

COTTON INSECTICIDE PERFORMANCE RATING, 2010

Rating Scale 0 = No control 10 = Excellent	Restricted Use (R)	Fall Armyworm	Beet Armyworm	Aphid**	Thrips	Western Flower Thrips	Cutworm	Grasshoppers	Bollworm	Tobacco Budworm	Cabbage Looper	Soybean Looper	Salt Marsh Caterpillar	Plant Bug (ES/LS)	Spider Mites**	Green and Southern Green Stink Bug	Brown Stink Bug	White Fly
Aeris	X				8	6	5											
Ammo	X	5	1	0	6	3	8	6	7	1	6	1	5	5/3	0	8	4	1
Asana XL/Adjourn	X	5	2	0	6	3	8	6	7	2	7	2	5	5/3	0	8	4	2
<i>Bacillus thuringiensis</i>		1	1	0	0	0	0	0	4	5	6	6	2	0	0	0	0	0
Baythroid XL	X	5	2		6	2	8	7	7	2	7	2	5	5/3	0	8	4	4
Belt		8							8	9	8	8		3				
Bidrin	X	0	0	5	6	5	0	7	0	0	0	0	1	8	3	9	9	3
Bidrin XP	X	5	2	6	6	5	8	7	7	2	7	2	5	8	7	9	9	3
Brigadier	X	5	2	6	6	5	8	7	7	2	7	2	5	7	7	8	7	6
Brigade/Discipline/Fanfare	X	5	2		6	2	6	8	7	2	7	2	5	5/3	7	8	7	6
Carbine		0	0	8	5	1	0	2	0	0	0	0	0	7	0	2	2	0
Centric		0	0	8	4	4	0	2	0	0	0	0	0	8	0	7	6	8
Comite		0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0
Confirm		8	8	0	0	0	2	0	4	4	7	7	8	0	0	0	0	0
Coragen		8							8	9	8	8		3				
Cruiser		0	0	0	8	4	0	0	0	0	0	0	0	0	0	0	0	0
Curacron	X	6	4	3	2	2	7	2	7	7	3	3	5	4	3	1	1	2
Denim		8	9	0	1	1	7	2	8	9	9	9	3	0	5	0	0	0
Diamond		8			1	1	1		4	4				6*		4*	4*	
Dicofol		0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0
Dimethoate/Dimate		0	0	5	6	2	0	6	0	0	0	0	1	5	3	5	4*	3
Di-Syston 15G, 8E	X				7	4		0										
Endigo	X	5	2	8	6	4	8	7	7	2	7	2	5	8	0	8	7	8
Gaicho					8	4	0	0										
Intrepid		8	9	0	0	0	5	0	6	6	9	9	9	0	0	0	0	0
Intruder		0	0	9	6		0	0	0	0	0	0	0	6	0	1	1	9
Karate/Silencer/Lambda-Cy	X	5	2	0	6	2	8	7	7	2	7	2	5	5/3	0	8	4	2
Lannate	X	7	4	5	1	0	5	6	4	4	7	7	4	3	0	5	3	0
Larvin	X	7	5	0	0	0	5	5	6	6	8	8	4	0	0	2	2	0
Leverage 360	X	5	2	5	6	2	8	7	7	2	7	2	5	7	0	8	6	5
Malathion/Fyfanan		2	1	0	3	1	0	7	0	0	0	0	0	6	0	5	4	0
Methyl Parathion	X	2	2	3		1	3	8	1	1	1	1	3	3	0	9	9	0
Mustang Max/Respect	X	5	3	0	6	3	8	7	7	2	7	2	5	5/3	0	8	7	2
Oberon															9			
Orthene/Acephate/SpitFire		4	3	4	6	5	6	8	5	5	7	4	3	8	0	5	7	5
Portal															8			
Prolex/Declare	X	5	2	0	6	2	8	7	7	2	7	2	5	5/3	0	8	4	2
Steward		8	9	0	0	0	5	0	7	9	9	9	5	6	0	3	3	
Temik	X				9	6	0	0										
Tracer		7	9	0	1	1	7	2	7	9	9	9	3	0	0	0	0	0
Trimax/Alias/Imidacloprid		0	0	6	3	1	0	2	0	0	0	0	0	7	0	2	2	0
Vydate C-LV	X	0	0	1	3	1	0	6	0	0	0	0	0	7	0	8	7	0
Zeal															9			
Zoro/Abba/Agri-Mek/Epi-Mek	X	0	0	0	0	0	0	0	0	8	0	0	0	0	9	0	0	0

*Effective on nymphs only.

