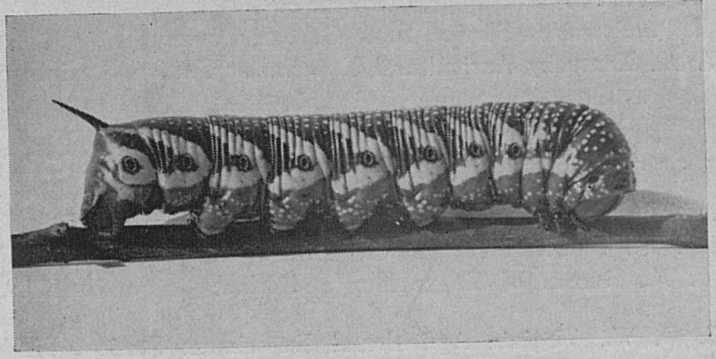
TOBACCO INSECTS

Suggestions for their Control in Kentucky

By W. A. PRICE



Tobacco Hornworm

Circular 437

UNIVERSITY OF KENTUCKY

College of Agriculture and Home Economics

Agricultural Extension Division

Thomas P. Cooper, Dean and Director

TOBACCO INSECT COUNCIL

Differences between types of tobacco and in conditions under which tobacco is grown, make it difficult to formulate adequate control measures for all types and conditions. A satisfactory remedy for an insect in one area might be entirely unsatisfactory in another area. Because of these and other problems encountered with tobacco insects, a Tobacco Insect Council was formed in 1937. Its members are entomologists working on tobacco insect problems and meeting frequently to pool information. The recommendations of their last conference on burley and dark fire-cured tobacco made by the following committee are contained in this circular:

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Tobacco Insects

SUGGESTIONS FOR THEIR CONTROL IN KENTUCKY

Arranged by W. A. Price

Thorough burning or steaming of the tobacco plant bed and tight framing and covering of it are the first steps in controlling insects that attack plants in the bed. If these things are well done insecticides often will not have to be used until the plants are set in the field.

PREVENT INSECT TROUBLES BY GOOD PLANT-BED CONSTRUCTION

Burn or steam the bed site thoroughly to destroy insects hibernating in the topsoil. Make the frame of 6-inch boards painted with creosote, and be sure that the frame is at least 2 inches narrower than the cloth so that the cloth will overlap the frame. Measure the width of the frame from the outside edges of the boards. Set the boards an inch or a little more into the soil, bank earth against them, and tamp. This prevents flea beetles and other insects from entering under the boards. Fit the boards carefully at the joints so there will be no cracks for the beetles. Anchor the frame to the ground by nailing the boards to pegs driven into the ground at corners, at the middle of each board, and at the joints. This assures a frame that will not give when the cloth is stretched over it. Place the cloth over the frame, draw it down the outside edges of the boards and fasten with small nails or strips of wood. Be sure that there are no openings between the cloth and frame.

Boards for the frame, if given good care, will last about 4 years, so that the cost distributed over that period is small. The cost of insecticides that would be needed if the bed were not tight-framed, and cost of labor to apply them, would be about the same over the 4-year period, as the cost of boards + creosote. The barrier also keeps out other pests such as cutworms, army worms, springtails, and slugs.

CHOICE OF INSECTICIDES LISTED

Several remedies for one tobacco pest are, in some instances, given in this leaflet, so as to permit a choice of material and treatment. The remedies are about equally effective. Use the remedy containing material available in your area.

TOBACCO FLEA BEETLE

In Plant Bed

Dust containing paris green 1 part, lead arsenate 5 parts

Mix well and apply with a rotary, hand-operated duster or a plunger type duster at the rate of ¾ pound per 100 square yards. Repeat application about every 4 to 7 days until pest is under control.

Dust containing 1 percent rotenone

Apply mixture prepared with cube or derris at the rate of ½ pound per 100 square yards of plant bed, with a rotary type, hand-operated duster or a plunger type duster. Repeat applications about every four days until beetles are destroyed. This dust may be applied through the cloth cover of the plant bed if the cover is dry and not resting on the plants. Rotenone is especially good for short periods around the edges of the plant beds.

Dust containing cryolite, (70-80 percent sodium fluoaluminate)

Apply with a rotary, hand-operated duster at the rate of ½ pound per 100 square yards. Repeat application about every 4 days until control is gained.

