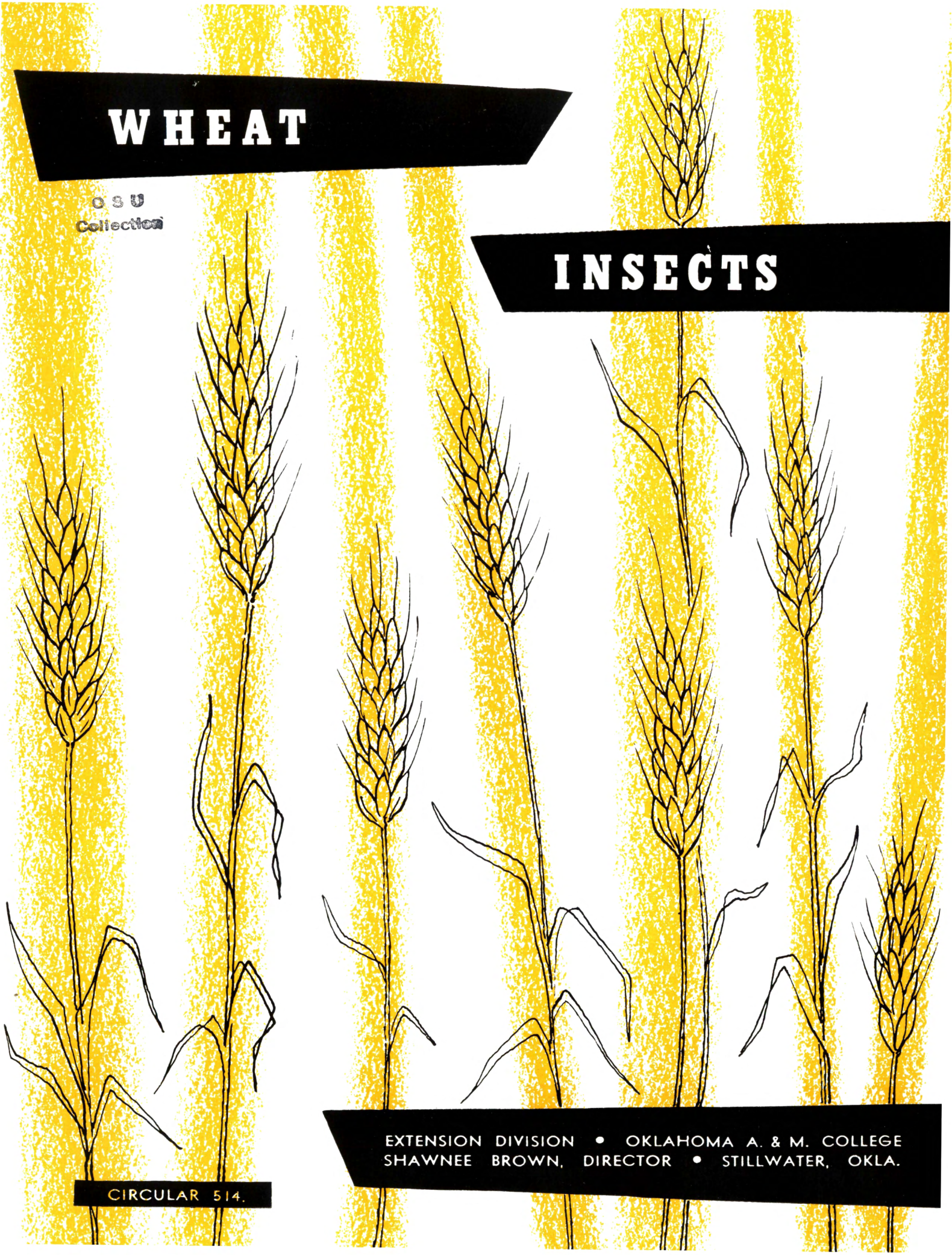
WHEAT INSECTS



EXTENSION DIVISION • OKLAHOMA A. & M. COLLEGE
SHAWNEE BROWN, DIRECTOR • STILLWATER, OKLA.

CIRCULAR 514.

