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*Arizona*  
*Insect Control*  
*Recommendations*

**1955**

**Circular 210**

Agricultural Extension Service  
University of Arizona, Tucson

# ARIZONA INSECT CONTROL RECOMMENDATIONS, 1955

By J. N. Roney, Extension Entomologist

Crop	Insect	Insecticide	Pounds Per Acre		When to Apply
			Ground	Air	
BEAN	Bean Beetle	1% Rotenone Dust	15-18	20-30	When beetles appear on several plants.
		50% Cryolite Dust	15-18	20-30	
		Rotenone-Pyrethrum spray mixture according to directions.			
	Mexican Bean Beetle	Same as above. <i>Note:</i> This insect feeds only on the under-side of the leaves and all insecticides must be applied accordingly if results are to be secured. <i>DDT will not kill this insect.</i>			Same as above.
	Thrips	325 mesh-conditioned sulfur dust	15-18	20-25	When leaves show a silvering.
		10% DDT Dust	15	20-25	Same as above.
Flea Beetle	10% DDT Dust	15	20-25	When injury appears harmful.	
	1% Rotenone Dust Rotenone-Pyrethrum Spray	15	20-30		
	<i>Note:</i> Do not use DDT on bean seedlings.		According to directions.		
Lesser Cornstalk Borer	Cultural controls. Do not plant in soils heavily infested with organic materials or where soil is poorly drained.				
Corn Earworm	10% DDT or DDT Dust	15-18	20-25	When eggs or small worms first appear.	
Seed Corn Maggot	2.66 oz. 75% Lindane to 100 lbs. of seed				

<b>PINTO BEANS</b>	Corn Earworm	5% DDT and Sulfur	15-18	20-25	When small worms first appear in bloom.
<b>BEETS &amp; SUGAR BEETS</b>	Beet Leafhopper	5% or 10% DDT Dust DDT or Pyrethrum Spray	12-15	15-20	When leafhoppers first appear on small plants.
	Beet Armyworm	5% or 10% DDT and 60 to 75 percent sulfur dust	15-18	20-30	When injury becomes noticeable.
	Cabbage Looper	15% Toxaphene	15-18	25-30	When worms are causing ragging.
	Stink Bugs	2% gamma isomer benzene hexachloride dust	No	30 to 40	When 3 to 4 stink bugs per 100 sweepings are present.
		20% toxaphene and 40% sulfur dust	No	30 to 40	
		Dieldrin dust or spray	No	½ technical	
	Lygus Bugs	5% or 10% DDT with 60% to 70% dusting sulfur	No	30 to 40	When 4 to 8 Lygus per 100 sweepings of a net are present.
		10% Toxaphene	No	30 to 40	
Aphids	Usually parasites or predaceous enemies keep these insects under control. If control measures are needed use 2% gamma isomer BHC dust.		25 to 30	When aphids appear in injurious numbers.	
	Demeton spray (systox)		4 oz. technical		
	4% to 6% Nicotine dust		30 to 40		
	Nicotine sprays		According to directions.		
	5% Malathion dust		12-15      20		
	57% Emulsion Concentrate		1½ pts. in 30 gallons of water.		
Salt Marsh Caterpillar	15% toxaphene, 5% DDT and dusting sulfur Aluminum foil barriers around the fields—7 inches high		20 to 30	When worms start injuring plants.	

Crop	Insect	Insecticide	Pounds Per Acre		When to Apply
			Ground	Air	
<b>BROCCOLI, LETTUCE, BRUSSELS SPROUTS, ROMAINE, ENDIVE</b>	Spider Mites	Dusting sulfur 2% Parathion 7½% Ovotran	20 to 30		When mites appear in injurious numbers.
	Special species of cabbage worms	5% to 10% DDT dust	15-18	20-30	
		1% to 3% Rotenone dust	15-18	20-30	
		50% Cryolite dust	15-18	20-30	
		Rotenone-Pyrethrum dust	15-18	20-30	
		DDT sprays, wettable powder or emulsions	Follow directions		
		5% DDT — 15% Toxaphene	15-18	20-25	
	Cabbage Looper	15% Toxaphene dust	15-18	20-25	
		According to research workers in Salt River Valley.			
		15% Toxaphene, 5% DDT	15-18	20 to 25	
		This for Yuma area and where other worms are a problem.	15-18	20 to 25	
		Dieldrin spray	2 oz. in 3 gals. of water.		When worms start to hatch. Be sure to apply insecticides thoroughly.
	Dust in form of 2% strength	20 to 25			
<i>Note: Do not apply any material except Rotenone or Pyrethrum within 30 days of harvest.</i>					
Harlequin Cabbage Bug	20% Sabadilla dust	15-18	20-30		
	1% Rotenone dust	15-18	20-30		
	Pyrethrum-Rotenone dusts	15-18	20-30		
Crickets	10% DDT dust	15-18	20-30	When they first appear in fields—usually <i>before</i> the plants come through ground.	
	5% or 10% Chlordane dust	15-18	20-30		
	Apple peel baits	10 to 12			

