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Tobacco Insect Pests In North Carolina

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Tobacco Insect Pests In North Carolina

By J. T. CONNER, JR., *Extension Entomologist*

And

W. M. KULASH, *Research Entomologist*

GENERAL

Residues from insecticidal treatments on tobacco are objectionable from several standpoints and should be guarded against through cautious and judicious use or application. Especially is this true of lead and arsenic residues. Workers are cautioned to wash the hands thoroughly after handling poisonous insecticides or young tobacco plants that have been dusted in the plant bed with paris green-lead arsenate dust mixture.

The recommendations given herein are applicable to all tobacco areas in North Carolina unless otherwise stated.

CAUTION! Do not allow the following to come into contact with plants as damage by burning may result:

- Bait for mole cricket.
- Bait for cutworms.
- Bait for grasshoppers.
- Bait for green June beetle larvae.

PLANT BEDS

TOBACCO FLEA BEETLE

Prevention of Infestation: Sterilize the beds before planting by burning or steaming and construct an "Insect Tight" plant bed. For information on proper plant bed construction, write to this office for free booklet.

After transplanting, pull all plants from the bed and scrape the soil with a hoe, or thoroughly plow and harrow the bed. This practice will prevent beetles from breeding and their subsequent migration to the fields.

Insecticidal Control: (Use any of the following)

1. Rotenone; dust mixture containing 1 per cent rotenone prepared with cube or derris. Apply with a rotary, hand-operated duster at the rate of $\frac{1}{2}$ pound to each 100 square yards. Repeat about every four days until infestation has been checked. Dust can be applied through the cloth cover provided cover is dry and not resting on plants.

2. Cryolite; a cryolite dust containing 70 to 80 per cent sodium fluoaluminatc applied with a rotary, hand-operated duster at the rate of 1 pound to each 100 square yards. Repeat application at weekly intervals.
3. Arsenical dusts; 1 pound of paris green to 5 pounds of lead arsenate applied with a rotary, hand-operated duster at the rate of $\frac{1}{2}$ pound to each 100 square yards of bed. Repeat application every seven to ten days. When cover is removed for "hardening-off" of the plants this dust is recommended because in addition to being toxic to the beetle, it also acts as a repellent.

MOLE CRICKETS

These insects occasionally damage tobacco in the seedbeds by uprooting the seedlings, cutting off the roots and eating into the underground parts of the plants.

Poisoned bait:

Corn meal or cotton seed meal	5 pounds
Wheat bran or shorts	5 pounds
Sodium fluosilicate	$\frac{3}{4}$ pound
Moistened slightly with molasses and water 1-100	2 quarts (approx.)

The corn meal or cottonseed meal, wheat bran or shorts, and sodium fluosilicate should be thoroughly mixed while dry. Then add the molasses and water. This bait should be applied within 48 hours after mixing at the rate of 3 to 4 pounds to each 100 square yards. Scatter the bait in pathways around edge of bed and where stand is sparse. Care must be exercised to prevent the bait from touching the young plants. Best results will be obtained if the bait is applied late in the afternoon.

SLUGS

These insects are usually black or dark brown and resemble a snail without a shell. Their presence in the plant bed can easily be detected by the slimy trail left by the slug. They damage by eating the leaves. For their control use 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 $\frac{3}{4}$ inch thick along margin just inside the bed walls. When damage is well distributed over entire bed, apply with duster at the rate of 4 pounds to each 100 square yards. Apply in late afternoon when plants and soil are dry to prevent burning.

CUTWORMS

The cutworm damages plant by cutting off the tobacco at the surface of the ground and may be controlled by the use of the following bait:

Wheat bran (free of shorts)	50 pounds
Sodium fluosilicate or paris green	1 pound
Water	To moisten

When mixing the bait, mix the wheat bran and sodium fluosilicate or paris green thoroughly before adding the water. Moisten the bait so that when a handful is pressed together it will fall apart with a crumbly consistency. Apply the bait in the late afternoon at the rate of 4 pounds to each 100 square yards underneath and between the plants being careful that the bait is not touching the plants.

GRASSHOPPERS

Wheat bran (free or shorts)	50 pounds
Sodium fluosilicate	2½ pounds
Cheap syrup	3 quarts
Water	To moisten

Mix the wheat bran and sodium fluosilicate thoroughly before adding the syrup and water. Apply the bait in a narrow strip just inside and outside of the plant bed walls and to bare spots over the bed, being careful that the bait does not touch the plants. The bait should be applied early in the morning on a bright warm day.

GREEN JUNE BEETLE LARVAE

Plant bed sites should be selected in the fall of the year on land that is free of June beetle larvae. If it is suspected that larvae are present, paris green may be applied in the fall on the intended plant bed site at the rate of 1 pound to each 100 square yards.

