E-6A
3-02

Texas Cooperative EXTENSION
The Texas A&M University System

Suggested Insecticides for Managing Cotton Insects in the High Plains, Rolling Plains and Trans Pecos Areas of Texas 2002

This publication is to be used with E-6, "Managing Cotton Insects in the High Plains, Rolling Plains and Trans Pecos Areas of Texas, 2002."

Suggested Insecticides for Managing Cotton Insects in the High Plains, Rolling Plains and Trans Pecos Areas of Texas

Mark A. Muegge, Brant A. Baugh, James F. Leser, Thomas A. Doederlein and E. P. Boring, III*

A committee of state and federal research scientists and Extension specialists meets annually to review cotton pest management research and management guidelines. Guidelines are revised at this meeting to reflect the latest proven techniques for maximizing profits for the Texas cotton producer by optimizing inputs and production.

Management of Cotton Pests

The proper management of cotton pests is dependent upon the use of pest management principles. Pest management does not rely solely on insecticides. Therefore, the USER of this insert is strongly encouraged to refer to E-6 for discussion of pest biology, scouting techniques, economic thresholds, insecticide resistance management, conservation of existing natural control agents, overall crop management practices which do not promote pest problems, ovicide use, microbial insecticide use, and guidelines for protecting bees from insecticides.

Policy Statement for Making Insecticide Use Recommendations

This is not a complete listing of all products registered for cotton or their uses. The insecticides and their suggested use patterns included in this publication reflect a consensus of opinion of Extension entomologists based on field tests. The data from these field tests met the minimum requirements as outlined in the Guidelines for the Annual Entomology Research Review and Extension Guide Revision Conference. Products listed must conform to our performance standards and avoid undue environmental consequences.

Suggested insecticide use rates have exhibited sufficient efficacy in tests to be effective in providing adequate control in field situations. However, it is impossible to eliminate all risks. Conditions or circumstances which are unforeseen or unexpected may result in less than satisfactory results. Texas Cooperative Extension will not assume responsibility for such risks. Such responsibility shall be assumed by the user of this publication.

Suggested pesticides must be registered and labeled for use by the Environmental Protection Agency and the Texas Department of Agriculture. The status of pesticide label clearances is subject to change and may have changed since this publication was printed.

The **USER** is always responsible for the effects of pesticide residues on his livestock and crops as well as problems that could arise from drift or movement of the pesticide. Always read and follow carefully the instructions on the container label. Pay particular attention to those practices which ensure worker safety.

For additional information, contact your county Extension staff or write the Extension Entomologist, Department of Entomology, Texas A&M University, College Station, TX 77843; or call (979) 845-7026.

Endangered Species Regulations

The Endangered Species Act is designed to protect and to assist in the recovery of animals and plants that are in danger of becoming extinct. In response to the Endangered Species Act, many pesticide labels now carry restrictions limiting the use of products or application methods in designated biologically sensitive areas. These restrictions are subject to change. Refer to the Environmental Hazards or Endangered Species discussion sections of product labels and/or call your local county Extension agent or Fish and Wildlife Service personnel to determine what restrictions apply to your area. Regardless of the law, pesticide users can be good neighbors by being aware of how their actions may affect people and the natural environment.

Worker Protection Standard

The Worker Protection Standard (WPS) is a set of federal regulations that applies to all pesticides used in agricultural plant production. If you employ any person to produce a plant or plant product for sale and apply any type of pesticide to that crop, WPS applies to you. The WPS requires you to protect your employees from pesticide exposure. It requires you to provide three basic types of protection: you must inform employees about exposure, protect employees from exposure, and mitigate pesticide exposures that employees might receive. The WPS requirement will appear in the "DIRECTIONS FOR USE" part of the label. For more detailed information, consult EPA publication 735-B-93-001 (GPO #055-000-0442-1) *The Worker Protection Standard for Agricultural Pesticides -- How to Comply: What Employers Need to Know*, or call Texas Department of Agriculture, Pesticide Worker Protection program, (512) 463-7717.

*Extension entomologist, Extension agent—IPM, Extension entomologist, Extension agent—IPM, and Extension entomologist, The Texas A&M University System.

Table 1. Insecticide suggestion table.

