INSECTICIDE RECOMMENDATIONS FOR SMALL GRAINS - 2012 (Barley, Oats, Wheat)

ENT-47

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Small grains are multi-purpose crops that occupy an important place in production systems. Small grains are attacked by a wide variety of insect pests, but good cultural practices can greatly reduce the potential for economic losses:

- Plant at the proper time (see AGR-18). Planting too early can result in problems with fall armyworms, Hessian flies, aphids, and diseases carried by insects.
- Use recommended seeding rates. Stands that are too thick provide good over-wintering sites for pests and are prone to armyworm infestations in the spring.
- Do not apply excess nitrogen. Luxuriant growth promotes aphid and armyworm problems. To establish need and estimate timing of insect control in small grains, fields should be check weekly when temperatures are above 50^{o}F from emergence to maturity.
- Know the difference between pest insects and beneficial insects.
- Check with your County Extension Agent for Agriculture about training in pest identification, damage thresholds, and control measures (Integrated Pest Management and Pesticide Safety Education training).

Additional Information

In addition to these recommendations the producer is advised to review **IPM-4 Kentucky IPM Manual for Small Grains**. This publication will provide information about identification, life cycle, scouting techniques, and threshold values for the common pests of small grains. This manual may be found on the IPM web pages at: **http://www.uky.edu/Agriculture/IPM/ipm.htm**.

Additionally, you may find useful information about a specific pest in our ENTFACT series. These fact sheets may be found on the Entomology web pages at**: http://www.uky.edu/Agriculture/Entomology/entfacts.htm** These and other publications and educational materials are also available to the producer through your County Extension Office.

Use Insecticides Properly

Products listed in this publication are not the only products labeled for use. These products are commonly used and generally available in Kentucky. You may find many other products with different trade names containing the same active ingredient. Be sure the product you choose is labeled for the intended use and registered in Kentucky.

This publication is an abbreviated guide; it is **not a substitute for a product label.** Before using an insecticide, read the entire label. Note sections containing directions for use, and the warning and precautionary statements. Be thoroughly familiar with the proper safety equipment (i.e., goggles, protective suits, respirators, etc.) required to afford maximum protection. Those involved in control operations should always know the name of the chemical being used and the particular concentration being applied.

Chemicals listed in ***bold italics*** are ***Restricted Use*** pesticides. Persons buying, using, or supervising the use of these pesticides must be certified as competent to do so. Certification training is available from your county extension agent for agriculture. Check http://www.uky.edu/Agriculture/PAT/welcome.htm for information on certification.

Insecticide Use for Plant Health Response

It is my position that I only recommend the use of insecticides to reduce, prevent, avoid, or mitigate insect pests or problems related to insect activity (such as the vectoring of certain diseases). I do not encourage nor recommend the use of insecticides for plant health responses in the absence of arthropod pest management. I feel that insecticides should be used to protect the yield and quality of agricultural products. In My opinion, using insecticides for reasons other than pest management unnecessarily increases the potential for non-target impacts, development of insecticide resistance, and exposure of mixers and applicators

Seed Treatment for Aphid Control

Use only on very early planting in fields with a history of barley yellow dwarf virus problems.

The seed applied insecticides Cruiser (thiamethoxam) and Gaucho (imidacloprid) are registered for use on Wheat and Barley. These products must be applied by a commercial seed treater. The manufactures, Syngenta and Bayer respectively, control the rates and combination of products. See your seed supplier for information.

Post Emergence Treatments for Aphids

(See: Aphids and Barley Yellow Dwarf in Kentucky Grown Wheat. Entfact-121. http://www.uky.edu/Agriculture/Entomology/entfacts/pdfs.entfa121.pdf)

The most important time for controlling aphids to prevent BYD is the first 30 days following emergence. The second most important time is the second 30 days following emergence. Generally, an insecticide applied after the wheat reaches Feeke's 4.0 does little good. Current research data support the following treatment guidelines.

Numbers of aphids per foot of wheat row required to support an insecticide application for management of BYD.

Crop Age	Aphids/Foot of Row
30 days post emergence	3
30 to 60 days post emergence	6
More than 60 days post emergence	10

Delayed planting until after the Hessian Fly free date (Oct. 10 north, to Oct. 15 south) will reduce aphid pressure in the fall. In late spring, treat only if large numbers of aphids are present and plants are exhibiting stress symptoms, or if there are an average of 50 or more aphids per head during the grain filling stage.

