

05-MAR-1998

(( BULK LABEL ))

DUAL(R) II

HERBICIDE

AGRICULTURAL

Emulsifiable Concentrate for Selective Weed Control

GUARANTEE:

metachlor 935 g/L

READ THE LABEL AND ATTACHED BOOKLET BEFORE USING

REGISTRATION NO.: 24792  
PEST CONTROL PRODUCTS ACT

Novartis Crop Protection Canada Inc.  
140 Research Lane  
Research Park, University of Guelph  
Guelph, Ontario  
N1G 4Z3

NOTICE TO USER:

This control product is to be used only in accordance with the directions on this label. It is an offence under the PEST CONTROL PRODUCTS ACT to use a control product under unsafe conditions.

NOTICE TO BUYER:

Seller's guarantee shall be limited to the terms set out on the label and subject thereto, the buyer assumes the risk to persons or property arising from the use or handling of this product and accepts the product on that condition.

FIRST AID:

This product contains a petroleum distillate.

If swallowed, do not induce vomiting. Obtain prompt medical attention or contact a poison control centre.

If in eyes, splash repeatedly with large amounts of clean water for at least 15 minutes. Obtain medical attention or contact a poison control centre.

If on skin, wash thoroughly with soap and water. If irritation occurs, obtain medical attention or contact a poison control centre.

NOTE: Metolachlor may cause skin sensitization reactions in certain individuals.

#### PRECAUTIONS:

KEEP OUT OF THE REACH OF CHILDREN. Harmful if swallowed. Avoid contact with eyes or prolonged contact with skin. Avoid inhalation of vapours or spray mist. Do not contaminate food, feed, domestic or irrigation water supplies, lakes, streams and ponds.

Wear a long-sleeved shirt and long pants during all activities. When handling the concentrate wear the previously mentioned clothing and chemical resistant gloves.

CAUTION: Do not graze the treated immature crop or cut for hay. In the case of corn, immature means before ear emergence. There are not sufficient data available to support such use. Do not harvest corn within 80 days of making a post-emergent application. Make only one application per season.

#### DECONTAMINATION AND DISPOSAL:

For information on the disposal of unused, unwanted product and the cleanup of spills, contact the Provincial Regulatory Agency or the manufacturer.

#### CONTAINER REFILLING OR DISPOSAL:

##### FOR REFILLABLE CONTAINERS:

If the container is to be refilled, do not rinse with any material or introduce any pesticide other than DUAL II. Reseal and return to the point of purchase for refilling. Before refilling, inspect thoroughly for damage such as cracks, punctures, bulges, dents, abrasions, and damaged or worn threads on closure devices. Check for leaks after filling and before transportation. Do not refill or transport damaged or leaking containers.

If the container is not being refilled, refer to the booklet section "FOR DISPOSAL OF 10 L JUGS" or contact the Provincial Regulatory Agency or the manufacturer.

IN CASE OF EMERGENCY INVOLVING A MAJOR SPILL, FIRE OR POISONING CALL 1-800-267-6351

(R) DUAL is a registered trademark of Novartis Crop Protection Canada Inc.

97.11.26

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Net Contents: 10 L

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NCPEL 479A 1297

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DECONTAMINATION AND DISPOSAL:

1. Thoroughly rinse the emptied container and add the rinsings to the spray mixture in the tank.
2. Follow provincial instructions for any required additional cleaning of the container prior to its disposal.
3. Make the empty container unsuitable for further use.

4. Dispose of the container in accordance with provincial requirements.
5. For information on the disposal of unused, unwanted product and the cleanup of spills, contact the Provincial Regulatory Agency or the manufacturer.

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(( PAMPHLET ))

DUAL(R) II

HERBICIDE

AGRICULTURAL

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Wear a long-sleeved shirt and long pants during all activities. When handling the concentrate wear the previously mentioned clothing and chemical resistant gloves.

CAUTION: Do not graze the treated immature crop or cut for hay. In the case of corn, immature means before ear emergence. There are not sufficient data available to support such use. Do not harvest corn within 80 days of making a post-emergent application. Make only one application per season.

