



Current Report

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Pest Management Series

Peanut Insect Control in Oklahoma

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Descriptions of pest species, their damage, and control recommendations are based on results of research conducted throughout the peanut-growing areas of the southern United States. Pest species included in this fact sheet are those that occur most commonly in Oklahoma. Information regarding each pest is designed to assist producers to identify pests and assess population and/or damage levels before beginning insecticide applications. Treatments should be made only when economically damaging pest populations exist. Unwarranted treatments will reduce profits and will have the detrimental effect of destroying parasites and predators that help control pest species.

Discussion of peanut pests is divided into two categories: (1) those associated with plant structures at or below the soil surface; and (2) foliage-feeding species which damage leaves and terminal buds.

Soil Insect Pests

Lesser Cornstalk Borer (LCB),

Elasmopalpus lignosellus

This small, slender larva lives beneath the soil surface in tubes constructed of soil particles woven together with silken material. This insect is bluish-green in color with several brown bands across the body and a dark brown head. The length of the full-grown larva is 3/4 inch. Larvae are easily distinguished from other caterpillars in peanuts by their unique behavior. LCB larvae attempt to escape by a flipping motion of their bodies when disturbed.

The LCB feeds on a variety of plants, including numerous grasses and field crops. The LCB is a major pest in peanuts where larvae feed primarily on subterranean portions of plants. In Oklahoma, most LCB infestations develop during July and August after pegging has begun. Infestation of seedling peanuts is generally restricted to those fields planted after mid-June. In nonirrigated peanuts, infestations are most common and severity of damage is increased during dry years. Infestations may be restricted to areas with sandy, well-drained soils unless drought conditions permit build-ups in sandy-loam or loam soils.

Damage in seedling peanuts frequently contributes to stand reduction as plant mortality results from girdling of stems

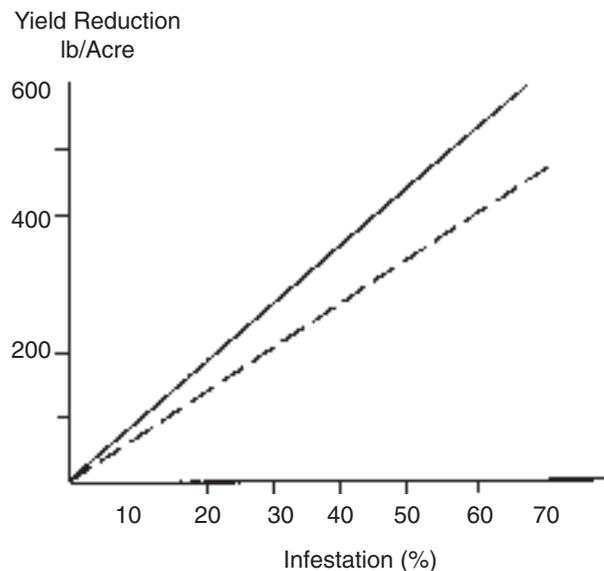


Figure 1. Percent infestation by LCB and yield reduction in nonirrigated peanuts. (Solid line = Spanish; dotted line = Florunner).

and feeding on roots. Damage includes destruction of pegs as they enter the soil, thus preventing pod formation. Developing pods are scarred by surface feeding and hollowed by tunneling of larvae. Portions of plants may be killed due to tunneling in stems. Damage frequently results in serious yield reductions that are related directly to LCB injury (Figure 1). In addition, damaged portions of plants may become infected by fungal pathogens leading to further reductions in yield and grade of peanuts. High incidence of infestation by pod-rotting fungi in association with LCB damage has also been reported.

Control Considerations: Keeping land free of volunteer peanuts and weeds several weeks before planting will help prevent damage from LCB's in seedling peanuts. Producers should begin checking at least five locations in each field in late June and continue weekly checks until September. In larger fields at least one location should be selected in each

Table 1. Infestation levels are calculated from this table.

Number of infested plants	Number of plants examined			
	25	33	50	100
1	4	3	2	1
2	8	6	4	2
3	12	9	6	3
4	16	12	8	4
6	20	15	10	5
6	24	18	12	6
7		21	14	7
8		24	16	8
9			18	9
10			20	10
11				15

five-acre area. It is important that samples be taken across the entire field to avoid poor population estimates. As the number of locations per field increases, the more accurate estimates become. A minimum of five plants should be examined at each location by removal from the soil and careful observation of the roots, pegs, and pods for damage and larvae. Soil around the plants should be disturbed minimally and examined for larvae that have been dislodged.