**Cotton aphids and spider mites can be flared by use of broad spectrum insecticides such as synthetic pyrethroids.

Shaded boxes indicate products recommended for specific pests in this guide.

ES - early season; LS - late season

The performance ratings in the chart are for comparison purposes only and are not necessarily a measure of percent control.

QUICK-VIEW THRESHOLD GUIDE

Insect	Number Per Unit	Basic Sampling (Four Random Areas Per 40 Acres)
Tarnished plant bug (TPB)	3 TPB per 5 row feet or 1 TPB per 3 row feet (problem fields) or 8 to 12 per 100 sweeps	At least 2 drop cloth samples per area.
Bollworm (BW) and Tobacco budworm (TBW)	Non-Bt cotton: 1 BW or 1 TBW (< 0.25 inch) per 2 row feet	At least 3.5 row feet whole-plant samples per area.
Thrips	2-5 thrips per plant and damage present	At least 5 plants per area sampled with a cup or box.
Aphids	50% of plants infested with actively growing colonies present, if no predators are present.	General visual observation, noting predator populations. See comments in aphid section.
Fall armyworm (FAW)	10-20 FAW per 100 plants	Examine as with BW and TBW, supplementing with drop cloth observations and counts in blooms.
Spider mites	50% of plants infested with actively growing colonies present	General visual observation, noting symptoms of feeding injury to leaves.
Stink bugs	1 stink bug per 6 row feet or 20% boll damage	At least 2 drop cloth samples per area or sample at least 25 quarter-sized bolls per area.

INSECTICIDE TERMINATION GUIDE

Determine Date of Cutout using the earlier of Date of NAWF=5 or Weather-restricted date (North AR: 8 Aug, Central AR: 14 Aug, South AR: 21 Aug)
Record daily heat units (DD60s) from Date of Cutout. (DD60s are calculated by subtracting 60 from the average daily temperature)

INSECT	TERMINATION RULES
Tarnished Plant bug	Cutout + 250 DD60s
Bollworm and Tobacco Budworm	Cutout + 350 DD60s
Stink Bugs	Cutout + 450 DD60s
Fall Armyworm	Cutout + 500 DD60s
<p>Crop termination recommendations are based on long-standing and ongoing COTMAN research conducted by University of Arkansas Division of Agriculture scientists. Date of Cutout is the flowering date of the last economically significant boll population. If a field reaches physiological cutout [average number of nodes above white flower=5 (NAWF=5)] in late July or early August in Arkansas, then heat units are accumulated from the NAWF=5 date. Otherwise, heat units are accumulated from a seasonal cutout date based on historical weather for that production region. Typically, a boll needs 850 DD60s to mature with acceptable size and quality.</p> <p>The weather-restricted, seasonal cutout date is the calendar date on which there is a 50% probability that the crop will have the benefit of late season temperatures sufficient to develop a mature boll. Seasonal cutout dates range across the state from August 8 in northernmost parts of Arkansas (Clay County) out to August 21 in the most southern portions of the state (Ashley County). The latest version of COTMAN will supply yearly updates for seasonal cutout dates for each production region. It is now available from Texas A&M University <http://cotman.tamu.edu/index.htm>.</p>	

COTTON INSECT CONTROL

Insect	Insecticide	Formulation/Acre	Lb ai/Acre	Acres/Gallon	Application/Comments	Minimum Days from Last Application to Harvest
Fall Armyworm	emamectin benzoate Denim 0.16 EC	8-12 oz	0.01-0.015	10.7-16	The best control is achieved when applications are timed to coincide with egg hatch or small larvae. Check blooms for the presence of fall armyworms. Treat for 10-20 fall armyworms per 100 plants. Do not treat for presence of eggs alone in dual-protein Bt cotton (e.g., Bollgard II, WideStrike). Terminate sprays for fall armyworm control after NAWF = 5 + 500 heat units past the last effective boll date for your area.	21