	20% Toxaphene dust	No	20 to 30	When crickets appear
	2% Dieldrin dust	15-18	20 to 30	in injurious numbers.
Spider Mites	325 mesh-conditioned sulfur This will work on some species.	25 to 30	25 to 30	When spiders cause injury.
Cabbage Aphids	Usually parasites or predaceous enemies keep these insects under control. If control measures are needed use 2% gamma isomer BHC dust. If root crop follows within 5 years do not use BHC.			
	Nicotine sprays		See directions	
	5% Malathion dust	20	30	When insects are causing injury.
	57% Malathion emulsion	1 pt.	1 pt.	
Salt Marsh Caterpillars	5% DDT — 15% Toxaphene Aluminum foil barriers 7 in. tall	15-18	20-30	When plants are small and eggs start hatching on plants.
Cutworms	10% DDT dust — ground equipment Poisoned baits	12-15		When they appear in damaging numbers when transplanting.
	20% Toxaphene dust	12-15	15-20	
	2½% Heptachlor dust	12-15	15-20	
	Endrin sprays	.4 to .6	.4 to .6	in 6 to 15 gallons water

## CARROTS

Lily root Aphid	2% Parathion dust	20 to 25	20 to 25	When aphids appear on crowns of carrots.
	TEP sprays (with ground sprayer)		According to directions.	

## CELERY

Celery Leaf Tier	5% DDT dust — 10% sulfur	20-25	30-35	When insect first appears.
	Pyrethrum dusts—1.3% Pyrethrins	20-30	20-40	
	<i>Note:</i> Dust the field and turn around and redust for best control. This is a leaf miner and a double application is necessary if results are to be secured.			
	Pyrethrum sprays — two sprayings (as above)		Follow directions	

Crop	Insect	Insecticide	Pounds Per Acre		When to Apply	
			Ground	Air		
SWEET CORN	Cutworms	5% DDT — 65% sulfur	15-18	20-25	When worms appear. Use ground equipment.	
		5% Chlordane dust — 20% Toxaphene dust	15-18	20-25		
		Apple peel or other poisoned baits	10 to 12			
		2½% Heptachlor dust	15-18	20-25		
	Spider Mites	325 mesh-conditioned sulfur dusts	15-20	20-30	When mites appear on greying plants or when first noticed.	
		TEP — tetra ethyl pyrophosphate	15-20	20-30		
		1% to 2% Parathion dust				
		3% Aramite dust	15-20	20-30		
	<i>Note: Do not use any of the phosphates 30 days prior to harvest.</i>					
	Salt Marsh Caterpillars	5% DDT, 15% Toxaphene 40% sulfur	15-20	30-40	When worms first appear.	
(Barriers may be needed if worms start migrating. The aluminum foil, 7 inches in height, is very effective. Sometimes the barriers are made of slick meat-wrapping paper or bread wrappers.)						
Vegetable Weevil	5% Malathion dust	20-25	30-35	When insects first appear.		
	57% Emulsion Malathion	1 to 1½ pts. in 15 to 20 gals. water				
Flea Beetles	10% DDT dust and inert carrier	12-15	20-30	When beetle injury first starts. Two appli- cations may be necessary.		
	1% Rotenone dust	12-15	20-30			
Corn Earworm	10% DDT dust — if in tassel	15-20	20-30	When worm injury appears scattered.		