Percent infestation is calculated by dividing the total number of plants examined into the number of plants infested (Table 1). Only plants where live larvae are found should be counted as infested. If two or more larvae are on a plant, it is counted as one infested plant. In addition, plants are considered infested if live larvae are found in soil where they were growing.

Current control costs and value of harvested peanuts considered along with information in Figure 1 indicate that insecticides may be applied profitably in nonirrigated peanuts when 8-10% of the plants are infested. Somewhat higher infestation levels (15%) may be tolerated in irrigated peanuts before insecticide use is suggested.

Granulate Cutworm, *Agrotis subterranea*

During daylight hours this larva is typically found on the soil surface beneath peanut foliage. It has mottled gray and tan coloration with many small, dark granules over the surface of the body. The length of the granulate cutworm is 1 -2 inches.

This species seldom damages large acreages of peanuts in Oklahoma, but may reach high population densities in some areas during August and September. It feeds principally during nighttime hours on plant foliage, pegs, and pods. The most serious yield reductions attributable to this pest result from clipping of pegs from plants and tunneling into pods.

Control Considerations: Field checks for granulate cutworms can be accomplished at the same time that sampling is conducted for lesser cornstalk borers. At present, it is recommended that general guidelines for controlling cutworms and armyworms be followed for this species (dryland peanuts = 3-5 larvae/row ft.; irrigated peanuts = 6-8 larvae/ row ft.); however, if cutworm feeding is visible and widespread on pegs or pods, treatment should begin if larval numbers exceed two-three per row ft. in both irrigated and dryland peanuts.

Foliage Feeding Pests

Thrips

These tiny, slender-bodied insects are found primarily on peanut blooms and between folds of young leaflets in plant terminals. The length of thrips is 1/20 inch. Thrips are common in seedling peanuts in all areas of Oklahoma. They possess rasping-sucking mouthparts which they use in tearing tender leaf surfaces for removal of plant sap. Thrips feeding results in malformation and curling of leaves and causes a condition known as “pouts.”

Two thrips species common to Oklahoma are known vectors of tomato spotted wilt virus (TSWV). This virus causes ring spots and oak leaf patterns on peanut leaves. The leaves may also become distorted and the plant may be stunted. Initially, a general yellowing may occur on the plant with little or no additional symptoms. Plants can be killed by the disease.

In 1989 and again in 1991, TSWV was reported in Oklahoma. The incidence of TSWV is very low and presently confined to production areas along the Red River. Until TSWV is proven to be a serious threat to Oklahoma peanuts, the stance on thrips control will remain as indicated below.

Control Considerations: Research conducted in several states since 1972 has not shown any yield response controlling thrips populations (up to 50 per plant terminal). It is strongly recommended that insecticide applications be based on actual field populations. Insecticide applications should be restricted to those instances where very high population densities exist and severe damage with destruction of plant terminals occurs in seedling peanuts.

Leafhoppers

The most common member of this group that infests peanuts in Oklahoma is the potato leafhopper. The length of leafhoppers is 1/4 inch. This tiny, wedge-shaped insect is light green in color and is often located on the undersides of leaves.

Leafhoppers migrate into peanut fields in June and July and populations may persist until September. They feed primarily along leaf veins with piercing-sucking mouthparts and cause yellowing of foliage. Discoloration and death of tissue begins at leaf tips and produces the symptom known as “hopperburn.” High leafhopper population densities may cause extensive discoloration and stunting of plant growth.

Control Considerations: Control of leafhoppers is not recommended unless heavy populations are present and extensive evidence of “hopperburn” and stunting of growth is noted. Threshold information from Georgia suggests treatment when hopperburn is heavy in 25 percent or more of the field and leafhoppers are readily seen flying as you walk the field.

Corn Earworm, *Helicoverpa zea* and

Beet Armyworms, *Spodoptera exigua*

Coloration of larvae varies from pink to black. The usual color is light green with alternating light and dark bands lengthwise on the body. Their length is 1 1/2 inches. Small larvae cause ragging of leaves by feeding on leaflets in plant terminals. Larger larvae feed on all foliar portions of plants and may cause extensive defoliation from July through September.