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CROP INFORMATION:

Dual II provides selective weed control in:

Corn\* (hybrid, silage, seed, sweet)  
Soybeans  
Dry common beans (white, kidney, pinto)  
Snap common beans (yellow and green)  
Lima beans  
Potatoes  
Sugar beets  
Transplanted tomatoes  
Rutabagas  
Sweet white lupins  
Peas (grown for processing)  
Fruit trees (bearing and non-bearing)  
Second-year or older poplar stoolbeds  
Second-year or older transplant or seedling stock of:  
White Spruce, Norway Spruce, Black Spruce, White Pine, Jack Pine  
and Red Pine

\* Dual II contains benoxacor which has been shown to enhance metolachlor metabolism in corn. This enhanced metabolism can reduce the potential of metolachlor injury to corn seedlings when grown under unfavourable weather conditions such as cool temperature or water stress. Use of Dual II will not provide improved crop safety on other labelled crops.

WEEDS CONTROLLED:

American Nightshade <sup>1</sup>	Eastern Black Nightshade <sup>1</sup>	Fall Panicum
Yellow Nutsedge <sup>2</sup>	Crabgrass (smooth, hairy)	Old Witchgrass
Barnyard Grass	Redroot Pigweed <sup>3</sup> (suppression only)	
Foxtail (green, yellow, giant)		Fall Panicum

<sup>1</sup> Pre-emergent treatments sometimes give better control than pre-plant surface, pre-plant incorporated or post-emergent treatments.

<sup>2</sup> Pre-plant incorporated treatment only. Extended periods of dry hot weather following application may result in reduced nutsedge control.

<sup>3</sup> Pre-plant incorporated and pre-emergent treatments only.



TIMING OF APPLICATION:

EASTERN CANADA	PRAIRIES & INTERIOR B.C.	COASTAL B.C.
Pre-plant Surface or Pre-plant Incorporated or Pre-emergent or Early Post-emergent	Pre-plant Incorporated or Pre-emergent if irrigated within 10 days	Pre-emergent

APPLICATION INFORMATION

PRE-PLANT SURFACE APPLICATION:

- For minimum tillage (reduced tillage), and no-till (zero-till) systems in corn and soybeans.
- Applications may be made up to 30 days before planting.
- To the extent possible, do not move treated soil out of the row or move untreated soil to the surface during planting, or weed control will be diminished.

PRE-PLANT INCORPORATION:

- Immediate incorporation is not necessary.
- Incorporation equipment should include rolling or western harrows.
- On sandy soils, heavy rainfall following an incorporated treatment may cause leaching of the herbicide.

INCORPORATION INSTRUCTIONS

TYPE OF EQUIPMENT	MAXIMUM WORKING DEPTH	MINIMUM SPEED
"S" - Tine (Danish) cultivator	10 cm	10 km/hr
"C" - Tine cultivator with overlapping sweeps	10 cm	10 km/hr
Tandem disc (maximum 18 cm spacing between discs)	10 cm	6 km/hr
Power driven cultivator	5 cm	any
Mulch Master	5 cm	10 km/hr

Dual II may be applied as an overall spray or as a band treatment. For

band treatment a suitable press wheel mounted ahead of the nozzle should be used for levelling the band. For band application, use proportionately less material.

#### PRE-EMERGENT APPLICATION:

- Apply evenly to a firm, lump-free seed bed.
- Rain is required within 10 days or a shallow cultivation or use of a rotary hoe is necessary.
- Pre-emergent applications may also be made in reduced tillage, ridge tillage, and no-till systems in corn and soybeans.
- Minimize exposure of untreated soil when cultivating or fertilizing.

#### EARLY POST-EMERGENT APPLICATION:

- CORN ONLY
- Apply when corn is in the spike to 2-leaf stage and before weeds pass the 2-leaf stage.
- Some leaf burn may occur but yield will not be affected.
- DO NOT tank-mix Dual II with fluid fertilizers, oils, oil concentrates or surfactants when applying post-emergent, as severe crop injury will result.
- Do not graze/feed or harvest corn within 80 days of making a post-emergent application.

