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Insect answers



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**WIREWORM CONTROL
WITH SEED TREATMENTS
ON DRYLAND WHEAT**

Wheat in the dry-farming areas of Washington and neighboring states is often damaged by wireworms. Wheat seed is burrowed out, or the plant stem just above the kernel is chewed while the plants are very young and tender in April and May, giving the portion attacked a shredded appearance. If wireworms are present, examination of the soil around injured plants will reveal nearly cylindrical, yellowish white, and shiny "worms," up to three-quarters of an inch.

Life History

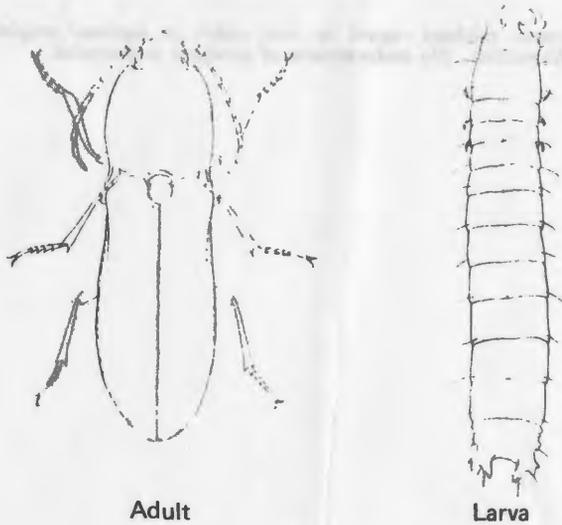
The wireworm in dryland is the Great Basin wireworm, *Ctenicera pruinina noxia*, which spends three years or longer as a larva in the soil. This presents a persistent control problem. After larval development it pupates and shortly afterward transforms into a black click beetle about half an inch in length. The winter is

passed as either the larva or beetle. The "worms" feed most extensively from late March through May when the ground is relatively cool and moist.

Some farming practices help reduce the amount of wireworm damage, though they do not always provide adequate control. Clean summer fallow deprives larvae of rootlets to feed on, though older larvae can stand extended periods of starvation. Vigorous stands, that result from proper applications of fertilizer and fungicides, should withstand wireworm attack much better than those lacking vigor. Early planting may help as fall wheat is farther advanced the following spring when attack by wireworms is at its peak. Injury by wireworms may be somewhat offset by thicker plantings of up to ten pounds of additional seed per acre.

Chemical Control

With the current practice of applying fungicides as a slurry treatment for smut control prior to planting, field experiments have been performed incorporating an insecticide to the slurry also. Previous experiments show that injury by wireworms destroyed as much as 20 percent of untreated wheat plants in test plots on the dryland experimental station at Lind, Washington. Many wireworms were actually killed at effective insecticide dosages, rather than merely repelled. Treatments where stand reduction was 4 percent or less, included the following:



Adult

Larva

**Seed Protectant Applications
of Insecticides to Wheat**

Insecticide, wettable powder* or liquid formulation	Ounces active ingredient	
	100 lbs. wheat	1 bu. wheat
Heptachlor**	2.8	2.0
Lindane	Many formulations; see manufacturer's recommendations, usually not more than 1 oz. lindane per bushel.	

*High concentrations of wettable powders (25% or higher) are preferable because they adhere better at the dosages suggested; present evidence suggests that emulsifiable concentrate (e.c.) insecticide formulations combined with e.c. formulations of fungicides may cause plant toxicity problems.

**The use of heptachlor as a seed treatment will be cancelled Sept., 1982. Until then it may be used to treat seed in accordance with label directions.

When injury from wireworms in dryland wheat is a problem, the amount of insecticide listed in the table should be applied to the seed as a slurry application. In some cases, the rates of application suggested are somewhat lower than

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amounts listed by the manufacturer. In experimental plots, insecticide-fungicide combinations tested did not show noticeable reduction in effectiveness of insecticide. Experiments were not designed to indicate whether insecticides will reduce the effectiveness of fungicides, but several years of use have not revealed a problem.

Precautions

1. Treated grain must not be fed to man or animals.
2. Apply insecticides just prior to planting to prevent chemical deterioration. Storage of treated grain can cause excessive loss in germination.
3. Overdoses of insecticides may affect germination.
4. Suggestions presented here were satisfactory under dry-farming conditions; they may be inadequate under irrigation conditions where higher populations of different species of wireworms exist.



Use pesticides with care. Read the label and follow its directions. Never smoke while using pesticides and avoid breathing the spray or dust. Wear natural rubber gloves when handling pesticides. Wash hands and face carefully with soap and water after applying. If insecticides are spilled on skin or clothing, remove contaminated clothing and wash skin thoroughly. Store pesticides in their original containers and be sure labels remain on the containers. Keep containers away from food or feed and out of reach of children or irresponsible persons.