	5% DDT — to silks	15-20	20-30	When silks appear — 3 dustings at 3-day intervals with a puff duster.
Seed Corn Maggot	Endeavor to plant in well drained soil. Avoid planting too early. Seed treatment with 5% Chlordane sometimes satisfactory. 2.66 oz. 75% Lindane to 100 lbs. of seed or 4 oz. Technical Chlordane per 100 lbs. of seed. Dieldrin 1 oz. Technical per 100 lbs. of seed.			
Spider Mites	325 mesh-conditioned sulfur dust	18-20	20-25	When mites appear in injurious numbers.
Southwestern Corn Borer	Fall plowing in order to turn the base of the stalks out on top of the soil as the worm spends the winter in the tip of the roots.			
Sweet Corn Fall Armyworm	15% Toxaphene — 5% DDT dust mixture	15-20	25-30	When worms appear in injurious numbers.
Lesser Cornstalk Borer	10% Chlordane — 2% Aldrin dust	10-12	No	On row just after planting—sometimes 2nd application when plants are 6 to 8 inches
Cucumber Beetle	50% Cryolite dust	12-15	15-20	When sprouts come through the soil, if beetles are present. Band application gives best results.
	1% Rotenone dust	12-15	15-20	
	5% DDT dust (Makes mites and serpentine leafminer bad.)	12-15	15-20	
Red Spider or Spider Mites	1% and 2% Parathion dust	12-15	15-20	When injury justifies.
	3% Aramite dust	12-15	15-20	
	2% Parathion and 7½% Ovotran	15-18	20-30	
Aphids or Plant Lice	Nicotine dust — 4% to 6%	15-18	20 to 30	If injury is apparent and no parasites or predators present.

**MELONS —  
CANTALOUPS,  
WATERMELONS,  
CUCUMBERS**



Crop	Insect	Insecticide	Pounds Per Acre		When to Apply	
			Ground	Air		
ONION	Thrips	Nicotine sulfate spray	1½ tsp. Nicotine sulfate, 1½ tsp. household ammonia, 1 gallon warm water			
		5% Malathion dust	12-15	20-30		
		1% and 2% Parathion dust	12-15	20-30		
		5% or 10% DDT dusts (This may cause mites to be bad if too much is used. Also may stunt some varieties when in seedling stage.)	15-18	20-30	When leaves show sil- vering appearance.	
		2% Parathion dust	15	20-25		
		Darkling Beetles and Crickets	Poison baits — (Apple peel and other)	10 lbs.	No	When injury is noticed.
			5% Chlordane dust	15-20	No	
			10% DDT dust	15-20	No	
			2% Dieldrin dust	10-12	No	
		Serpentine Leaf Miner	2% Dieldrin spray	.25	No	
	2% Parathion dust		12-15	20 to 25	When injury appears numerous on many leaves.	
	Thrips	Dieldrin spray	.25 to .50		When injury is noticeable.	
		2% Dieldrin dust	15-18	20-30		
		5% to 10% DDT dust	15-18	20 to 30		
(Note: Weekly applications may be necessary for first 2 or 3 applications.)				Many thrips present.		
	20% Toxaphene dust	15	20 to 25			
	Heptachlor dust or spray	½ to ¾ technical				

	Maggots	Endeavor to plant in well drained soils.			
<b>PEAS</b>	Aphids	Nicotine dust 4% to 6%	15	20 to 30	When insects appear in injurious numbers.
		Nicotine sulfare spray — same as for melons			
		10% DDT dust	15	20 to 25	
	Flea Beetles	10% DDT dust	15	20 to 25	When insects appear in injurious numbers.
<b>PEPPERS</b>	Cutworms	5% or 10% DDT and sulfur dust	15	20 to 30	When worms first appear.
	Hornworms	or any DDT materials. Do not apply any DDT materials within 30 days of harvest.			
		30% to 50% Cryolite	15-18	20-30	
<b>WHITE POTATOES</b>	Leafhoppers	325 mesh-conditioned sulfur	15-18	20 to 30	When insects appear to injure crop, usually nymphs and adults are present.
		5% DDT and sulfur	15	20 to 30	
		2% Dieldrin dust	12-15	15-18	
	Flea Beetles	5% or 10% DDT dust with sulfur	12-15	18-20	When injury appears damagingly.
		1% Rotenone dust	15-18	20 to 30	
	Blister Beetles	50% Cryolite dust	15-18	20 to 30	When an infestation first appears.
		1% Rotenone dust	15-18	20 to 30	
		1% Rotenone-pyrethrum dust	15-18	20 to 30	
		Pile dry grass or straw and drive beetles into hay — add kerosene and burn.			
	Psyllids	5% DDT and 75% sulfur dust	15-18	20 to 30	When either adults or nymphs are first seen. They usually show up on lower leaves of plant.
		50% wettable DDT		3 or 4 lbs. in	
		8 to 10 lbs. wettable sulfur		50 gals. water	
		Lime-sulfur spray		Follow directions	
	Aphids	Nicotine sprays or dusts —			

