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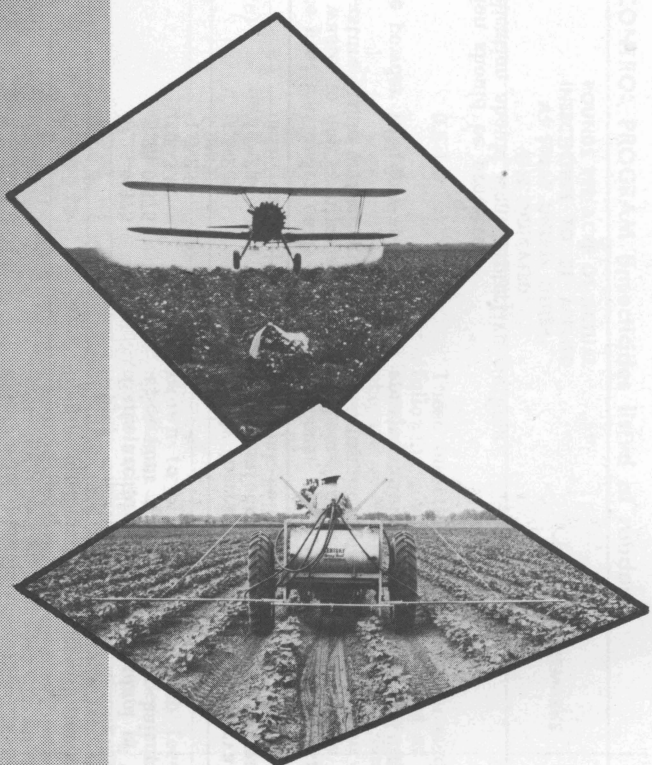
South Texas Guide

for controlling

Cotton Insects



TEXAS A&M UNIVERSITY
TEXAS AGRICULTURAL EXTENSION SERVICE
J. E. HUTCHISON, DIRECTOR, COLLEGE STATION, TEXAS

SOUTH TEXAS GUIDE FOR CONTROLLING COTTON INSECTS

COTTON INSECTS can be controlled economically by using recommended insecticides at the correct time. (See table.) Poisons must cover the plants to kill insects. Plants usually are not protected when insects attack new growth or when poisons wash off.

For information on the identification, life history and nature of damage of the major cotton insects, see B-933, **Cotton Insects.**

Substantial profits have been made even when a large number of poison applications were necessary for maximum yields, by controlling damaging infestations of boll weevils and bollworms on cotton growing on fertile soils. On upland soils where insect infestations do not last long, fewer applications may be needed. The control program for 1964 includes three phases:

1. EARLY-SEASON CONTROL (insures early fruiting and maturity in certain areas)
2. LATE-SEASON CONTROL (based upon infestation)
3. EARLY STALK DESTRUCTION AND FARM CLEANUP (reduces overwintering populations of boll weevils and pink bollworms)

The grower must carry out an adequate control program to obtain greatest benefits. Inspect cotton before applying insecticides to determine the degree of infestation and to check for pests such as aphids and spider mites which may influence the choice of insecticides.

The extension of the early-season control program after the one-third grown square stage may create conditions favorable for a bollworm buildup. However, if fleahoppers are present in injurious numbers, it may be necessary to initiate the late-season control program.

Apply late-season treatments when infestation counts indicate they are needed. Cotton growing under irrigation or on other high-yielding land usually requires protection longer than the dryland acreage.

Early Stalk Destruction and Farm Cleanup

Early harvest, immediate stalk destruction and plowing under debris before the first frost reduces boll weevil and pink bollworm populations. These practices force the boll weevil into starvation before time to enter winter quarters, prevent late-season buildup of weevils and pink bollworms and reduce the number that survive the winter. See L-219, **Ways to Fight the Pink Bollworm in Texas.**

Beneficial Insects

Natural populations of beneficial insects may help control cotton pests such as the bollworm, cotton aphid and spider mite. Growers never should reply entirely on beneficial insects to control cotton insects, but should examine their fields frequently to determine the need for insecticides. The introduction or release of either trichograma wasps or convergent lady beetles has not proved effective in controlling damaging bollworm populations.

