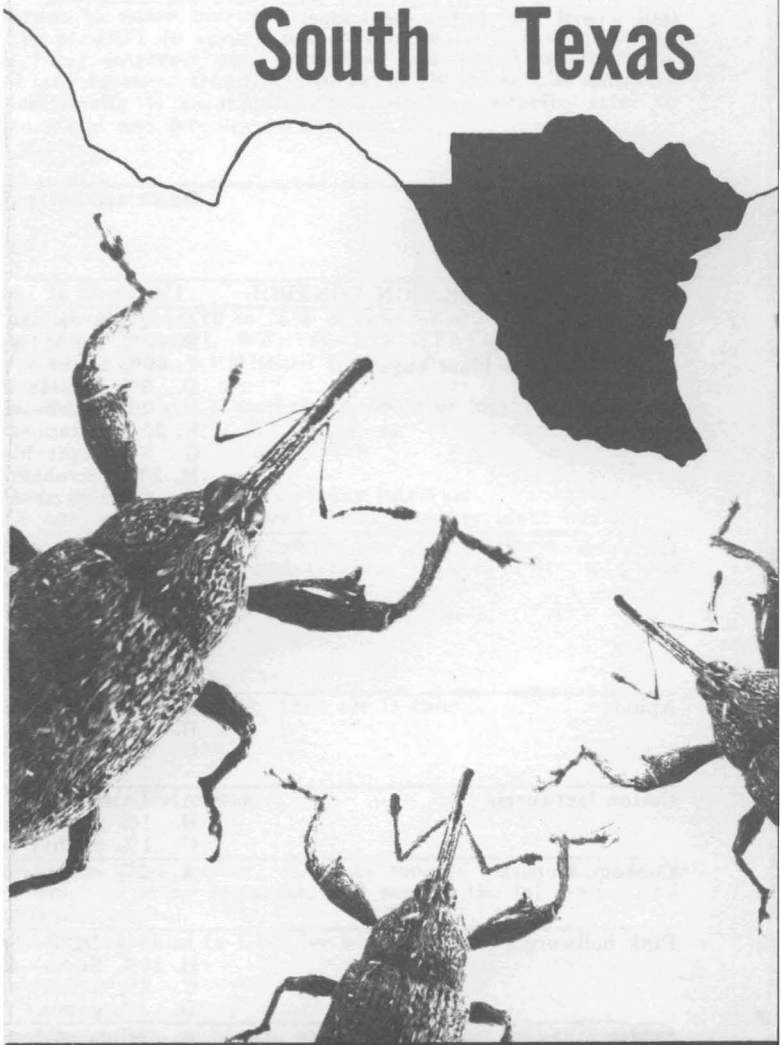


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Guide
for
Controlling

Cotton Insects in South Texas



THE AGRICULTURAL AND MECHANICAL
COLLEGE OF TEXAS
TEXAS AGRICULTURAL EXTENSION SERVICE
J. E. Hutchison, Director, College Station, Texas