WHEAT INSECTS

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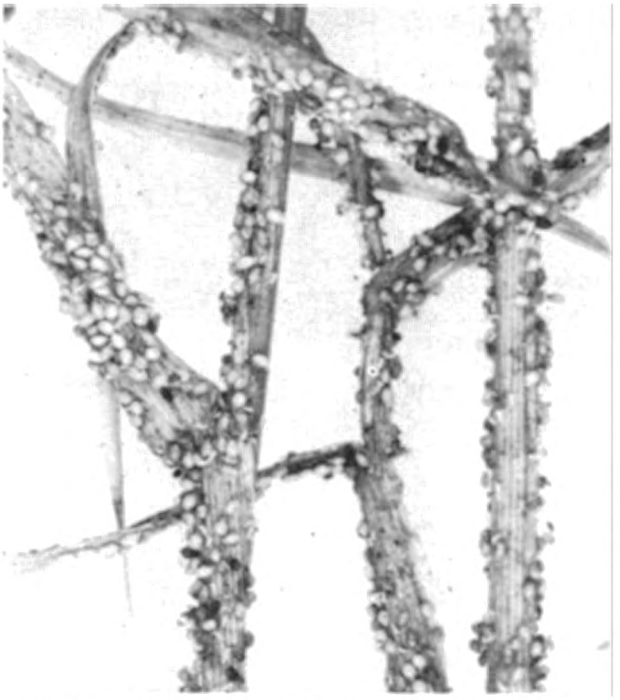
Wheat, one of Oklahoma's principal cash crops, is attacked each year by a number of insects. The annual damage varies from minor in some years to severe or even total loss during other years. Some of the most important wheat insects that occur in Oklahoma are the greenbug, several species of grasshoppers, the chinch bug, the armyworm, cutworms, the wheat white grub and the hessian fly. Some of the minor pests are the brown wheat mite, wireworms, and false wireworms.

GREENBUG

The greenbug is a small green insect with sucking mouth parts. It is one of the aphids. A mild, dry fall and winter followed by a cold, dry, late spring is favorable for greenbug growth and activity. This is especially true where such seasons follow a wet summer that is favorable for the growth of volunteer wheat, which affords good breeding places for the insect.

Control: Under average conditions, the greenbug is controlled by its natural enemies, such as the lady beetles and small parasitic wasps. Temperatures between 44 and 64 degrees, however, are favorable for greenbug development and unfavorable for the development of its principal enemy.

Wheat fields that are heavily infested with greenbugs should be pastured in order to get all of the good possible from the crop before cold weather sets in.



Wheat stems infested with greenbugs.

Parathion: This highly poisonous material has given excellent results when applied as a spray or as a dust at the rate of one-fourth pound of the actual material per acre. Be sure to follow directions on the container.

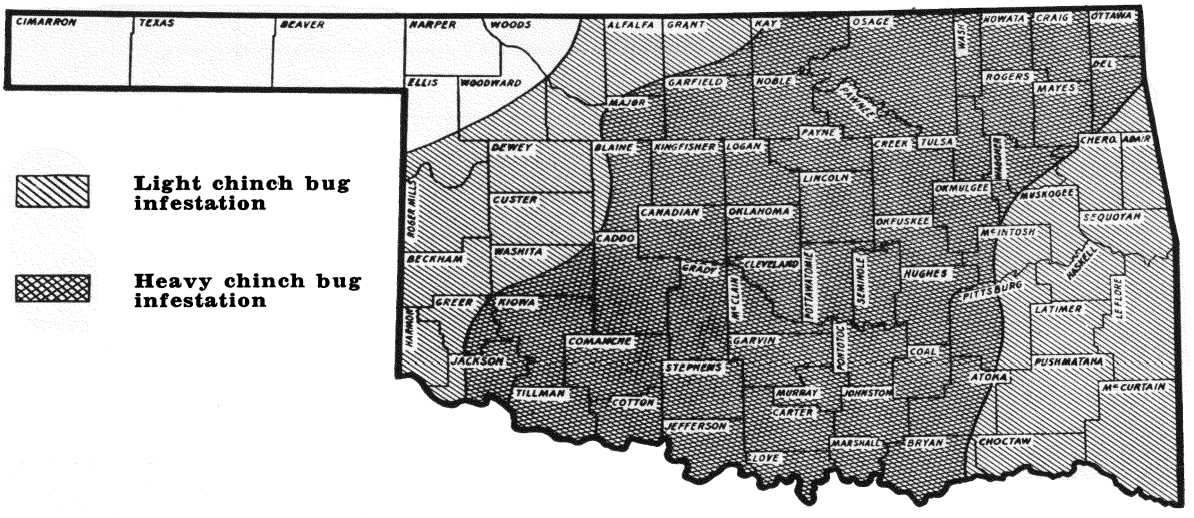
Metacide: Metacide, one of our phosphorous compounds, has also given good greenbug control. It should be used at the rate of one-fourth pound of the actual chemical per acre. It may be purchased at several strengths, so be sure you use the right amount per acre. If you have a 25 per cent strength material, use a pint per acre; but should you have a 50 per cent material, use one-half pint per acre.

