

WEED CONTROL IN CANOLA

(J.L. Gunsolus and P.M. Porter)

- CA1.** Weed control in canola needs to involve integrated weed management, since there are a limited number of herbicides that can be legally applied to this crop. If good annual weed management occurs during the first three to four weeks following planting, good season-long control of annual weeds should occur, since canola is a competitive species once it is established. Since the spectrum of weeds controlled by labeled herbicides is rather narrow, growers should properly identify weeds and select herbicides and other control measures based on prevalent weed species and weed densities. Control or suppression of some perennial weeds, especially quackgrass and Canada thistle, are possible in canola. However, good control of perennial weeds requires an integrated and consistent management strategy for all crops grown in rotation because good control of perennial weeds requires persistence. Canola is very sensitive to certain classes of herbicides, especially certain sulfonylurea and imidazolinones, and growers need to manage the crop(s) preceding canola to prevent potential herbicide carryover problems. Be sure to check rotational restrictions on herbicide labels for products used on crops prior to planting canola. Growers should check the preharvest interval for all postemergence herbicides to avoid potential residue problems in seed. The preharvest interval ranges from 60 to 75 days for postemergence herbicides which gives a narrow window for legally applying postemergence products (Table CA1).

Cultural Practices

- CA2.** Tillage can be a very effective method for controlling weeds. However, since canola is normally seeded early in the spring, tillage prior to planting may have little effect on control of annual weeds if weeds have not germinated prior to tillage. Biennial weeds or perennial weeds may be suppressed by early season tillage. Growers should practice good weed management in crops preceding canola to reduce the weed seed reservoir in the soil. Preventing weeds from producing seed following harvest of other crops via tillage or herbicide application is a good weed management practice. Perennial weed management with tillage and/or herbicides can be done in the fall after harvesting the crop preceding canola. Fields that are heavy infested with weeds that are not controlled by herbicides currently registered for use on canola should be planted to another crop. Recent data indicates that seeding rate of canola affects its ability to compete with weeds. Therefore, canola should be planted at the optimum seeding rate for the variety.

Labeled Herbicides

Preplant incorporated

- CA3.** **Trifluralin** controls many annual grasses and some broadleaf weeds. Perennial weeds are not controlled by this herbicide. Trifluralin (Treflan and generics) may be applied prior to planting canola as a preplant incorporated treatment at 0.5 to 1.0 lb ai/A (1 to 2 pts/A or 5 to 10 lb/A of 10 G) depending on soil type. This herbicide must be thoroughly incorporated for best results. Soil conditions at the time of application must be dry enough to allow good mixing of this herbicide in the top 1 to 2 inches of soil. Herbicides are normally concentrated in the upper one half of the tillage zone, i.e. if a field cultivator is operated 4-inches deep, most of the material applied to the surface will be concentrated in the top 2 inches of soil. If two pass incorporation is used, the second pass should be at an angle to the first pass and slightly shallower to avoid bringing untreated soil to the surface or burying the herbicide too deep. Trifluralin can be applied either in the spring or the fall. Fall trifluralin should **NOT** be applied before September 1.
- CA4.** **Sonalan (ethalfluralin)** may be applied prior to planting canola as a preplant incorporated treatment at .55 to .95 lb ai/A (1.5 to 2.5 pt/A or 5.5 to 9.5 lb/A of 10G) depending upon soil type. Thoroughly incorporate Sonalan for best results. Sonalan controls many annual grasses and some broadleaf weeds, often targeting wild buckwheat, Russian thistle, and kochia. Sonalan can be applied either in the spring or fall. Fall application can occur between October 1 and December 31.