COTTON INSECT CONTROL MEASURES FOR SOUTH TEXAS — 1962

INSECT	DUST	Insecticides are listed at random SPRAY CONCENTRATE PER ACRE	REMARKS
EARLY SEASON CONTROL			
Cutworms	Dusts are effective but sprays are considered more practical and economical under early season conditions	A. Toxaphene ¹ —1½ to 2 qt. B. DDT ¹ —2 to 2¾ qt. C. Toxaphene-DDT ¹ —(2-1 mixture) 1½ to 2 qt. D. Endrin ¹ —1½ to 2 pt.	Apply insecticides when damage is first noted.
Darkling beetle		A. Heptachlor ^{1,2} —1 qt. B. Dieldrin ¹ —1 qt.	Apply insecticides when needed.
Thrips		A. Dieldrin + DDT ¹ 1 to 1½ pt. + 1½ pt. B. Guthion ³ ½ to 1 pt. C. Strobane-DDT ^{1,2} 1½ pt. to 1½ qt. D. Sevin ¹ .7 to 1.3 lb. E. Toxaphene-DDT—1½ pt. to 1½ qt. F. Heptachlor + DDT ^{1,2} —1 to 1½ pt. + 1½ pt. G. Endrin + DDT ¹ —1 to 1½ pt. + 1½ pt.	When silvering of leaves is noted or when plants are 3 to 5 days old, apply insecticides at 7-day intervals. NOTE: Thrips injury is more prevalent in vegetable areas. Methyl parathion at 1 pt. per acre may be substituted for DDT in the recommended mixtures to control thrips.
Boll weevil and cotton fleahopper		A. Heptachlor—1 qt. B. Endrin—1 to 1½ pt. C. Toxaphene-DDT (2-1 mixture) 1½ to 2 qt. D. Sevin ¹ (W.P.) 80%—2½ lb. E. Methyl parathion ^{1,5} — to 1½ pt. + DDT—1½ to 2 qt. F. Dieldrin—1 to 1½ pt. G. Strobane-DDT ^{1,2} (2-1 mixture) 1½ to 2 qt. H. Guthion—1 pt.	If fleahoppers appear tolerant to some insecticides or hard to control because of population pressure, add 1½ pt. DDT to sprays not containing DDT (except where Sevin is used). Apply at 7-day intervals until controlled and watch carefully for bollworm infestations which may develop. One pound of Sevin (W.P.) 80% is adequate for fleahoppers alone. If difficulty is encountered in controlling weevils, refer to remarks on boll weevils under mid and late season control.
Aphids	Dusts are not recommended	A. Demeton ⁵ —½ to 1 pt. B. Parathion ⁵ —1 to 1½ pt. C. Malathion—1 to 1½ pt. D. Methyl parathion ⁵ —1 to 1½ pt.	Apply as needed.
MID AND LATE SEASON CONTROL			
	Use dusts at 15-20 lb. per acre unless otherwise specified		
Boll weevil Cotton fleahopper Lygus and other plant bugs	A. 2½% dieldrin—10% DDT—40% sulfur B. 2% methyl parathion—10% DDT C. 10% Sevin—40% sulfur D. 3% gamma BHC—10% DDT—40% sulfur E. 2% endrin—40% sulfur F. 20% toxaphene—40% sulfur G. 5% heptachlor—10% DDT—40% sulfur H. 20% Strobane—40% sulfur I. Calcium arsenate at 8-12 lb. per acre	A. Methyl parathion—1 to 1½ qt. + DDT—1½ to 2 qt. B. Sevin (W.P.) 80%—1.9 to 2.5 lb. C. Toxaphene-DDT (2-1 mixture) 1½ to 2 qt. D. Endrin—1 to 1½ pt. + DDT—1½ to 2 qt. E. Dieldrin—1½ qt. + DDT—1½ to 2 qt. F. BHC-DDT ¹ (3-5 mixture)—2 to 3 qt. G. Strobane-DDT (2-1 mixture)—1½ to 2 qt. H. Heptachlor—1 to 1½ qt. + DDT—1½ to 2 qt. I. Guthion—1 to 2 pt. + DDT—1½ to 2 qt. J. Methyl Trithion ^{1,2} —1 to 1½ pt. + DDT—1½ to 2 qt.	Apply insecticides at 5-day intervals when 10 to 25% of squares are found punctured. UNDER CONDITIONS OF HEAVY BOLL WEEVIL INFESTATION WHERE IT IS DESIRABLE TO REDUCE WEEVIL NUMBERS QUICKLY, THE FOLLOWING MATERIALS ARE EFFECTIVE: A. Chlorinated hydrocarbon-DDT mixture + methyl parathion or Methyl Trithion B. Guthion + DDT C. Sevin D. Calcium arsenate + DDT E. Methyl parathion or Methyl Trithion + DDT at 3-day intervals Calcium arsenate alone will not control fleahoppers, lygus or other plant bugs.
Bollworm	A. 3% gamma BHC—10% DDT—40% sulfur B. 20% toxaphene—40% sulfur C. 10% DDT—1% parathion D. 10% DDT—40% sulfur E. 2% endrin—5% DDT—40% sulfur F. 10% Sevin—40% sulfur G. 20% Strobane—40% sulfur	A. Toxaphene-DDT (2-1 mixture)—1½ to 2 qt. B. Endrin—1¼ to 1¾ pt + DDT—1 to 2 pt. C. DDT—1½ to 2 qt. D. Sevin (W.P.) 80%—1.9 to 2.5 lb. E. Strobane-DDT (2-1 mixture)—1½ to 2 qt.	Apply insecticides when eggs and 4 to 5 young worms per 100 terminals are found or when 5% of young squares are damaged, and continue at 4 or 5-day intervals until under control.
Aphids	A. 2½% methyl parathion B. 2% parathion C. 4% malathion	A. Demeton—½ to 1 pt. B. Methyl parathion—1 to 1½ pt. C. Malathion—1 to 1½ pt. D. Parathion—1 to 1½ pt.	When honeydew first appears, apply insecticides when air is calm.
Cotton leafworms	A. Calcium arsenate at 8-12 lb. per acre B. 1% parathion C. 1% methyl parathion	A. Parathion—½ to 1 pt. B. Toxaphene-DDT (2-1 mixture)—1½ to 2 qt. C. Methyl parathion—½ to 1 pt.	Begin treatment when young worms first appear.
Cabbage loopers	A. 2% endrin—20% sulfur	A. Endrin—1 qt.	Begin control when young worms first appear. Cabbage loopers are susceptible to viral and baterial diseases which in many instances, will control the infestation and eliminate the need for insecticidal control.
Pink bollworms	A. 15% DDT—40% sulfur B. 10% Sevin—40% sulfur C. 2½% Guthion—10% DDT D. 3% gamma BHC—15% DDT—40% sulfur	A. Guthion—1 to 2 pt. + DDT—1½ to 2 qt. B. Sevin (W.P.) 80%—2½ to 3 lb. C. DDT—2 to 2¾ qt.	If boll weevils are present, add a material to DDT for weevil control.
Spider mites	A. 2% parathion	A. Demeton—½ to 1 pt. B. Parathion—1 to 1½ pt. C. Methyl parathion—1 to 1½ pt. D. Trithion ¹ —¾ to 1½ pt. E. Ethion ^{1,2} —¾ to 1½ pt.	When leaves first begin to turn yellow or brown, apply insecticides and repeat only as necessary. Except where demeton is used two or more applications may be necessary.