Pink Bollworm

Begin pink bollworm counts after cotton has been blooming for at least 5 days. Select five representative locations in the field, step off 300 feet of row and count the number of rosetted blooms. Add the total number of rosetted blooms from these 5 locations and multiply by 10 to obtain the number of worms per acre. When approximately 350 or more worms per acre are found, begin treatment immediately.

When less than 350 worms per acre are found, make boll inspections as soon as the first bolls are 4 weeks old. Continue inspections at weekly intervals. Walk diagonally across the field and collect at least 100 bolls (two-thirds grown or larger). Crack the bolls and examine the inside of the hull for tunnels made by small worms. Start treatment when 10 to 15 percent of the bolls are infested and continue until 70 percent are open.

INSECTICIDES SHOULD BE APPLIED AT INTERVALS OF NOT MORE THAN 5 DAYS TO MAINTAIN EFFECTIVE CONTROL OF THE BOLL WEEVIL, BOLLWORM AND PINK BOLLWORM.

General Information

In the late-season program, dusts and sprays are equally effective when properly applied. Maintain a strict 5-day schedule, even in showery weather. Repeat the application as soon as possible if the poison is washed off within 24 hours, except when aphicides are used. When infestations are heavy, increase dosages to the maximum and apply insecticides at 5-day intervals or less.

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

Apply dusts when the air is calm or nearly calm. 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 the 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 2 to 2½ gallons per acre except in West Texas and the lower Rio Grande Valley where 3 or 4 gallons per acre should be used.

Some poisons are particularly destructive to honeybees. Make a determined effort to prevent their destruction, since bees help pollinate many agricultural crops.

A supplemental guide for the High Plains and Trans-Pecos areas is available.

The recommendations in this guide are based upon results of experiments conducted by the Texas Agricultural Experiment Station of the Texas A&M University and the Entomology Research Division, U. S. Department of Agriculture.

For additional information, contact your county agent or write the Extension Entomologists, College Station, Texas.

Three-way Insecticidal Mixtures

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

Caution

All insecticides are poisonious. Follow carefully all precautions on the label. Take special precautions in handling parathion, endrin, methyl parathion, demeton, Di-Syston, Guthion, Bidrin and phorate (Thimet). Avoid prolonged contact with the skin. Do not breath the vapors or drift from either sprays or dusts.

Insecticidal drift may contaminate neighboring vegetables or forage crops at the time cotton is sprayed or dusted.

CONVERSION TABLE

Pounds of Actual Insecticide in Different Quantities of Spray Concentrate

Insecticide	Gallon	2 quart	1 quart	1 pint
Aldrin	2.0	1.0	0.5	0.25
Bidrin	8.0	4.0	2.0	1.00
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
TDE	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

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EARLY-SEASON CONTROL PROGRAM (Insecticides listed at random)