Postemergence

- CA5.** **Assure II* (quizalofop)** applied at 0.04 to 0.069 lb ai/A (5 to 10 oz/A) will give good control of annual grasses and suppression of quackgrass. A crop oil concentrate at 1% v/v or a nonionic surfactant at 0.25% v/v must always be added to the spray solution. However, **Do Not** use vegetable oil as an additive, since control will be reduced compared to other additives.
- CA6.** **Poast (sethoxydim)** may be applied at 0.14 to 0.47 lb ai/A (0.75 to 2.5 pts/A) for control of annual grasses and suppression of quackgrass. The higher rate improves control of quackgrass. An oil concentrate or methylated seed oil at 1 qt/A must be used to provide consistent performance. Liquid nitrogen solution or ammonium sulfate can be added in addition to crop oil concentrate or methylated seed oil to improve control of certain weeds such as wild oats, volunteer cereals and volunteer corn.
- CA7.** **Select*/ Select Max/Prism (clethodim)** may be applied at 0.063 to 0.094 lb ai/A (4 to 6 oz/A Select*, (9 to 12 oz/A Select Max and 8.5 to 10.5 oz/A Prism) for control of annual grasses and suppression of quackgrass. A crop oil concentrate or methylated seed oil at 1% v/v is required for adequate weed control.

* or generic equivalent.

Ammonium sulfate can be added for improved weed control. Select Max has more adjuvant options than Select* and Prism, see label for details. **Do Not** apply near or after the crop has begun bolting and no more than 6 oz/A of Select or 11 oz/A of Prism may be applied per season. **Do Not** apply to flowering canola as crop injury may occur.

- CA8. Stinger* (clopyralid)** is effective on Canada thistle and perennial sowthistle, perennials, and on wild sunflower, common ragweed, cocklebur, and wild buckwheat. Rates range from 0.09 to 0.125 lb ai/A (0.25 to 0.33 pts/A). Due to cost, spot treatment of Canada thistle patches is the primary use for this product in canola. For best Canada thistle or perennial sowthistle control, apply clopyralid when the majority of the plants have emerged and leaves are at least 6 to 8 inches in diameter or height but before bud stage.

Herbicide-Resistant Canola

- CA9. Beyond (imazamox)** is approved for use on **Clearfield** canola. Apply Beyond postemergence to actively growing 3 inch-tall weeds at 0.03 lb ai/A (3 oz/A) for control of several annual grasses and broadleaf weeds. A nonionic surfactant at 0.25 % v/v and either a liquid fertilizer at 1 to 2.5% v/v or spray grade ammonium sulfate at 5 to 15 lbs. per 100 gal. of spray solution is required for adequate weed control. Herbicide application must be made prior to the bloom stage and no more than 4 oz/A of Beyond may be applied per season.
- CA10. Glyphosate** is approved for use on **Roundup Ready** canola. Glyphosate may be applied from crop emergence through the six-leaf stage with a maximum of 0.95 lb. a.i./A per growing season. **No more than two over-the-top applications per growing season.** Single applications of 0.47 to 0.68 lb. a.i./A no later than the 6-leaf stage. Sequential applications of 0.47 lb. a.i./A should start at the 1- to 3-leaf stage and a minimum interval of 10 days must occur before the second application but no later than 6-leaf stage. Applications exceeding 0.47 lb. a.i./A after the 4-leaf stage or overlapping applications **may result in temporary yellowing, delayed flowering, and/or growth reduction.**
- CA11. Liberty (glufosinate)** is approved for use on **Liberty Link** canola. Liberty can be applied **only to Liberty Link canola** with a maximum of two applications per year totaling no more than 0.89 lb ai/A of active ingredient (68 oz/A product). Use rate for Liberty is 0.44 lb ai/A (34 oz/A). It is recommended that ammonium sulfate at the rate of 3 lb/A be added to the spray mixture. Apply Liberty before grasses tiller. If applied after tillering, especially if target weeds are wild oats, volunteer barley and wheat or yellow foxtail, apply Liberty at 28 oz/A product with 1/5 lb/A of ammonium sulfate plus the recommended rates of either Assure II, Select, or Poast. **Avoid drift** onto sensitive crops. **Do Not** graze the treated crop or cut for hay.

Summary

- CA12.** Heavy weed infestations left uncontrolled can reduce canola yields by 50% or more and can reduce seed quality leading to dockage. Weed management in canola should involve assessing weed species and weed densities present in each field and designing an integrated control program using crop rotation, tillage, cultural practices, and herbicides. Managing weeds in all crops using integrated weed management strategies is necessary to produce a high yielding, high quality crop of canola.

