

SPECIAL CROPS

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Last edited: February 2005

ALFALFA LOOPER

Alfalfa looper

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
methomyl	peas	195-510	1	-
naled	dry beans	950-1900	4	-
	peas	950-1900	4	-
	soybean	950-1900	4	-
	vetches	1000-1750	4	-

Restrictions -

naled: Do not apply when temperature is over 32°C. Do not graze within 4 days of application.
methomyl: Do not graze livestock within 10 days.

ALFALFA WEBWORM

Alfalfa webworm

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
trichlorfon	sugarbeet	1155-1680	14	-

Restrictions -

trichlorfon: Do not apply within 48 hours of frost or when temperatures drop below 5°C.
Wait at least 28 days to feed foliage to livestock.

APHIDS

Aphids

Economic Threshold -

canary grass: More than 50 per head between heading and soft dough.
 field peas: 9-12 aphids/sweep or 2-3 aphids/20 cm stem tip when 50% of plants have produced some young pods. (4)

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
azinphos-methyl	vetches**	540-675	-	-
azinphos-methyl (EC & WP)	dry beans	425-550	3	
azinphos-methyl (dust)	dry beans	525-675	3	-
diazinon	dry beans	500	7	
dimethoate	canary grass	240	21	-
	dry beans	340-500	7	-
	peas	130-205	3	1
disulfoton	dry beans	1080-2340*	60	-
	peas	1125-2625*	50	-
endosulfan	dry beans	600-1000	2	-
	peas	600-800	7	-
	sugarbeet	800	45	-
malathion	canary grass	700	14	-
	dry beans	750-1375	1	-
	peas	1125	3	-
methomyl	peas	195-510	1	-
naled	dry beans	950-1900	4	-
	peas	950-1900	4	-
	soybeans	1000-1750	4	-
	vetches**	950-1900	4	-
pirimicarb	peas	75-137	6	

* for 75 cm row spacing (or use 75 - 145 g AI/1000 m row for other row spacings). Do not place disulfoton-treated zones (bands or furrows) closer together than 15 cm.

** seed crop only; not for feed or forage.

Restrictions -

azinphos-methyl: Do not feed treated forage. Do not graze treated area within 21 days of application. Do not treat food crops grown in greenhouses or other crops used for food or forage.

dimethoate: Do not feed or allow livestock to graze treated pea vines within 21 days after application. Do not apply foliar sprays during the heat of the day when temperatures are exceedingly high. Do not graze or feed treated bean forage to livestock.

endosulfan: dry beans, peas, sugar beet - do not ensile or feed crop refuse (vines, tops, stalks or threshings) to livestock.

peas - treat only if crop is to be mechanically harvested by combine. Apply not more than twice per year on peas for canning.

disulfoton: Do not exceed the 2340 g ai/ha rate. Do not use as foliar spray. Do not apply more than once per season.

methomyl: Do not graze livestock for 10 days after treatment.

naled: Do not apply when temperature is over 32°C.

pirimicarb: Use at least 17 L water per ha when applied by aircraft. Use higher rate when aphid population is high or when weather is very cool.

Notes -

dimethoate: May be applied by air or ground equipment.

disulfoton: Can be sprayed or injected into the furrow at planting time, or injected as a soil-dress treatment after plants become established.

CAUTION - At maximum rates under adverse conditions such as extremely cool, dry, or wet weather may cause some delay in emergence, stunting of seedlings or reduction of stand. Effects may be more pronounced in light sandy soils. Plant injury may also occur or be enhanced when certain pre-emergence herbicides are used in conjunction with disulfoton.

References -

1. Wise, Pest. Res. Rep. 1988: 82
2. Moons, Pest. Res. Rep. 1987: 91
3. Baillargeon, Pest. Res. Rep. 1978: 193
4. Maiteki and Lamb, J. Econ. Entomol. 1985: 1449.

ARMY WORM

Armyworm

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
trichlorfon	dry beans	1155-1680	14	-

BEET LEAFMINERS

Beet leafminer and other unspecified leafminers

Economic Thresholds -

Sugar beet - Only infestations causing more than 25% defoliation require treatment. (1)

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
azinphos-methyl	dry beans	425-550	3	-
diazinon	dry beans	500	7	-
dimethoate	dry beans	340-500	7	-
trichlorfon	dry beans	1155-1680	14	-
	sugarbeet	630-1155	14	1-3

Notes -

dimethoate:consult fieldman before treating.