COTTON INSECT CONTROL

Insect	Insecticide	Formulation/Acre	Lb ai/Acre	Acres/Gallon	Application/Comments	Minimum Days from Last Application to Harvest
Fall Armyworm	flubendiamide Belt 4 SC	2-3 oz	0.063-0.094	42.7-64	Do not apply Belt more than 3 times per season.	28
	indoxacarb Steward 1.25 SC	9.2-11.3 fl oz	0.09-0.11	11.5-14		14
	methomyl (R) Lannate 2.4 LV Lannate 1.8 L	1 1/2-2 1/4 pt 2-3 pt	0.45-0.675	3.6-5.3 2.7-4	Lannate may redden cotton. If excessive, stop use or alternate with other insecticides.	15
	methoxyfenozide Intrepid 2 F	4-10 oz	0.06-0.16	12.8-32		14
	novaluron Diamond 0.83 EC	6-12 oz	0.039-0.078	10.7-21.3		30
	profenofos (R) Curacron 8 E	3/4-1 pt	0.75-1.0	8-10.67	Continuous agitation during mixing, filling and application is required.	14
	rynaxypyr Coragen 1.67 SC	3.5-7.0 oz	0.045-0.09	18.3-36.6		21
	spinosad Tracer 4 SC	2.144-2.88 oz	0.067-0.09	45-60	Pyrethroids at maximum labeled rates will provide control if timed to egg lay and small larvae.	28
	thiodicarb (R) Larvin 3.2 F	1 1/2-2 1/4 pt	0.6-0.9	3.5-5.3		28
	Beet Armyworm	emamectin benzoate Denim 0.16 EC	6-8 oz	0.0075-0.01	16-21	Apply treatment when field scouting reveals 3-5 or more "hits" or egg clusters per 100 ft of row and eggs are hatching or larval feeding is observed. The best control is achieved when applications are timed to coincide with egg hatch or small larvae. Mixtures may increase activity against beet armyworms. Adding 1 qt of crop oil may aid in control. Beet armyworm infestations are difficult to control, and the listed insecticides may only give suppression.
indoxacarb Steward 1.25 SC		9.2-11.3 fl oz	0.09-0.11	11.5-14		14
methoxyfenozide Intrepid 2 F		4-10 oz	0.06-0.16	12.8-32		14
rynaxypyr Coragen 1.67 SC		3.5-7.0 oz	0.045-0.09	18.3-36.6		21
spinosad Tracer 4 SC		2.144-2.88 oz	0.067-0.09	45-60	Do not apply more than 6 oz of Tracer per year.	28
Aphids	<p>Aphid Management and Control Treatment for aphids alone seldom results in a yield increase.</p> <ol style="list-style-type: none"> Threshold: When populations are building and aphid colonies are present on approximately 50% of the plants: <ol style="list-style-type: none"> If there are less than 0.3 lady beetle adults AND less than 0.2 lady beetle larvae (per row-ft), <u>treat</u>. If there are at least 0.3 lady beetle adults OR 0.2 lady beetle larvae (per row-ft), <u>do not treat, but resample within 7 days</u>. <ol style="list-style-type: none"> If aphid population is still increasing after 7 days, <u>treat</u>, otherwise continue normal sampling interval. The aphid fungus is very effective in reducing aphid populations in early to mid-July. Fields should be checked for fungus before treatments are applied. If confident the fungus is present in 15% of the aphid population, do not treat. Contact your county agent for the most recent recommendations. Resistance to neonicotinoid insecticides (Trimax, Intruder, Centric) is developing. Avoid unnecessary/automatic applications of these insecticides when aphids are present. 					

