented in the Midwest. Selecting for fungicide resistance in a fungal pathogen population is similar. If fungal pathogens are repeatedly exposed to fungicides, the chances of selecting for a "resistant" strain within a fungal population increases. Also, many fungal pathogens of corn produce very mobile spores that can travel relatively long distances, and the numbers of spores that can be produced by fungal pathogens under suitable conditions are far greater than the number of seeds produced by any weeds.

In the short term, "high risk" fungicides may result in yield increases, even at times in the supposed absence of any disease pressure. However, these fungicides used indiscriminately will only increase the selection pressure for selecting fungicide-resistant strains of fungal pathogens. Hypothetically, there could be a time when fungicides are NEEDED to manage a foliar disease on corn, only to find out that these fungicides will no longer be effective against these pathogens. To ensure "high risk" fungicides continue to be useful tools in the future, these fungicides should be used responsibly now--i.e., only for the management of fungal diseases causing economical losses.

To reduce the risk of fungicide resistance development, follow these practices:

1. Apply a fungicide only when it is warranted. Use IPM practices, and base fungicide applications on good scouting observations.
2. Observe recommended fungicide rates. Applying a fungicide at a sub-lethal rate can increase the risk of fungicide resistance development.
3. Mix or alternate fungicides with different modes of action.
4. Do not make back-to-back applications of fungicides with the same mode of action.

For more information about fungicide resistance, go to the [Fungicide Resistance Action Committee \(FRAC\) Web site](#).

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