Pest	Insecticides (listed alphabetically)	Insecticide class[1]	Pounds active ingredient per acre[2]	Formulated amount per acre	Precaution status[3]	Re-entry interval (hrs)[4]	Honey bee hazard[5]
Thrips							
Seed	Acephate (Orthene® 80 S)	OP (treated at delinting plant)					
	Thiamethoxam (Cruiser® 5 FS)	N (treated at delinting plant, 7.75 oz./100 lbs. of seed)					
Planter box	Acephate	OP					
	(Address® 75 S)		0.18	4 oz.	C	*	**
	(Address® 90 S)		0.18	3.25 oz.	C	*	**
	(Orthene® 90 S)		0.18	3.25 oz.	C	*	**
	(Orthene® 97)		0.18	3 oz.	C	*	**
In-furrow	Acephate	OP					
	(Payload 15 G)		0.5-1.0	3.33-6.67 lbs.	C	0	**
	Aldicarb	C					
	(Temik® 15 G)		0.3-0.45	2-3 lbs.	D	0	**
	Disulfoton	OP					
	(Di-syston® 15 G)		0.6	4 lbs.	D	0	**
	Phorate	OP					
	(Thimet® 20 G)		0.5	2.5 lbs.	D	0	**
Foliar	Acephate	OP					
	(Address® 75 S)		0.094-0.18	2-4 oz.	C	24	H
	(Address® 90 S)		0.094-0.18	1.67-3.2 oz.	C	24	H
	(Orthene® 90 S)		0.094-0.18	1.67-3.2 oz.	C	24	H
	(Orthene® 97)		0.094-0.18	1.5-3 oz.	C	24	H
	Azinphosmethyl	OP					
	(Guthion® 2 L)		0.125	8 oz.	D	48***	H
	Dicrotophos	OP					
	(Bidrin® 8 E)		0.05-0.2	0.8-3.2 oz.	D	48***	H
	Dimethoate	OP					
	(Dimate® 4 E)		0.125-0.25	4-8 oz.	W	12	H
	(Dimethoate® 2.67 E)		0.11-0.22	5.3-10.5 oz.	W	12	H
	(Dimethoate® 4 E)		0.125-0.25	4-8 oz.	W	12	H
	(Dimethoate® 5 E)		0.125-0.25	3.2-6.4 oz.	D	48	H
	Methyl Parathion (4 E)	OP	0.125-0.25	4-8 oz.	D	4 days***	H
Fleahopper	Acephate	OP					
	(Address® 75 S)		0.188-0.25	4-5.33 oz.	C	24	H
	(Address® 90 S)		0.188-0.225	3.34-4 oz.	C	24	H
	(Orthene® 90 S)		0.188-0.225	3.34-4 oz.	C	24	H
	(Orthene® 97)		0.188-0.2425	3.10-4 oz.	C	24	H
	Chlorpyrifos	OP					
	(Lorsban® 4 E)		0.19-0.5	6-16 oz.	D	24	H
	Dicrotophos	OP					
	(Bidrin® 8 E)		0.05-0.2	0.8-3.2 oz.	D	48***	H
	Dimethoate	OP					
	(Dimate® 4 E)		0.125-0.25	4-8 oz.	W	12	H
	(Dimethoate® 2.67 E)		0.11-0.22	5.3-10.5 oz.	W	12	H
	(Dimethoate® 4 E)		0.125-0.25	4-8 oz.	W	12	H
	(Dimethoate® 5 E)		0.125-0.25	3.2-6.4 oz.	D	48	H
	Imidacloprid	N					
	(Provado® 1.6 F)		0.047	3.75 oz.	C	12	H
	(Trimax® 4F)		0.047	1.5 oz.	C	12	H
	Indoxacarb	I					
	(Steward® 1.25 SC)		0.09-0.11	9.2-11.3 oz.	C	12	H
	Methomyl	C					
	(Lannate® 2.4 LV)		0.113-0.225	6-12 oz.	D	72	H
	Methyl Parathion (4 E)	OP	0.1	3.2 oz.	D	4 days***	H
	Oxamyl	C					
	(Vydate® 2 L)		0.25	1 pt.	D	48	H
	(Vydate® 3.77 C-LV)		0.25	8.5 oz.	D	48	H
	Oxydemeton methyl	OP					
	(Metasystox-R® 2 E)		0.25	1 pt.	W	48***	M
	Thiamethoxam	V					
	(Centric® 40 WG)		0.047	2 oz.	C	12	H
Boll Weevil							
Overwintered	Azinphosmethyl	OP					
	(Guthion® 2 L)		0.25	1 pt.	D	48***	H
	Endosulfan	CD					
	(Phaser® 3 E)		0.375-1.5	1-4 pts.	D	48	M
	(Thiodan® 3 E)		0.375-1.5	1-4 pts.	D	48	M
	(Thiodan® 50 WP)		0.5-1.5	1-3 lbs.	D	48	M

(continued)

