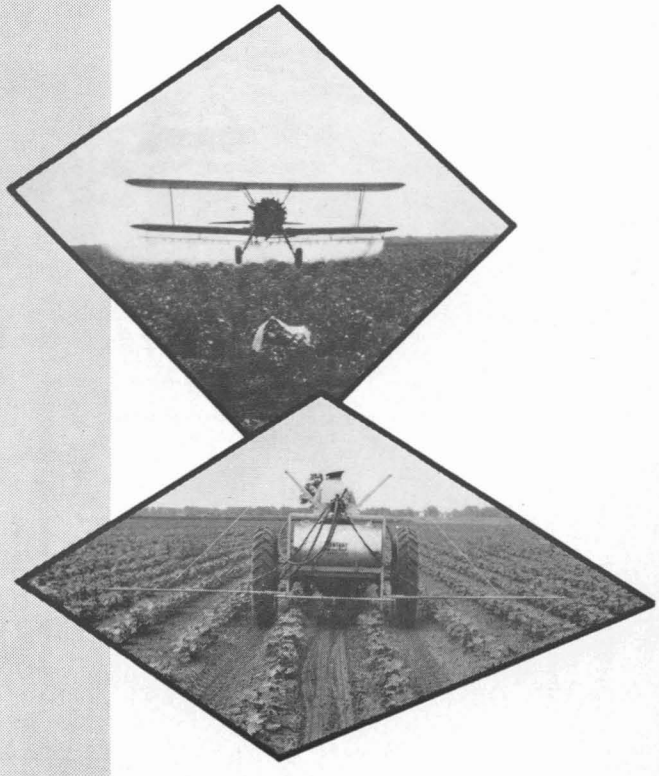
1963 L-508

Guide for Controlling

COTTON INSECTS

in the High Plains and Trans-Pecos Areas of Texas



THE AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS
TEXAS AGRICULTURAL EXTENSION SERVICE
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Guide for

CONTROLLING COTTON INSECTS

in the

HIGH PLAINS AND TRANS-PECOS AREAS

of Texas

DO NOT USE THIS GUIDE IN AREAS WHERE BOLL WEEVILS ARE A PROBLEM

THIS GUIDE IS A SUPPLEMENT to the state-wide guide, L-218, *Texas Guide for Controlling Cotton Insects*, and is primarily for use in the Texas High Plains and Trans-Pecos areas. Growing conditions of cotton and cultural practices in these areas are distinctly different from many other parts of the State. The boll weevil is not common and climatic conditions, rainfall, soil type and farming practices differ considerably. If boll weevils occur in your area use L-218, *Texas Guide for Controlling Cotton Insects.*

Cotton insects can be controlled economically by the use of the proper insecticides at the correct time (refer to table). Poisons must cover the plants to kill insects. Timely, effective applications of insecticides to control damaging insect infestations should result in substantial profits to the cotton producer although numerous applications may be required. Cotton growing under dryland conditions generally has lighter insect infestations and injurious infestations usually do not last as long as in irrigated cotton. Consequently, few insecticide applications are needed.

INSECT CONTROL PROGRAM

The cotton insect control program for the areas includes two major phases with the following objectives:

1. Early season control (insures early fruiting and maturity in certain areas).

2. Late season control (insures continued fruiting and protects fruit).

The grower must carry out an adequate control program to obtain greatest benefits. Cotton fields should be examined closely throughout the growing season to determine when to apply insecticides.

EARLY SEASON CONTROL PROGRAM

Research in these areas shows that substantial savings can be realized by basing early season control on infestation counts. The early season control program in most years will be conducted primarily to control thrips and fleahoppers. Regular and thorough insect checks by the grower are necessary to obtain good insect control. If the cotton producer knows the insect situation in his

field, he can determine when he needs to apply insecticides. Every grower should know how to make insect counts, when to apply insecticides based on insect population numbers and how to recognize the damage by different cotton insects.

The grower who follows an early season control program based on infestation numbers uses insecticides only when needed.