#### CAUTION:

Do not apply to soils that contain less than 1% or more than 10% organic matter. Winter cereals may be planted 4 1/2 months following application. If drought conditions persist after either a pre-plant surface, pre-plant incorporated or pre-emergent application, annual grass control may not be adequate.

#### LIQUID FERTILIZERS:

Nitrogen solutions or complete liquid fertilizers may replace water as a carrier for pre-plant surface, preplant incorporated or pre-emergent application of Dual II alone or in tank mixes in corn. Do not use fertilizer solutions for post-emergent applications. Always predetermine the compatibility of Dual II or labelled Dual II tank mixes with your water or liquid fertilizer carrier by mixing small proportional quantities in advance. Always consult the label of the tank mix partner if tank mixtures are to use liquid fertilizer as the carrier.

#### DRY BULK GRANULAR FERTILIZERS:

Many dry bulk granular fertilizers may be impregnated with Dual II plus Aatrex(R) for pre-plant incorporated application to control weeds in corn. Prepare the herbicide/fertilizer mixtures by using any commonly used dry bulk fertilizer blender. Spray herbicide mixture uniformly onto fertilizer. If the herbicide/fertilizer mixture is too wet, the use of a highly absorptive powder (generally less than 2% by weight) such as Microcel E, diatomaceous earth or finely powdered clay is recommended.

For best results, apply Dual II or Dual II plus AAtrex/fertilizer mixtures uniformly to the soil with properly calibrated equipment immediately after blending and incorporate according to label directions.

NOTE: Apply a minimum of 225 kg per hectare of dry granular fertilizer impregnated with recommended rates of Dual II alone or Dual II tank mixtures.

Do not impregnate Dual II alone or with AAtrex onto nitrate fertilizers, superphosphates, or limestone.

#### MIXING AND SPRAYING INSTRUCTIONS:

Spray Pressure - 200 - 300 kPa

Spray Volume - minimum 150 litres per hectare. The use of higher water volumes and larger spray tip sizes will generally increase spray deposition and reduce drift.

Keep bypass line at bottom of tank to minimize foaming.

Use 16 mesh suction screens, 50 mesh line and tip screens.

1. Fill sprayer 1/2 full of carrier. Start gentle agitation.
2. Add wettable powder or wettable granule tank-mix partner, if applicable. Slurry with water first if using liquid fertilizers as the carrier.
3. Add liquid flowable tank-mix partner, if applicable, and agitate thoroughly.
4. Fill tank 9/10 full of carrier and add Dual II and other emulsifiable concentrate or solution tank-mix partners.
5. Top off tank with carrier, maintain agitation and spray.
6. Do not let stand without agitation.
7. Sprayer equipment should be thoroughly flushed with clean water and drained before and after use of Dual II and its tank mixes.

NOTE: If using Fieldstar (TM) ensure that the water soluble packets and the Fieldstar are completely dissolved before proceeding to the next

step.

CORN

TANK MIXTURES (EASTERN CANADA ONLY):

TIMING	WEEDS CONTROLLED	RATE/HA DUAL II (1)	RATE PER HECTARE/TANK MIX PARTNER (2)
Pre-plant Surface (up to 30 days before planting)	Annual Grasses and Broadleaf Weeds (3)	2.0-2.75 L	+1.1-1.7 kg AAtrex Nine-O(R) or 216 g Fieldstar (4) or Aatrex Liquid 480 2.1-3.1L
	Annual Grasses, Emerged Annual or Perennial Weeds	2.0-2.75 L	+Roundup(R) (5)
	Annual Grasses, Broadleaf Weeds, Emerged Annual or Perennial Weeds	2.0-2.75 L	+Roundup (5,6) +1.1-1.7 kg, AAtrex Nine-O or 2.1-3.1 L AAtrex Liquid 480
Pre-plant Incorporated	Nutsedge, Annual Grasses	2.0-2.75 L	Dual II applied alone
	Nutsedge, Annual Grasses and Broadleaf Weeds	2.0-2.75 L	+1.1-1.7 kg AAtrex Nine-O or 2.1-3.1 L AAtrex Liquid 480 or 216 g Fieldstar
Pre-emergent	Annual Grasses	2.0-2.75 L	Dual II applied alone
	Annual Grasses and Broadleaf Weeds	2.0-2.75 L	+1.1-1.7 kg AAtrex Nine-O or 2.1-3.1 L AAtrex Liquid 480