Control Considerations: During much of the growing season, peanuts can tolerate considerable defoliation without serious yield reduction and insecticide applications for foliage feeding caterpillars are not required. It is important to be aware that these species are attacked by a variety of beneficial or-

ganisms that provide natural regulation of pest populations. Frequently, serious damage by foliage feeders results from destruction of beneficials with unwarranted insecticide applications.

The threat of yield reduction due to defoliation exists primarily when plants are from 60 to 90 days old. Producers should check fields frequently during July and August for the presence of earworms and armyworms and apply insecticides if populations exceed 3-5 larvae/row ft. in dryland or 6-8 larvae/row ft. in irrigated peanuts.

Rednecked Peanutworm, *Stegasta bosqueella*

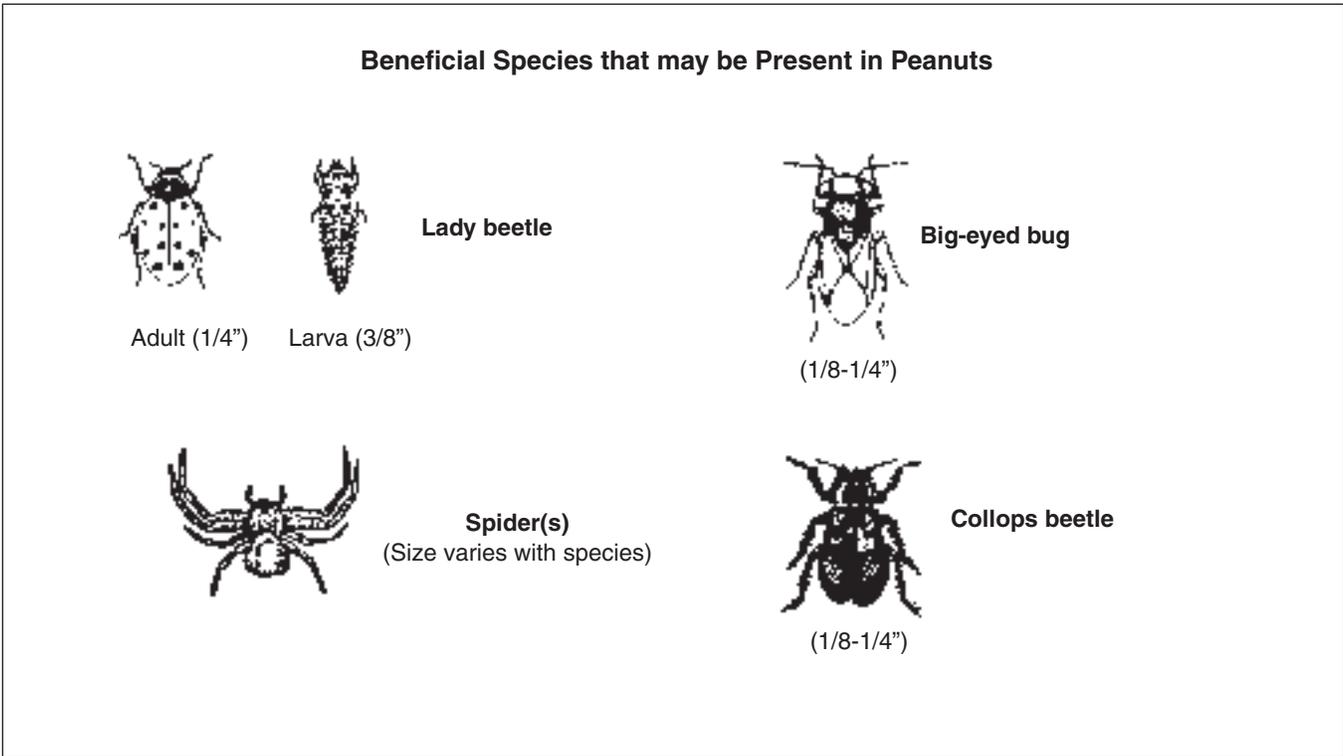
Larvae are light colored with a red band around the first two segments behind the head. This insect feeds almost exclusively in terminal buds. The length of the rednecked peanutworm is 1/3 inch. The peanutworm is the most common foliage-feeding larva in Oklahoma peanut fields. Larvae feed within buds and unopened leaflets and produce ragging of leaves as they enlarge. Feeding may extend over a period of several weeks from late June through September with resulting destruction of terminal buds and stunting of plant growth.