There may also be other strengths on the market of both metacide and parathion. **Precautions:** Parathion and metacide are highly toxic to humans; so do not become careless when handling them. Do not get the dust or liquid on your body. Do not breathe the dust or the spray. Always wear rubber gloves and an approved mask when working with these poisons. If any ill effects are noticed, such as headache, dizziness, vomiting, etc., stop spraying, leave the field at once, call a doctor, take a bath and change clothes immediately. Atropine administered by a physician is recommended.

CHINCH BUGS

Some years chinch bugs cause damage to wheat and barley, especially in the fall of the year. The damage is most pronounced in dry years. Damage may also occur in the spring when conditions are favorable for the bugs to overwinter and are favorable for the young bugs to develop in the spring. Dry weather favors their development.

Control: Chinch bugs may be controlled by sprays, dusts or barriers.



Chinch bug infestations are usually most severe in a wide belt of Oklahoma extending diagonally across the state from the northeast to the southwest. Of greatest importance as a pest of corn and sorghums, chinch bugs may injure wheat in the fall and again the next spring.

Sprays: **Toxaphene,** at two pounds per acre, or **dieldrin** at one-half pound per acre, in from two to eight gallons of water are very effective.

Dusts: Dust infested spots thoroughly with a 20 per cent **toxaphene** dust; a 5 per cent **chlordane** dust or a 3 per cent **gamma BHC** dust. Good results will be obtained if it isn't too windy.

Barriers: The presence of many chinch bugs in a wheat field means trouble for a nearby corn or sorghum field. When the wheat matures early in June, thousands of the bugs will crawl out of the field and kill rows of corn and sorghum plants. This migration takes place in northern Oklahoma in early June. Be prepared to protect young corn and sorghum by the judicious use of barriers. Extension Circular 369 gives complete details on chinch bug control on corn and sorghums through the use of barriers.

GRASSHOPPERS

These insects usually cause most damage to wheat in Oklahoma during the fall of the year. The damage is done soon after the wheat germinates and is greatest at the margins next to weedy roadsides, turn rows, creek banks and the like. Oftentimes they will destroy from ten to eighty feet of the wheat around the margins. In years when grasshoppers are numerous, they have been known to cut the heads from the ripening grain.

Control: **Aldrin** is effective in controlling small grasshoppers when used at the rate of two ounces of the actual chemical per acre.
Chlordane is also effective when used at the rate of one pound of actual chemical per acre.

Toxaphene is effective when used at the rate of one and one-half pounds of actual chemical per acre.

These materials can be applied either as a spray or as a dust. They should be applied in April or May while the grasshoppers are small and while they are congregated in and around their hatching beds, which are usually found along turn rows, roadsides, creek banks and the like. These materials may also be used for the control of the adult hoppers when they are congregated over limited areas, but it will often require two or more applications to bring the adult hoppers under control, and the dosage should be increased by half. It is very important that farmers locate the grasshoppers while they are small and destroy them before they spread over the fields, as it is more economical to control young hoppers.

Poison Bait: Poison bait is effective for grasshopper control in Oklahoma, especially when the weather is dry. Sodium fluosilicate, white arsenic, or Paris green are used at the rate of six pounds to each one hundred pounds of bait material. Apply at the rate of ten pounds of dry material per acre. Broadcast where the hoppers are feeding. Baits are most effective in protecting field margins of fall-sown grain.

ARMY WORMS

Cool damp springs are favorable for the development of these pests. Most damage is done about the time the wheat begins to head, or when it is in the dough stage. The plants often are completely defoliated and if the infestation is severe enough, the wheat beards and heads are cut off, thus greatly reducing the yield. The damage is more severe on rank wheat.