Foliar Treatments for Aphids

Insecticide	Rate per Acre	Days to Harvest
Baythroid XL (cyfluthrin)	1.8 to 2.4 fl. oz.	30 (Grain) 3 (grazing or forage)
Lannate SP (methomyl)	1/4 to 1/2 lb.	7 (Grain) 10 (grazing or feeding)
Mustang Max (Wheat only) (zeta-cypermethrin)	3.2 to 4.0 fl. oz.	14 (grain, forage & hay)
Warrior (lambda-cyhalothrin)	2.56 to 3.84 fl. oz.	30 (Grain & Hay)

Foliar Treatments for Armyworms

(See: Armyworms in Small Grains. Entfact-111. http://www.uky.edu/Agriculture/Entomology/entfacts/pdfs.entfa111.pdf)

Insecticide	Rate per Acre	Days to Harvest
Bacillus thruringensis "B.t."	Aid in control of armyworms can be obtained using many products containing "B.t.". Some examples are Dipel, Javelin and Lepinox. Check label for details. Days to Harvest = 0.	

Baythroid (cyfluthrin)	1.8 to 2.4 fl. oz.	30 (Grain) 3 (grazing or forage)
Lannate WSP (methomyl)	1/4 to 2 lbs.	7 (Grain) 10 (Grazing & feeding)
Malathion 5 (malathion)	2 pts.	7
Mustang Max (Wheat Only) (zeta-cypermethrin)	1.76 to 4.0 fl. oz	14 (Grain, forage &hay)
Tracer (spinosad)	1.5 to 3.0 fl. oz.	21(Grain or straw) 3 (forage or hay)
Warrior (lamda-cyhalothrin)	2.56 to 3.84 fl. oz.	30 (Grain & Hay)

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Foliar Treatment for Cereal Leaf Beetle
(See: Cereal Leaf Beetle in Kentucky Wheat. Entfact-107.
http://www.uky.edu/Agriculture/Entomology/entfacts/pdfs.entfa107.pdf)

Treatment is justified if population size reaches one cereal leaf beetle (adult or larvae) per stem.

Insecticide	Rate per Acre	Days to Harvest
Baythroid XL (cyfluthrin)	1.0 to 1.8 fl. oz.	30 (Grain) 3 (grazing or forage)
Lannate WSP (methomyl)	¼ to 1/2 lb	7 (Grain) 10 (Grazing & Feeding)
Malathion 5 (malathion)	1 to 1 1/2 pts.	7
MustangMax (Wheat Only) (zeta-cypermethrin)	1.76 to 4.0 fl. oz	14 (Grain, forage &hay)
Tracer (naturalyte)	1.0 to 3.0 fl. oz.	21(Grain or straw) 3(forage or hay)
Warrior (lambda-cyhalothrin)	2.56 to 3.84 fl. oz.	30 (Grain & Hay)

Foliar Treatments for Grasshoppers
(See: Three Common Kentucky Grasshoppers and their Natural Enemies. Entfact-116.
http://www.uky.edu/Agriculture/Entomology/entfacts/pdfs.entfa116.pdf)

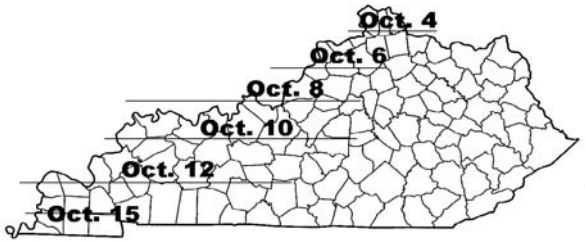
Insecticide	Rate per Acre	Days to Harvest/Forage
Baythroid XL (cyfluthrin)	1.8 to 2.4 fl. oz.	30 (Grain) 3 (grazing or forage)
Dimethoate 4 *(*Wheat Only*)* (dimethoate)	3/4 pt.	35 (Grain) 14 (Grazing)
***Mustang* Max** (Wheat Only) (zeta-cypermethrin)	3.2 to 4.0 fl. oz	14 (Grain, forage &hay)
Warrior (lambda-cyhalothrin)	2.56 to 3.84 fl. oz.	30 (Grain & Hay)

HESSIAN FLY

(See: Hessian Fly in Kentucky Wheat. Entfact-101.
http://www.uky.edu/Agriculture/Entomology/entfacts/pdfs.entfa101.pdf)

Delay in planting until October 10 (north) or October 15 (south) will control this fly. No chemical treatments are recommended.

