

LENTIL

CUTWORMS

Cutworms are an occasional problem in lentil. Cutworms overwinter as eggs or young larvae that feed on the newly emerged shoots in spring. The shoots may be cut off below the soil surface. Cotyledons (seeds) of lentil often remain below the soil surface and can recover from cutworm damage if cool, moist growing conditions. However, recovered plants are generally set back 4 to 7 days by the damage.

Threshold:

The risk is low, unless more than 2 to 3 cutworms per square yard occur in the top 3 inches of soil.

Insecticides approved for use on cutworms in Lentil.

INSECTICIDE	DOSAGE IN LB AI/ACRE	PRODUCT PER ACRE	RESTRICTIONS ON USE
beta-cyfluthrin Baythroid XL <i>RUP</i>	0.007 - 0.013	0.8 - 1.6fl oz	PHI = 7 days. Maximum of 6.4fl oz per acre per season. Maximum of 3.2 fl oz per acre between 14-day interval. Minimum application volume is 10 GPA by ground and 5 GPA by air. Do not feed treated vines or hay to livestock.
bifenthrin Brigade 2EC <i>RUP</i>	0.033 - 0.10	2.1 - 6.4 fl oz	PHI = 14 days. Apply in a minimum of 2 GPA by air or 10 GPA for ground application. Do not make applications less than 7 days apart.
bifenthrin Capture LFR <i>RUP</i>	0.04 - 0.08 (0.0023 - 0.0046 lb/1000 linear feet)	3.4 - 6.8 fl oz (0.20 - 0.39 fl oz/ 1000 linear feet)	See label for soil application directions. Do not apply more than 0.1 lb ai per acre per season as an at-plant application.
carbaryl Sevin 4F	1.0 - 1.5	32 - 48 fl oz	Do not apply within 14 days of grazing or harvest for forage use or within 21 days of harvest of dried seed or hay. Most effective against cutworm species that feed on the upper parts of the plant. Apply as necessary up to a total of 4 applications but not more than once every 7 days.
cyfluthrin Tombstone Tombstone Helios <i>RUP</i>	0.013 - 0.025	0.8 - 1.6 fl oz	PHI = 7 days. Maximum of 6.4fl oz per acre per season. Maximum of 3.2 fl oz per acre per 14-day interval. Minimum application volume is 10 GPA by ground and 5 GPA by air. Do not feed treated vines or hay to livestock.
esfenvalerate Asana XL <i>RUP</i>	0.03 - 0.05	5.8 - 9.6 fl oz	PHI = 21 days. Do not apply more than 0.2 lb ai/acre per season. Do not feed or graze livestock on treated fields. Apply with a minimum of 2 GPA for air and 10 GPA for ground applications.
gamma-cyhalothrin Proaxis <i>RUP</i>	0.01 - 0.015	2.56 - 3.84 fl oz	PHI = 21 days. Do not apply more than 0.06 lb ai (0.96 pt) per acre per season. Do not graze livestock in treated areas or harvest vines for forage or hay.
lambda-cyhalothrin Lambda-Cy <i>RUP</i>	0.015 - 0.025	1.92 - 3.2 fl oz	PHI = 21 days. Do not graze livestock in treated area or harvest vines for forage or hay. Do not apply more than 0.12 lb ai (15.36 fl oz) per acre per season.
lambda-cyhalothrin Taiga Z <i>RUP</i>	0.015 - 0.025	1.92 - 3.2 fl oz	
lambda-cyhalothrin Warrior <i>RUP</i>	0.015 - 0.025	1.92 - 3.2 fl oz	
zeta-cypermethrin Mustang Max <i>RUP</i>	0.008 - 0.025	1.28 - 4.0 fl oz	PHI = 21 days. Do not apply more than 0.15 lb ai per acre per season. Do not make applications less than 5 days apart.

RUP - Restricted use pesticide

GRASSHOPPERS

Grasshoppers are a potential problem in lentil. Lentil crops are less tolerant to grasshopper feeding than some other pulse crops. In lentils, grasshoppers pose the greatest threat from the bud stage through early pod development. Damage on lentil plants is often not highly visible because grasshoppers do not normally prefer lentil foliage. However, grasshoppers will consume flower buds and especially early pods of lentil plants. This can result in yield loss and a delay in maturity due to delayed pod set.

Threshold:

Scout fields from the early bud stage through pod development. Research conducted by Agriculture and Agri-Food Canada in Saskatoon found that 2 grasshoppers per square yard, feeding on lentil flowers or pods, can reduce yields enough to warrant insecticide treatment.

LYGUS BUG / TARNISHED PLANT BUG

Lygus bug feeding on the immature reproductive structures of lentils causes seed and pod abortion, as well as a serious seed-quality problem known as "chalk spot." This problem has been reported for lentil in the Pacific Northwest production areas, but has not been seen as a significant problem in North Dakota. Lygus bugs feed with piercing, sucking mouthparts and inject toxic saliva into the immature seed. This forms a depression around the feeding area and leaves a chalky blemish. Monitor adult lygus bug populations during blooming and podding by using a sweep net, making 25, 180° sweeps in at least 5 randomly selected places in a field.

Threshold:

Insecticide treatment is recommended when 7 to 10 adults are collected per 25 sweeps.

PEA APHID

The most common insect pest found in lentil is the pea aphid. They are small, about 1/8+ inch long, and pale green. In North Dakota, aphids usually do not reach economic levels in field pea. Aphids have many natural enemies, including lady bird beetles, parasitic wasps, lacewings and syrphid flies, but chemical control may be necessary if these insects do not keep aphids at subeconomic levels. Insecticide treatment for pea aphid control should be considered (1) when an economic threshold of 30 to 40 aphids are collected per 180° sweep of a 15-inch diameter insect net, (2) when few natural enemies are present, and (3) when aphid numbers do not decline over a 2-day period.