EARLY SEASON PESTS

Thrips

Heavy infestations of thrips on young cotton may delay plant maturity for a few days to a few weeks. Thrips normally cause heaviest damage from the time of plant emergence until early squaring. Serious damage may continue for longer periods. The first sign of thrips damage on newly emerged cotton is wilted, wrinkled, blackened leaves and terminal growth. The number of thrips and time of occurrence vary from season to season.

Fleahoppers

Fleahoppers usually begin damaging cotton as soon as fruiting starts and continue throughout the season. Control measures should be based on infestation counts and the apparent loss of small, terminal forms as cotton fruiting progresses. The first forms should be protected to allow the cotton to produce early fruit.

Fleahoppers damage only the small squares and do not cause the shedding of the larger squares or bolls. After plants have set more fruit than the cotton is capable of maturing, under a given set of growing conditions, it is not advisable to continue fleahopper control because additional forms ordinarily will be shed by the cotton plant.

All cotton should be checked carefully before applying insecticides to determine the degree of infestation. The presence of aphids, spider mites or other insect pests may influence the selection of the insecticide. (For additional information on cotton insects, see Extension publication B-933, *Cotton Insects.*)

LATE SEASON CONTROL PROGRAM

The late season control program, like the early season control program, is based on infestation count. The principal insect involved is the bollworm. Other cotton insects which may occur are fleahoppers, lygus bugs, cotton leafworms, cabbage loopers, aphids, spider mites, garden webworms, beet armyworms, and stink bugs. Begin control measures when bollworms and cabbage loopers are small.

Bollworms

The bollworm is a common pest of cotton as well as many other crops. The history of this area shows that the bollworm causes more damage to cotton than any other insect.

Eggs generally are laid on the tender growth of the terminal areas of the plant. The eggs hatch in about

3 days and the small worms begin working their way down the cotton plants, feeding on the squares and bolls.

Insecticide applications should be made when the bollworms are small.

Pink Bollworm

See extension publication L-219, *Ways to Fight the Pink Bollworm in Texas.*

GENERAL INFORMATION

In the late season program, dusts and sprays are equally effective when properly applied. Repeat the application as soon as possible if the poison is washed off within 24 hours, except when aphicides are used.

When infestations are extra heavy, increase dosages to the maximum.

For detailed information on the use of sprays and spray machinery, see extension publication L-486, *Insecticidal Spraying of Field Crops with Ground Machinery.*

Apply dusts when the air is calm or nearly so. Dew on plants is not necessary. Dusts and wettable powders are washed off more easily by light showers than sprays. Place dust nozzles on ground machines 4 to 6 inches above the plants.

Ground machines and airplanes are equally effective for applying poisons. For best results with airplanes, flag the swaths so that they overlap. Increase dosages recommended in this guide by at least 50 percent when an airplane is used in making early season applications. Apply aerial spray at 3 or 4 gallons per acre.

Some poisons are particularly destructive to honeybees. A determined effort should be made to prevent their destruction, since bees help pollinate many agricultural crops.

The recommendations in the Guide are based upon results of experiments conducted by the Texas Agricultural Experiment Station of the A&M College of Texas and the Entomology Research Division, United States Department of Agriculture.

For additional information, contact your county agent or write the extension entomologists, College Station, Texas.

CAUTION

All insecticides are poisonous. Follow carefully all precautions on the label. Take special precautions in handling parathion, endrin, methyl parathion, demeton, Di-syston, Guthion, and phorate (Thimet) to avoid prolonged contact with the skin or breathing of the vapors or drift from either spray or dust.

Be mindful of insecticidal drift that may contaminate neighboring vegetables or forage crops at the time cotton is sprayed or dusted.