Restrictions -

trichlorfon:treated tops should not be fed within 28 days of treatment.

dimethoate:do not graze treated forage or feed to livestock.

References -

1.Lilly, Pest. Res. Rep., 1970:142.

2.Lilly and Bergen, Pest. Res. Rep. 1970:142.

3.Lilly and Harper, J. Amer. Soc. Sugar Beet Technol. 12:192,1962.

BEET WEBWORM and BEET ARMYWORM

Beet Webworm and Beet Armyworm

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
endosulfan	sugarbeet (beet webworm)	800-1100	45	-
trichlorfon	sugarbeet (beet armyworm)	1155-1800	14	-
	sugarbeet (beet webworm)	294-630	14	1, 2

Restrictions -

trichlorfon:Tops harvested less than 28 days after treatment should not be fed to livestock.
 endosulfan:Do not ensile or feed crop refuse to livestock. Do not apply more than once per season.

Notes -

Trichlorfon:Use lower rate when applied by row crop sprayers and higher rate for low volume or aircraft sprayers.

References -

- 1.McDonald, J. Econ. Entomol. 56:248,1963.
- 2.Chemagro Corp. (Kansas City). Tech. Data Bull., 1961.

BLISTER BEETLES

Blister beetles

Crop - vetches

Chemical Control - no insecticides recommended for control.

CUCUMBER BEETLES

Cucumber beetles: Striped and Spotted cucumber beetle

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
azinphos-methyl	dry beans	550	3	-

CUTWORMS

Cutworms: Army, Darksided, Pale western, Redbacked, Variegated and White cutworms

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
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chlorpyrifos (pale western & redbacked only)	sugar beets	575-1150	90	1, 2
deltamethrin	lentils	10	30	-
permethrin	lentils, peas sugar beets	70-150 70-150	90 90	- -
trichlorfon (variegated cutworm)	dry beans sugar beets	1155-1680 630-1155	14 14	- -

Restrictions -

chlorpyrifos:Apply once per season in 50 - 220 L water/ha at seedling stage (4 to 5 leaf stage).
trichlorfon:Tops harvested less than 28 days after treatment should not be fed to livestock. Use lower rate when applying by row crop sprayer, higher rate for low volume or aircraft application.

Note -

permethrin:Use the high rate when the soil surface is extremely dry, when cutworms are nearing maturity or the infestation is heavy. Apply in the evening or at night when cutworms are most active. Do not disturb soil surface for 5 days after treatment.

References -

- 1.Allen and Askew, Pest. Res. Rep. 1971:154.
- 2.Askew *et al.*, Pest. Res. Rep. 1973:151.

FLEA BEETLES

Flea Beetles

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
azinphos-methyl (240E)	sugar beet	67	100	-
azinphos-methyl (50W)	sugarbeet	75	100	-
carbaryl	dry beans	1200	5	-
malathion	sugar beet	560	-	-

Restrictions - Sugar Beet

azinphos-methyl:Do not apply more than once per season.
malathion:Do not apply at air temperatures below 20°C.

Note -

azinphos-methyl:Use minimum 80 litres water/ha.
malathion:Use 90 - 225 L water/ha.

GRASSHOPPERS

Grasshoppers

Economic Threshold -
Safflower: More than 15/m²

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
deltamethrin (decis F)	lentils	4-6	30	-
deltamethrin (decis EC)	lentils	5-7.5	30	-
dimethoate	dry beans	335-480	21	-
	safflower	265-480		-

Restrictions -

deltamethrin: Do not feed treated straw or crop residue to livestock. Do not graze treated fields. Do not apply more than 3 times per year. Apply not more than twice per year by air.
ground application: Use 100 - 200 L water/ha. Do not apply if temperature exceeds 28°C.
aerial application: Use 11-22 L of water per ha. Do not apply more than 2 times per year. Do not apply when wind exceeds 8 km/h (5 mph). Use high rate only.

Notes -

deltamethrin: Best control achieved when grasshoppers in the 2 - 4 nymph stages. Observe buffer zone around sensitive areas: 100 m. when applying by air, 15 m. when applying by ground.
dimethoate: Not more than 2 applications/year. Do not apply foliar sprays when air temperatures are exceedingly high.