If larvae are found in the plant bed, use the following bait:

Wheat middlings	25 pounds
Paris green	1 pound
Water to moisten	2½ to 3 gallons

The wheat middlings and paris green should be thoroughly mixed before the water is added. Apply by hand at the rate of 10 to 12 pounds to each 100 square yards of bed being careful that the bait is not touching the young plants.

MIDGE LARVAE

Midge larvae may be controlled with naphthalene flakes. Remove the cover and broadcast naphthalene flakes at the rate of 1½ to 2 pounds to each 100 square yards of bed and replace the cover. Apply once each week until the infestation is under control.

NEWLY SET PLANTS

TOBACCO FLEA BEETLE

(Use any one of the following.)

1. Rotenone; a dust mixture containing 1 per cent rotenone. Apply at the rate of 3 pounds to the acre with plunger type or 8 pounds to the acre with rotary, hand-operated duster. Repeat every four days until infestation has been checked.

2. Cryolite; a dust mixture containing 70 to 80 per cent sodium fluoaluminate. Apply at the rate of 3 to 5 pounds to the acre with plunger type or 8 to 10 pounds to the acre with rotary, hand-operated duster.
3. Arsenical dusts; 1 pound of paris green to 5 pounds of lead arsenate. This should be applied in the plant bed immediately before pulling the plants at the rate of 1 pound to 100 square yards or immediately after setting at the rate of 7 to 8 pounds to the acre.

HORNWORMS

Ordinarily hornworms do not cause much damage on newly set plants. However, if there are enough hornworms on the newly set plants to warrant control procedures use any insecticide that is given for the control of hornworms on field plants.

CUTWORMS

As insurance against injury use the same bait as given for cutworms in plant beds. Broadcast this bait in the field where the plants are to be set at the rate of 15 to 20 pounds to the acre. If after setting, injury is spotted over the field, drop a small amount of bait next to the plant. If the injury is general over the field, drop a small amount of bait next to each plant in the field.

GRASSHOPPERS

Use the same bait as given for grasshoppers in plant beds. If grasshoppers are abundant in adjacent fields, apply broadcast before plants are set at the rate of 20 pounds to the acre. If an outbreak occurs later in the season, apply the bait in the middle of the rows only and scatter around the edge of the field at the rate of 20 pounds to the acre.

BUDWORMS

These insects eat into the buds or unfolded leaves of tobacco as the plants begin to top. They can be controlled with the following baits:

Corn meal	75 pounds
Lead arsenate	1 pound
(or for smaller quantities)	

Corn meal	1 peck
Lead arsenate	2½ oz. or 6 heaping teaspoonfuls

or

Corn meal	1 peck
Cryolite	1 pound

Mix the corn meal and lead arsenate or cryolite thoroughly and



Tobacco Budworm Injury

(Photo Courtesy USDA)

apply it dry. Put about $\frac{1}{2}$ teaspoonful to the bud or tip of each plant in the field.

TOBACCO CRAMBIDS (Tobacco webworms or corn webworms)

These insects damage the tobacco by cutting into the young plants at the surface of the ground and then boring up or down in the stem.

Corn meal	25 pounds
Paris green	1 pound
Oil of mirbane (Nitrobenzene)	1 ounce
Water	1 pint

Mix the corn meal and paris green thoroughly, then add oil of mirbane and water. Apply this poison to the rows or hills of tobacco using a stick-can applicator at the rate of 15 pounds to the acre. A stick-can applicator can be made by nailing a stick about

3 feet long on to the outside of an ordinary tin can and punching holes in the bottom of the can. The bait can then be applied by a swift downward motion.

NOTE: On burley apply at the rate of 20 pounds to the acre and on dark fire-cured at the rate of 10 pounds to the acre to the plant.

FIELD PLANTS

TOBACCO FLEA BEETLE

Cryolite or Arsenical dusts: Use any one of the same dusts as mentioned above for newly set plants. Rate of application will vary according to the size of plants, but will be approximately 10 to 15 pounds to the acre applied with a rotary, hand-operated duster.

NOTE: On burley and dark-fire cured tobacco, add 4 pounds of hydrated lime to the arsenical dust. Apply at the rate of $\frac{3}{4}$ pound to 100 square yards of bed and repeat every four to seven days; on newly set plants at the rate of 3 pounds to the acre.

HORNWORMS

Cultural Control: The effective utilization of cultural control methods is very important. If properly practiced they should greatly lessen the necessity for insecticide control.

Hand picking: The control of hornworms by hand-picking as generally practiced on small acreages is profitable and should be used whenever practical. Under conditions of heavy infestation and large acreages, however, it may be necessary to utilize insecticides to protect the crop.