Crop	Insect	Insecticide	Pounds Per Acre		When to Apply
			Ground	Air	
		(See previous recommendations as for melons or peas.) Ladybugs are sold commercially and will give good control.			
	Potato Stalk Borer	Do not plant potatoes late in Spring in poor soil.			
	Potato Tuber Moth	Be certain to plant seed free of tuber moths. Don't plant in soil where tuber moths previously were present.			
<b>SQUASH</b>	Squash Vine Borer	1% Rotenone dust 3 lbs. wettable methoxychlor per 100 gallons of water  Locate where attack first appears by yellowish excrement on vine. Take knife and remove borer. Pull soil over cut area to prevent drying and resprouting.	15-18	20 to 30	When injury first develops.
	Squash Bug	10% to 20% Sabadilla dust 1% Rotenone dust Pyrethrum-rotenone sprays  Hand picking of eggs and adults where only a few are present. Use small boards in rows, killing the bugs that collect. <i>Note: Never use DDT on squash plants.</i>	18-20 18-20	25 to 30 25 to 30	When eggs or adults first appear.
	Aphids Beet Leafhopper	Same as control for melons. This insect causes the curly top of squash. No control at present.			
	Cucumber Beetle	Same control as for melons.			
	Squash Capsid	1% Rotenone dust	15-18	20 to 25	When they appear in injurious numbers.

## TOMATO

Tomato Hornworm	5% to 10% DDT and sulfur dust or any DDT materials  Do not apply any DDT materials within 30 days of harvest. DDT sprays 30% to 50% Cryolite 20% toxaphene dust	15-18	20 to 30	When worms first appear.
Russet Mites	325 mesh-conditioned sulfur This insect causes plants to turn bronze color and die.	15 to 18	20 to 25	It is wise to use on all tomatoes just before they start blooming.
Red Spider or Spider Mites	325 mesh-conditioned sulfur dust. Phosphates same as for mites or red spider on celery. 3% Aramite dust	12-15	20 to 25	When webs start to show.
Tomato Fruit Worm	10% DDT dust 1% Rotenone dust <i>Note: Do not use DDT 30 days prior to harvest.</i>	12-15 15-18	20 to 25 20 to 25	When eggs or worms are first seen.
Flea Beetles	10% DDT dust Do not use on small plants.	12-15	15 to 20	When injury appears harmful.
Psyllids	Same control as for psyllids on potatoes.			
Blister Beetles	50% Cryolite dust 1% Rotenone spray Destruction with straw — see potato insects.	15-18	20 to 25	When they appear in injurious numbers.
Beet Leafhopper (Western Tomato Blight)	No control for the insects. Cover plants in seedbed as well as after planting field with canvas or crates until fruit about the size of marbles.			