Dust containing 3 percent DDT

Results of first experiments indicate that 3 percent DDT dust is very effective for controlling the flea beetle. Apply with a rotary hand-operated duster through the plant bed cover at the rate of 1 pound per 100 square yards. Repeat the application if evidence of flea beetle injury is noted. An application of DDT dust immediately before pulling plants from the bed serves as a control of flea beetle after the plants are set in the field.

Just Before Transplanting

Just before transplanting young plants to the field, dust them with a mixture of 1 part paris green and 5 parts lead arsenate, at the rate of 1 pound per 100 square yards. If coverage is good, this application will serve as a control for flea beetles after the plants are set in the field.

Disposal of Plant Bed

Destroy all the plants in the bed as soon as transplanting has been completed. This removes the plants as a source of breeding material for the flea beetle. Two good methods of disposal are: (1) pull the plants and scrape the soil with a hoe, or plow and harrow thoroughly, and (2) cut the plants off, and apply fuel oil with a sprinkling can, about 8 gallons per 100 square yards.

Newly Set Plants

Dust containing paris green 1 part, lead arsenate 5 parts

Apply right after setting, (unless plants were dusted in bed just before pulling) with a plunger type duster or a rotary, hand-operated duster, at the rate of about 3 pounds per acre. Repeat application until control is gained.

Dust containing cryolite* (70-80 percent sodium fluoaluminate)

Apply with a rotary, hand-operated duster covering well as soon as possible after the plants are set.

Dust containing 3 percent DDT

Apply with a rotary, hand-operated duster or a plunger type duster at the rate of about 4 pounds per acre. Do not apply DDT after the formation of leaves of tobacco intended for market, because of the possible health hazard of DDT residues on the marketed tobacco.

Field Plants

Dust containing cryolite* (70-80 percent sodium fluoaluminate)

Apply with a rotary, hand-operated duster at a rate to provide good coverage. Repeat application about every 7 days until control is gained.

TOBACCO HORNWORMS ON FIELD PLANTS

Control practices

Plow before March 15 to reduce the over-wintering population of hornworms. Where there is soil erosion, follow fall plowing with a cover crop, such as rye.

Hand-picking

Control of hornworms by hand-picking on small areas is generally profitable. During heavy infestation, however, application of insecticides is necessary.

Dust containing paris green 1 pound; hydrated lime 6 pounds

Apply with a rotary, hand-operated duster at the rate of 7 to 8 pounds per acre, depending upon the size of the plants. Be sure to get an even coverage of dust, as this lessens the danger of burning the leaves.

Any diluent used with cryolite* should be insoluble in water and nonreactive with cryolite. Do not use hydrated lime, but materials such as clay, talc, or flour are satisfactory. Be sure to wash your hands thoroughly after handling poisonous insecticides, or the young tobacco plants that have been treated in the plant bed.

*Paris green 1 pound may be used when cryolite is not obtainable.

Lead arsenate and paris green

A mixture of 1 pound paris green and 5 pounds lead arsenate gives effective hornworm control when properly applied, but its use isn't recommended except when cryolite is not available, or other control measures are not practical. Whenever possible the mixture should be used as a spray 1½ to 2 pounds to 50 gallons of water, because protection can be gained cheaper by means of a spray. If dust is used apply it at the rate of 6 pounds per acre when the plants are dry. In any case take extreme care to see that heavy deposits of these materials are not left on the leaves, as they contain two poisons, lead and arsenic.

Apply insecticides when the hornworms are small and easier to kill. Prompt applications as soon as the eggs or small larvae are discovered will save buying more insecticides later.

BLACK EUROPEAN SLUG IN PLANT BEDS

Metaldehyde

A poison bait for slugs and snails containing metaldehyde has been found highly effective for use in gardens or on lawns. This material is available under various trade names. Follow directions of manufacturer.

Hydrated or air-slaked lime

When damage is confined to margins of bed, apply the dust in a band 3 to 4 inches wide and ½ inch thick along margin just inside the bed walls. When damage is well distributed over the bed, apply the lime over the entire surface with a duster at the rate of 4 pounds per 100 square yards. Apply in the late afternoon when soil and plants are dry to prevent injuring the young plants and to get best results.

CUTWORMS

In Plant Beds Use a Poisoned Bait Made of:

Wheat bran ..... 50 pounds
Paris green or sodium fluosilicate ..... 1 pound
Enough water to moisten.

Add enough water so that a handful of bait pressed together will fall apart with a crumbly consistency.