Insecticides approved for control of grasshopper, Lygus bug, pea aphid, and other insect pests of Lentil.

INSECTICIDE	DOSAGE IN LB AI/ACRE	PRODUCT PER ACRE	RESTRICTIONS ON USE
beta-cyfluthrin Baythroid XL <i>RUP</i>	0.0125 - 0.025	1.6 - 3.2 fl oz	PHI = 7 days. Maximum of 6.4 fl oz per acre per season. Maximum of 3.2 fl oz per acre between 14-day interval. Minimum application volume is 10 GPA by ground and 2 GPA by air. Do not feed treated vines or hay to livestock. Label include plant bugs, grasshoppers, and other insect pests. For pea aphid, use high rate of 3.2 fl oz/acre for pest suppression only.
carbaryl Sevin	0.5 - 1.5	rate varies by formulation	Labeled for grasshoppers, lygus suppression and other insects. PHI = 21 days. Do not apply within 14 days of graze or harvest for forage.
cyfluthrin Tombstone Tombstone Helios <i>RUP</i>	0.025 - 0.050	1.6 - 3.2 fl oz	PHI = 7 days. Maximum of 6.4 fl oz per acre per season. Maximum of 3.2 fl oz per acre between 14-day interval. Minimum application volume is 10 GPA by ground and 2 GPA by air. Do not feed treated vines or hay to livestock. Label include plant bugs, grasshoppers, and other insect pests. For pea aphid, use high rate of 3.2 fl oz/acre for pest suppression only.
dimethoate Digon 400, Dimethoate 400, Dimethoate 2.67 EC	0.125 - 0.75	0.33 - 1½ pt	Labeled for aphid control. Peas may be harvested mechanically on day of application. Do not feed or graze hay within 21 days of last application. Do not make more than 1 application per season.

INSECTICIDE	DOSAGE IN LB AI/ACRE	PRODUCT PER ACRE	RESTRICTIONS ON USE
esfenvalerate Asana XL <i>RUP</i>	0.02 - 0.03	Low Rate: 3.9 - 5.8 fl oz	PHI = 21 days. The lower rates are for control of first- and second-stage grasshoppers ONLY . The reduced-rate application has a range of 3.9 - 5.8 fl oz. The higher rates are for control of grasshopper nymphs larger than 2 nd instar. Do not apply more than 0.2 lb ai/acre per season. Do not feed or graze livestock on treated fields. Apply with a minimum of 2 GPA for air and 10 GPA for ground applications.
GRASSHOPPER ONLY	0.03 - 0.05	High Rate: 5.8-9.6 fl oz	
esfenvalerate Asana XL <i>RUP</i>	0.03 - 0.05	5.8 - 9.6 fl oz	PHI = 21 days. Do not apply more than 0.2 lb ai/acre per season. Do not feed or graze livestock on treated fields. Apply with a minimum of 2 GPA for air and 10 GPA for ground applications.
gamma-cyhalothrin Proaxis <i>RUP</i>	0.01 - 0.015	2.56 - 3.84 fl oz	PHI = 21 days. Label includes aphid, grasshopper, cutworm and others. Proaxis may be used to control grasshoppers in bordering, non-crop areas that are not hayed or grazed.
imidacloprid Nuprid 2F Controls aphids, leafhoppers, lygus bug only	see label	16 - 24 fl oz	PHI = 21 days. Maximum amount allowed per season 24 fl oz/acre/season. Apply using one of the following methods: 1) Chemigation into root-zone through low-pressure drip, trickle, microsprinkler or equivalent equipment, 2) In-furrow spray during planting directed on or below seed, 3) Narrow band spray at ground cracking directly over the row during hilling covered with 3 In a narrow (2" or less) surface band over seed-line during planting incorporated to a depth of 1 to 1.5 inches with sufficient irrigation within 24 hours following application, 4) In a narrow band directly below the eventual seed row in a bedding operation 7 or fewer days before planting, or 5)As a post-seeding drench, transplant drench, or hill drench. Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.
lambda-cyhalothrin Lambda-Cy <i>RUP</i>	0.02 - 0.03	2.56 - 3.84 fl oz	PHI = 21 days. Label includes aphid, grasshopper, cutworm and others. Warrior may be used to control grasshoppers in bordering, non-crop areas that are not hayed or grazed. Do not apply more than 0.12 lb ai (15.36 fl oz) per acre per season.
lambda-cyhalothrin Taiga Z <i>RUP</i>	0.02 - 0.03	2.56 - 3.84 fl oz	
lambda-cyhalothrin Warrior <i>RUP</i>	0.015 - 0.03	2.56 - 3.84 fl oz	
malathion Malathion 57 EC	0.625 - 1.25	1 - 2 pts	Labeled for aphid control. PHI = 3 days. Do not graze or feed treated crop foliage to livestock.
spinosad (microbial) Success	0.047 - 0.094	3 - 6 fl oz	PHI = 28 days. Do not apply more than a total of 12 fl oz per acre per season.. For control of armyworms, corn borer, loopers, leafminers and thrips only. Treat when pests appear, targeting eggs at hatch or small larvae. Use a higher rate in the rate range for larger larvae or moderate to severe infestations.
zeta-cypermethrin Mustang Max <i>RUP</i>	0.017 - 0.025	2.72 - 4 fl oz	PHI = 21 days. Label includes aphid, grasshopper and plant bugs.

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