	Annual Grasses and Broadleaf Weeds including triazine tolerant weeds	2.0-2.75 L	+1.25 L Banvel(R) 480 (7) or 3.7-4.5 L Marksman(R) (8) or 1.1-1.7 kg AAtrex Nine-O plus 1.25 L Banvel 480 (7) or 2.1-3.1 L AAtrex Liquid 480 plus 1.25 L Banvel 480 (7) or 216 g Fieldstar
	Annual Grasses, Emerged Annual or Perennial Weeds	2.0-2.75 L	+Roundup (5)
	Annual Grasses, Broadleaf Weeds, Emerged Annual or Perennial Weeds	2.0-2.75 L	+Roundup (5,6) +1.1-1.7 kg AAtrex Nine-O or 2.1-3.1 L AAtrex Liquid 480
Early Post-Emergent	Annual Grasses	2.0-2.75 L	Dual II applied alone
	Annual Grasses and Broadleaf Weeds	2.0-2.75 L	+1.1-1.7 kg AAtrex Nine-O or 2.1-3.1 L AAtrex Liquid 480
	Annual Grasses and Broadleaf Weeds including triazine tolerant weeds	2.0-2.75 L	+3.7-4.5 L Marksman (8) or 0.6-1.25 L Banvel 480 (7) or 1.2 kg AAtrex Nine-O plus 0.6-1.25 L Banvel 480 (7) or 2.3 L AAtrex Liquid 480 plus 0.6-1.25 L Banvel 480 (7)

1. Use the higher rate of Dual 11 for heavier weed populations.
2. Consult the label of the product(s) to be tank mixed with Dual II for specific instructions regarding broad-leafed weeds, soil-type variations, and rotational crop, grazing or other restrictions.
3. Apply pre-plant surface applications of Dual II plus AAtrex only when emerged annual weeds are less than 6 cm tall. If emerged

annual weeds are taller than 6 cm apply Roundup prior to the tank mix application or make an application of a 3-way tank mix of Dual II plus AAtrex plus Roundup. Consult the tank mix partner label for specific instructions regarding precautions, restrictions, recommended rates and additives.

4. Annual broadleaved weeds beyond the 2-leaf stage of growth will not be controlled by surface pre-plant applications of Dual II and Fieldstar.
5. Perennial weeds, such as quackgrass, may not be controlled with lower rates of Roundup. Use higher rates of Roundup when perennial weeds are present.
6. It is recommended that liquid formulations of products be used when tank mixing with Roundup. Consult the Roundup label for specific instructions regarding precautions, restrictions, recommended rates and additives.
7. DO NOT USE TANK MIXES CONTAINING BANVEL ON SWEET CORN.
8. Use the lower rate of Marksman on sand or sandy loam soil and the higher rate on loam or clay soils.

NOTES for Pre-plant Surface and Pre-emergent Applications Only:

For improved burndown of small emerged annual weeds, the following additives may be applied in mixtures of Dual II with AAtrex Nine-0 or AAtrex Liquid 480:

- Crop Oil, 28-0-0 or 10-34-0 at 5% v/v
- Crop oil concentrate 1% v/v
- Non-ionic surfactant at 0.1 % v/v New P If annual weeds are larger or perennial weeds are present, use Roundup in the tank mix (See preceding table).

TANK MIXTURES (WESTERN CANADA ONLY):

TIMING	WEEDS CONTROLLED	RATE/HA DUAL II (1)	RATE PER HECTARE/TANK MIX PARTNER (2)
Pre-Plant Incorporated	Green and Yellow Foxtail, Barnyard Grass and Broadleaf Weeds	2.0-2.75 L	+1.1-1.7 kg AAtrex Nine-0 or 2.1-3.1 L AAtrex Liquid 480
Pre-emergent with irrigation	Green and Yellow Foxtail, Barnyard Grass and Broadleaf Weeds	2.0-2.75 L	+1.1-1.7 kg AAtrex Nine-0 or 2.1-3.1 L AAtrex Liquid 480

- 1 Use the higher rate of Dual II for heavier weed problems.
- 2 Consult the label of the product to be tank mixed with Dual II for specific instructions regarding soil-type variations and other restrictions.