Table 1. Insecticide suggestion table. ***(Continued)***

Pest	Insecticides (listed alphabetically)	Insecticide class[1]	Pounds active ingredient per acre[2]	Formulated amount per acre	Precaution status[3]	Re-entry interval (hrs)[4]	Honey bee hazard[5]
	Malathion	OP					
	(Atrapa® ULV 9.9)		0.61-1.22	8-16 oz.	C	12	H
	(Fyfanon® ULV 9.9)		0.61-1.22	8-16 oz.	C	12	H
	Methyl Parathion (4 E)	OP	0.25-0.5	8-16 oz.	D	4 days***	H
	Oxamyl	C					
	(Vydate® 2 L)		0.25	1 pt.	D	48	H
	(Vydate® 3.77 C-LV)		0.25	8.5 oz.	D	48	H
	Synthetic pyrethroids***						
Grasshoppers	Chlorpyrifos	OP					
	(Lorsban® 4 E)		0.25-0.5	8-16 oz.	D	24	H
	Cyfluthrin	SP					
	(Baythroid® 2 E)		0.031-0.044	2.0-2.8 oz.	D	12	H
	Cyfluthrin +	SP +					
	Imidacloprid	N	0.032 +				
	(Leverage® 2.7 SE)		0.047	3.75 oz.	W	12	H
	Dicrotophos	OP					
	(Bidrin® 8 E)		0.25	4 oz.	D	48***	H
	Esfenvalerate	SP					
	(Asana XL® 0.66 E)		0.03-0.05	5.8-9.6 oz.	W	12	H
	Malathion	OP					
	(Atrapa® ULV 9.9)		0.61-0.92	8-12 oz.	C	12	H
	(Fyfanon® ULV 9.9)		0.61-0.92	8-12 oz.	C	12	H
	Zeta-cypermethrin	SP					
	(Fury® 1.5 E)		0.0375-0.05	3.2-4.3 oz.	W	12	H
Beet Armyworm	Chlorpyrifos	OP					
	(Lorsban® 4 E)		1.0	2 pts.	D	24	H
	Diflubenzuron	IGR					
	(Dimilin® 2 F)		0.0625-0.125	4-8 oz.	C	12	R
	Indoxacarb	I					
	(Steward® 1.25 SC)		0.09-0.11	9.2-11.3 oz.	C	12	H
	Methomyl	C					
	(Lannate® 2.4 LV)		0.45	1.5 pts.	D	72	H
	Methoxyfenozide	IGR					
	(Intrepid® 2 F)		0.06-0.16	4-10 oz.	C	4	R
	Profenofos	OP					
	(Curacron® 8 E)		0.75-1.0	12-16 oz.	W	48***	H
	Spinosad	NA					
	(Tracer® 4 SC)		0.067-0.089	2.14-2.9 oz.	C	4	H
	Tebufenozide	IGR					
	(Confirm® 2 F)		0.06-0.25	4-16 oz.	C	4	R
	Thiodicarb	C					
	(Larvin® 3.2 F)		0.6-0.9	1.5-2.25 pts.	W	12	M
Saltmarsh Caterpillar	Bifenthrin	SP					
	(Capture® 2 E)		0.25-0.5	8-16 oz.	D	24	H
	Cyfluthrin	SO					
	(Baythroid® 2E)		0.025-0.04	1.6-2.6 oz.	D	12	H
	Cyfluthrin +	SP +					
	Imidacloprid	N	0.025 +				
	(Leverage® 2.7 SE)		0.375	3 oz.	W	12	H
	Cyhalothrin	SP					
	(Karate® 2.08 CS)		0.02-0.03	1.28-1.92 oz.	D	24	H
	Cypermethrin	SP					
	(Ammo® 2.5 E)		0.04-0.1	2-5 oz.	D	24	H
	Deltamethrin	SP					
	(Decis® 1.5 E)		0.019-0.03	1.62-2.56 oz.	D	12	H
	Esfenvalerate	SP					
	(Asana XL® 0.66 E)		0.03-0.05	5.8-9.6 oz.	W	12	H
	Malathion	OP					
	(Atrapa® ULV 9.9)		0.61-0.92	8-12 oz.	C	12	H
	(Fyfanon® ULV 9.9)		0.61-0.92	8-12 oz.	C	12	H
	Methyl Parathion (4 E)	OP	0.5-1.0	1-2 pts.	D	4 days***	H
	Parathion (8 E)	OP	0.5-1.0	8-16 oz.	D	7 days	H
	Tralomethrin	SP					
	(Scout® X-tra 0.9 E)		0.018-0.024	2.56-3.41 oz.	D	24	H
	Zeta-cypermethrin	SP					
	(Fury® 1.5 E)		0.033-0.045	2.8-3.8 oz.	W	12	H

(continued)