Remove bed cover and apply broadcast at the rate of 4 pounds (dry weight) per 100 square yards.

On Newly Set Plants Use a Poisoned Bait Made of:

Wheat bran ..... 50 pounds
Paris green or sodium fluosilicate ..... 1 pound
Enough water to moisten.

Apply the bait broadcast late in the afternoon just before plants are set, at the rate of 15 to 20 pounds per acre (dry weight). When applying after plants are set, drop a small amount close to each hill, but do not touch the plant with bait.

GRASSHOPPERS

In Plant Beds Use a Poisoned Bait Made of:

Wheat bran (free of shorts)	50 pounds
Paris green or sodium fluosilicate	2½ pounds

Enough water to moisten.

Apply by hand to bare spots on the plant bed and to a strip just inside the bed wall. Broadcast bait on a narrow strip outside the wall. Be sure that the bait doesn't touch the young plants as this will result in severe burning. Apply bait in the early morning before the ground warms up.

For Newly Set Plants Use a Poisoned Bait Made of:

Wheat bran	50 pounds
Paris green or sodium fluosilicate	2½ pounds
Water	5 to 6 gallons

Apply broadcast by hand over the field before plants are set 20 pounds per acre (dry weight). If application is made after plants are set, apply bait to row middles only and scatter the bait over a strip around the field.

Two new insecticides, chlordane and benzene hexachloride, appear very promising for grasshopper control. Use chlordane 1 pound of a 50 percent wettable powder to 8 gallons of water and spray a 20 foot strip of vegetation bordering the field to be protected from grasshoppers. It is important that this spray be applied just before the grasshoppers start migrating. Apply benzene hexachloride as a dust (containing 1 percent of the gamma isomer) to infested plants at the rate of 30 pounds per acre.

BUDWORMS ON GROWING PLANTS

Use a Dry Poisoned Bait Made of:

Cornmeal	75 pounds
Lead arsenate	1 pound

Mix and apply dry.

Apply about ½ teaspoonful of the dry mixture to the center of the bud or tip of the plant.

Apply about 1¾ pounds per 1,000 plants. Under most conditions one or two applications is enough. Effectiveness of this treatment will depend upon a thorough distribution of the lead arsenate in the cornmeal and upon placing the right amount of the mixture in the center of each plant bud. Small lots of this poisoned bait can be made as follows:

Cornmeal	1 peck
Lead arsenate	2½ ounces or 6 heaping teaspoonfuls

GREEN JUNE BEETLE LARVAE IN PLANT BEDS

Select a bed site in late summer or early fall on land free of June beetle larvae. Steam the beds if larvae are present in the soil, or apply kerosene emulsion at the same dilution and amount as for controlling white grubs in the soil (this method is especially applicable in Kentucky). If grubs appear in the bed in spring, use poisoned bait made of:

Wheat bran	25 pounds
Barium or sodium fluosilicate*	4 pounds
Water to dampen.	

Mix well and broadcast at the rate of 10 to 12 pounds per 100 square yards of bed. The poisoned bait gives only partial control.

Gasoline

Apply in holes 6 to 8 inches deep and 2 inches in diameter, spaced one foot apart in each direction. Ten to 14 gallons (2 ounces per hole) are required to treat 100 square yards of infested bed. The holes, which are made with an iron bar, are large enough to keep the level of the gasoline at least 2 inches below the soil surface. Plug the openings with lumps of moist soil after applying the gasoline.

TOBACCO CRAMBIDS ON NEWLY SET PLANTS

Use a Poisoned Bait Made of:

Cornmeal	25 pounds
Oil of mirbane (nitrobenzene)	1 ounce
Paris green	1 pound
Water	1 pint

Mix the cornmeal and paris green thoroughly, and add the oil of mirbane and water to give an even distribution of the liquid throughout the cornmeal. Apply to rows or hills of tobacco with a stick-can applicator at the rate of 10 pounds per acre for dark fire-cured tobacco (3,500 plants per acre) or 20 pounds per acre for burley tobacco.

WIREWORMS

Wireworm damage is greatest to newly set plants. These pests are apparently attracted to the plant shortly after it has been planted in the field. No satisfactory control method has been developed which can be used economically on tobacco land. Use of large, stocky plants in areas known to be infested with wireworms tends to reduce damage from these pests.

*Paris green 1 pound may be used when fluosilicate is not available.

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