

GROUP	15	HERBICIDE
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Mestalin Herbicide

COMMERCIAL - AGRICULTURAL

Emulsifiable Concentrate for Selective Weed Control

ACTIVE INGREDIENT:

S-Metolachlor*915 g/L

* and R-enantiomer

READ THE LABEL AND ATTACHED BOOKLET BEFORE USING

WARNING: EYE AND SKIN IRRITANT

REGISTRATION NO.: **35759**

PEST CONTROL PRODUCTS ACT

NET CONTENTS: **1L – 1000L**

Zhongshan Chemical Canada Corp.
411 Mackay Street
Apartment # 811
Ottawa ON K1M 2K5
Tel. +16137472870

LABEL

1.0 NOTICE TO USER

This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *Pest Control Products Act* to use this product in a way that is inconsistent with the directions on the label.

2.0 FIRST AID

IN CASE OF POISONING, contact a physician or a poison control centre **IMMEDIATELY**. Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

IF SWALLOWED, call a poison control centre or doctor immediately for treatment advice. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give **any** liquid to the person. Do not give anything by mouth to an unconscious person.

IF IN EYES, hold eye open and rinse slowly and gently with water for 15–20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control centre or doctor for treatment advice.

IF ON SKIN OR CLOTHING, take off contaminated clothing. Rinse skin immediately with plenty of water for 15–20 minutes. Call a poison control centre or doctor for treatment advice.

IF INHALED, move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control centre or doctor for further treatment advice.

NOTE: This product may cause skin sensitization reactions in certain individuals.

3.0 TOXICOLOGICAL INFORMATION

If swallowed, there is no specific antidote. Treat symptomatically. If a large amount has been ingested and emesis has been inadequate, lavage stomach. The active ingredient in this product, S-Metolachlor, has a high affinity for activated charcoal. A suspension of activated charcoal in water can be given to absorb the remaining toxicant. Skin reactions have been treated with antihistamines and ointments containing an anti-inflammatory agent.

This product contains a petroleum distillate.

4.0 PRECAUTIONS

KEEP OUT OF THE REACH OF CHILDREN. May irritate the skin. Avoid contact with skin. Causes eye irritation. DO NOT get in eyes. 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.

Restricted Entry Interval (REI): DO NOT enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

Apply only when the potential for drift beyond the area to be treated is minimal. Take into consideration wind speed, wind direction, temperature inversions, application equipment, and sprayer settings.

DO NOT APPLY BY AIR.

If this pest control product is to be used on a commodity that may be exported to other countries in the world and you require information on acceptable residue levels in these countries, please contact Zhongshan Chemical Canada Corp. at +16137472870.

CAUTION: Do not graze treated immature crops or cut for hay. In the case of corn, immature means before ear emergence. Do not harvest sweet corn within 45 days of application. Do not harvest other corn within 80 days of making a post-emergent application. Make only one application per season.

5.0 PERSONAL PROTECTIVE EQUIPMENT

Wear coveralls over a long-sleeved shirt, long pants, chemical-resistant gloves, socks and chemical-resistant shoes during mixing, loading, application, clean-up and repair. In addition, wear protective eyewear (goggles or face shield) during mixing, loading, clean-up and repair. Gloves are not required during application within a closed cab. Avoid breathing vapours or spray mist. If ventilation is not adequate, wear an appropriate pesticide respirator.

Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Wash splashes from skin IMMEDIATELY with plenty of water. Remove PPE immediately after handling this product. Wash the outside of gloves with soap and water before removing. As soon as possible, wash thoroughly and change into clean clothing. After spraying, wash hands and shower thoroughly with soap and water.

Heavily contaminated or drenched clothing and other absorbent materials contaminated with this product should be discarded. Do not reuse them.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Store and wash PPE separately from other laundry.

Wear freshly laundered clothes daily.

Do not wear contaminated shoes.

Do not eat, drink, smoke or apply cosmetics in areas where there is potential for exposure to this product. Wash hands and face before eating, drinking, smoking or using the toilet.

6.0 ENVIRONMENTAL PRECAUTIONS

Toxic to aquatic plants and non-target terrestrial plants. Observe spray buffer zones specified under DIRECTIONS FOR USE.

To reduce runoff from treated areas into aquatic habitats, avoid application to areas with a moderate to steep slope, compacted soil, or clay.

Avoid application when heavy rain is forecast.