Control Considerations: Research results have indicated that peanuts can tolerate considerable feeding by the peanutworm without reduced yields. Unless populations become quite heavy (80 percent to 100 percent terminals infested) or infestations occur in combination with other foliage feeders such as the corn earworm, insecticide applications are unwarranted.

Spider Mites

These close relatives of insects are very small. Their length is 1/50 inch. Leaves of lightly infested plants become yellow to gray in appearance. When peanuts are heavily infested, foliage turns brown or reddish-brown, and leaves often drop from plants. Severely damaged plants often die. Infestations typically begin in small areas which may be only a few feet in diameter within fields or along field borders. During hot, dry weather, spider mites can complete a generation in 9 to 12 days. Thus, in some years, numbers of mites can become extremely large by late August.

Control Considerations: Naturally occurring beneficial organisms usually provide effective control of spider mites. Unnecessary pesticide applications may promote mite infestations and add to the growing problem of insecticide resistance in mites. Spot treatment of damaged areas should be considered as an alternative to spraying entire fields. When chemical controls are applied for mites, ground-rig applications are preferred where high gallonage and adequate coverage can be assured. The use of drop-nozzles is encouraged to penetrate within the peanut canopy. If aerial application is conducted, 3 to 5 gallons/acre should be utilized. Thorough coverage of plant foliage is essential for control. Fields should be checked within 3 to 5 days of application to determine if further treatment is required. Alternating compounds used in multiple applications will help prevent buildup of resistant populations of mites.



Peanut Insect Control Suggestions

<i>Insect and Time Most Prevalent</i>	<i>Damage and/or Insect Description</i>	<i>Insecticide (MOA Group)** and Amount Per Acre</i>		<i>Comments</i>	
Beet armyworm Summer See end of section	Striped-green caterpillar that has a black spot above the second pair of true legs.	Warrior ^r (3)	3.84 oz	14 day waiting period to harvest. Suppression only	
		Silencer ^r (3)	3.84oz	Suppression only. 14 day waiting period to harvest. Do not exceed 0.96 pts/acre/season	
		WarriorII ^r (3)	1.92oz	Suppression only. 14 day waiting period to harvest.	
		Lannate LV ^r (1A)	1.25-3.0 pt	Do not feed treated vines and do not apply within 21 days of harvest.	
		Baythroid XL ^r (3)	2.4-2.8oz	14 day waiting period to harvest. Do not exceed 8.4 oz per crop season.	
		Asana XL ^r (3)	5.8-9.6 oz	Do not exceed 29 oz per season. 21 day waiting period to harvest.	
		Tracer (5)	2.0-3.0 oz	3 day waiting period to nut harvest, 14 days for forage.	
		Dimilin 2L ^r (15)	4 -8oz	Do not apply more than 9.0 fl oz per acre per crop, or make more than 3 applications per calendar year. 28 day waiting period to harvest. Do not exceed 24 oz per acre.	
		Proaxis ^r (3)	3.84 oz	Do not apply within 14 days of harvest. Do not apply more than 0.96 pts per acre per season.	
	Prolex ^r (3)	1.54 oz	Do not apply within 14 days of harvest. Do not apply more than 0.38 pts per acre per season.		
	Javelin (11B2)	0.25-1.5 lb	No waiting period to harvest. A Bacillus thuringiensis (B.t.) product.		
Blister beetles July-August	3-striped most common in peanuts.	Sevin XLR+ (1A)	0.5-1.0 qt	14 day waiting period to harvest	
Cabbage looper Summer See thresholds ¹	Looper - large green caterpillar with white stripes – tapers toward head	Lannate LV ^r (1A)	1.5-3.0 pt	Large loopers can be difficult to control. See restrictions for these chemicals under beet armyworm comments.	
		Javelin (11B2)	0.25-1.5 lb		
		Tracer (5)	1.5-3.0 oz		
		Orthene97 (1B)	12-16 oz	14 days to digging.	
Corn earworm Summer See thresholds ¹	Caterpillars chew holes in foliage and feed on terminal buds.	Sevin XLR+ (1A)	1.0-1.5 qt	14 day waiting period to harvest.	
		Orthene 97 (1B)	12-16 oz	14 days to digging.	
		Danitol ^r (3)	10.6-16.0 oz	14 days to digging.	
		Baythroid XL ^r (3)	1.8-2.4 oz	See restrictions for these chemicals under beet armyworm comments.	
		Silencer ^r (3)	2.56-3.84 oz		
		Lannate LV ^r (1A)	0.75-3.0 pt		
			Lannate SP ^r (1A)	0.25-1.0 lb	
			WarriorII ^r (3)	1.28-1.92oz	
			Warrior ^r (3)	2.56-3.84 oz	
	Tracer (5)	1.5-3.0 oz			
	Asana XL ^r (3)	2.9-5.8 oz			
	Javelin (11B2)	0.25-1.5 lb			
	Proaxis ^r (3)	2.56-3.84 oz			
	Prolex ^r (3)	1.02-1.54 oz			