* or generic equivalent.

Table CA1. Crop Stage and Harvest Restrictions for Canola

| Herbicide Name | Minimum Crop Stage | Maximum Crop Stage | Grain Harvest Restriction (days) |
|------------------------------------|--------------------|--------------------|----------------------------------|
| <u>Conventional Canola</u> | | | |
| Arrow (clethodim) | cotelydon | Prior to bolting | 75 |
| Assure II (quizalofop) | none | none | 60 |
| Poast (sethoxydim) | none | none | 60 |
| Prism (clethodim) | cotelydon | prior to bolting | 70 |
| Section (clethodim) | cotelydon | Prior to bolting | 70 |
| Select (clethodim) | cotelydon | Prior to bolting | 70 |
| Select Max (clethodim) | cotelydon | Prior to bolting | 70 |
| Sonalan (ethalfluralin) | n.a. | n.a. | none |
| Stinger (clopyralid) | 2 | 6 | 50 |
| Targa (quizalofop) | none | none | 60 |
| Treflan (trifluralin) | n.a. | n.a. | none |
| trifluralin, others (trifluralin) | n.a. | n.a. | none |
| Trust (trifluralin) | n.a. | n.a. | none |
| <u>Clearfield Canola</u> | | | |
| Beyond (imazamox) | emergence | before bloom | none |
| <u>Liberty Link Canola</u> | | | |
| Liberty (glufosinate) | cotyledon | early bolting | 65 |
| <u>Roundup Ready Canola</u> | | | |
| Durango (glyphosate) | emergence | 6 leaf | 60 |
| Glyphomax XRT (glyphosate) | emergence | 6 leaf | 60 |
| glyphosate, others (glyphosate) | emergence | 6 leaf | 60 |
| Roundup Original MAX (glyphosate) | emergence | 6 leaf | 60 |
| Roundup WeatherMAX (glyphosate) | emergence | 6 leaf | 60 |
| Touchdown (glyphosate) | n.a. | flowering | 14 |