Crop	Insect	Insecticide	Pounds Per Acre		When to Apply
			Ground	Air	
OKRA	False Chinch Bug	No insecticidal control. If causing injury, attempt to drive into a pile of straw and burn.			
	Cutworms	20% Toxaphene	15-18	20-30	When injury appears.
	Bollworms	15% Toxaphene — 5% DDT dust mixture	15-18	20-30	When worms injure foods.
RADISHES, TURNIPS, MUSTARD	Aphids	5% Malathion dust 57% Emulsion spray Nicotine spray	12-15 1½ pts. in 6 to 8 gals. water	18-25	When aphids appear.
	Cutworms	10% DDT dust 20% Toxaphene dust 2% Heptachlor dust Endrin spray	12-15 12-15 15-18 .4-.6	No 15 to 20 20-25 .4-.6	When injury appears.
ALL CROPS	Seed Corn Maggots	2.66 oz. 75% lindane to 100 lbs. of seed			
	Cabbage Loopers, Beet Army Worms	15% Toxaphene, 5% DDT	12-15	20-25	When plant is small.
	Grasshoppers	2 ounces Aldrin per acre on range in ½ to 1 gallon of kerosene. On alfalfa use emulsion 2 to 3 gallons per acre. Baits are not as effective as this spray. See Extension Circulars Nos. 188 and 189.			When they are present in injurious numbers.
	Cutworms	Poison bran or apple peel baits. 10% DDT dust or 20% Toxaphene dust	10 15-18	10 to 12 20 to 25	When injury develops or if present when plants are transplanted it is wise to treat.

## FIELD CORN

Darkling Beetles	10% Chlordane dust 2% dieldrin dust	12-15 12-15	20-25 20-25	When injury appears.
Crickets	2% Dieldrin dust 2% Aldrin dusts in oil	12-15 10-12	20-25 No	When crickets cause injury.
Corn Earworm	10% DDT dust			Apply to ears when silks first reach $\frac{1}{2}$ inch in length. Apply with stencil brush.
Seed Corn Maggots	Seed treatment Lindane 2.66 oz. 75% Lindane to 100 lbs. of seed			
Flea Beetles	10% DDT dust	12-15	20-25	When beetles start injuring plants.
Fall Armyworm	15% Toxaphene, 5% DDT, 40% sulfur	12-15	20-25	When worms are causing injury.
Lesser Corn Stalk Borer	10% Chlordane	10-12	No	On top of row just after planting.
Small Grains Aphids	2% Gamma Isomer BHC	No	20-25	When aphids are killing the growing tip.
Mites	2% Parathion	No	20-25	When mites are killing plants.

## SOYBEANS

Lesser Cornstalk Borer	Seed treatment with 2 ozs. technical chlordane per 100 pounds of seed. Also dusting of plants when they come through the soil with 10% Chlordane.			
Woolly Worms	15% Toxaphene, 5% DDT, 40% sulfur	15-20	20-25	When injury develops.

## FRUIT INSECTS APPLES & PEARS

Codling Moths	DDT spray — use $1\frac{1}{2}$ pounds 50% wettable DDT to 100 gallons of water. <i>Note:</i> 3 to 4 applications are needed. See Extension Circular 148.			
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Crop	Insect	Insecticide	Pounds Per Acre	
			Ground	Air When to Apply
	Thrips	8 lbs. wettable DDT to 100 gallons of water Nicotine and sugar sprays. (Note: See Fruit Insect Control Hints, Circular 148, for details.)	150 gallons	When thrips appear in swelling buds.
	Spider Mites or Red Spiders	Dormant Lime — Sulfur Spray Aramite sprays (See Circular 148 for details)	Follow directions Follow directions	Two applications during winter. When mites cause injury.
	Blister Mite	Dormant Dry Lime sulfur (See Circular 148 for details)	Follow directions	Dormant stage of trees.
	Woolly Apple Aphis	(See Fruit Insect Control Hints, Circular 148)		
<b>PEACHES, APRICOTS, PLUMS AND NECTARINES</b>	Thrips	Same control as for apples and pears except some applications may be needed after the fruit has set. See Fruit Insect Control Hints, Circular No. 148.		
	Red Spiders or Two-Spotted Mites			
	Peach Twig Borer	Same as for apples 50% wettable DDT	4 lbs. in 100 gals. water	Apply just as blooms swell.
<b>GRAPES</b>	Grape Leafhopper	5% DDT-oil with spray-duster or conventional spray Pyrethrum oil sprays  Malathion sprays and dusts according to directions. May be used when DDT fails.	Follow directions on container. According to directions.	When leafhoppers appear in injurious numbers.
	Flea Beetles	Same as above.		