Cutting stalks: As soon as priming has been completed the plant stalks should be cut down. The suckers on these stalks usually furnish food for the development of large numbers of hornworms which overwinter and develop into moths the following summer.

Fall plowing: Fall plowing will aid in materially reducing the over-wintering population of hornworms. Where soil erosion is a factor, or where a grower for any other reason may so desire, fall plowing should be followed by seeding the field to rye or some other suitable cover crop.

Insecticidal Control: (Use any one of the following)

1. **Cryolite spray:** 6 pounds of cryolite containing at least 85 per cent sodium fluoaluminate to each 50 gallons of water applied at the rate of 70 to 80 gallons to the acre. Thorough coverage with a minimum amount of spray is important. Three nozzles fitted on each side of the spray boom adjusted to cover the entire plant should be used regardless of the size of the plants.



Tobacco Hornworm and Injury

(Photo Courtesy USDA)

2. Cryolite dust: **CAUTION:** Any diluent used with cryolite should be insoluble in water and non-reactive with cryolite. Hydrated lime should not be used but materials such as clay, talc, or pyrophyllite are satisfactory. The cryolite should contain from 70 to 80 per cent sodium fluoaluminatc applied at the rate of 10 to 15 pounds to the acre depending upon the size of the plants.
3. Paris green-lead arsenate spray: 1 pound of paris green to 5 pounds lead arsenate. Use $1\frac{1}{2}$ to 2 pounds of this mixture to each 50 gallons of water and apply at the rate of 60 to 70 gallons to the acre.
4. Paris green-lead arsenate dust: 1 pound of paris green to 5 pounds of lead arsenate. This dust is not recommended except in cases of emergency when cryolite is not available or other control measures are not practical. Apply the dust with a hand-operated duster at the rate of 8 to 10 pounds to the acre when the plants are dry. Extreme care should be taken to see that no heavy deposits of these materials are left on the leaves because these deposits contain two very objectionable poisons—lead and arsenic.

NOTE: On burley and dark-fire cured tobacco, the farmer may



(Photo Courtesy USDA)

Tobacco Moth injury to cured tobacco in farm packhouse.

also use a dust containing paris green 1 pound and lime 6 pounds. Apply with a rotary, hand-operated duster at the rate of 7 to 8 pounds to the acre.

GRASSHOPPERS

The same bait as given for grasshoppers in the plant bed and on newly set plants.

BUDWORMS

Use the same bait as given for budworms on newly set plants.

WIREWORMS

There is no satisfactory control.

CONTROL OF THE TOBACCO MOTH ON THE FARM

Elimination of Sources of Infestation: In many areas the tobacco moth infestations in packhouses result largely from moths that have developed in favorable breeding places other than the packhouses. The most important of these breeding places are buildings where tobacco is stored for a long period of time, especially open storage units. Such storage places should be kept in good condition and screened with fly screen so that the moths cannot gain entrance or leave the buildings. Places where grains or food stuffs are stored near tobacco are also sources for large numbers of moths. Grain or food storage places should be cleaned before putting new feed into the bins. It is a good practice to clean out all the old grain and feeds from their storage places before new grain or feed is put into the bins.

Marketing Crop: When tobacco in the packhouse is infested with the tobacco moth it should be graded and sold as soon as possible. The lighter types such as lugs and early primings should be sold first because these are most attractive to the insect and will be most severely injured.

Packhouse Sanitation: Dispose of scrap tobacco as it accumulates and remove and destroy all trash. As soon as the crop is sold the packhouse should be thoroughly cleaned. This cleaning should be done before cold weather so that the larvae will be eliminated before they crawl into protected places where they pass the winter. Farm crops, corn, grain, and soybeans should not be stored in packhouses. Milled stock feeds offer favorable food for the tobacco moth and should not be kept in packhouses.

Protection of Tobacco: Tobacco should not be left in curing barns any longer than necessary. If the bulks in the packhouses are carefully and completely covered at once with cloth, such as a good grade of plant bed cloth in good condition, they will be pro-

tected to a certain extent. These covers should be removed at 4-day intervals during July and August and at 5-to-7-day intervals during September and dipped in boiling water to kill eggs which have been deposited on them. Beating the cloths or exposing them to direct sunlight in hot weather will eliminate many of the eggs. Covers should not be left off the bulks any longer than necessary.

NORTH CAROLINA STATE COLLEGE OF AGRICULTURE AND ENGINEERING
OF THE
UNIVERSITY OF NORTH CAROLINA

AND
U. S. DEPARTMENT OF AGRICULTURE, CO-OPERATING
N. C. AGRICULTURAL EXTENSION SERVICE

J. O. SCHAUB, DIRECTOR
STATE COLLEGE STATION
RALEIGH