Table CA2. Summary of herbicides for use in Canola

| <u>Application Type</u> | | Crop | |
|--|---|-----------|---|
| Herbicide / Formulation | Rate Range | Tolerance | Remarks |
| <u>Conventional Canola</u> | | | |
| <u>Preplant Incorporated</u> | | | |
| Sonalan 10 G | 5.5 to 9.5 lbs | F | Apply preplant incorporated for control of annual grasses and some broadleaf weeds. Rate of application depends upon soil texture. Do Not exceed rates for your soil type or crop injury may occur. |
| Sonalan 3 E (ethalfluralin) | 1.5 to 2.5 pt (0.55 to 0.95 lb ai/A) | | |
| trifluralin 10 G | 5 to 10 lbs | G | Apply preplant incorporated for control of annual grasses and some broadleaf weeds. Rate of application depends on soil texture. Do Not exceed rates for your soil type or crop injury and carryover may result. Several generic trifluralins are available. |
| trifluralin 4 E (trifluralin) | 1 to 2 pt/A (0.5 to 1 lb ai/A) | | |
| <u>Postemergence</u> | | | |
| Arrow 2 EC (clethodim) | 4 to 5 fl oz (0.063 to 0.078 lb ai/A) | G | Apply postemergence for control of annual grasses and suppression of quackgrass. Add crop oil concentrate at 1% v/v also, AMS may be added. DO NOT apply more than 0.094 lb ai/A per growing season. DO NOT apply near or after crop has begun bolting. DO NOT apply to flowering canola as crop injury may occur. |
| Assure II 0.88 E (quizalofop) | 5-10 fl oz (0.034 to .069 lb ai/A) | G | Apply postemergence for control of annual grasses, quackgrass and volunteer corn or cereals. Quackgrass control may require repeat application and higher rate. Always add a crop oil concentrate at 1% v/v or nonionic surfactant at 0.25% v/v but Do Not add vegetable oil. Apply when annual grasses are actively growing and 3 to 4 inches tall. For quackgrass control apply 10 oz/A when plants are 6 to 10 inches tall and actively growing. Do Not graze treated fields or harvest for forage or hay. |
| Poast 1.5 E (sethoxydim) | 0.75 to 2.5 pts (0.14 to 0.47 lb ai/A) | G | Apply postemergence for control of annual grasses, volunteer cereals, volunteer corn and suppression of quackgrass. Two applications may be necessary for quackgrass. Always add a crop oil concentrate or methylated seed oil at 1 qt/A; use of 28% N or ammonium sulfate may improve control of quackgrass and other grasses. |
| Prism 0.94 E (clethodim) | 8.5 to 10.5 fl oz (0.063 to 0.078 lb ai/A) | G | Apply postemergence for control of annual grasses and suppression of quackgrass. Add crop oil concentrate at 1% v/v also, AMS may be added. DO NOT apply more than 0.094 lb ai/A per growing season. DO NOT apply near or after crop has begun bolting. DO NOT apply to flowering canola as crop injury may occur. |
| Section 2 EC (clethodim) | 4 to 5 fl oz (0.063 to 0.078 lb ai/A) | G | Apply postemergence for control of annual grasses and suppression of quackgrass. Add crop oil concentrate at 1% v/v also, AMS may be added. DO NOT apply more than 0.094 lb ai/A per growing season. DO NOT apply near or after crop has begun bolting. DO NOT apply to flowering canola as crop injury may occur. |
| Select 2 EC (clethodim) | 4 to 5 fl oz (0.063 to 0.078 lb ai/A) | G | Apply postemergence for control of annual grasses and suppression of quackgrass. Add crop oil concentrate at 1% v/v also, AMS may be added. DO NOT apply more than 0.094 lb ai/A per growing season. DO NOT apply near or after crop has begun bolting. DO NOT apply to flowering canola as crop injury may occur. |
| Select Max 0.97 EC (clethodim) | 9 to 12 fl oz (0.068 to 0.09 lb ai/A) | G | Apply postemergence for control of annual grasses and suppression of quackgrass. DO NOT apply near or after crop has begun bolting. DO NOT apply to flowering canola as crop injury may occur. |
| Stinger 3 S (clopyralid) | 0.25 to 0.33 pt (0.094 to 0.125 lb ai/A) | G | Apply postemergence for broadleaf weed control. Apply in the 2 to 6 leaf stage. For Canada Thistle control, apply after the majority of basal leaves have emerged but prior to bud stage. |
| Targa 0.88 E (quizalofop) | 5 to 12 fl oz (0.034 to 0.083 lb ai/A) | G | |

Table CA2. Summary of herbicides for use in Canola

| <u>Application Type</u> | | Crop | |
|---|--|-----------|--|
| Herbicide / Formulation | Rate Range | Tolerance | Remarks |
| <u>Clearfield Canola</u> | | | |
| <u>Postemergence</u> | | | |
| Beyond 1 S (imazamox) | 4 oz (0.03 lb ai/A) | G | Apply only to Clearfield canola. Apply postemergence for control of annual grasses and broadleaf weeds. A nonionic surfactant at 0.25 % v/v and either a liquid fertilizer at 1 to 2.5% v/v or spray grade ammonium sulfate at 5 to 15 lbs. per 100 gal. of spray solution is required. Herbicide application must be made prior to the bloom. |
| <u>Liberty Link Canola</u> | | | |
| <u>Postemergence</u> | | | |
| Liberty 1.67 S (glufosinate) | 34 oz (0.44 lb ai/A) | G | Apply only to Liberty-Link canola. Apply before grasses begin to tiller. If either wild oats or yellow foxtail are the target species, and they have begun to tiller, add either Assure II, Select, or Poast. It is recommended that ammonium sulfate at 3 lb/A be added for improved control of all species. Apply no more than two applications per year totaling no more than 0.89 lb/A (68 oz/A). Do Not graze or cut for hay. Avoid drift to sensitive crops. |
| <u>Roundup Ready Canola</u> | | | |
| <u>Postemergence</u> | | | |
| Durango 4 S | 0.9 to 1.4 pt | G | Apply only to Roundup Ready canola. Apply from crop emergence through the sixth leaf stage. Maximum of two postemergence applications per year. Avoid Drift to sensitive crops. |
| Glyphomax XRT 4 S | 0.9 to 1.4 pts | | |
| Roundup Original MAX 4.5 S | 0.8 to 1.2 pts | | |
| Roundup WeatherMAX 4.5 S | 0.8 to 1.2 pts | | |
| Touchdown Hi-Tech 5 L | 0.75 to 1 pts | | |
| Touchdown Total 4.17 L (glyphosate) | 0.8 to 1.2 pts (0.47 to 0.68 lb ai/A) | | |