Grape Leaf Skeletonizer	50% Cryolite dust <i>Note: This insect feeds only on the underside of the leaf. The insecticide must be applied accordingly.</i>	15-20	20 to 30	When worms first appear on leaves.
Spider Mites	Dusting sulfur 2% Parathion dust	15-18 15-18	20 to 30 20 to 25	When mites appear. When mites appear.
Three-lined Sphinx Worms Woolly Worms Salt Marsh Caterpillar	10% DDT dust Same as for Beets (Same as for Flax)	15-18	20 to 25	When worms appear in injurious numbers.

## STRAWBERRIES

Red Spider or Spider Mites	325 mesh-conditioned sulfur dust		20 to 25	When spiders appear in injurious numbers.
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## CITRUS

Thrips	8 lbs. 50% wettable DDT to an acre in 100 gallons of water with spray duster, 200 to 300 gallons with conventional rig. (If cottony cushion scale is bad, use Dieldrin.)			When $\frac{3}{4}$ of the petals on the south side have fallen.
	$\frac{1}{2}$ pound technical Dieldrin per acre. Use in 200-300 gallons of water for conventional rig and 100 gallons with spray duster.			When $\frac{3}{4}$ of petals on the south side have shed.
	1 to 1 $\frac{1}{2}$ pts. 57% Malathion spray in 200 gallons of water for fall flush growth. Several applications may be necessary.			

Wasps	1% Thanite in spray-base oil	Enough to kill nest		When nests are found.
Cottony Cushion Scale	Vedalia Ladybug			When the infestation develops during summer months.

## SEED CROPS

### ALFALFA SEED

Lygus	10% DDT-sulfur dust 20% Toxaphene-sulfur dust Toxaphene spray	12-15 20-25 2 to 3 technical	15 to 25 20 to 35	When Lygus appear in injurious numbers (50 to 60 per 100 sweeps).
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Crop	Insect	Insecticide	Pounds Per Acre		When to Apply
			Ground	Air	
	Stink Bugs	20% Toxaphene dust and sprays	12-15	20 to 30 6 technical	When 2 to 4 stink bugs per 100 sweeps are present.
	Spider Mites	325 mesh-conditioned sulfur	12-15	15 to 30	When injury appears.
		3% Aramite dust Sprays (not as effective as dusts)	15-18	20 to 25 1 lb. tech.	
	Alfalfa Caterpillar	10% DDT dust A virus on infested field works at times.	15-18	20-25	When injury is noticed.
		15% Toxaphene — 5% DDT	15-18	20-25	
		20% Toxaphene dust	15-18	20-25	
	Chalcids	10% DDT dust	15-18	20 to 30	When adults are first seen.
		20% Toxaphene dust	15-18	20 to 30	Control is only fair.
	Leaf Rollers	10% DDT	15-18	20 to 30	When worms first appear.
		5% DDT dust	15-18	20 to 30	Early control profitable.
	Leafhoppers	5% Malathion dust	12-15	20	When hoppers are causing damage.
	Three-Cornered Alfalfa Hopper	Cut alfalfa at least every 35 days to prevent injury.			
		5% Malathion dust	15-20	20 to 30	When hoppers cause damage.
	Ants	2% Dieldrin dust around hole — not in opening.			
		10% Chlordane — same way.			

Yellow-Clover Aphid	5% Malathion dust Malathion 57% Emulsion (Use on hay or seed and may be fed in 7 days.) 15% Toxaphene — 5% DDT (On seed or seedlings. Do not pasture or feed for 40 days.)	10-12 1½ pts. 10-12	20-25 1½ pts. 20-25	When aphids cause damage to plants, old or young.
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Egyptian Weevil	5% Methoxychlor dust Aldrin dust or spray	10-12 .25	20-25 .25	When injury appears.
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## ALFALFA HAY

Yellow Clover Aphid	5% Malathion dust Malathion 57% Emulsion	10-12 1½ pts.	20-25 1½ pts.	When injury appears.
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Leafhoppers	5% Malathion dust	10-12	20-25	
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Three-Cornered Alfalfa Hopper	5% Malathion dust	10-12	20-25	
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Ants	Same as for alfalfa seed.			
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Aphids	2% Parathion dust with ground machinery.	12	No	When aphids are causing injury (apply only on hay prior to blooming).
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## SORGHUM