Table 1. Insecticide suggestion table. ***(Continued)***

Pest	Insecticides (listed alphabetically)	Insecticide class[1]	Pounds active ingredient per acre[2]	Formulated amount per acre	Precaution status[3]	Re-entry interval (hrs)[4]	Honey bee hazard[5]
Lygus Bug	Acephate	OP					
	(Address® 75 S)		0.5-1.0	10.66-21.33 oz.	C	24	H
	(Address® 90 S)		0.5-1.0	9-17.77 oz.	C	24	H
	(Orthene® 90 S)		0.5-1.0	9-17.77 oz.	C	24	H
	(Orthene® 97)		0.5-1.0	8-16 oz.	C	24	H
	Bifenthrin****	SP					
	(Capture® 2 E)		0.04-0.1	2.6-6.4 oz.	W	12	H
	Cyfluthrin****	SP					
	(Baythroid® 2 E)		0.025-0.04	1.6-2.6 oz.	D	12	H
	Cyfluthrin****+	SP +					
	Imidacloprid	N	0.032 +				
	(Leverage® 2.7 SE)		0.047	3.75 oz.	W	12	H
	Cyhalothrin****	SP					
	(Karate® 2.08 CS)		0.02-0.03	1.28-1.92 oz.	D	24	H
	Cypermethrin****	SP					
	(Ammo® 2.5 E)		0.04-0.1	2-5 oz.	D	24	H
	Deltamethrin****	SP					
	(Decis® 1.5 E)		0.013-0.019	1.11-1.62 oz.	D	12	H
	Dicrotophos	OP					
	(Bidrin® 8 E)		0.5	8 oz.	D	48***	H
	Dimethoate	OP					
	(Dimate® 4 E)		0.25	8 oz.	W	12	H
	(Dimethoate® 2.67 E)		0.22	10.7 oz.	W	12	H
	(Dimethoate® 4 E)		0.25	8 oz.	W	12	H
	(Dimethoate® 5 E)		0.25	6.4 oz	D	48	H
	Esfenvalerate****	SP					
	(Asana XL® 0.66 E)		0.03-0.05	5.8-9.6 oz.	W	12	H
	Imidacloprid	N					
	(Provado® 1.6 F)		0.047	3.75 oz.	C	12	H
	(Trimax® 4 F)		0.047	1.5 oz.	C	12	H
	Methomyl	C					
	(Lannate® 2.4 L-V)		0.225	0.75 pt.	D	72	H
	Methyl Parathion (4 E)	OP	0.5-1.0	1-2 pts.	D	4 days***	H
	Methyl Parathion encapsulated	OP					
	(Penncap-M® 2 F)		0.25	1 pt.	W	4 days***	H
	Oxamyl	C					
	(Vydate® 2 L)		0.25	1 pt.	D	48	H
	(Vydate® 3.77 C-LV)		0.375-1.0	12.7-34.0 oz.	D	48	H
	Parathion (8 E)	OP	0.5-1.0	8-16 oz.	D	7 days	H
	Tralomethrin****	SP					
	(Scout® X-tra 0.9 E)		0.016-0.02	2.28-2.84 oz.	D	24	H
	Zeta-cypermethrin****	SP					
	(Fury® 1.5 E)		0.035-0.05	2.99-4.26 oz.	W	12	H
Bollworm & Tobacco Budworm (Eggs)	*(Use only with a larvicide, see E-6.)*						
	Amitraz	T					
	(Ovasyn® 1.5 EC)		0.125-0.25	0.67-1.33 pt.	W	24	R
	Methomyl	C					
	(Lannate® 2.4 LV)		0.113-0.225	6-12 oz.	D	72	H
	Profenofos	OP					
	(Curacron® 8 E)		0.125-0.25	2-4 oz.	W	48***	H
	Thiodicarb	C					
	(Larvin® 3.2 F)		0.125-0.25	5-10 oz.	W	12	M
(Bollworm Larvae)	*Bacillus thuringiensis* (See listing in Table 2. See "Microbial Insecticides" section in E-6.)						
	Bifenthrin****	SP					
	(Capture® 2 E)		0.04-0.1	2.6-6.4 oz.	W	12	H
	Cyfluthrin****	SP					
	(Baythroid® 2 E)		0.025-0.05	1.6-3.2 oz.	D	12	H
	Cyfluthrin +	SP +					
	Imidacloprid****	N	0.032+				
	(Leverage® 2.7 SE)		0.047	3.75 oz.	W	12	H
	Cyhalothrin****	SP					
	(Karate® 2.08 CS)		0.025-0.04	1.6-2.56 oz.	D	24	H
	Cypermethrin****	SP					
	(Ammo® 2.5 E)		0.04-0.1	2-5 oz.	D	24	H
	Deltamethrin****	SP					
	(Decis® 1.5 E)		0.019-0.03	1.62-2.56 oz.	D	12	H
	Esfenvalerate****	SP					
	(Asana XL® 0.66 E)		0.03-0.05	5.8-9.6 oz.	W	12	H

(continued)