<i>Insect and Time Most Prevalent</i>	<i>Damage and/or Insect Description</i>	<i>Insecticide (MOA Group)** and Amount Per Acre</i>	<i>Comments</i>		
Granulate Cutworm See thresholds ¹	Larvae found at soil surface beneath peanut foliage. Mottled gray and tan with many dark granules over surface of the body.	Asana XL ^r (3)	5.8-9.6 oz	See restrictions for these chemicals under beet armyworm comments.	
		Silencer ^r (3)	1.92-3.20 oz		
		Baythroid XL ^r (3)	1.0-1.8 oz		
		Lannate LV ^r (1A)	1.5-3.0 pt		
		Lannate SP ^r (1A)	0.50-1.0 lb		
		Javelin (11B2)	0.25-1.5 lb		
		Proaxis ^r (3)	1.92-3.20 oz		
		Prolex ^r (3)	0.77-1.28 oz		
		Warriorr (3)	1.92-3.20 oz		
		WarriorII ^r (3)	0.96-1.60 oz		14 day waiting period to harvest.
	Sevin XLR+ (1A)	2.0 qt	14 day waiting period to harvest.		
Fall armyworm Summer See thresholds ¹	Large striped caterpillar with inverted “y” on front of head.	Sevin XLR+ (1A)	1.0-1.5 qt	14 day waiting period to harvest.	
		Danitol ^r (3)	10.6-16.0 oz	14 day waiting period to harvest.	
		Orthene 97 (1B)	12.0-16.0 oz	14 days to digging.	
		Baythroid XL ^r (3)	2.4-2.8 oz	See restrictions for these chemicals under beet armyworm comments.	
		Silencer ^r (3)	2.56-3.84 oz		
		WarriorII ^r (3)	1.92 oz		
		Lannate LV ^r (1A)	0.75-3.0 pt		
		Tracer (5)	2.0-3.0 oz		
		Asana XL ^r (3)	9.6 oz		
		Prolex ^r (3)	1.02-1.54 oz		
Warrior ^r (3)	2.56-3.84 oz				
Grasshoppers Summer See thresholds ¹	Consume foliage	Asana XL ^r (3)	5.8-9.6 oz		See restrictions for these chemicals under beet armyworm comments.
		Dimilin 2L ^r (15)	2.0 oz		
		Baythroid XL ^r (3)	1.8-2.4 oz		
		Warrior ^r (3)	2.56-3.84 oz		
		Silencer ^r (3)	2.56-3.84 oz		
		Warrior II ^r (3)	1.28-1.92 oz		
		Orthene 97 (1B)	4.0-8.0 oz	14 day waiting period to harvest.	
		Proaxis ^r (3)	2.56-3.84 oz		
		Prolex ^r (3)	1.02-1.54 oz		
Potato Leafhopper Summer	Small hopping or flying wedge-shaped insects–sap feeders, cause yellowing of foliage and brown leaf tips (called “Hopperburn”).	Sevin XLR+ (1A)	1.0 qt	14 day waiting period to harvest.	
		Orthene 97 (1B)	12.0-16.0 oz	14 day waiting period to harvest.	
		Danitol ^r (3)	6.0-10.6 oz	14 day waiting period to harvest.	
		Warrior ^r (3)	1.92-3.20 oz	Note. Threshold information from Georgia states treatments should be considered when you find 25-30% hopperburn and leafhoppers present	
		Silencer ^r (3)	1.92-3.20 oz		
		Baythroid XL ^r (3)	1.0-1.8 oz		See restrictions for these chemicals under beet armyworm comments.
		WarriorII ^r (3)	0.96-1.60 oz		
		Asana XL ^r (3)	2.9-5.8 oz		
		Lannate LV ^r (1A)	0.75-3.0 pts		
		Proaxis ^r (3)	1.92-3.20 oz		
Prolex ^r (3)	0.77-1.28 oz				