COTTON INSECT CONTROL

Insect	Insecticide	Formulation/Acre	Lb ai/Acre	Acres/Gallon	Application/Comments	Minimum Days from Last Application to Harvest
Aphids (cont.)	acetamiprid Intruder 70 WP	0.8-1.1 oz	0.035-0.05			28
	dicrotophos (R) Bidrin 8 EC	6-8 oz	0.33-0.5	16-24	Do not apply more than 16 oz of Bidrin per season during bloom. Do not make applications of Bidrin closer than 14 days apart.	30
	flonicamid Carbine 50 WG	1.41-2.02 oz	0.044-0.063		Do not apply more than 3 applications of Carbine per season, allowing at least 7 days between applications.	30
	imidacloprid Trimax Pro 4.44 SC Imidacloprid 4 F	0.9-1.8 oz 1.0-1.5 oz	0.031-0.062	71-142 85.3-128	Do not graze treated fields.	14
	thiamethoxam Centric 40 WG	1.25-2 oz	0.031-0.05		Do not exceed a total of 5 oz of Centric per acre during each growing season. Allow at least 5 days between applications. Do not apply Centric within 45 days of neonicotinoid seed treatment (Cruiser, Gaucho, Aeris, Avicta).	21
Thrips	In Furrow acephate		0.75-1.0		Orthene-treated seed may require one or more foliar treatments for thrips control.	21
	Acephate 90S IFS*	0.83-1.1 lb				
	Orthene 97 IFS	0.77-1.03 lb				
	Orthene 90S IFS	0.83-1.1 lb				
	Orthene-treated seed	Commercially available				
	aldicarb (R) Temik 15 G	3.5 lb	0.5		Do not use pyrethroids for thrips control. Apply Temik and Di-Syston in furrow with a recommended in-furrow fungicide.	90
	disulfoton (R) Di-Syston 15 G Di-Syston 8E IFS	4-6.7 lb 10.3-16.5 fl oz	0.6-1.0 0.65-1.0	7.8-12.4	Apply in-furrow at planting.	
	imidacloprid Gaucho 480 Gaucho 600 Gaucho Grande	per 100 lb seed 8 oz 6 oz 9.3 oz			Seed treatment.	
	imidacloprid + thiodicarb (R) Aeris	0.75 mg ai/seed			Commercially available seed treatment.	
	thiamethoxam Cruiser	7.65 oz/100 lb seed			Seed treatment.	
	Avicta Complete Cotton	see label			Seed treatment.	
	Foliar Sprays acephate 90 S Acephate/Orthene/SpitFire Orthene 97	0.22 lb 0.21 lb	0.2		Treat with foliar sprays when first or second true leaf emerges with noticeable damage from thrips. On larger seedlings, treat for an average of 5 thrips per plant and damage that may cause delayed growth or stunting of plants.	21
	dicrotophos (R) Bidrin 8 EC	3.2 oz	0.2	40	Bidrin is limited to one application of 3.2 oz pre-square.	30
	dimethoate Dimethoate 4 EC	6.4 oz	0.2	20		14