GREEN CLOVERWORM

Green Cloverworm

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
azinphos-methyl	dry beans	425-550	3	-

IMPORTED CABBAGEWORM

Imported Cabbageworm

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
trichlorfon	dry beans	1155-1680	14	-

LEAFHOPPERS

Leafhoppers

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
azinphos-methyl	dry beans	550	3	2
carbaryl	dry beans	1200	5	
diazinon (50W)	dry beans	500	7	-
dimethoate	dry beans	340-500	7	-
disulfoton	dry beans	1080-2340*	60	-
	peas	1125-2625*	50	-
endosulfan	dry beans	600-1000	2	
malathion	dry beans	750-1375	3	-
	peas	1125	3	-
methoxychlor	dry beans, peas, vetches	110-225	7	-
naled	dry beans, peas	654-1145	4	-
	sugarbeet	1900	5	
	vetches	950-1900	4	

* for 75 cm row spacing (or use 75 - 145 g AI/1000 m row for other row spacings). Do not place disulfoton-treated zones (bands or furrows) closer together than 15 cm.

Restrictions -

dimethoate: Do not graze or feed treated forage to livestock.
 disulfoton: Do not exceed the 3.25 L/ha rate. Do not use as foliar spray. Do not apply more than once per season.
 endosulfan: Do not ensile or feed crop refuse to livestock.
 malathion: peas: Do not apply unless foliage is dry.
 methoxychlor: Do not feed pea foliage to livestock.
 naled: Do not apply when air temperature is over 32°C.

Notes -

disulfoton: Can be sprayed or injected into the furrow at planting time, or injected as a soil-dress treatment after plants become established.

CAUTION - At maximum rates under adverse conditions such as extremely cool, dry or wet weather may cause some delay in emergence, stunting of seedlings or reduction of stand. Effects may be more pronounced in light sandy soils. Plant injury may also occur or be enhanced when certain pre-emergence herbicides are used in conjunction with disulfoton.

References -

1. Whitfield *et al.*, Pest. Res. Rep. 1976: 178
2. Whitfield and Ellis, Pest. Res. Rep. 1976: 180

LEAFROLLERS

Leafrollers

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
azinphos-methyl (EC & WP)	dry beans	275-550	3	-
azinphos-methyl	dry beans	300-660	3	-

Restrictions -

azinphos-methyl: Do not feed crop residue to livestock. Do not graze treated forage.

PEA MOTH

Pea moth

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
malathion	peas	1125	3	-

Restrictions -

malathion:Do not apply unless foliage is dry..

PEA WEEVIL

Pea weevil

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
endosulfan	peas	600-800	7	
malathion	peas	1125	3	
methoxychlor	peas	800-2300	7	-

Restrictions -

malathion:Do not apply unless foliage is dry.
methoxychlor:Do not feed foliage to livestock.

ROOT MAGGOTS

Root maggots: Seed corn and Bean seed maggots (*Delia* spp.); Sugarbeet root maggot

Chemical Control -

Active Ingredient	Crop	Rate (g AI/100 kg seed)	Preharvest Interval (days)	References
		Seed Treatments		
diazinon	soybean	30-35		6, 7
	dry beans	60		
	peas	60		
		Band Treatments		

terbufos	sugar beet	1100		2
		Drench Treatments		
carbofuran	sugar beet	1100	120	-

Restrictions -

carbofuran: Do not use on fields subject to flooding (waterfowl feeding on treated fields may be killed).
diazinon: Toxic to birds, bees, fish and wildlife, including waterfowl. Do not contaminate water.
diazinon: Do not use on seed already treated with an insecticide. Do not store treated seed more than three months. Apply only in conjunction with or over a fungicidal treatment. Allow seed to dry before bagging.
terbufos: Do not place in direct contact with seed. Apply 5-8 cm behind seed crop zone after some soil has covered the seed.

Notes -

soybean: For best results seed should be planted within a week after treatment. Seed may be treated with diazinon alone or with captan.
sugar beet: Apply drench treatment in 200 L water/ha over the row followed by a light irrigation.