1. Do not feed treated forage or allow dairy or meat animals to graze in treated fields. 2. Do not apply after bolls open. 3. Do not apply with 5 days of harvest at the ¼ pound per acre rate or 21 days of harvest at a higher rate. 4. Problems may be encountered in spraying wettable powder with low-volume farm sprayers; follow manufacturer's directions carefully. Allow 7 days between last application and grazing treated fields. 5. Do not apply within 5 days of hand picking.

Guide for Controlling Cotton Insects in South Texas

INSECTICIDES used to control cotton insects pay good dividends when applied properly. Amounts used and proper timing are the most important factors.

Dusts and Sprays: Dusts are not as effective as sprays for early season control. For late season control, dusts and sprays are equally effective. Dusts should not be applied when the wind exceeds 4 miles per hour. With both ground and aerial spraying, from 2 to 8 gallons of spray per acre give adequate coverage. Cotton seldom grows too large to be treated with ground equipment, but wheel shields should be mounted on tractors when cotton foliage begins to reach the middle of the rows. Aerial spraying should not be done when the wind is more than 10 miles per hour. With aerial application, flagmen should mark the swaths. The swath should not exceed the width of the wingspan.

Early Season Control: Sprays are more effective for early season control. Cotton during the early stages should be watched closely since some early season insects can destroy stands, deform plants and retard growth and fruiting within a short time.

Mid and Late Season Control: Dusts and sprays are equally effective in controlling insects after cotton begins to bloom. Applications of insecticides washed off by rains within 24 hours should be repeated, except in the case of aphicides.

Infestation Counts: All counts should be made at weekly intervals, but when boll weevils show signs of migration or when bollworm infestations show signs of becoming heavy, inspections should be made every 3 or 4 days.

Cotton Fleahopper: Regardless of whether early preventive treatment was used, counts should be made when the first squares are formed or when cotton is in the eight-leaf stage. Counts at weekly intervals should continue until cotton is well fruited. While walking diagonally across the field, examine 100 or more terminals selected at random points, and record the number of fleahoppers found. Begin treatment when infestation reaches 15 to 35 per 100 terminals and continue at weekly intervals until insects are under control.