#### SOYBEANS

##### TANK MIXTURES:

TIMING	WEEDS CONTROLLED (1)	RATE/HA DUAL II (2)	RATE PER HECTARE/TANK MIX PARTNER (3)
Pre-plant Surface (up to 30 days before planting)	Annual Grasses and Broadleaf Weeds including Nightshade (4)	1.75-2.75 L	+1.0-2.2 L Sencor(R) 500F or 670 g - 1.45 kg Sencor 75DF or 670 g -1.45 kg Lexone(R) DF
	Annual Grasses, Nightshade, Emerged Annual or Perennial Weeds	1.75-2.75 L	+Roundup (5)

	Annual Grasses, Broadleaf Weeds including Nightshade, Emerged Annual or Perennial Weeds	1.75-2.75 L	+Roundup (5,6) +1.0-2.2 L Sencor 500F or 670 g - 1.45 kg Sencor 75DF or 670 g - 1.45 kg Lexone DF
Pre-plant Incorporated	Nutsedge, Annual Grasses and Nightshade	1.75-2.75 L	Dual II applied alone
	Nutsedge, Annual Grasses and Broadleaf Weeds including Nightshade	1.75-2.75 L	+550 - 750 g Sencor 75DF or 850 mL - 1.75 L Sencor 500F or 540 - 640 g Lexone DF or 312 mL Pursuit(R) (7)
Pre-emergent	Annual Grasses and Nightshade	1.75-2.75 L	Dual II applied alone
	Annual Grasses and Broadleaf Weeds including Nightshade	1.75-2.75 L	+850 mL - 2.25 L Sencor 500F or 550 - 750 g Sencor 75DF or 540 - 960 g Lexone DF or 1.6 - 2.5 L Afolan(R) F or 1.9 - 2.3 L Lorox(R) L or 1.75 - 2.25 kg Lorox DF or 3.0 - 4.0 L Patoran(R) 400SC or 5.5-8.5 L Afesin(R) 200EC or 312 - 420 mL Pursuit (7)
	Annual Grasses, Nightshade, Emerged Annual or Perennial Weeds	1.75-2.75 L	+Roundup (5)



	Annual Grasses, Broadleaf Weeds including Nightshade, Emerged Annual or Perennial Weeds	1.75-2.75 L	+Roundup (5,6) +850 mL - 2.25 L Sencor 500F or 550 - 750 g Sencor 75DF or 540 - 960 g Lexone DF or 312 - 420 mL Pursuit (7)
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- 1 For optimum nightshade control, use the higher rate of Dual II applied pre-emergently and choose tank-mix partner which is also registered for the control of nightshade.
- 2 Use the higher rate of Dual II for heavier weed problems. For redroot pigweed suppression, apply a minimum of 2.0 L of DUAL II per hectare.
- 3 Consult the label of the product(s) to be tank mixed with Dual II for specific instructions regarding broad-leafed weeds, soil-type variations and rotational crop, grazing or other restrictions.
- 4 Apply pre-plant surface applications of Dual II plus Sencor or Dual II plus Lexone only when emerged annual weeds are less than 6 cm tall. If emerged annual weeds are taller than 6 cm apply Roundup prior to the tank mix application or make an application of a 3-way tank mix of Dual II plus Roundup plus Sencor or Lexone. Consult the tank mix partner label for specific instructions regarding precautions, restrictions, recommended rates and additives.
- 5 Perennial weeds, such as quackgrass, may not be controlled with lower rates of Roundup. Use higher rates of Roundup when perennial weeds are present.
- 6 It is recommended that liquid formulations of products be used when tank mixing with Roundup. Consult the Roundup label for specific instructions regarding precautions, restrictions, recommended rates and additives.
- 7 Do not apply Pursuit as a pre-plant incorporated application more than one year in sequence. Only soybeans, field corn, spring barley, spring wheat and winter wheat may be planted the season following application of Pursuit. Winter wheat should not be planted within 120 days of the application of Pursuit.