*IFS = in-furrow spray

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Insect	Insecticide	Formulation/Acre	Lb ai/Acre	Acres/Gallon	Application/Comments	Minimum Days from Last Application to Harvest
Western Flower Thrips	acephate 90 S Orthene/SpitFire/Acephate Orthene 97	0.56 lb 0.52 lb	0.5		Treatment should be made when at least 100 thrips are found per bloom plus some leaf damage. Treatment is seldom warranted. Populations may resurge to treatment levels 10 days after treatment. Treat with foliar sprays when first or second true leaf emerges with noticeable damage from thrips. On larger seedlings, treat for an average of 5 thrips per plant and damage that may cause delayed growth or stunting of plants.	21
	aldicarb (R) Temik 15 G	3.5 lb	0.5		Temik is effective for early season control on seedling cotton.	90
Cutworms	acephate 90 S Acephate/Orthene/SpitFire Orthene 97	1.0 lb 0.93 lb	0.9		Maintain 2-3 plants per row ft. Cutworm control is most effective when ground applications are made and sprays are directed (banded) to the base and lower portion of the plant.	21
	beta-cyfluthrin (R) Baythroid XL	0.8-1.6 oz	0.007-0.013	80-160	Stale seedbed/no-till fields, fields with cover crops and/or heavy spring weed pressure or fields with a history of cutworm problems should be considered high-risk fields. Consider preventative pyrethroid applications for cutworm in these situations utilizing a one-third band applicator behind the planter.	0
	bifenthrin 2 EC (R) Brigade/Fanfare/ Discipline/Sniper	2.4-6.4 oz	0.04-0.1	20-49.2		14
	cypermethrin (R) Ammo 2.5 EC	1.3-5.0 oz	0.025-0.1	25-100		14
	esfenvalerate 0.66 EC (R) Asana XL/Adjourn	3.2-9.6 oz	0.016-0.05	13.2-40		21
	gamma-cyhalothrin 1.25 (R) Prolex/Declare	1.02-1.54 oz	0.01-0.015	83-125		21
	lambda-cyhalothrin (R) Karate Z 2.08 CS Silencer/Lambda-Cy 1 EC	1.28-1.92 oz 1.92-2.56 oz	0.02-0.03	66.7-100 50-66.7		21
	thiodicarb (R) Larvin 3.2 F	24 oz	0.6	5.3		28
	zeta-cypermethrin 0.8 EC (R) Mustang Max/Respect	1.28-1.92 oz	0.008-0.012	67-100		14
	Bollworm	Pyrethroids bifenthrin 2 EC (R) Brigade/Fanfare/ Sniper/Discipline	2.56-6.4 oz	0.04-0.1	20-50	Treat for 7,000 (1 per 2 row feet) small larvae (< 0.25 inch) per acre (non- <i>Bt</i> cotton). If larger larvae (≥ 0.25 inch) begin to develop in fields, treat for 3,500 (1 per 4 row feet) larvae (non- <i>Bt</i> cotton and <i>Bt</i> cotton). When damage to squares occurs, treat for 14,000 damaged squares (1 per row foot) plus eggs and small larvae, timing insecticide applications to egg hatch (non- <i>Bt</i> cotton).
beta-cyfluthrin (R) Baythroid XL 1EC		1.6-2.6 oz	0.012-0.013	49-80		0

COTTON INSECT CONTROL

Insect	Insecticide	Formulation/Acre	Lb ai/Acre	Acres/Gallon	Application/Comments	Minimum Days from Last Application to Harvest
Bollworm (cont.)	<u>Pyrethroids</u>					
	cypermethrin (R) Ammo 2.5 EC	2-5 fl oz	0.04-0.1	25-62.5		14
	esfenvalerate 0.66 EC (R) Asana XL/Adjourn	5.8-9.6 oz	0.03-0.05	13-22		21
	flubendiamide Belt 4 SC	2-3 oz	0.062-0.094	42.7-64	Do not apply Belt more than 3 times per season.	28
	gamma-cyhalothrin 1.25 (R) Prolex/Declare	1.28-2.05 oz	0.0125-0.02	62.5-100	Terminate sprays for bollworm control after NAWF = 5 + 350 heat units or 350 heat units past the last effective boll date for your area.	21
	lambda-cyhalothrin (R) Karate Z 2.08 CS Silencer/Lambda-Cy 1 EC	1.6-2.56 oz 3.2-5.12 oz	0.025-0.04	50-80 25-40		21
	zeta-cypermethrin 0.8 EC (R) Mustang Max/Respect	2.64-4.0 oz	0.0165-0.025	32-48		14
	<u>Organophosphates</u>					
	profenofos (R) Curacron 8 E	3/4-1 pt	0.75-1.0	8-10.6		14
	<u>Carbamates</u>					
	methomyl (R) Lannate 1.8 L Lannate 2.4 LV	2-3 pt 1 1/2-2 1/4 pt	0.45-0.675	2.67-4 3.6-5.3	Lannate may redden cotton. If excessive, stop use or alternate with other insecticides. Use Lannate as an occasional spray in regular schedule but not more than every 10 days.	15
	thiodicarb (R) Larvin 3.2 F	1 3/4-2 1/4 pt	0.7-0.9	3.5-4.6		28
	<u>Other Classes of Insecticides</u>					
	emamectin benzoate Denim 0.16 EC	8-12 oz	0.01-0.015	10.7-16		21
	indoxacarb Steward 1.25 SC	9.2-11.3 fl oz	0.09-0.11	11.5-14		14
	rynaxypyr Coragen 1.67 SC	3.5-7.0 oz	0.045-0.09	18.3-36.6		21
spinosad Tracer 4 SC	2.144-2.88 fl oz	0.067-0.09	44-66		28	

