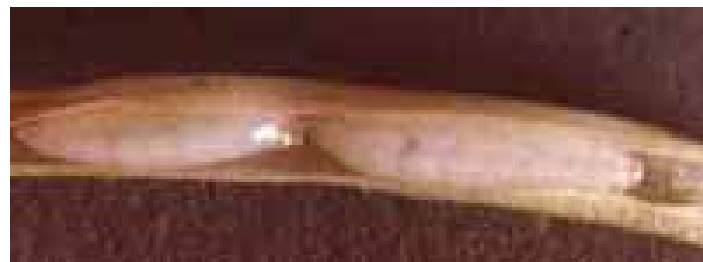




HESSIAN FLY ON WHEAT

During the past decade, damage to wheat by Hessian fly has been minimal in Pennsylvania. Outbreaks of this historic pest, however, have occurred in states to our south such as North Carolina and Virginia, possibly because growers have gotten lax about planting after the fly-free dates and/or increased use of small grain cover crops that are planted earlier in the year than a cash crop would be and then are not harvested.

The low incidence of occurrence of and damage from Hessian fly in Pennsylvania can be attributed both host-plant resistance and planting date. Many varieties of wheat commonly used in Pennsylvania possess either complete or moderate resistance to attack by Hessian fly. Also helpful in holding down fly damage has been the cultural practice of planting wheat after the “fly-free” date in late September or early October (see below for these dates). Continued diligence in using resistant varieties and planting late should prevent Hessian fly from returning as a major pest of wheat in Pennsylvania.



Hessian fly eggs. #512-11. Oregon State University in cooperation with EPA.



Hessian fly pupa. #512-25. Oregon State University in cooperation with EPA.

LIFE HISTORY

There are two generations per year, one in early fall and one in the spring. There may also be a third generation in July and August if moisture conditions are high enough for volunteer wheat to sprout and grow. When a summer or supplementary brood does develop, early-sown non-resistant wheat is often severely damaged.

Flies (Fig. 1) of the fall brood tend to appear in late September and live for just a few days. They lay their eggs on the leaves of young grasses, including small grains. Wheat appears to be preferred, but flies will also lay eggs on barley and rye and some native grasses. Planting after the fly-free date is an effective control method because it avoids having large numbers of young potential host plants available to receive eggs when adult flies are active. If the flies emerge and die off before the new wheat plants emerge, the crop cannot be infested. Maggots can survive on native grasses, but populations do not appear to thrive until they find small grain hosts, particularly wheat.



Fig. 1. Hessian fly adult. Photo from the USDA.



Fig. 2. A hessian-fly infested wheat plant on left compared to a health plant on the right. Photo by John Tooker

Maggots soon hatch from the eggs, and these tiny larvae crawl to the crown of seedlings (just above the roots) and feed on plant juices after injecting their unique saliva. Feeding by one larva can permanently stunt plant growth (Fig. 2). A larva will complete its growth before cold weather and pass the winter as puparium or “flaxseed.”

DAMAGE

In the spring, adult flies emerge from the “flaxseeds” and lay eggs on the leaves. Upon hatching, the maggots work their way under the leaf sheath near the node of these large plants. Their feeding at this site weakens the stem which results in the stalks breaking over before harvest. The maggots change into puparia about the time wheat heads out and they remain in the stubble as “flaxseeds” until fall.

CONTROL

High mortality of Hessian fly from parasites is sporadic in the spring generations but cannot be relied upon for the high level of control we desire. Therefore we suggest the use of fly resistant varieties where feasible or plant wheat after the “fly-free date”. The fly-free date for each county in Pennsylvania is listed below. It must be acknowledged, however, that these dates may be somewhat ‘soft’ given the warmer temperatures that we have been experiencing in recent years. To be more conservative, growers should consider planting even a week or so later if possible.

COUNTY & FLY-FREE DATE

Adams	October 1	Lackawanna	September 26
Allegheny	September 28	Lancaster	September 30
Armstrong	September 28	Lawrence	September 28
Beaver	September 28	Lebanon	September 27
Bedford	October 1	Lehigh	September 27
Berks	September 27	Luzerne	September 27
Blair	October 1	Lycoming	September 27
Bradford	September 26	McKean	September 22
Bucks	September 30	Mercer	September 26
Butler	September 28	Mifflin	October 1
Cambria	September 27	Monroe	September 27
Cameron	September 27	Montgomery	September 30
Carbon	September 27	Montour	September 27
Centre	September 27	Northampton	September 27
Chester	September 30	Northumberland	September 27
Clarion	September 28	Perry	October 1
Clearfield	September 27	Philadelphia	September 30
Clinton	September 27	Pike	September 26
Columbia	September 27	Potter	September 20
Crawford	September 26	Schulykill	September 27
Cumberland	October 1	Snyder	September 27
Dauphin	September 27	Somerset	September 27
Delaware	September 30	Sullivan	September 25
Elk	September 27	Susquehanna	September 27
Erie	September 26	Tioga	September 26
Fayette	September 28	Union	September 27
Forest	September 26	Venango	September 26
Franklin	October 1	Warren	September 26
Fulton	October 1	Washington	October 1
Greene	October 1	Wayne	September 26
Huntingdon	October 1	Westmoreland	September 28
Indiana	September 28	Wyoming	September 26
Jefferson	September 28	York	October 1
Juniata	October 1		

WARNING

Pesticides are poisonous. Read and follow directions and safety precautions on labels. Handle carefully and store in original labeled containers out of the reach of children, pets, and livestock. Dispose of empty containers right away, in a safe manner and place. Do not contaminate forage, streams, or ponds.

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Last updated: August 2012

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Issued in furtherance of Cooperative Extension Works, Acts of Congress May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture and the Pennsylvania Legislature. D. Jackson, Director of Cooperative Extension, The Pennsylvania State University.

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