Table 1. Insecticide suggestion table. ***(Continued)***

Pest	Insecticides (listed alphabetically)	Insecticide class[1]	Pounds active ingredient per acre[2]	Formulated amount per acre	Precaution status[3]	Re-entry interval (hrs)[4]	Honey bee hazard[5]
	Indoxacarb (Steward® 1.25 SC)	I	0.09-0.11	9.2-11.3 oz.	C	12	H
	Methomyl (Lannate® 2.4 LV)	C	0.45	1.5 pts.	D	72	H
	Methyl Parathion (4 E)	OP	1.25-2.0	2.5-4 pts.	D	4 days***	H
	Profenofos (Curacron® 8 E)	OP	0.5-1.0	8-16 oz.	W		H
	Spinosad (Tracer® 4 SC)	NA	0.067-0.089	2.14-2.9 oz.	C	4	H
	Thiodicarb (Larvin® 3.2 F)	C	0.6-0.9	1.5-2.25 pts.	W	12	M
	Tralomethrin**** (Scout® X-tra 0.9 E)	SP	0.018-0.024	2.56-3.37 oz.	D	24	H
	Zeta-cypermethrin**** (Fury® 1.5 E)	SP	0.033-0.045	2.82-3.83 oz.	W	12	H
(Tobacco Budworm Larvae)	*Bacillus thuringiensis* (See listing in Table 2. See "Microbial Insecticides" section in E-6.)						
	Indoxacarb (Steward® 1.25 SC)	I	0.09-0.11	9.2-11.3 oz.	C	12	H
	Methomyl (Lannate® 2.4 LV)	C	0.45	1.5 pts.	D	72	H
	Methyl Parathion (4 E)	OP	1.25-2.0	2.5-4 pts.	D	72	H
	Profenofos (Curacron® 8 E)	OP	0.5-1.0	8-16 oz.	W	48***	H
	Spinosad (Tracer® 4 SC)	NA	0.067-0.089	2.14-2.9 oz.	C	4	H
	Thiodicarb (Larvin® 3.2 F)	C	0.6-0.9	1.5-2.25 pts.	W	12	M
Boll Weevil (In-season)	Azinphosmethyl (Guthion ® 2 L or ULV 2 lb)	OP	0.25	1 pt.	D	48***	H
	Dicrotophos (Bidrin® 8 E)	OP	0.5	8 oz.	D	48***	H
	Endosulfan	CD					
	(Phaser ® 3 E)		0.375-1.5	1-4 pts.	D	48	M
	(Thiodan ® 3 E)		0.375-1.5	1-4 pts.	D	48	M
	(Thiodan® 50 WP)		0.5-1.5	1-3 lbs.	D	48	M
	Malathion	OP					
	(Atrapa® ULV 9.9)		0.92-1.22	12-16 oz.§	C	12	H
	(Fyfanon® ULV 9.9)		0.92-1.22	12-16 oz.§	C	12	H
	Methyl Parathion (4 E)	OP	0.375-1.0	12-32 oz.	D	4 days***	H
	Methyl Parathion encapsulated (Penncap M® 2 F)	OP	0.25	1 pt.	W	4 days***	H
	Oxamyl	C					
	(Vydate® 2L)		0.25	1 pt.	W	48	H
	(Vydate® 3.77 C-LV)		0.25	8.5 oz.	D	48	H
	Synthetic pyrethroids***						
Cotton Aphids §§	Chlorpyrifos (Lorsban ® 4 E)	OP	0.25-1.0	8-32 oz.	D	24	H
	Dicrotophos (Bidrin ® 8 E)	OP	0.25-0.5	4-8 oz.	D	48***	H
	Dicrotophos (Bidrin 8 E) + Amitraz (Ovasyn 1.5 E)	OP + T	0.25-0.5 + 0.125-0.25	4-8 oz. + 0.67-1.33 pt.	D + W	48***	H
	Dicrotophos (Bidrin 8 E) + Profenofos (Curacron 8 E)	OP + OP	0.25-0.5 + 0.125-0.25	4-8 oz. + 2-4 oz.	D + W	48***	H
	Imidacloprid	N					
	(Provado ® 1.6 F)		0.047	3.75 oz.	C	12	H
	(Trimax ® 4 F)		0.047	1.5 oz.	C	12	H
	Methomyl (Lannate ® 2.4 LV)	C	0.225	12 oz.	D	72	H
	Parathion (8 E)		0.25-0.37	4-6 oz.	D	7 days	H
	Profenofos (Curacron ® 8 E)	OP	0.5	8 oz.	W	48***	H
	Thiamethoxam (Centric ® 40 WG)	N	0.047	2 oz.	C	12	H

(continued)