Corn Earworm	10% DDT dust (use only on those fields for seed). Early planting not injured as badly.	No	20 to 25	Examine 25 heads at 5 spots in field. If 4 to 5 heads per 25 are infest- ed in all parts, start control.
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Lesser Cornstalk Borer	Avoid planting on land in sorghum or cane the previous year.			
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Beet Armyworm	10% DDT (ground duster only)	12-15	No	When worms causing injury.
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Crop	Insect	Insecticide	Pounds Per Acre		When to Apply
			Ground	Air	
	Cutworm	10% DDT	12-15	20-25	When injury appears.
		20% Toxaphene	12-15	20-25	
		Endrin spray	4-6	4-6	
		2½% Heptachlor dust	15-20	20-25	
	Southwestern Corn Borer	Do not follow grain sorghum with sorghum each year. Plow stubble out on top of soil in fall.			
	Stink Bugs	20% Toxaphene	No	20 to 25	When insects are causing injury to heads.
		2% gamma BHC — 5% DDT	No	20 to 25	
	Spider Mites	Dusting sulfur or 3% Aramite dust	No	25 to 30	When mites start to web.
	Aphids	2% gamma isomer BHC		25-30	When aphids killing growing tip of plant.
<b>COTTON</b>	(See Circular 223, "Insects and Diseases of Cotton.")				
<b>SESAME</b>	Beet Armyworm	10% DDT with inert carrier	15-18	20 to 25	When worms start injuring bolls.
<b>FLAX</b>	Beet Armyworm	10% DDT with inert carrier	15-18	20 to 30	
	Corn Earworm	Only late flax is injured by this insect.			
		10% DDT dust	15-18	20 to 30	When injury appears.
	Cutworms, etc.	10% DDT dust	15-18	20 to 30	When worms are present.
		20% Toxaphene dust	15-18	20 to 25	
	Salt Marsh Caterpillar	15% Toxaphene, 5% dust	20-30	30 to 40	When worms appear in field.

**CASTOR BEANS**

Cutworms	Same as for flax			When worms are present.
Corn Earworm	Same as for flax			
Salt Marsh Caterpillars	Same as for flax			
Spider Mites	3% Aramite dust Aramite sprays according to directions.	15-18	20 to 25	When mites cause injury.

**BERMUDA GRASS SEED**

Thrips, Bermuda Grass Scale	2% Parathion dust — Follow directions. Ground machinery.	12-15		Use when thrips first appear in heads. For scale, when crawlers are present.
Weevil	10% Chlordane or 2% Aldrin	15-18	20 to 25	When injury appears in lawn.
Pearl Scale	No good control at the present.			
Spider Mites	3% Aramite dust 2% Parathion	12-15 10-12	15 to 18 12 to 15	When injury appears.

**STORED GRAIN INSECTS**

Weevils, Bran Beetles, Other Beetles, and Moths	Be certain that all storage bins are perfectly clean. If for seed treat walls with DDT (wetable powder) 1 lb. to 5 gallons water. (For information on fumigation, contact your County Agricultural Agent.)			
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Crop	Insect	Insecticide	Pounds Per Acre	
			Ground	Air When to Apply
<b>TREES, SHRUBS</b>				
<b>ELMS</b>	Tent Caterpillars	2 to 4 pounds of 50% wettable DDT to 100 gallons of water.		When they first hatch.
	Elm Leaf Beetle	2 to 4 pounds of 50% wettable DDT to 100 gallons of water. 2 to 3 pounds arsenate of lead to 100 gallons of water. 1 pound technical Dieldrin to 100 gallons of water.		When slugs or beetles appear.
	Elm Scale	Dormant oil spray in winter Summer oil spray in summer	According to directions.	
<b>COTTONWOOD TREES</b>	Cottonwood Beetles	50% wettable DDT 2 to 4 lbs. per 100 gallons water.		
<b>SHADE TREES</b>	Box Elder Bug	Chlordane spray	According to directions.	
	Mites or Red Spiders	Dusting sulfur 3% Aramite dust or spray	Enough to cover insects. According to directions.	When injury appears.
<b>PITTOSPORUM, GARDENIA, and related plants</b>	Cottony Cushion Scale	Ladybird beetles (Vedalia)		When insects are present.
<b>ARBORVITAE and ARIZONA CYPRESS</b>	Spider Mites or Red Spider	Same as for shade trees.		
	Aphids	Nicotine sulfate sprays	Same as for roses.	When injury appears.