Control: Toxaphene, when applied as a spray at the rate of one and three-fourths pounds of the actual chemical in one and one-half to three gallons of water per acre, gave excellent results in southwestern Oklahoma in 1949.

DDT, when used at the rate of one and one-fourth pounds of actual chemical per acre in one and one-half to three gallons of water, gave good control.

Dieldrin, when used as a spray at the rate of one-fourth pound of actual chemical in one and one-half to three gallons of water per acre, also gives good results.

Toxaphene, DDT, and **Dieldrin** spray can be applied by plane. Should one wish to apply any of these chemicals from ground equipment, the amount of water used should be increased to five to seven gallons per acre.

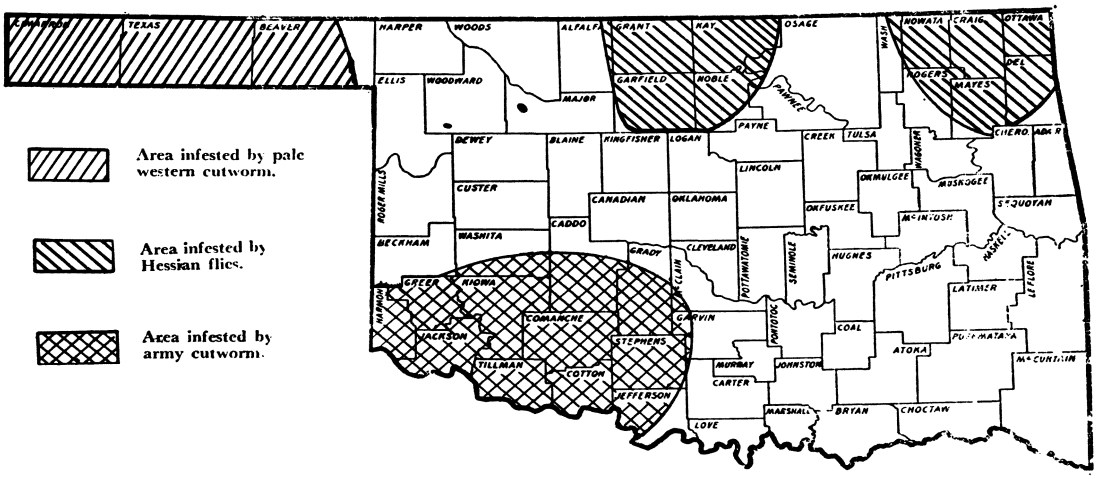
Comparison between healthy wheat heads and heads infested with armyworms.

Poison bait, when made and applied in the same manner as for grasshopper control, has given excellent results, and is recommended when the above materials cannot be obtained. Broadcast late in the afternoon.

ARMY CUTWORM

Conditions that favor the development of the armyworm also favor the development of the army cutworm. Both of these pests are more damaging in the western part of the state. Army cutworms usually appear in late February or March in many of our wheat and alfalfa fields

throughout southwestern Oklahoma. Damage may be severe if plants are small and the plant growth is slow. The controls recommended for armyworms are equally as effective for the army cutworm.



A. Most injury by army cutworms occurs in southwestern Oklahoma. The injury is typical cutworm work, the young wheat plants being destroyed in the spring.

B. The Panhandle section is the only part of Oklahoma where pale western cutworm injury occurs.

C. Hessian fly damage is restricted to the north central and northeastern counties.

PALE WESTERN CUTWORM

In some years the pale western cutworm causes severe damage to wheat in the Oklahoma Panhandle counties. This cutworm is grayish to white in appearance and when full grown measures from one and one-fourth inches to one and one-half inches in length. It differs from other cutworms by feeding just beneath the surface of the soil, and poison baits are not effective in its control. Dry springs are very favorable for the development of this pest.

Control: Fields in which this cutworm is known to occur in damaging numbers should be fallowed or planted in grain sorghums. Several of the recommended control practices are not advisable in the Panhandle due to the soil blowing.