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Insect	Insecticide	Formulation/Acre	Lb ai/Acre	Acres/Gallon	Application/Comments	Minimum Days from Last Application to Harvest	
Tobacco Budworm	<u>Bt Cotton</u>				Cotton varieties expressing the <i>Bt</i> (<i>Bacillus thuringiensis</i>) protein are very effective against the tobacco budworm.		
	<u>Organophosphates</u>						
	profenofos (R) Curacron 8 E	1 pt	1.0	8	Time insecticide application to egg hatch. Under heavy pressure, do not reduce rates. Treat for 7,000 (1 per 2 row feet) small larvae (less than 1/4 inch) per acre. If larger larvae begin to develop in fields, treat for 3,500 (1 per 4 row feet) larvae.	14	
	<u>Carbamates</u>						
	methomyl (R) Lannate 1.8 L Lannate 2.4 LV	2-3 pt 1 1/2-2 1/4 pt	0.45-0.675	2.67-4 3.6-5.3		15	
	thiodicarb (R) Larvin 3.2 F	1 3/4-2 1/4 pt	0.7-0.9	3.5-4.6	When damage to squares occurs, treat for 14,000 damaged squares (1 per row foot) plus eggs and small larvae.	28	
	<u>Other Classes of Insecticides</u>						
	emamectin benzoate Denim 0.16 EC	8-12 oz	0.01-0.015	10.7-16	Lannate may redden cotton. If excessive, stop use or alternate with other insecticides. Use Lannate as an occasional spray in regular schedule but not more than every 10 days.	21	
	flubendiamide Belt 4 SC	2-3 oz	0.062-0.094	42.7-64	Do not apply Belt more than 3 times per season.	28	
	indoxacarb Steward 1.25 SC	11.3 fl oz	0.11	11.5	Terminate sprays for tobacco budworm control after NAWF = 5 + 350 heat units or 350 heat units past the last effective boll date for your area.	14	
	rynaxypyr Coragen 1.67 SC	3.5-7.0 oz	0.045-0.09	13.3-36.6		21	
	spinosad Tracer 4 SC	2.144-2.88 oz	0.067-0.09	44-60		28	
	Cabbage Looper Soybean Looper	<i>Bacillus thuringiensis</i>	Check label.			Economic damage seldom occurs; treat when 25% defoliation occurs and bolls are still being developed.	
		emamectin benzoate Denim 0.16 EC	8-12 oz	0.01-0.015	10.7-16		21
indoxacarb Steward 1.25 SC		6.7-9.2 fl oz	0.065-0.09	14-19		14	
methoxyfenozide Intrepid 2 F		4-8 oz	0.0625-0.125	16-32		14	
rynaxypyr Coragen 1.67 SC		5.0-7.5 oz	0.065-0.098	21-25.6		21	
spinosad Tracer 4 SC		2.14-2.9 oz	0.067-0.085	45-60		28	
thiodicarb (R) Larvin 3.2 F		1 1/2-2 1/4 pt	0.6-0.9	3.6-5.3		28	