## ROSES

Aphids	Nicotine sulfate sprays	1½ tps. of Black-Leaf 40 1½ tps. household ammonia to 1 gallon of water.	When injury appears.
	5% Malathion dust	1½ pts. to 100 gals.	
	57% Malathion emulsion	water or 2 tbs. to gal- lon of water	
Flat Headed Apple Tree Borer	Do not scar or injure the plant. Make clean cuts and cover with paint or seal material.		
Fruit Bud Beetle	10% DDT dust	Enough to leave some on plants.	When beetle causes injury.
Thrips	10% DDT 5% Chlordane 2% Dieldrin 5% Malathion dust		When insects are caus- ing damage, apply dust.

## CHRYSANTHEMUM

Borer	In transplanting, be certain not to remove any of the old crown. (For other flower, shrub, and shade tree insects, see Circular 199.)		
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# LIVESTOCK AND HOUSEHOLD PESTS

Crop	Insect	Insecticide	Pounds Per Acre	
			Ground	Air When to Apply
<b>RANGE LIVESTOCK</b>	Hornflies	50% wettable DDT powder emulsifiable concentrate. A cable or chain covered with a burlap material then saturated with the above formulations works very good. Suspend with cable between two posts at the watering trough or feed pens.	8 to 12	When flies are present.
<b>DAIRY ANIMAL IN BARN, CORRALS, TREES, OUTHUSES</b>	Hornflies	Wettable methoxychlor powder	6 to 8	When flies are present.
	Houseflies and Other Flies	57% Malathion emulsion — Syrup (white corn). Spray walls of barns, dairy barns, trees, and out- houses. Do not spray animals.	2 gallons	When flies are annoying.
		12% gamma isomer Benzene hexachloride wettable	2 gallons	
<b>HOMES</b>	Flies	Lindane — Wettable powder 25% Emulsifiable concentrate Around the outside of homes, in patios, eaves of house, porches, etc.	8½ pounds 1½ gallons	When flies are annoying.
		57% Malathion emulsion and Corn Syrup	2 gallons	
<b>HOMES</b>	Flies	Pyrethrum sprays; DDT sprays and bombs; Lindane sprays best for indoor use.	2 gallons	As needed.
<b>DAIRY ANIMALS</b>	Flies	Use only methoxychlor or pyrethrum as mentioned under horn flies. 5% Thanite sprays.		

## RANGE ANIMALS

Flies Pyrethrum sprays or any of the organics that give results.  
*Note:* Never use organic insecticides in oils on livestock.

Cattle Lice (See Circular 185.)

Cattle Grubs (See Circular 185.)

Screwworms (See Circular 185.)

Mosquitoes Use 5% DDT in oil .4  
Chlordane and heptachlor are also useful.  
Follow directions. When mosquitoes are present.

## DOGS

Dog Ticks and Fleas For animals — Use any good tick or flea material for sale.  
2½% Dieldrin (dust or granular)

Ticks (on Lawns) 10% Chlordane 25 pounds Where ticks are on lawn.  
2½% Dieldrin (dust or granular)

Fleas (on Lawns) Sulfur or 25 pounds Where fleas are present.  
10% DDT dust

## HOUSE

Ants 2% Dieldrin dust — Make ring ¼ lb. per hill When hills are active.  
around nest about 2 feet from opening of hill.

Never place in opening.  
10% Chlordane ½ lb. per hill When hills are active.  
(Repeated applications may be necessary.)

Household Insects (See Circular 195, Household Insects.)

Subterranean Termites Look for mud channels where wooden floors are present.  
Treat area where termites are present. Use 1 part creosote and 2 parts crankcase oil for each 5 cu. feet of soil.  
DDT, Chlordane, and other mixtures also are very effective.  
4½ quarts Dieldrin emulsion containing 1.5 pounds technical to 100 gallons of water. Use this at rate of .5 to 1 gallon per lineal foot of soil along foundation. Use half strength for soil treatment under cement floor.



University of Arizona  
College of Agriculture, Agricultural Extension Service  
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