Table CA3. Effectiveness of herbicides on major weeds in Canola

| Herbicides | Grasses | | | | | Broadleaves | | | | | | | | | | | | Perennials | | | | | |
|-----------------------------------|---------------|---------------|----------------|-----------|-------------------|-------------|--------|----------------------|---------------|--------------|--------------------------|------------------|--------------|----------------|---------------|---------------------|----------------|------------|-----------------|----------------|------------|----------------|----------------------|
| | Barryardgrass | Green Foxtail | Yellow Foxtail | Wild Oats | Volunteer Cereals | Cocklebur | Kochia | Common Lambsquarters | Venice Mallow | Wild Mustard | Eastern Black Nightshade | Hairy Nightshade | Pigweed spp. | Common Ragweed | Giant Ragweed | Smartweeds (annual) | Wild Sunflower | Marshelder | Russian Thistle | Wild Buckwheat | Quackgrass | Canada Thistle | Perennial Sowthistle |
| Conventional Canola | | | | | | | | | | | | | | | | | | | | | | | |
| Preplant Incorporated | | | | | | | | | | | | | | | | | | | | | | | |
| Sonalan (ethalfluralin) | G | G | G | F | F | N | G | G | F | N | P | P | G | P | N | P | N | P | G | P | P | N | N |
| trifluralin, others (trifluralin) | G | G | G | P | P/F | N | F | F/G | F | N | P | P | G | P | N | P | N | P | G | P | P | N | N |
| Postemergence | | | | | | | | | | | | | | | | | | | | | | | |
| Arrow (clethodim) | G | G | G | G | G | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | F | N | N |
| Assure II (quizalofop) | G | G | G | G | G | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | G | N | N |
| Poast (sethoxydim) | G | G | G | G | G | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | F | N | N |
| Prism (clethodim) | G | G | G | G | G | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | F | N | N |
| Section (clethodim) | G | G | G | G | G | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | F | N | N |
| Select (clethodim) | G | G | G | G | G | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | F | N | N |
| Select Max (clethodim) | G | G | G | G | G | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | F | N | N |
| Stinger (cloprialid) | N | N | N | N | N | G | N | P/F | P | N | F | F | P | G | F/G | P/F | G | G | P/F | F/G | N | G | F/G |
| Targa (quizalofop) | G | G | G | G | G | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | G | N | N |
| Clearfield Canola | | | | | | | | | | | | | | | | | | | | | | | |
| Postemergence | | | | | | | | | | | | | | | | | | | | | | | |
| Beyond (imazamox) | G | G | G | G | G | G | G | G | F/G | G | G | G | G | F | G | G | G | G | G | P | P | P | P |
| Liberty Link Canola | | | | | | | | | | | | | | | | | | | | | | | |
| Postemergence | | | | | | | | | | | | | | | | | | | | | | | |
| Liberty (glufosinate) | F | G | F | F | F | G | G | F | G | G | G | G | G | G | G | G | F/G | G | G | P | F/P | F/P | |
| Roundup Ready Canola | | | | | | | | | | | | | | | | | | | | | | | |
| Postemergence | | | | | | | | | | | | | | | | | | | | | | | |
| glyphosate, others (glyphosate) | G | G | G | G | G | G | F/G | G | G | G | F | F | G | F/G | G | G | G | G | F/G | F | G | G | G |

NOTE: G = Good; F= Fair; P = Poor; N = No control. Effectiveness ratings apply if herbicide is used according to label recommendations as to rate, time of application, etc., and favorable temperature and moisture conditions prevail.