<i>Insect and Time Most Prevalent</i>	<i>Damage and/or Insect Description</i>	<i>Insecticide (MOA Group)** and Amount Per Acre</i>	<i>Comments</i>
Lesser cornstalk borer (LCB)	Bluish-green worm; up to 0.66 in long - very active when touched.	Lorsban 15G (1B) 6.8-13.9 lb	On 36" rows. Check label for different row spacing and rates. Lorsban granular application at pegging using the higher rate in a narrow band over the row and an in-row foliage opener can provide excellent control of LCB's and good suppression of Southern blight, with rainfall or irrigation following application. Two full rate (2.0 lb) applications per season may be applied. Also, provides suppression of Southern blight. Do not harvest within 21 days after treatment and do not feed treated peanut forage or hay to meat or dairy animals. Under hot, dry conditions, repeated applications may flare spidermite populations.
Mid-June through September.	Tunnels nuts and stems, cuts pegs near soil surface. Economic infestation more common from late July on	Warrior ^r (3) 3.84 oz Warrior II ^r (3) 1.92 oz Silencer ^r (3) 3.84 oz	Suppression only. Suppression only. Suppression only. Begin application when infestation level reaches 8-10% in dryland peanuts and 15% in irrigated peanuts.
		Dimilin 2L ^r (15) 4-8 oz	See restrictions for these chemicals under beet armyworm comments.
		Asana XL ^r (3) (aids in control) 9.6 oz Proaxis ^r (3) 3.84 oz Prolex ^r (3) 1.54 oz	
Rednecked peanutworm	Small, greenish-white worm with crimson necks. Scar and perforate terminals (buds) destroying or deforming the young leaves and stunting growth.	Sevin XLR+ (1A) 1.0 qt	Research indicates that peanuts can tolerate considerable feeding by peanutworms without reducing yield. Unless populations become quite heavy (80-100% terminals infested) or infestations occur in combination with other foliage feeders, such as corn earworms, insecticide applications are unwarranted
May to September with heaviest infestations occurring from mid-summer through September.		Baythroid XL ^r (3) 1.0-1.8 oz Asana XL ^r (3) 2.9-5.8 oz Silencer ^r (3) 1.92-3.20 oz Warrior II ^r (3) 0.96-1.60 oz Tracer (5) 1.5-3.0 oz Proaxis ^r (3) 1.92-3.20 oz Prolex ^r (3) 0.77-1.28 oz Warrior ^r (3) 1.92-3.20 oz	See restrictions for these chemicals under beet armyworm comments.
Spider mites	Very small (1/50 inch) damage indicated by reddish brown discoloration of leaves. Mites can be wind or machinery transported to fields. Frequently develop in early summer in weeds, fence/turn rows, and move to peanuts when dry weather hits	Omite 30W ^r (12C) 3.0-5.0 lb	Do not apply within 14 days of harvest. No more than two applications per season. Two or more treatments 5 days apart may be necessary to get control.
Summer; during hot dry weather, most common after first of August.		Silencer ^r (3) 3.84oz Warrior II ^r (3) 1.92oz Warrior ^r (3) 3.84 oz	Suppression only. Suppression only. 14 day waiting period to harvest. Suppression only.
		Comite ^r (14) 2.0 pt	Apply 20 gal. of finished spray per acre by ground and 5 gal. per acre by air. Do not apply within 14 days of harvest and do not graze or feed livestock on treated area.
Note: See footnote 2 for additional products.		Danitol ^r (3) 10.6-16.0 oz Proaxis ^r (3) 3.84 oz Prolex ^r (3) 1.54 oz	Do not apply within 14 days of harvest or grazing. See restrictions under beet armyworm comments. Suppression only. See restrictions under beet armyworm comments. Suppression only.

