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Barley Thrips

BIOLOGY and CONTROL

Dr. Richard L. Post
Professor of Entomology
Experiment Station

Dean K. McBride
Assistant
Extension Entomologist

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The barley thrips, Limothrips denticornis Haliday, a comparatively new insect pest in North Dakota was first recorded here when hibernating specimens were collected from sod in 1946. Large numbers of these thrips were found in North Dakota barley fields from 1951 to 1955. Before 1956, when a project on the biology, ecology and control of barley thrips was initiated by North Dakota Agricultural Experiment Station, little was known about the life history and economic importance of this insect in North America.

Came From Europe - This insect was introduced from Europe where it is of minor economic importance. It is not mentioned in American books on entomology.

Economic Importance - Loss from barley thrips occurs when there are 2 or more adults with their 30 or more resulting young per plant. They are frequently abundant enough in early seeded fields, planted before May 15, to cause injury. This damage is a reduction of 1 pound in test weight; 11 per cent in plump kernels and an increase of 2 per cent thin kernels. This caused an average loss of 6 cents per bushel based on the market prices for malting barley. This reduction, together with an average decreased yield of 2.5 bushels per acre totaled between 14.3 \$4.50 and \$5.00 per acre.

Description - Adult thrips are dark brown to blackish and about as long as but slightly wider than the undotted "i" in this circular. The blackish

female has wings fringed with long hairs and has prominent bristles at the end of her pointed abdomen. The wingless male is dark brown and the end of the abdomen is rounded. The prolongation of the third antennal segment is characteristic. The wingless, immature forms are pale greenish-yellow and blend in with the host plant making it difficult to see them.

Overwintering Habits - Only the adult females overwinter, hibernating in sheltered places. Hibernating specimens have been collected from forest litter, sod, leaf mold and insect galls. As many as 227 have been taken from one robin's nest but the average is 6 to 12 per bird's nest. They prefer Kentucky bluegrass and brome sod in shelterbelts where they average 65 to 70 per square foot. They are fewer in roadside sod with 5 per square foot.



INFESTED



NON-INFESTED

Barley infested with cereal thrips may have typical goose neck stalks as shown on the left.

CONTROL MEASURES

Winter Mortality - Although 60 to 65 per cent of the overwintering thrips die by April, enough survive to populate barley fields.

Spring Appearance - Barley thrips come out of hibernation in late May and early June when they are common on grasses in and around shelter-belts. They also fly to roadside grasses. They do not breed to any extent on grasses, although young have been found in a few instances on these early spring hosts.

Seasonal Development - The seasonal appearance of both adults and nymphs of barley thrips is correlated with the stage of development of the host plants. Adults are not found within the leaf sheaths until the heads begin to form. The young appear about the time the heads begin to emerge. An average of 15 young result from each female.

In early-planted barley fields, seeded before May 15, migrating female adults appear in considerable numbers from mid June to early July. They crawl down the inside of the terminal leaf sheaths where they lay their eggs in the plant tissues. They prefer to lay eggs within the inner surfaces of the terminal leaf sheaths although some eggs are laid in the stems. The eggs hatch in about 4 to 5 days with the first young appearing about the last of June and the majority maturing by mid July.

Unusual Life History - In this species it is the female pupa (immature stage) and not the adult which is fertilized by the male adult, a phenomenon not yet observed in any other insects. The males die off and only the females overwinter.

Fewer In Late Seeded Fields - Fewer than two adults and their resulting young per plant cause negligible damage and control measures will not be repaid by better quality and increased yield. Fields seeded after May 15 seldom have more than 1 adult and 10 young per plant.

When Control Measures Are Needed - Although barley thrips have occurred throughout North Dakota barley fields during the past 10 years, they are not always abundant enough to warrant controlling them. Sufficient damage to justify control measures occurs when there are 28 to 30 or more young per plant. Since an average of 15 young results from each adult female, control measures should be taken only if 2 or more adults are found per plant. Control of lighter infestations will not result in increased return to pay for the cost of insecticidal application.

You Have To Check Each Field - You can't tell by the appearance of the barley plants whether they are infested. You have to check individual fields for the presence of these small, but costly enemies.

When To Check Your Fields - Control measures should be taken only if two or more adult thrips are found per plant when the heads are just beginning to emerge from the sheaths and before the crop is fully headed. At this time, the thrips are concealed on the inner surfaces of the terminal leaf sheaths or on the developing heads. It is too late to consider control measures after the crop is fully headed.

How To Check Your Field - Carefully examine at least 10 plants in different field locations in order to find the average number per plant. Do not confine your counts to the border of the field where the thrips are frequently more abundant. The tallest and more mature plants have the higher populations of thrips, therefore, select 10 plants at random and after checking a plant take 8 or 10 steps towards the center of the field.

How To Examine Plants - Break the plant off and carefully peel down the upper sheath and count the number of small elongate dark thrips on the inside of the leaf, on the stem and developing head. The dark colored adults are easily seen