INSECTS		INSECTICIDES	POUNDS PER ACRE OF ACTUAL INSECTICIDES TO BE APPLIED AS SPRAY UNLESS OTHERWISE INDICATED[1]	REMARKS
Application at Planting Time for Control of: Thrips, Aphids, Spider mites, Leaf miners	A.	Di-Syston (Granules-in-furrow)	0.5-1.0	These insecticides will provide control for 4 to 6 weeks following planting. When used at the maximum recommended rates under conditions of cool, wet weather, phorate or Di-Syston may cause some delay in emergence or stunting and result in reduction of stand. Injury may be more pronounced on light sandy soils. Care should be exercised in using systemic insecticides in conjunction with pre-emergence herbicides.
	B.	Phorate (Granules-in-furrow)	0.5-1.0	
	C.	Phorate (Pre-treated seed)	1.0-1.5 lbs. per 100 lbs. seed	
Cutworms	A.	Toxaphene-DDT (2-1 mixture)[2]	2.0-3.0	Examine seedling cotton for presence of these pests. Apply treatment as needed.
	B.	Endrin[2,9]	0.3-0.4	
	C.	Strobane-DDT (2-1 mixture)[2]	2.0-3.0	
Darkling beetles	A.	Heptachlor[2,4]	0.5	Brown to black beetles which feed around the base of seedlings. Damage resembles cutworm attack. Begin control when damage warrants it.
	B.	Dieldrin[2]	0.375	
Thrips	A.	Dieldrin + DDT[2]	0.2-0.25 + 0.5	If thrips are present, make first application soon after plant emergence. The first application may not be needed until the four-leaf stage or until thrips appear. Make a second application 7 days after the first if infestation persists.
	B.	Guthion[3]	0.125-0.25	
	C.	Strobane-DDT (2-1 mixture)[2]	1.25-2.25	
	D.	Sevin[5]	0.5-1.0	
	E.	Toxaphene-DDT (2-1 mixture)[2]	1.25-2.25	
	F.	Heptachlor + DDT[2,4]	0.25-0.375 + 0.5	
	G.	Endrin + DDT[2,9]	0.2-0.3 + 0.5	
	H.	Bidrin[2,8]	0.1-0.25	
Overwintered boll weevils	A.	Sevin[5]	1.25-1.5	Where weevils are found make application just before first squares are one-third grown to prevent egg laying. If emergence of more weevils from hibernation sites occur, an additional treatment may be necessary. These insecticides also control thrips and cotton fleahoppers. Guthion, Sevin, Methyl Trithion and methyl parathion produce rapid, effective control of overwintered boll weevils in areas where they are resistant to chlorinated hydrocarbons.
	B.	Guthion[3]	0.25	
	C.	Methyl parathion[6,10]	0.25-0.375	
	D.	Methyl Trithion[2,4]	0.375-0.5	
	E.	Toxaphene-DDT (2-1 mixture)[2]	2.0-3.0	
	F.	Strobane-DDT (2-1 mixture)[2]	2.0-3.0	
	G.	Endrin + DDT[2,9]	0.3-0.4 + 0.5-1.0	
Fleahoppers	Apply one of the spray materials recommended for thrips control.			Treatment for fleahoppers should be made when infestation counts warrant. Begin treatments when 15 to 35 fleahoppers (nymphs and adults) are found per 100 terminals.
Cotton aphids	A.	Malathion	0.625-0.9	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.
	B.	Methyl parathion[6,10]	0.25-0.375	
	C.	Parathion[6]	0.25-0.375	
	D.	Demeton (Systox)[2,7]	0.125-0.25	

The extension of the early-season control program beyond the one-third grown square stage may create conditions favorable for a bollworm buildup. However, if fleahoppers are present in injurious numbers it may be necessary to initiate the late-season control program.

LATE-SEASON CONTROL PROGRAM (Insecticides listed at random)