CAUTION: Soybeans should be seeded at least 4 cm deep or crop injury may result. Do not apply Dual II if soybeans have emerged.

Notes for Pre-plant Surface and Pre-emergent Applications ONLY:  
 For improved burndown of small emerged annual weeds, the following additives may be applied in mixtures of Dual II with Sencor 500F, Sencor 75DF, Lexone DF, or Pursuit:

- Crop oil, 28-0-0, or 10-34-0 at 5% v/v
- Crop oil concentrate at 1 % v/v
- Non-ionic surfactant at 0.1 % v/v

If annual weeds are larger perennial weeds are present use Roundup in the tank mix (See preceding table).

OTHER BEANS

SNAP COMMON BEANS (Yellow and Green Only)  
 DRY COMMON BEANS (White, Kidney and Pinto only)  
 AND LIMA BEANS

Eastern Canada and B.C.

SPLIT APPLICATION ONLY:

WEEDS CONTROLLED	RATE PER HECTARE DUAL II (1)	RATE PER HECTARE PATORAN (2)
Nutsedge, Annual Grasses and Broadleaf Weeds	1.75-2.75 L Pre-plant Incorporation	Pre-Emergent Only 2.5-3.5 L Patoran 400SC

- 1 Use the higher rate of Dual II for heavier weed problems. For redroot pigweed suppression apply a minimum of 2.0 L of Dual II per hectare.
- 2 Rates of Patoran are soil-type dependent. Refer to the Patoran label for special instructions regarding soil-type variations.

CAUTION: Beans should be seeded at least 4 cm deep or crop injury may result. Do not apply Dual II as a pre-emergent spray. Do not incorporate Dual II plus Patoran. Do not tank mix Dual II with Patoran.

POTATOES

TANK MIXTURES:

TIMING	WEEDS CONTROLLED	RATE/HA DUAL II (1)	RATE PER HECTARE/TANK MIX PARTNER (2)
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Pre-plant Incorporated	Nutsedge, Annual Grasses and Broadleaf Weeds	2.0-2.75 L	+750 g - 1.5 kg Sencor 75DF or 1.1 - 2.25 L Sencor 500F or 830 g - 1.2 kg Lexone DF
Pre-emergent	Annual Grasses and Broadleaf Weeds	2.0-2.75 L	+1.6 - 2.5 L Afolan F or 750 g - 1.5 kg Sencor 75DF or 1.1-2.25 L Sencor 500F or 830 g - 1.2 kg Lexone DF or 1.9 - 2.3 L Lorox L or 3.0 - 4.0 L Patoran 400SC or 1.75 - 2.25 kg Lorox DF or 5.5 - 8.5 L Afesin 200EC

- 1 Use the higher rate of Dual II for heavier weed problems.
- 2 Consult the label of the product to be tank mixed with Dual II for specific instructions regarding soil-type variations and special restrictions.

CAUTION: Do not apply Dual II at ground crack or if potatoes have emerged. Do not use on the variety Superior.

#### SUGAR BEETS

##### TIMING OF APPLICATION:

Dual II can be applied as:

1. a pre-plant incorporated spray in tank mix combination with Pyramin, or,
2. a pre-emergent spray in tank mix combination with Pyramin(R), or,
3. a pre-plant incorporated spray, followed by a pre-emergent spray of Pyramin.

RATE PER HECTARE Dual II (1)	RATE PER HECTARE/TANK MIX PARTNER (2)
2.0 - 2.75 L	8.25 - 10.25 L Pyramin FL 430 g/L

- 1 Use the higher rate of Dual II for heavier weed problems.
- 2 Consult the Pyramin FL label for specific instructions regarding soil-type variations and other restrictions.