Contamination of aquatic areas as a result of runoff may be reduced by including a vegetative filter strip between the treated area and the edge of the water body. Additional guidance can be found on the Runoff Mitigation portion of the Canada.ca website.

For the protection of aquatic plants, overspray or drift to important wildlife habitats such as wetlands, sloughs or dry slough borders and water bodies should be avoided. Leave a spray buffer zone of 29 metres between the last spray swath and the edge of any of these habitats. Drift to emerging vegetation or newly emerged vegetation in shelterbelts or woodlots should be avoided. When tank mixes are permitted, consult the labels of the tank mix partners and observe the largest (most restrictive) spray buffer zone of the products involved in the tank mixture and apply using the coarsest spray (ASABE) category indicated on the labels for those tank mix partners.

This product contains aromatic petroleum distillates, which are toxic to aquatic organisms. Avoid contamination of aquatic systems during application. Do not contaminate these systems through direct application, disposal of waste or cleaning equipment.

7.0 STORAGE

Keep in original container, tightly closed, during storage. Store in a cool, dry, well-ventilated and secure area out of the reach of children, unauthorized persons and animals. Store this product away from seed, foodstuffs, feed, fertilizer and beverages and tobacco. Keep away from fire or open flame, or other sources of heat. This product does not require heated storage.

8.0 DISPOSAL

Disposal of unused, unwanted product: For information on disposal of unused, unwanted product, contact the registrant or the provincial or territorial regulatory agency. Contact the registrant and the provincial or territorial regulatory agency in case of a spill, and for cleanup of spills.

Recyclable Containers

Disposal of container: DO NOT reuse this container for any purpose. This is a recyclable container, and is to be disposed of at a container collection site. Contact your local distributor/dealer or municipality for the location of the nearest collection site. Before taking the container to the collection site:

1. Triple- or pressure-rinse the empty container. Add the rinsings to the spray mixture in the tank.
2. Make the empty, rinsed container unsuitable for further use.

If there is no container collection site in your area, dispose of the container in accordance with provincial or territorial requirements.

Refillable Containers

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BOOKLET

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9.0 PRODUCT INFORMATION

Mestalin Herbicide provides selective weed control in corn, soybeans, dry common beans and other labelled crops.

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

9.1 Weeds Controlled

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

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

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

³ Pre-plant incorporated and pre-emergent treatments only.

10.0 DIRECTIONS FOR USE**10.1 General Information**

As this product is not registered for the control of pests in aquatic systems, DO NOT use to control aquatic pests.

DO NOT contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.

This product may be tank mixed with a fertilizer, a supplement, or with registered pest control products, whose labels also allow tank mixing, provided the entirety of both labels, including Directions For Use, Precautions, Restrictions, Environmental Precautions, and Spray Buffer Zones are followed for each product. In cases where these requirements differ between the tank

mix partner labels, the most restrictive label must be followed. Do not tank mix products containing the same active ingredient unless specifically listed on this label.

In some cases, tank mixing pest control products can result in reduced pesticide efficacy or increased host crop injury. The user should contact Zhongshan Chemical Canada Corp. at +16137472870 for information before applying any tank mix that is not specifically recommended on this label.

10.2 Application Information

Field sprayer application: **DO NOT** apply when wind speed is less than 1 km/h. Avoid application of this product when winds are gusty. **DO NOT** apply with sprays finer than the American Society of Agricultural and Biological Engineers (ASABE) S572 (572.1 to 572.3) fine classification. Boom height must be 60 cm or less above the crop or ground.

DO NOT APPLY BY AIR.

10.2.1 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.

10.2.2 Pre-Plant Incorporation Application

- 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

10.2.3 Pre-Emergent Application

- Apply evenly to a firm, lump-free seed bed.
- If an activating rain (>1.25 cm) is not received within 7-10 days after a pre-emergent application, cultivate or use other weed control measures if weeds develop.
- 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.

10.2.4 Post-Emergent Application

- CORN ONLY.
- Apply when corn is in the spike to 6-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 Mestalin Herbicide with fluid fertilizers, oils, oil concentrates or surfactants when applying post-emergent.
- Do not graze treated immature crops or cut for hay. Do not harvest sweet corn within 45 days of application. Do not harvest other 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.