INSECTS		INSECTICIDES	AMOUNT PER ACRE OF ACTUAL INSECTICIDE TO BE APPLIED AS DUST OR SPRAY	REMARKS
Apply dusts at 10-15 pounds per acre unless otherwise indicated.				
Bollworms	A.	Strobane-DDT (2-1 mixture)[2]	3.0-4.5	HOW TO CHECK FOR BOLLWORMS—Examine the terminal buds (upper 3 to 4 inches 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 to 5 young worms are found per 100 terminals or 5% of the small squares and bolls have been injured by small bollworms. Apply dusts or sprays at 5-day intervals or less. Fields should be checked closely two to three days following each application to be sure of effective control. Where control has not been obtained repeat the application immediately using one of the recommended materials plus methyl parathion.
	B.	Toxaphene-DDT (2-1 mixture)[2]	3.0-4.5	
	C.	Sevin[5]	2.0-3.0	
	D.	Endrin + DDT[2,9]	0.3-0.5 + 1.0-1.5	
	Where tobacco budworms and/or resistant bollworms are encountered, add 0.5 to 1.0 lb. of methyl parathion[6,10] to one of the above listed recommendations.			
	TDE[2] may be substituted for DDT in the above mixtures.			
Boll weevils	A.	Sevin[5]	1.6-2.4	HOW TO CHECK FOR BOLL WEEVILS—Examine cotton weekly. Pull 100 squares, at least ⅓ grown, at random, taking a few squares at several representative places in the field. If 15 to 25% or more have weevil punctures, begin treatment. Apply insecticides at 5-day intervals. Under extremely heavy buildups it may be necessary to shorten the interval to 3 days.
	B.	Strobane-DDT (2-1 mixture)[2]	3.0-4.5	
	C.	Methyl Trithion[2,4]	0.375-0.5	
	D.	Methyl parathion[6,10]	0.375-0.5	
	E.	Endrin + DDT[2,9]	0.3-0.4 + 0.5-1.0	
	F.	Toxaphene-DDT (2-1 mixture)[2]	3.0-4.5	
	G.	Guthion[3]	0.25	
	H.	Calcium arsenate[2] (dust only)	10-15	
	Under conditions of heavy boll weevil infestations where it is desirable to reduce weevil numbers quickly, use Guthion or add Methyl Trithion or methyl parathion to toxaphene-DDT, Strobane-DDT or endrin-DDT.			
Cotton aphids	Use insecticides as recommended for early-season control.			
Fleahoppers	Use insecticides as recommended for early-season control.			
Spider mites	A.	Trithion[2]	0.375-0.75	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.
	B.	Methyl parathion[6,10]	0.25-0.375	
	C.	Ethion[2,4]	0.375-0.75	
	D.	Parathion[6]	0.25	
	E.	Demeton (Systox)[2,7]	0.25	
Lygus and stink bugs	A.	Toxaphene-DDT (2-1 mixture)[2]	1.5-3.0	When 1 to 2 bugs per 100 sweeps with a 15 to 16 inch net are found, begin treatment. Apply dusts or sprays at 5 to 7-day intervals or as required.
	B.	BHC-DDT (3-5 mixture)[2,11]	1.25	
	C.	DDT[2]	1.0	
	D.	Strobane-DDT (2-1 mixture)[2]	1.5-3.0	
Leafworms	A.	Guthion[3]	0.25	Apply dusts or sprays when cotton leafworms first appear and at 5-day intervals until control is obtained. Young worms are easier to kill than old worms. The BROWN COTTON LEAFWORM can be controlled effectively with parathion—0.125-0.25 lb.; malathion—0.35 lb.; or endrin—0.3 lb. per acre.
	B.	Parathion[6]	0.125-0.25	
	C.	Sevin[5]	1.0-1.25	
	D.	Methyl parathion[6,10]	0.125-0.25	
	E.	Toxaphene-DDT (2-1 mixture)[2]	1.5-3.0	
	F.	Strobane-DDT (2-1 mixture)[2]	1.5-3.0	
Cabbage loopers	A.	Endrin[2,9]	0.4-0.5	Begin treatment when small worms first appear.
Grasshoppers	A.	Dieldrin[2]	0.2	Apply insecticides when damaging infestations appear. Baits are preferred for control of "jumbo" grasshoppers. (See your county agent for bait mixture.)
	B.	Aldrin[2]	0.25-0.375	
	C.	Heptachlor[2,4]	0.25-0.375	
	D.	Toxaphene[2]	1.5-3.0	
	E.	Sevin[5]	1.5-2.0	
Pink bollworms	A.	Sevin[5]	1.5-2.0	Apply insecticides at 5-day intervals. See text for additional information and how to make infestation counts for pink bollworms.
	B.	DDT[2]	1.5-2.0	
	C.	Guthion + DDT[2,3]	0.187-0.375 + 1.5-1.0	

[1]Dusts are effective, but sprays are considered more practical under early-season conditions.
[2]Do not graze or feed treated plants, including gin waste, 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.
[8]Do not apply within 10 days of harvest.
[9]Workers entering fields within 5 days of application should be protected.
[10]Workers entering fields within 24 hours after application should wear protective clothing.
[11]Do not apply when rotating with root crops.