Map showing normal safe dates for sowing wheat to escape injury by the Hessian fly. These are approximate and will vary some from year to year.



Products for Control of Insect Pests in Stored Small Grains

(See: Controlling Insect in Stored Grain. Entfact-145.
http://www.uky.edu/Agriculture/Entomology/entfacts/pdfs.entfa145.pdf)

The availability of stored grain insecticides is undergoing continuous change. Always check the label of the product to insure that you use it correctly

"Clean-out" Fumigant

Applied to boots of elevators, beneath false floors, etc. This is an "empty" space fumigation targeted at the space beneath the perforated floor in a metal grain bin. Fumigant is applied on a volume not bushel basis.
See the **WARNING** below.

Phostoxin, Fumtoxin etc. (aluminum phosphide***)*** tablets 30-140 / 1000 cubic feet.
pellets 150-700 / 1000 cubic feet

Note: Applied by volume NOT by bushels.

Aluminum phosphide is not significantly heavier than air. Because of its light and penetrating nature very close attention must be paid to sealing the area to be treated.

Bin Surface Applications

Dilute with water to make enough spray to treat 1,000 ft.sq. of bin surface. Use only in empty bins.

Storcide II (deltamethrin + chlorprifos-methyl) ..... 1.8 fl oz in 1 gal
Tempo SC Ultra (cyfluthrin) ..... 0.27 fl. oz.
Insecto, etc. (silicon dioxide, from diatomaceous earth) .....1.0 lb. per 1,000 ft. sq.
Note: some grain buyers, especially food processors will not accept grain coated with this product. Be sure your buyer will accept this treatment.

Grain Protectants

Applied directly to stored small grains.
Do not use the same compound for both Bin Surface and Grain protection.

	Amount per 1,000 bu.
Storcide II	12.4 fl. oz. -- Wheat
	9.9 fl. oz. -- Barley
	6.6 fl. oz. -- Oats

Grain Surface "Cap Out" Treatments

Applied directly to the top surface of stored small grains for Indian Meal Moth control.

Biobit HP (B.t.)	3 oz. / 1,000 ft. sq. (mixed to 4 inches deep)
Dipel DF (B.t.)	1 lb. / 1,000 ft. sq. (mixed to 4 inches deep)
Javelin WG (B.t.)	14 oz / 1,000 ft. sq. (mixed to 4 inches deep)

Indian meal moth larvae can be controlled by many products containing the active ingredient *Bacillus thuringensis* "B.t.". Biobit, Dipel and Javelin are just examples of these products. B.t. products will not control beetles and weevils.

Note: Indian meal moth adults may be controlled by hanging DDVP Resin strips (Vapona) in the head space over the grain mass. Use 1 strip for each 1,000 cubic feet of air space over the grain. One treatment will last about 3 months.

Bulk Grain Fumigation

Amount of Fumigant to be applied/1,000 bu. stored small grains.

Phostoxin, Fumtoxin etc. (aluminum phosphide) tablets 40 - 180 / 1,000 bu.
pellets 200 - 900 / 1,000 bu.

Note: Economic thresholds are hard to determine for stored grain but these numbers should provide a guide to when fumigation will be profitable. Rice weevil or lesser grain borer 1 insect / qt of grain. Red flour beetle, rusty grain beetle and other bran bugs 5 insects / qt of grain. Successful fumigation includes consideration of many variables, use these fumigant amounts as guide and consult the label of the product you choose.

WARNING: Fumigation is a complicated and dangerous technique. If at all possible hire a commercial fumigator. If a commercial fumigation is not possible consult the label of the product you have chosen to use and follow it to the letter. Note that the Aluminum phosphide label has undergone major revision in recent years and now contains significant requirements for pre-planning and documentation of the fumigation and access to considerable safety equipment.