TRANSPLANTED TOMATOES - GROWN FOR PROCESSING

TANK MIXTURES:

TIMING	WEEDS CONTROLLED	RATE/HA DUAL II (1)	RATE PER HECTARE/TANK MIX PARTNER (2)
Pre-plant Incorporated	Annual Nightshades (American Nightshade, Eastern Black Nightshade), Nutsedge, Annual Grasses and Broadleaf Weeds	2.0-2.75 L	+0.5 - 1.4 L Sencor 500F

- 1 Use the higher rate of Dual II for heavier weed problems.
- 2 Consult the label of the product to be tank mixed with Dual II for specific instructions regarding weeds, rates, soil-type and organic matter variations and other restrictions.

CAUTION: DO NOT APPLY DUAL II ON DIRECT-SEEDED TOMATOES.

NOTE: DUAL II MAY DAMAGE TRANSPLANTS THAT HAVE BEEN WEAKENED BY ANY CAUSE RESULTING IN REDUCED CROP YIELD. TO PREVENT DAMAGE, PLANT ONLY HEALTHY TRANSPLANTS; DO NOT PLANT WHEN WET, COOL OR UNFAVOURABLE GROWING CONDITIONS EXIST. FOLLOW ALL APPLICATION AND INCORPORATION DIRECTIONS EXACTLY.

RUTABAGAS (EASTERN CANADA ONLY)

TIMING OF APPLICATION:

Dual II can be applied either as:

1. a pre-plant incorporated spray, or,
2. a pre-emergent spray

RATES PER HECTARE DUAL II (1)
2.0 - 2.75 L

1 Use the higher rate of Dual II for heavier weed problems.

To control nutsedge, Dual II must be applied as a pre-plant incorporated spray.

SWEET WHITE LUPINS

WEEDS CONTROLLED	TIMING	RATE/HA (1)	REMARKS
Annual Grasses	Pre-emergent	Dual II 1.7-2.7 L	Make one treatment per year with ground application equipment. Apply in 200 - 300 L of total volume per hectare.

1 Use the higher rate of Dual II for heavier weed problems. For redroot pigweed suppression apply a minimum of 2.0 L of Dual II per hectare.

TANK MIXTURE (EASTERN CANADA ONLY)

WEEDS CONTROLLED	TIMING	RATE/HA (1)
Annual Grasses and Broadleaf Weeds including Nightshade (3)	Pre-emergent	Dual II (2) 1.7-2.7 L plus Lorox DF 2.0 - 3.0 kg
Annual Grasses and Broadleaf Weeds including Nightshade (3,4)	Pre-emergent	Dual II (2) 1.67-2.7 L plus Patoran 400SC 2.5-3.75 L

REMARKS:

Make one treatment per year using ground application equipment. Apply in 200 - 300L of water/ha. Do not spray after lupins have emerged. Lupins should be planted at least 5 cm deep. Use the lower rate of Lorox DF on light coloured soils with less than 2% organic matter. Do not harvest lupins within 80 days of treatment.

1 Consult the label of the product to be tank mixed with Dual II for additional specific instructions regarding broadleaf weeds, soil-type variations and rotational crop, grazing or other

restrictions.

- 2 Use the higher rate of Dual II for heavier weed problems. For redroot pigweed suppression apply a minimum of 2.0 L of Dual II per hectare.
- 3 For optimum nightshade control, use the higher rate of Dual II.
- 4 Some crop injury may be observed after treatment with the Dual II + Patoran 400SC tankmix, but the crop will recover.

#### SWEET WHITE LUPINS

#### TANK MIXTURE (MARITIMES ONLY)

WEEDS CONTROLLED	TIMING	RATE/HA (1)
Annual Grasses and Broadleaf Weeds including Nightshade (3)	At planting or Pre-emergent	Dual II (2) 1.7-2.7 L plus Sencor DF 670 g

#### REMARKS:

Make one application per year. Apply as a broadcast spray during planting or as a separate operation after planting but before the crop has emerged. Lupin seed must be planted at least 4 cm below the soil surface. Do not apply to sandy or light soils with less than 2% organic matter or to muck soils. Better weed control will be obtained if light rainfall or irrigation follows application.

Rotational crops such as onions, celery, peppers, cole crops, lettuce, spinach, sugar beets, table beets, turnips, pumpkins, squash, cucumbers and melons, tobacco and non-triazine tolerant canola are sensitive to Sencor and may be injured planted into soil treated with Sencor during the year of application and the following year. After-harvest tillage practices which provide thorough mixing of the soil may be helpful in reducing the possibility of injury to succeeding crops. Do not use treated vines for feed and forage.