COTTON INSECT CONTROL

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Tarnished Plant Bugs/Fleahoppers	acephate 90 S		0.5-0.75		First two weeks of squaring, treat for plant bugs if square set is 75% or less and plant bugs are present.	21
	Acephate/Orthene/SpitFire	0.56-0.83 lb				
	Orthene 97	0.31-0.77 lb				
	dicrotophos (R)		0.3-0.5			
	Bidrin 8 EC	4.8-8 oz		16-26.7	Treat for 3 plant bugs per 5 row feet on normal fruiting fields.	30
	dimethoate		0.25			
	Dimethoate 4 E	8 oz		16	If small square set is less than 75%, treat for 1 plant bug per 3 row feet. After last week of June in north Arkansas and first week of July in south Arkansas, if small square set is less than 85%, treat for 1 bug on 3 row feet.	14
	flonicamid		0.053-0.089			
	Carbine 50 WG	1.7-2.85 oz			Do not apply more than 8.4 oz or 3 applications of Carbine per season, allowing at least 7 days between applications. Terminate sprays for plant bugs after NAWF = 5 + 250 heat units.	30
	imidacloprid					
Trimax Pro 4.44 SC	1.8 oz	0.062	71		14	
Imidacloprid 4 F	1.5 oz	0.047	85.3			
Alias/Couraze 4 F	2.0 oz	0.062	64			
oxamyl (R)		0.31-0.5				
Vydate 3.77 CLV	10.5-17 oz		7.5-12.2	Do not apply more than 0.5 lb ai Vydate per application and 4 lb ai per season. Do not graze treated fields.	14	
thiamethoxam		0.05				
Centric 40 WG	1.5-2.5 oz			Do not exceed a total of 5 oz of Centric per acre during each growing season. Allow at least 5 days between applications. Do not apply Centric within 45 days of neonicotinoid seed treatment (Cruiser, Gaucho, Aeris, Avicta). Use higher rates of Centric on high populations on larger cotton.	21	
Tank Mix Insecticide						
novaluron		0.039-0.058				
Diamond 0.83 EC	6-9 oz		14.2-21.3	Effective on nymphs only. Tank mix with a recommended insecticide for control of adults. Do not apply more than 4 applications or 42 oz of Diamond per season.	30	
Spider Mites	Early Season					
	abamectin 0.15 EC (R)		0.00465-			
	Agri-Mek/Abba/Zoro		0.006975		Early season for Agri-Mek is before cotton is 10" tall.	20
Epi-Mek	4-6 fl oz		21.3-32			
dicofol		0.75-1.5				
Dicofol 4 E	1 1/2-3 pt		2.66-5.3	Dicofol should not be applied more than two times per season. Treat infested areas when 50% of plants are infested. Spot treatments may be beneficial in preventing spread of mites across the field.	30	

COTTON INSECT CONTROL

Insect	Insecticide	Formulation/Acre	Lb ai/Acre	Acres/Gallon	Application/Comments	Minimum Days from Last Application to Harvest
Spider Mites	Late Season abamectin 0.15 EC (R) Agri-Mek/Abba/Zoro Epi-Mek	8-16 fl oz	0.0093-0.0188	8-16	Treat infestations when 50% of plants are infested. Early-season spot treatments may be beneficial in preventing spread of mites across the field. Do not apply more than 32 fl oz or more than 2 applications per acre of Agri-Mek in any growing season. Do not graze or feed cotton foliage.	20
	bifenthrin 2 EC (R) Brigade/Sniper/ Fanfare/Discipline	3.8-6.4 oz	0.06-0.1	20-33	Avoid unnecessary use of pyrethroid insecticides as they can flare spider mite populations.	14
	Season Long etoxazole Zeal	0.66-1.0 oz	0.03-0.045			28
	fenpyroximate Portal 5EC	1-2 pt	0.05-0.1	4-8	No applications by air. Do not apply more than 2 pt/season.	14
	propargite Comite 6.55	1 1/2-2 pt	1.23-1.64	4-5.3	Do not apply Comite until cotton is 12 inches tall. When spider mite populations are high, 2 applications at a 5- to 7-day interval are required using 25-40 gals water by ground and 5-15 gals by air.	50
	spiromesifen Oberon 2 SC	8-16 oz	0.125-0.25	8-16		30
	Whiteflies	acephate Orthene 90 S Orthene 97	0.56-1.1 lb 0.52-1.1 lb	0.5-1.0		
acetamiprid Intruder 70 WP		1.7- 2.3 oz	0.75-0.1			28
bifenthrin 2 EC (R) Brigade/Sniper/ Fanfare/Discipline		3.8-6.4 oz	0.06-0.1	20-33	Treat infested areas when 50% of the plants are infested.	14
thiamethoxam Centric 40 WG		2 oz	0.05		Do not exceed a total of 5 oz of Centric/A during each growing season. Allow at least 5 days between applications. Do not apply Centric within 45 days of neonicotinoid seed treatment (Cruiser, Gaucho, Aeri, Avicta).	21
Brown Stink Bugs		acephate 90 S Orthene/SpitFire/Acephate Orthene 97	0.83 lb 0.77 lb	0.75		Treat when stink bugs exceed 1 bug per 60 row feet or when 20% of medium bolls display internal signs of feeding and stink bugs are observed. Check at least 25-50 bolls per 40 acres. Terminate sprays for stink bugs after NAWF = 5 + 450 heat units.
	bifenthrin 2 EC (R) Brigade/Sniper/ Fanfare/Discipline	3.8-6.4 oz	0.06-0.1	20-33		14
	dictyophos (R) Bidrin 8 EC	8 oz	0.5	16		30
	methyl parathion (R) Methyl 4 EC Penncap-M 2	1 pt 2 pt	0.5	8 4		1