References -

1. Askew *et al.*, Pest Res. Rep. 1976: 145
2. Askew *et al.*, Pest Res. Rep. 1977: 183
3. Askew *et al.*, Pest Res. Rep. 1978: 135
4. Askew *et al.*, Pest Res. Rep. 1979: 100
5. Lilly, Pest Res. Rep. 1975: 179
6. Schaafsma, Pest Res. Rep. 1987: 156
7. Schaafsma, Pest Res. Rep. 1988: 53
8. Whitfield and Bergen, Pest Res. Rep. 1984: 159
9. Whitfield and Bergen, Pest Res. Rep. 1985: 132

SPIDER MITES

Spider mites

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
azinphos-methyl (dust)	dry beans	525-675	3	-
azinphos-methyl (EC & WP)	dry beans	300-540	3	-
dimethoate	dry beans	336-480	7	-
	soybean	480	7	
disulfoton	dry beans	1080-2340*	60	-
malathion	dry beans	750-1375	1	-
	peas	1125	3	-
naled	dry beans	950-1900	4	-
	peas	950-1900	4	-
	soybean	1000-1750	4	-
	sugarbeet	1900	5	-

* for 75 cm row spacing (or use 75 - 145 g AI/1000 m row for other row spacings). Do not place disulfoton-treated zones (bands or furrows) closer together than 15 cm.

Restrictions -

dimethoate: Do not apply more than 3 times per season. Do not feed or allow livestock to graze treated forage.

disulfoton: Do not exceed the 3.25 L/ha rate. Do not use as foliar spray. Do not apply more than once per season.

malathion: Do not apply unless foliage is dry.

naled: Do not apply when air temperature is over 32°C.

Notes -

disulfoton: Can be sprayed or injected into the furrow at planting time, or injected as a soil-dress treatment after plants become established.

CAUTION - At maximum rates under adverse conditions such as extremely cool, dry or wet weather may cause some delay in emergence, stunting of seedlings or reduction of stand. Effects may be more pronounced in light sandy soils. Plant injury may also occur or be enhanced when certain pre-emergence herbicides are used in conjunction with disulfoton.

SUGARBEET ROOT APHID

Sugarbeet root aphid

Cultural Control -
Maintain fertility, irrigate early and frequently. No satisfactory chemical control is available.

Reference -
1.Harper, J. Econ. Entomol. 54:6, 1961.

TARNISHED PLANT BUG

Tarnished plant bug and other *Lygus* spp.

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
carbaryl	dry beans	2520-3072	5	-
dimethoate	dry beans	340-500	7	-
naled	vetch	950-1918	4	-
trichlorfon	dry beans	1155-1680	14	-

Restrictions -
dimethoate:Do not graze or feed treated forage to livestock. Only three applications per season.
naled:Do not apply when temperature is over 32 C.

THRIPS

Thrips

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
disulfoton	Dry beans	1080 - 2340*	60	-

* for 75 cm row spacing (or use 75 - 145 g AI/1000 m row for other row spacings). Do not place disulfoton-treated zones (bands or furrows) closer together than 15 cm.

Restrictions -

disulfoton: Do not plant disulfoton-treated zones. Do not exceed the 3.25 L/ha rate. Do not use as foliar spray. Do not apply more than once per season.

Notes -

disulfoton: Can be sprayed or injected into the furrow at planting time, or injected as a soil-dress treatment after plants become established.

CAUTION - At maximum rates under adverse conditions, such as extremely cool, dry, or wet weather, disulfoton may cause some delay in emergence, stunting of seedlings or reduction of stand. Effects may be more pronounced in light sandy soils. Plant injury may also occur or be enhanced when certain pre-emergence herbicides are used in conjunction with disulfoton.

STINK BUGS

Stink Bugs

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
carbaryl	dry beans	2520-3072	5	-

VETCH BRUCHID

Vetch bruchid

Chemical Control -

Active Ingredient	Crop	Rate (g AI/ha)	Preharvest Interval (days)	References
azinphos-methyl (dust)	vetch	825	-	-
azinphos-methyl (EC & WP)	vetch	550	-	-

Restrictions -

azinphos-methyl: Do not feed crop residue to livestock. Do not feed treated forage.

WIREWORMS

Wireworms

Chemical Control -

Active Ingredient	Crop	Rate (g AI/100 kg seed) Seed Treatments	References
diazinon	soybean	30-35	-
terbufos	sugar beet	67.5	1

Notes -

soybean:Formulations may vary; seed may require dry or slurry treatment.

sugar beet:

terbufos - Tops and beet pulp may be fed to livestock after harvest. Apply in furrow at planting time 5-8 cm behind the seed drop zone after some soil has covered the seed.

References -

1.Lilly, Pest. Res. Rep. 1978:137