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CONVERSION TABLE

Pounds of Actual Insecticide in Different Quantities of Spray Concentrate

Insecticide	Gal.	2 Qt.	1 Qt.	1 Pt.
Aldrin	2.0	1.0	0.5	0.25
DDT	2.0	1.0	0.5	0.25
DDT	3.0	1.5	0.75	0.375
Demeton	2.0	1.0	0.5	0.25
Dieldrin	1.5	0.75	0.375	0.187
Endrin	1.6	0.8	0.4	0.2
Ethion	4.0	2.0	1.0	0.5
Guthion	2.0	1.0	0.5	0.25
Heptachlor	2.0	1.0	0.5	0.25
Malathion	5.0	2.5	1.25	0.675
Methyl parathion	2.0	1.0	0.5	0.25
Methyl parathion	4.0	2.0	1.0	0.5
Methyl Trithion	4.0	2.0	1.0	0.5
Parathion	2.0	1.0	0.5	0.25
Toxaphene	6.0	3.0	1.5	0.75
Trithion	4.0	2.0	1.0	0.5
BHC-DDT	2.4	1.2	0.6	0.3
Strobane-DDT	6.0	3.0	1.5	0.75
Toxaphene-DDT	6.0	3.0	1.5	0.75
	Pounds Actual Sevin			
	3.0	2.0	1.0	0.5
Pounds of Sevin 80% wettable powder required	3.75	2.5	1.25	0.625

TREATMENT WITH SYSTEMIC INSECTICIDES AT PLANTING TIME

Four to 6 weeks protection from planting date can be obtained from thrips, aphids, spider mites and leaf miners with phorate (Thimet) applied to the seed or placed in the furrow in granulated form at planting. One-fourth to ½ pound of the active ingredient per acre may be applied as a seed treatment or ½ to 1 pound per acre in the furrow. Seed may be treated at the rate of 1 to 1½ pounds per 100 pounds of seed to accommodate planting rate. One-half to 1 pound of actual Di-syston applied in granular form at time of planting is also effective. Overdosing with seed treatments may retard early growth especially under weather conditions unfavorable for emergence. Use extreme care in handling treated seed or granules because they are toxic to man. Care should be exercised in using systemic insecticides in conjunction with pre-emergence herbicides.

THREE-WAY INSECTICIDAL MIXTURES

Commercial mixtures of emulsifiable concentrates containing three insecticides are being marketed in the State. Growers should know the contents of such mixtures and make sure that they are applying recommended dosages of the insecticides required to give control of the pests involved.

EARLY SEASON CONTROL PROGRAM (Insecticides listed at random)

Increase Dosages Recommended in This Guide at Least 50 Percent When an Airplane Is Used to Make Early Season Applications

Insects	Insecticides	Pounds per acre of actual insecticide to be applied as spray[1]	Remarks
Cutworms and certain armyworms	A. Toxaphene-DDT (2-1 mixture)[2] B. Endrin[2]	2.0-3.0 0.3-0.4	Examine seedling cotton for presence of these pests. Apply treatment as needed.
Darkling beetles	A. Heptachlor[4] B. Dieldrin[2]	0.5 0.375	Brown to black beetles which feed around base of seedlings. Damage resembles cutworm attack. Begin control when damage warrants it.
Thrips and fleahoppers	A. Dieldrin + DDT[2] B. Guthion[3] C. Strobane-DDT (2-1 mixture)[2,4] D. Sevin[5] E. Toxaphene-DDT (2-1 mixture) F. Heptachlor + DDT[2,4] G. Endrin + DDT[2]	0.2-0.25 + 0.5 0.125-0.25 1.25-2.25 0.5-1.0 1.25-2.25 0.25-0.375 + 0.5 0.2-0.3 + 0.5	THRIPS—Begin control measures as soon as damage is apparent on seedling plants. Damage is characterized by wilted, deformed and blackened leaves. Silvering of the lower leaf surface also is common. Apply sprays at 7-day intervals. If difficulty is encountered in controlling thrips, substitute methyl parathion[6] at 0.25 lb. per acre for DDT. FLEAHOPPERS—After cotton is old enough to produce squares, examine the main stem terminal buds (about 3-4 in. of top of plant) of 100 cotton plants at several representative points in the field. As cotton reaches the fruiting stage, apply control measures when 15-20 fleahoppers are found per 100 terminals. As plants increase in size and fruit load, larger populations may be tolerated without serious damage. Later treatments should be based both on numbers of fleahoppers and on damage as indicated by excessive loss of small squares. Apply sprays at 7-day intervals.
Cotton Aphids	A. Malathion	0.625-0.9	In early season, apply insecticides as needed. In late