COTTON INSECT CONTROL

Insect	Insecticide	Formulation/Acre	Lb ai/Acre	Acres/Gallon	Application/Comments	Minimum Days from Last Application to Harvest
Stink Bugs (Green and Southern Green)	acephate 90 Acephate/Orthene/SpitFire Orthene 97	0.83 lb 0.77 lb	0.75		Treat when stink bugs exceed 1 bug per 6 row feet or when 20% of medium bolls display internal signs of feeding and stink bugs are observed. Check at least 25-50 bolls per 40 acres. Many pyrethroids, at bollworm rates, will provide good control of "green" species, but "brown" species are less susceptible to insecticides, specifically pyrethroids. Terminate sprays for stink bugs after NAWF = 5 + 450 heat units.	21
	beta-cyfluthrin (R) Baythroid XL 1 EC	1.6-2.6 oz	0.013-0.021	48-80	Do not graze after applying Baythroid, Karate, Respect, Mustang Max, Asana XL or Adjourn.	0
	esfenvalerate 0.66 EC (R) Asana XL/Adjourn	5.8-9.6 oz	0.03-0.05	13-22		21
	lambda-cyhalothrin (R) Karate Z 2.08 CS	1.6-2.56 oz	0.025-0.04	50-80		21
	zeta-cypermethrin 0.8 EC (R) Mustang Max/Respect	2.64-3.6 oz	0.016-0.022	35.6-48.5		14
	bifenthrin 2 EC (R) Brigade/Sniper/ Fanfare/Discipline	3.8-6.4 oz	0.06-0.1	20-33		14
	dicrotophos (R) Bidrin 8 EC	4.8-8.0 oz	0.3-0.5	16-26.7	Do not apply more than 16 oz Bidrin per season during bloom. Do not make applications of Bidrin closer than 14 days apart.	30
	methyl parathion (R) Methyl 4 EC Penncap-M 2	1 pt 2 pt	0.5	8 4		1
	oxamyl (R) Vydate 3.77 CLV	13.6 oz	0.4	9.4		14
	Multiple Pests	chloryrifos + gamma-cyhalothrin (R) Cobalt 2.54 EC	19-38 oz	0.38-0.76	3.4-6.7	For control of multiple pests exceeding thresholds, including but not limited to the following: bollworm, aphids, plant bugs and stink bugs.
dicrotophos/bifenthrin (R) Bidrin XP		4.0-6.4 oz	0.31-0.5	20-32		30
imidacloprid/bifenthrin (R) Brigadier 2 SC		3.8-7.7 oz	0.06-0.12	16.6-33.7		14
imidacloprid/beta-cyfluthrin (R) Leverage 360 SC		2.8-3.2 oz	0.067-0.075	40-45.7		14
lambda-cyhalothrin + thiamethoxam (R) Endigo 2.06 ZC		3.5-5.5 oz	0.056-0.09	23.3-36.6		21