Table 1. Insecticide suggestion table. ***(Continued)***

Pest	Insecticides (listed alphabetically)	Insecticide class[1]	Pounds active ingredient per acre[2]	Formulated amount per acre	Precaution status[3]	Re-entry interval (hrs)[4]	Honey bee hazard[5]
Stink Bugs	Acephate	OP					
	(Address ® 75S)		0.75	16 oz.	C	24	H
	(Address ® 90 S)		0.8	14.2 oz.	C	24	H
	(Orthene ® 90 S)		0.8	14.2 oz.	C	24	H
	(Orthene ® 97)		0.72	12 oz.	C	24	H
	Bifenthrin	SP					
	(Capture ® 2 E)		0.04-0.10	2.6-6.4 oz.	W	12	H
	Cyfluthrin	SP					
	(Baythroid ® 2 E)		0.025-0.04	16.2-2.6 oz.	D	12	H
	Cyfluthrin +	SP +					
	Imidacloprid	N	0.025 +				
	(Leverage ® 2.7 SE)		0.0375	3 oz.	W	12	H
	Cyhalothrin	SP					
	(Karate ® 2.08 CS)		0.025-0.04	1.6-2.56 oz.	D	24	H
	Deltamethrin	SP					
	(Decis ® 1.5 E)		0.019-0.03	1.62-2.56 oz.	D	12	H
	Dicrotophos	OP					
	(Bidrin ® 8 E)		0.5	8 oz.	D	48***	H
	Methyl Parathion (4 E)	OP	0.5-1.0	1-2 pts.	D	4 days***	H
	Oxamyl	C					
	(Vydate 3.77 C-LV)		0.33-0.5	11.2-17.0 oz.	D	48	H
	Parathion (8 E)		0.5-0.75	8-12 oz.	D	7 days	H
	Tralomethrin	SP					
	(Scout ® X-tra 0.9 E)		0.018-0.024	2.56-3.41 oz.	D	24	H
	Zeta-cypermethrin	SP					
	(Fury ® 1.5 E)		0.033-0.045	2.8-3.8 oz.	W	12	H
Pink Bollworm	Chlorpyrifos	OP					
	(Lorsban ® 4 E)		0.75-1.0	1.5-2.0 pts.	D	24	H
	Cyfluthrin****	SP					
	(Baythroid 2 E)		0.025-0.05	1.6-3.2oz.	D	12	H
	Cyhalothrin****	SP					
	(Karate 2.08 CS)		0.02-0.03	1.28-1.92 oz.	D	24	H
	Esfenvalerate****	SP					
	(Asana XL ® 0.66 E)		0.03-0.05	5.8-9.6 oz.	W	12	H
	Methyl Parathion (4 E)	OP	0.5-1.0	1-2 pts.	D	4 days***	H
	Methyl Parathion encapsulated						
	(Penncap M ® 2 F)		0.5-1	2-4 pts.	W	4 days***	H
	Tralomethrin****	SP					
	(Scout X-tra 0.9 E)		0.018-0.024	2.56-3.41 oz.	D	24	H
	Zeta-cypermethrin****	SP					
	(Fury ® 1.5 E)		0.033-0.045	2.82-3.83 oz.	W	12	H
Cabbage Looper	*Bacillus thuringiensis (see "Microbial Insecticides" section in E-6)*						
	Indoxacarb	I					
	(Steward® 1.25 SC)		0.09-0.11	9.2-11.3 oz.	C	12	H
	Methoxyfenozide	IGR					
	(Intrepid® 2 F)		0.06-0.16	4-10 oz.	C	4	R
	Spinosad	NA					
	(Tracer® 4 SC)		0.067-0.089	2.14-2.9 oz.	C	4	H
Spider Mites	Avermectin B_1						
	(Zephyr ® 0.15 E)		0.01-0.02	8-16 oz.	W	48	H
	Dicofol	CH					
	(Kelthane ® MF)		1.0-1.5	1-1.5 qts.	C	12	R
	Methyl Parathion (4 E)	OP	0.25-0.33	8.0-10.6 oz.	D	4 days***	H
	Parathion (8 E)		0.25	4 oz.	D	7 days	H

§ 16 oz rate restricted to fall diapause applications. *(continued)*

§§ Difficulty in controlling cotton aphids has been encountered in some areas of Texas. Poor or erratic control can be expected in the High Plains, Trans Pecos, Rolling Plains and Wintergarden areas. Resistance exists to most registered materials and continued excessive use of certain insecticides is apt to expand the resistance problem. Where resistance exists in an area, the initial insecticide application should be made at the higher labeled rate. Poorest control has occurred during periods of rapid population growth. Contact the county Extension agent in your area for the latest information on aphid control.

* Refer to Federal label for specific field re-entry instructions.

** These products are applied to the seed or to the soil and pose no hazard to honey bees.

*** Re-entry interval is 72 hours in areas where the average annual rainfall is less than 25 inches.

**** The synthetic pyrethroid insecticides (examples include fenvalerate, bifenthrin, deltamethrin esfenvalerate, cyfluthrin, cyhalothrin, tralomethrin, cypermethrin and zeta-cypermethrin) recommended for control of bollworms also will control boll weevil. However, application intervals similar to those recommended for the traditional phosphate insecticides (3 to 5 days under heavy pressure) are necessary to provide adequate control. When treatments are to be made for a bollworm-boll weevil complex a suggested treatment regime is to use a pyrethroid followed 3 to 5 days later by a phosphate or carbamate boll weevil insecticide.

Since pyrethroids are not more effective than phosphates or carbamates for boll weevil control, but are more effective for bollworm control, they should be saved for bollworm management.

We do not recommend using pyrethroids for boll weevil control alone or for early season pests because increased use may contribute to the development of resistance to pyrethroids.

Bifenthrin suppresses spider mites when used for control of bollworms.

The use of synthetic pyrethroid insecticides may increase cotton aphid numbers.

Table 1. Insecticide suggestion table. ***(Continued)***

Pest	Insecticides (listed alphabetically)	Insecticide class[1]	Pounds active ingredient per acre[2]	Formulated amount per acre	Precaution status[3]	Re-entry interval (hrs)[4]	Honey bee hazard[5]
	Profenofos (Curacron ® 8 E)	OP	0.5-0.75	8-12 oz.	W	48***	H
	Propargite (Comite ® 6.55 E)	CD	0.8-1.6	1-2 pts.	D	24	R

[1] C=carbamate; OP=organophosphate; SP=synthetic pyrethroid; CD=cyclodiene; CH=chlorinated hydrocarbon; T=triazapentadiene; IGR=insect growth regulator, NI=nitroguanidine; NA=naturalyte I=indeno-oxadiazine.

[2] Refer to Table 4 for converting pounds active ingredient per gallon to acres per gallon.

[3] C=Caution; W=Warning; D=Danger

[4] Time after application before re-entering fields without protective clothing. The wearing of protective clothing as described on the label may shorten the re-entry interval. In general, no insecticide label will have the statement "allow spray to dry" or "allow dust to settle" as a re-entry interval. However, there may be limited instances where EPA could grant a shorter re-entry interval than the minimum of 12 hours following application. Re-entry intervals are determined by the product's federal label or by Texas Department of Agriculture regulations and are subject to change.