10.2.5 Liquid Fertilizers

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

10.3 Mixing Instructions

1. Ensure that the sprayer interior is clean, then fill the spray tank with ½ the required amount of carrier and engage gentle agitation. Good agitation is indicated by a rippling or rolling action on the surface of the water.
2. Add any WG or DF formulation mix partners and agitate to ensure complete mixing.
3. Add any SE or SC formulation mix partners and agitate to ensure complete mixing.
4. Add Mestalin Herbicide and any other EC formulations and agitate to ensure complete mixing.
5. Fill the tank to ¾ the required amount of water.
6. Add any solution (SN or SL) formulation mix partners and agitate to ensure complete mixing.
7. Finish filling the sprayer with carrier, maintaining good agitation.

8. Always ensure that agitation is maintained until spraying is completed. After any break in spraying operations, agitate thoroughly before spraying again. Reduce agitation once tank volume is reduced to about one third of capacity.
9. Do not mix, load or clean spray equipment where there is a potential to contaminate wells or aquatic systems.

When using chemical handling equipment to fill the sprayer, the following additional recommendations apply:

- WG and DF formulations are preferentially batch mixed.
- SC, SN, and SL formulations may be inducted or batch mixed.
- EC formulations are preferentially batch mixed.

10.4 Spraying Instructions

1. Carrier Volume: Apply in a minimum spray volume of 150 L/ha OR the volume given in the crop and pest specific instructions tabulated below, whichever is LARGER.
2. Sprayer Agitation: Use a jet agitator or liquid sparge tube which recirculates 7-10% of the tank per minute. DO NOT use an air sparger.
3. Pump: Screens should be used to protect the pump and prevent clogging. Use 16 mesh or coarser screens on the suction side of the pump. DO NOT place a screen in the recirculation line. Use 50 mesh or coarser screens between the pump and boom unless directed otherwise by the sprayer manufacturer.
4. Spray Nozzles: 80° or 110° drift reducing flat fan (e.g. those with a pre-orifice or turbulence chamber) or air induction nozzles are recommended. Use 50 mesh or coarser nozzle screens or as recommended by the nozzle manufacturer. DO NOT use flood type nozzles, controlled droplet application equipment, spray foils or hollow cone nozzles.
5. Pressure: As recommended by the nozzle manufacturer to achieve no finer than ASABE 572.1 medium sized droplets.
6. Apply at uniform speed and avoid overlapping. Shut off spray boom while starting, turning, slowing or stopping to avoid potential crop injury from over application.

10.5 Equipment Clean-Up

To avoid subsequent injury to other crops, thoroughly clean application equipment immediately after spraying each day. Ensure that all traces of the product are removed. Do not allow residue to dry in spray tank. Do not allow solution to remain in lines or tank overnight.

When using tank mixes, consult the tank mix partner label for additional clean-up instructions. The following recommendations are provided:

1. Drain and flush tank walls, boom and all hoses for ten minutes with a clean water/detergent mixture. Rinse with clean water. **DO NOT** clean application equipment near desirable vegetation, wells or other water sources.
2. Remove all nozzles and screens and wash separately.
3. Dispose of all rinsate in accordance with provincial regulations.

10.6 Spray Buffer Zones

A spray buffer zone of 29 metres is required between the point of direct application and the closest downwind edge of sensitive terrestrial habitats (such as grasslands, forested areas, shelter belts, woodlots, hedgerows, riparian areas and shrublands), sensitive freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs and wetlands) and estuarine/marine habitats.

A spray buffer zone is NOT required for:

- uses with hand-held application equipment permitted on this label,
- low-clearance hooded or shielded sprayers that prevent spray contact with crop, fruit or foliage,
- soil drench or soil incorporation.

The spray buffer zones specified in the table below are required between the point of direct application and the closest downwind edge of sensitive terrestrial habitats (such as grasslands, forested areas, shelter belts, woodlots, hedgerows, riparian areas and shrublands), sensitive freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs and wetlands) and estuarine/marine habitats.

Method of Application	Crop/Site	Spray Buffer Zones (metres) Required for the Protection of:				
		Freshwater Habitat of Depths:		Estuarine/Marine Habitat of Depths:		Terrestrial Habitat:
		Less than 1 m	Greater than 1 m	Less than 1 m	Greater than 1 m	
Field sprayer	Caneberries	10	4	1	1	20

When tank mixes are permitted, consult the labels of the tank mix partners and observe the largest (most restrictive) spray buffer zone of the products involved in the tank mixture and apply using the coarsest spray (ASABE) category indicated on the labels for those tank mix partners.