			(about 3-4 in. of top of plant) of 100 cotton plants at several representative points in the field. As cotton reaches the fruiting stage, apply control measures when 15-20 fleahoppers are found per 100 terminals. As plants increase in size and fruit load, larger populations may be tolerated without serious damage. Later treatments should be based both on numbers of fleahoppers and on damage as indicated by excessive loss of small squares. Apply sprays at 7-day intervals.
Cotton Aphids	A. Malathion B. Methyl parathion[6] C. Parathion[6] D. Demeton[2,7]	0.625-0.9 0.25-0.375 0.25-0.375 0.125-0.25	In early season, apply insecticides as needed. In late season, begin treatment when honeydew appears. Demeton, parathion, malathion or methyl parathion may be combined with other sprays.

LATE SEASON CONTROL PROGRAM (Insecticides listed at random)

Insects	Insecticides	Pounds per acre of actual insecticide to be applied as spray or dust	Remarks
Apply dusts at 10-15 lb. per acre unless otherwise indicated.			
Bollworms	A. Strobane-DDT (2-1 mixture) B. Endrin C. Endrin + DDT D. Toxaphene-DDT (2-1 mixture) E. Sevin	3.0-4.5 0.4-0.5 0.3-0.4 + 0.5-1.0 3.0-4.5 1.6-2.4	HOW TO CHECK FOR BOLLWORMS—Examine the terminal buds (upper 3-4 in. of the plant) of 100 cotton plants and 100 consecutive squares and bolls at each of several points in the field. Begin treatment when bollworm eggs and 4 or 5 young worms are found per 100 terminals or 5% of the small squares and bolls have been injured by small bollworms. Make additional applications as needed. Tobacco budworms may occur in damaging numbers late in the season. The maximum recommended dosages should be used to control this pest. DDT resistance to the bollworm and tobacco budworm occurs in several areas of the State. DDT alone may be used to control these pests where resistance does not occur.
Cotton aphids	Use insecticides as recommended for early season control.		
Spider mites	A. Trithion[2] B. Methyl parathion C. Ethion[2,4] D. Parathion E. Demeton (Systox)	0.375-0.75 0.25-0.375 0.375-0.75 0.25 0.25	Treat when leaves begin to turn yellow. Demeton, ethion or Trithion generally are more effective for controlling the two spotted mite. Two applications at 5-day intervals may be necessary with all materials except demeton.
Lygus and stink bugs	A. Toxaphene-DDT (2-1 mixture) B. BHC-DDT (3-5 mixture)[2] C. DDT	1.5-3.0 1.25 1.0	When 8 to 10 bugs are found per 100 squares or young bolls, begin treatment. Apply dusts or sprays at 7 to 10-day intervals.
Leafworms	A. Guthion B. Parathion C. Sevin D. Methyl parathion E. Toxaphene-DDT (2-1 mixture)	0.25 0.125-0.25 1.0-1.25 0.125-0.25 1.5-3.0	Apply dusts or sprays when cotton leafworms first appear. Young worms are easier to kill than old worms.
Cabbage loopers	A. Endrin	0.4-0.5	Begin treatment when small worms first appear.
Grasshoppers	A. Dieldrin B. Aldrin[2] C. Heptachlor D. Toxaphene E. Sevin	0.2 0.25-0.375 0.25-0.375 1.5-3.0 1.5-2.0	Apply insecticide when damaging infestations appear. Baits are preferred for control of "jumbo" grasshoppers. (See your county agent for bait mixtures.)
Pink bollworms	A. Sevin B. DDT C. Guthion + DDT	1.5-2.0 1.5-2.0 0.187-0.375 + 1.0-1.5	Apply DUSTS at 15 lb. per acre at 5-day intervals. Apply SPRAYS at 5-day intervals.

[1]Dusts are effective, but sprays are considered more practical under early season conditions.

[2]Do not graze or feed treated plants to dairy animals or animals being finished for slaughter.

[3]Do not apply within one day of harvest. Do not pasture fields or feed gin waste if late applications are made.

[4]Do not apply after bolls open.

[5]Problems may be encountered in spraying wettable powder with low-volume farm sprayers; follow manufacturer's directions carefully.

[6]Do not apply within 5 days of hand picking.

[7]Do not apply within 21 days of harvest.