[5] H=highly toxic; M=moderately toxic; R=relatively non-toxic

Table 2. Registered *Bacillus thuringiensis* products and labeled rates for controlling bollworm and tobacco budworm.

Product	Rate per acre (formulated material)
Condor	0.5-1.67 qts.
Dipel DF	0.5-2.0 lbs.
Dipel ES	1-4 pts.
Javelin WG	0.25-1.5 lbs.

Table 3. A listing of registered insecticides labeled for use in chemigation systems.

Ammo ® 2.5E	Guthion ® 2L
Asana ® XL 0.66E	Larvin ® 3.2F
Baythroid ® 2E	Lorsban ® 4E
Capture ® 2E	MetaSystox-R ® 2E
Dipel ® DF	Penncap-M ® 2F

Table 4. Converting pounds active ingredient per gallon to acres per gallon.

Pounds active ingredient needed per acre	Pounds active ingredient per gallon																	
	0.15	0.30	0.66	0.90	1.00	1.80	2.00	2.40	2.50	2.67	3.00	3.20	4.00	6.00	6.55	7.50	8.00	9.33
	Acres per gallon*																	
0.01	15.0	30.0	66.0	90.0	100.0	180.0	200.0	240.0	250.0	267.0	300.0	320.0	400.0	600.0	655.0	750.0	800.0	933.0
0.015	10.0	20.0	44.0	60.0	66.7	120.0	133.3	160.0	166.7	178.0	200.0	213.3	266.7	400.0	436.7	500.0	533.3	622.0
0.019	7.9	15.8	34.7	47.4	52.6	94.7	105.3	126.3	131.6	140.5	157.9	168.4	210.5	315.8	344.7	394.7	421.1	491.1
0.02	7.5	15.0	33.0	45.0	50.0	90.0	100.0	120.0	125.0	133.5	150.0	160.0	200.0	300.0	327.5	375.0	400.0	466.5
0.025	6.0	12.0	26.4	36.0	40.0	72.0	80.0	96.0	100.0	106.8	120.0	128.0	160.0	240.0	262.0	300.0	320.0	373.2
0.03	5.0	10.0	22.0	30.0	33.3	60.0	66.7	80.0	83.3	89.0	100.0	106.7	133.3	200.0	218.3	250.0	266.7	311.0
0.04	3.8	7.5	16.5	22.2	25.0	45.0	50.0	60.0	62.5	66.8	75.0	80.0	100.0	150.0	163.8	187.5	200.0	233.3
0.05	3.0	6.0	13.2	18.0	20.0	36.0	40.0	48.0	50.0	53.4	60.0	64.0	80.0	120.0	131.0	150.0	160.0	186.6
0.0625	2.4	4.8	10.6	14.4	16.0	28.8	32.0	38.4	40.0	42.7	48.0	51.2	64.0	96.0	104.8	120.0	128.0	149.3
0.08	1.9	3.8	8.3	11.3	12.5	22.5	25.0	30.0	31.3	33.4	37.5	40.0	50.0	75.0	81.9	93.8	100.0	116.6
0.1	1.5	3.0	6.6	9.0	10.0	18.0	20.0	24.0	25.0	26.7	30.0	32.0	40.0	60.0	65.5	75.0	80.0	93.3
0.11	1.4	2.7	6.0	8.2	9.1	16.4	18.2	21.8	22.7	24.3	27.3	29.1	36.4	54.5	59.5	68.2	72.7	84.8
0.113	1.3	2.7	5.8	7.9	8.8	15.9	17.7	21.2	22.1	23.6	26.5	28.3	35.4	53.1	58.0	66.4	70.8	82.6
0.125	1.2	2.4	5.3	7.2	8.0	14.4	16.0	19.2	20.0	21.4	24.0	25.6	32.0	48.0	52.4	60.0	64.0	74.6
0.17	0.9	1.8	3.9	5.3	5.9	10.6	11.8	14.1	14.7	15.7	17.6	18.8	23.5	35.3	38.5	44.1	47.1	54.9
0.19	0.8	1.6	3.5	4.7	5.3	9.5	10.5	12.6	13.2	14.1	15.8	16.8	21.1	31.6	34.5	39.5	42.1	49.1
0.2	0.7	1.5	3.3	4.5	5.0	9.0	10.0	12.0	12.5	13.4	15.0	16.0	20.0	30.0	32.8	37.5	40.0	48.7
0.22	0.7	1.4	3.0	4.1	4.5	8.2	9.1	10.9	11.4	12.1	13.6	14.5	18.2	27.3	29.8	34.1	36.4	42.4
0.225	0.6	1.3	2.9	4.0	4.4	8.0	8.9	10.7	11.1	11.9	13.3	14.2	17.8	26.7	29.1	33.3	35.6	41.5
0.25	0.6	1.2	2.6	3.6	4.0	7.2	8.0	9.6	10.0	10.7	12.0	12.8	16.0	24.0	26.2	30.0	32.0	37.3
0.33	0.4	0.9	2.0	2.7	3.0	5.5	6.1	7.3	7.6	8.1	9.1	9.7	12.1	18.2	19.8	22.7	24.2	28.3
0.37	0.4	0.8	1.8	2.5	2.7	4.9	5.4	6.5	6.8	7.2	8.1	8.6	10.8	16.2	17.7	20.3	21.6	25.2
0.375	0.4	0.8	1.8	2.4	2.7	4.8	5.3	6.4	8.7	7.1	8.0	8.5	10.7	16.0	17.5	20.0	21.3	24.9
0.45	0.3	0.7	1.5	2.0	2.2	4.0	4.4	5.3	5.6	5.9	6.7	7.1	8.9	13.3	14.6	16.7	17.8	20.7
0.5	0.3	0.6	1.3	1.8	2.0	3.6	4.0	4.8	5.0	5.3	6.0	6.4	8.0	12.0	13.1	15.0	16.0	18.7
0.55	0.3	0.5	1.2	1.6	1.8	3.3	3.6	4.4	4.5	4.9	5.5	5.8	7.3	10.9	11.9	13.6	14.5	17.0
0.58	0.3	0.5	1.1	1.5	1.7	3.1	3.4	4.1	4.3	4.6	5.2	5.5	6.9	10.3	11.3	12.9	13.8	16.1
0.6	0.2	0.5	1.1	1.5	1.7	3.0	3.3	4.0	4.2	4.5	5.0	5.3	6.7	10.0	10.9	12.5	13.3	15.6
0.675	0.2	0.4	1.0	1.4	1.5	2.7	3.0	3.6	3.7	4.0	4.4	4.7	5.9	8.9	9.7	11.1	11.9	13.8
0.75	0.2	0.4	0.9	1.2	1.3	2.4	2.7	3.2	3.3	3.6	4.0	4.3	5.3	8.0	8.7	10.0	10.7	12.4
0.8	0.2	0.4	0.8	1.2	1.3	2.3	2.5	3.0	3.1	3.3	3.8	4.0	5.0	7.5	8.2	9.4	10.0	11.7
0.88	0.2	0.3	0.8	1.0	1.1	2.0	2.3	2.7	2.8	3.0	3.4	3.6	4.5	6.8	7.4	8.5	9.1	10.6
0.9	0.2	0.3	0.7	1.0	1.1	2.0	2.2	2.7	2.8	3.0	3.3	3.6	4.4	6.7	7.3	8.3	8.9	10.4
1	0.1	0.3	0.7	0.9	1.0	1.8	2.0	2.4	2.5	2.7	3.0	3.2	4.0	6.0	6.6	7.5	8.0	9.3
1.17	0.1	0.3	0.6	0.8	0.9	1.5	1.7	2.1	2.1	2.3	2.6	2.7	3.4	5.1	5.8	6.4	6.8	8.0
1.25	0.1	0.2	0.5	0.7	0.8	1.4	1.6	1.9	2.0	2.1	2.4	2.6	3.2	4.8	5.2	6.0	6.4	7.5
1.5	0.1	0.2	0.4	0.6	0.7	1.2	1.3	1.6	1.7	1.8	2.0	2.1	2.7	4.0	4.4	5.0	5.3	6.2
1.6	0.1	0.2	0.4	0.5	0.6	1.1	1.3	1.5	1.6	1.7	1.9	2.0	2.5	3.8	4.1	4.7	5.0	5.8
2	0.1	0.2	0.3	0.5	0.5	0.9	1.0	1.2	1.3	1.3	1.5	1.6	2.0	3.0	3.3	3.8	4.0	4.7