- 1 Consult the label of the product to be tank mixed with Dual II for additional specific instructions regarding broadleaf weeds, soil-type variations and rotational crop, grazing or other restrictions.
- 2 Use the higher rate of Dual II for heavier weed problems. For redroot pigweed suppression apply a minimum of 2.0 L of Dual II per hectare.
- 3 For optimum nightshade control, use the higher rate of Dual II.

FIRST-YEAR (NON-BEARING) APPLE, APRICOT, SWEET & SOUR CHERRY, PEACH  
PEAR, PLUM TREES

TIMING	WEEDS CONTROLLED	RATE/HA	REMARKS
Post planting, pre-emergent to weeds	Annual Grasses and Broadleaf Weeds (Late- season emerging fall panicum and crabgrass may not be controlled by this treatment)	Dual II (1) 2.0- 2.75 L plus Princep Nine-T (1)1.1-2.2 kg	Apply once per year. Avoid contact with trunk and leaves of trees. Do not use on sandy soils with less than 2% organic matter. Best results are obtained with applications made after rain has settled the soil around trees. Back pack sprayer or tractor mounted boom sprayer may be used to apply.

- 1 Use the higher rate of Dual II and Princep Nine-T for heavier weed problems.

ESTABLISHED (BEARING) APPLE, APRICOT, SWEET & SOUR CHERRY, PEACH, PEAR,

PLUM TREES

TIMING	WEEDS CONTROLLED	RATE/HA	REMARKS
Post planting, pre-emergent to weeds	Annual Grasses	Dual II 2.75 L	Apply once per year as a band treatment under the tree (s). Avoid contact with trunk and leaves of tree (s). Do not use on sandy soils with less than 2% organic matter. Back pack sprayer or tractor mounted boom sprayer may be used to apply.
	Annual Grasses and Broadleaf Weeds (Late-season emerging fall panicum and crabgrass may not be controlled by this treatment)	Dual II 2.75 L plus Princep Nine-T 2.5 kg	
	Annual Grasses and Broadleaf Weeds	Dual II 2.75 L plus Lexone DF 1.0 kg	

SECOND-YEAR OR OLDER WHITE SPRUCE, NORWAY SPRUCE, BLACK SPRUCE, WHITE PINE, JACK PINE AND RED PINE TRANSPLANT OR SEEDLING STOCK AND POPLAR STOOLBEDS.

TIMING	WEEDS CONTROLLED	RATE/HA	REMARKS
Pre-emergent or early post-emergent to weeds	Annual grasses and broadleaf weeds	Dual II (1) 2.0-2.7 L	Apply to spruce and pine in forest tree nurseries prior to budbreak. DO NOT APPLY DUAL II WITHIN 4 WEEKS AFTER BURST OR UNTIL THE NEEDLES HAVE HARDENED. May be applied as a pre-emergent or early post-emergent application to weeds before they pass the 2 leaf stage. For Poplar Stoolbeds, apply to dormant and flushing stoolbeds.

1 Use the higher rate of Dual II for heavier weed problems.



PROCESSING PEAS (Eastern Canada only)

TIMING	WEEDS CONTROLLED	RATE (1)/HA DUAL II	REMARKS
Pre-emergent	Eastern Black Nightshade, Annual Grasses	2.0-2.75 L	Make one application per year. Apply in 150-250 L water/ha. Apply by ground application equipment only.

1 Use the higher rate of Dual II for heavier weed problems.

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Consult the label of products to be tank mixed or split applied with Dual II for specific crop recommendations.

ADHERE TO THESE PRODUCT LABELS FOR BROADLEAF WEEDS CONTROLLED, PRECAUTIONS, WARNINGS, RESTRICTIONS, TANK MIXING AND SPRAYING INSTRUCTIONS, ROTATIONAL CROPS AND DETAILED DIRECTIONS FOR USE REGARDING DOSAGE VARIATIONS ACCORDING TO SOIL TYPE

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