<i>Insect and Time Most Prevalent</i>	<i>Damage and/or Insect Description</i>	<i>Insecticide (MOA Group)** and Amount Per Acre</i>	<i>Comments</i>
Southern corn rootworm	This rootworm is the larva of the spotted cucumber beetles. The larva is yellowish-white with a brown head and somewhat wrinkled body. The larva may reach 0.5 inch in length	Lorsban15G (1B) 6.8-13.9 lb	Apply in a narrow band over the row during early pegging. (See comments under LCB section.) Rainfall or irrigation is needed following application. Rate based on 36" row spacing.
		Baythroid XL ^r (3) 1.8-2.4 oz	(Adults Only)
		Silencer ^r (3) 2.56-3.84 oz	(Adults Only)
		Warrior II ^r (3) 1.28-1.92 oz	(Adults Only) Tend to occur most commonly on heavier soils. Damage to shell may appear as a small brown spot on nut. If spots are noted, open nuts and check for larvae
		Thimet ^r 20G (1B) 3.87-5.28 lb	Apply as a band over the fruiting zone at pegging. Do not graze or feed hay for forage. Rate based on 36" row spacing.
		Warrior ^r (3) 2.56-3.84 oz	14 day waiting period before harvest. (Adults Only)
		Proaxis ^r (3) 2.56-3.84 oz	See restrictions under beet armyworm comments. (Adults Only)
		Prolex ^r (3) 1.02-1.54 oz	See restrictions under beet armyworm comments.
Thrips	Tiny, slender, insects, most commonly found in terminals—rasp new leaves causes blotching and deformed terminals. Generally not a problem once bloom begins.	Lannate LV ^r (1A) 1.5-3.0 pt	Do not feed treated vines.
		Baythroid XL ^r (3) 2.8 oz	Suppression Only.
		Silencer ^r (3) 2.56-3.84 oz	May through June Check immediately after emergence.
		Danitol ^r (3)+ Orthene 97 Tank Mix 10.6-16 oz + 8.0 oz	Must comply with both label restrictions.
		Sevin XLR+ (1A) 1.0 qt	14 day waiting period to harvest.
		Proaxis ^r (3) 2.56-3.84 oz	See restrictions under beet armyworm comments.
		Prolex ^r (3) 1.02-1.54 oz	See restrictions under beet armyworm comments.
		Orthene 97 (1B) 6.0-12.0 oz	Do not feed forage or hay or graze treated areas.
		Warrior II ^r (3) 1.28-1.92 oz	Note: Research has not been able to show consistent yield increases even with control of heavy thrips populations. Insecticide applications should be restricted to instances where very high populations exist and severe damage, with destruction of terminals, occurring in seedling plants.
		Warrior ^r (3) 2.56-3.84 oz	Do not feed forage or hay or graze treated areas. Do not apply more than 15.36 oz/A/season.
		"AT PLANT APPLICATIONS" Granular Insecticide Box applications Thimet 20G ^r (1B) 5.5oz/1000 ft of row	See footnote 3. Apply granules evenly in the furrow at planting. Do not graze or feed treated hay or forage. 90 day pre-harvest interval.
Temik 15G ^r (1A) 7.0 lb/acre	Apply in seed furrow and cover with soil. Check label for restrictions. 90 day pre-harvest interval.		

^r Restricted use Pesticides.

** MOA = Mode of Action Group for rotational purposes

- 1 Thresholds: For foliage feeding pests (e.g., corn earworm and armyworms) - the threat of yield reduction due to defoliation exists primarily when plants are from 60 to 90 days old. Check fields frequently during July and August for earworms, armyworms, etc. and apply insecticides if populations exceed 3 to 5 larvae/row ft. in dryland or 6 to 8 larvae/row ft. in irrigated peanuts. For granulate cutworms - if feeding on foliage, use the same guidelines provided above for foliage feeders; however, if cutworms are feeding on pegs or pods, treatment should begin if larval numbers exceed 2 to 3 per row ft. in irrigated or dryland peanuts.
- 2 Additional miticides: Limited control (suppression) has been obtained using either M-pede (potassium salts of fatty acids), Pyrellin(pyrethrins and rotenone) or Saf-T-Side (petroleum oil). The latter two are toxic to fish and should not be used near water. Saf-T-Side should not be used with, before, or after spraying dinitro compounds, or fungicides containing sulfur. Also, do not use with Carbaryl or Dimethoate.
- 3 Systemics for thrips: Several formulations of this type have been used in Oklahoma with erratic results. Success with these compounds is usually related to thrips pressure, moisture conditions and planting time. Currently, prophylactic use of these compounds in Oklahoma is not recommended. These compounds are presented here only as a guideline to rates and application methods

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- It provides practical, problem-oriented education for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
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- More than a million volunteers help multiply the impact of the Extension professional staff.
- It dispenses no funds to the public.
- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
- Local programs are developed and carried out in full recognition of national problems and goals.
- The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.
- Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

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