*See Table 1 for specific rates of insecticides for each insect or mite pest.

Table 5. Converting percent active ingredient of dry insecticides to formulated insecticide per acre.

Pounds active ingredient needed per acre	Percent active ingredient					
	5	15	20	50	80	90
	Pounds of formulated product per acre*					
0.09	1.80	0.60	0.45	0.18	0.11	0.10
0.188	3.76	1.25	0.04	0.38	0.24	0.21
0.25	5.00	1.67	1.25	0.50	0.31	0.28
0.3	6.00	2.00	1.50	0.60	0.38	0.33
0.45	9.00	3.00	2.25	0.90	0.56	0.50
0.5	10.00	3.33	2.50	1.00	0.63	0.56
0.6	12.00	4.00	3.00	1.20	0.75	0.67
0.75	15.00	5.00	3.75	1.50	0.94	0.83
1.0	20.00	6.67	5.00	2.00	1.25	1.11
1.25	25.00	8.33	6.25	2.50	1.56	1.39
1.33	26.60	8.87	6.65	2.66	1.66	1.48
1.5	30.00	10.00	7.50	3.00	1.88	1.67
1.6	32.00	10.67	8.00	3.20	2.00	1.78
2.0	40.00	13.33	10.00	4.00	2.50	2.22
2.4	48.00	16.00	12.00	4.80	3.00	2.67

*See Table 1 for specific rates of insecticides for each insect or mite pest.

Cover photo by Winfield Sterling.