HESSIAN FLY

The hessian fly is often a serious pest to wheat in northern and northeastern Oklahoma. The fly passes the summer and winter in the resting stage, commonly called the "flax seed" stage. In the winter months you can find the "flax seed" close to the soil between the leaf sheath and the stem at or just below the soil surface. The adult fly is seldom seen and it is about the size of a gnat or mosquito. Injury is caused by the young developing maggot absorbing food material from

the growing wheat plant. The maggots develop between the leaf sheath and the wheat stems. There are at least two broods each year. Damaged wheat often dies in the fall of the year, and if not killed, fails to stool and produces very few heads. Heavy spring infestation causes light heads and many straws to break over before harvest.

Control: Plow stubble under immediately after harvest. Keep down all volunteer grain. Plant after fly-free date, which in general is October 15 to November 1 in northern Oklahoma. The flies are killed by the first frost.

Pawnee and Ponca are recommended resistant varieties of wheat.

WHEAT WHITE GRUBS

These grubs which are the young of a gray wingless May beetle, attack the roots of the young plants in the fall of the year and the roots of the more mature plants in the spring. Serious damage often occurs where wheat follows wheat year after year. Most serious damage occurs in years when the weather is dry and warm. When the ground gets cold, the grubs go below the plow line and cease feeding. The damage usually occurs in the same part of the field each year, and the spots increase in size from year to year.

Control: The white grub is a difficult insect to control, since it occurs in sections of the state where it is difficult to plan a satisfactory crop rotation. A suggested rotation is: first year, plant corn or grain sorghums; second year, oats followed by wheat in the fall.

Summer fallow helps if all vegetation is kept down from harvest until wheat is sown in October.

Aldrin, when used at the rate of two and one-half pounds of the actual chemical per acre, shows much promise in controlling these pests. It is appearing on the market in the granular form, and can be mixed and applied with fertilizer. This can be especially recommended where there are small spots infested with white grubs from which they are spreading to other parts of the field.

BROWN WHEAT MITE

This tiny pest of wheat occurs principally in the western part of the state, but during dry years may appear as far east as Stillwater. Oftentimes their injury will cease following a good, hard shower. Wheat fields that are heavily infested with brown mites present a scorched withered appearance, and when one notices this condition, it is pretty certain that the brown mites are present.

Control: Several chemicals have been tested for the control of the brown wheat mite. **Parathion,** when used at the rate of one-half pound

of actual chemical per acre, has given the best control. **Sulphur,** when applied at the rate of 30 pounds per acre, is also effective. These chemicals do not destroy the eggs, and if the weather remains dry, we may get a re-infestation of the fields. Parathion is applied as a spray, while sulphur is used as a dust.

WIREWORMS

Injury caused by these pests consists of thinning of the stand of your wheat plants in the fall of the year by the worms feeding on the plant roots. Injury is greatest in dry years due to the slow growth of the plants. The adult of the wireworm is a "click beetle," sometimes spoken of as a "snapping jack."

Control: Plant an excess amount of seed, five to ten pounds above the normal seeding rate. Plant when moisture is favorable for rapid germination and growth.

In recent tests where **dieldrin** was used at the rate of two ounces of the actual chemical for the amount of wheat that one plants to an acre, it was an effective seed treatment for the control of wireworms in some of the states. Dieldrin is usually dusted over the seed wheat at the above rate just before it is planted.

Lindane, when used at the rate of two ounces of the actual chemical for each 100 pounds of grain, has also given good control. It can be used either as a dust or spray; and immediately after the grain is treated, it should be planted. Do not use an excessive amount of lindane, as it will injure seed germination. On light soils, it is recommended that only one ounce of lindane be used to 100 pounds of grain.

Benzine Hexachloride has given good results in New Jersey on heavy soils when used at the rate of one-half pound of the actual chemical per acre and mixed with soil. Root crops such as potatoes, turnips, peanuts, etc., cannot be grown on soil treated with benzine hexachloride due to the off-flavor given them from the benzine hexachloride.

Methods of Applying Insecticides to Wheat

The applications of sprays and dusts to wheat field by plane is effective and recommended where the acreage to be treated is large. Low-gallonage ground sprayers are also recommended for smaller fields or for spot treatment. The use of crop dusters is frequently unsatisfactory because of windy conditions. Wettable powders are unsatisfactory for use in planes or low-gallonage ground sprayers. Many of the wettable powders seriously injure low-gallonage pumps.

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