Boll Weevil: Counts should begin when plants average three or four squares per plant and should continue as long as the plants are fruiting. Inspect 100 or more squares at random points in the field. Squares from top, middle and lower parts of the plants should be examined.

When 10 to 25 percent of the squares are punctured, begin treatment at 4 or 5-day intervals and continue until infestation is under control.

Bollworm: Examine 100 terminals and 100 small squares at representative points in the field. Begin treatment when eggs and four to five worms per 100 plants are found or when 5 percent of the small squares are damaged by young worms. If a large number of dried blooms cling to bolls, pull them off and look for worm damage, since eggs may be laid in open blooms.

Cotton Leafworm: Observe plants for ragging of leaves. Begin treatment when worm damage is first observed and continue until the infestation is under control.

Cabbage Looper: Begin treatment when small worms first appear. Regular applications of toxaphene-DDT or 3-10-40 mixture for bollworms usually prevent heavy damage. Cabbage loopers are susceptible to viral and bacterial diseases which, in many instances, will control the infestation and eliminate the need for insecticidal control.

Pink Bollworm: Pink bollworm counts should begin 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 five locations and multiply by 10 to obtain the number of worms per acre. When 350 or more worms per acre are found, begin treatment immediately.

As soon as first bolls are 4 weeks old, make boll inspection at weekly intervals. Walk diagonally across the field and collect at least 100 firm green bolls. Crack the bolls and examine the inside of the bolls carpel (hull) for tunnels made by small worms. Begin treatment when 10 to 15 percent of the bolls are infested and continue until 70 percent are open.

Beneficial Insects: Beneficial insects aid in controlling cotton pests such as the bollworm, cotton aphid and spider mite. Growers should **never rely entirely on beneficial insects to control cotton insects**, but should examine their fields frequently to determine if insecticides are needed.

General: Defoliate, harvest and destroy crop residue as soon as practical. It seldom is possible to protect small or young bolls until they mature in the face of an overwhelming population of late season pink bollworms and boll weevils.

Cultural Control: Regulation of planting dates, thorough destruction of stalks early in the fall and elimination of volunteer plants in the winter are the most effective cultural measures used against the pink bollworm and the boll weevil. These practices increase yields, reduce the need for insecticides and will prove beneficial.

See Extension Service Leaflet 219 for regulations and recommended practices for pink bollworm control.

Caution: Precautions printed on insecticide labels should be followed strictly. Special precautions should be taken in handling endrin, dementon, methyl parathion, Guthion, Trithion and parathion as follows: avoid drifts or breathing the vapors; wear approved respirators; have shirt sleeves rolled down; change clothing and bathe immediately after spraying. Cotton poisons destroy many colonies of honeybees each year. Cotton farmers are urged to notify apiarists within 1 mile of the cotton fields before applying insecticides. Beekeepers should inform their cotton farming neighbors where their bees are located.

Insecticidal Drift Precautions: State and Federal laws prohibit residues of certain insecticides on food and feed crops; therefore, strict precautions should be used to avoid possible contamination of food or feed crops grown very near to cotton. Insecticides should not be applied in a manner which will allow drift into the food or feed crops. County agricultural agents or the area extension entomologist at Weslaco should be consulted about allowable residues of pesticides on adjacent crops. Drift into adjacent crops is a greater hazard with dusts than with sprays.

Spray recommendations are based on the formulation below. Examine the labels on all containers and if the formulation varies from these, consult your county agent or the area entomologist for amounts to be used.

Lb. of Actual Material Per Gal.		Combinations Lb. of Actual Material Per Gal.	
DDT	3		
Demeton	2	Gammá BHC—0.9, DDT—1½	
Dieldrin	1.5	Strobane—4, DDT—2	
Endrin	1.6	Toxaphene—4, DDT—2	
Ethion	4		
Guthion	2		
Heptachlor	2		
Malathion	5		
Methyl parathion	2		
Methyl Trithion	4		
Parathion	2		
Sevin (W.P.) 80% wetable powder	4		
Toxaphene	6		
Trithion	4		

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

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