The spray buffer zones for this product for conventional application equipment can be modified based on weather conditions and spray equipment configuration by accessing the Spray Buffer Zone Calculator on the Drift Mitigation portion of the Canada.ca website.

10.7 Spray Drift Management and Application Requirements

Use good pesticide practices and apply only when the potential for drift beyond the area to be treated is minimal. Take into consideration wind speed, wind direction, temperature inversions, application equipment, and sprayer settings.

For the protection of non-target habitats, over-spray or drift to any body of water or other environmentally sensitive habitat must be avoided. The interaction of equipment and weather-related factors determines the potential for spray drift. The applicator is responsible for considering all these factors when making application decisions.

10.8 Rotational Crop Restrictions

Crop, Crop Group, or Crop Subgroup	Plant-back Interval
Winter Cereals	4-1/2 months

11.0 CROP USE DIRECTIONS

11.1 Corn (Eastern Canada Only)

TIMING	Pre-Plant Surface (up to 30 days before planting)
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 2.1 L – 3.1 L AATREX Liquid 480 Herbicide
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems. Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations, and rotational crop, grazing or other restrictions. Apply pre-plant surface applications of Mestalin Herbicide plus AATREX Liquid 480 Herbicide only when emerged annual weeds are less than 6 cm tall. If emerged annual weeds are taller than 6 cm, apply a glyphosate product prior to the tank mix application or make an application of a 3-way tank mix of Mestalin Herbicide plus AATREX Liquid 480 Herbicide plus a glyphosate product. Consult the tank mix partner label for specific instructions regarding precautions, restrictions, recommended rates and additives.
TIMING	Pre-Plant Surface (up to 30 days before planting)
WEEDS CONTROLLED	Annual Grasses, Emerged Annual or Perennial Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	900 g ae/ha of a registered glyphosate product
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems. Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations, and rotational crop, grazing or other restrictions. Some perennial weeds may not be controlled with this rate of glyphosate. Consult the glyphosate product label regarding perennial weeds controlled. Refer to the glyphosate product label to determine the appropriate rate for the target weeds.

TIMING	Pre-Plant Surface (up to 30 days before planting)
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds, Emerged Annual or Perennial Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 2.1 L – 3.1 L AATREX Liquid 480 Herbicide + 900 g ae/ha of a registered glyphosate product
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems. Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations, and rotational crop, grazing or other restrictions. Some perennial weeds may not be controlled with this rate of glyphosate. Consult the glyphosate product label regarding perennial weeds controlled. Refer to the glyphosate product label to determine the appropriate rate for the target weeds. It is recommended that liquid formulations of products be used when tank mixing with a glyphosate product. Consult the glyphosate product label for specific instructions regarding precautions, restrictions, recommended rates and additives.
TIMING	Pre-Plant Incorporated
WEEDS CONTROLLED	Nutsedge, Annual Grasses
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems.
TIMING	Pre-Plant Incorporated
WEEDS CONTROLLED	Nutsedge, Annual Grasses and Broadleaf Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 2.1 L – 3.1 L AATREX Liquid 480 Herbicide
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems. Consult the label of the product(s) to be tank mixed with MESTALIN HERBICIDE Herbicide for specific instructions regarding broadleaf weeds, soil-type variations, and rotational crop, grazing or other restrictions.
TIMING	Pre-Emergent
WEEDS CONTROLLED	Annual Grasses
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems.

TIMING	Pre-Emergent
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 2.1 L – 3.1 L AATREX Liquid 480 Herbicide
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems. Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations, and rotational crop, grazing or other restrictions.
TIMING	Pre-Emergent
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds including triazine tolerant weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 600 g a.e./ha of a registered dicamba herbicide OR + 2.1 L - 3.1 L AATREX Liquid 480 Herbicide + 600 g a.e./ha of a registered dicamba herbicide OR + 0.3 L CALLISTO® 480SC Herbicide OR + 0.3 L CALLISTO 480SC Herbicide + 2.1 L - 3.1 L AATREX Liquid 480 Herbicide
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems. Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations, and rotational crop, grazing or other restrictions. DO NOT APPLY DICAMBA TANK MIXTURES TO SEED CORN, SWEET CORN OR POPCORN.

TIMING	Pre-Emergent
WEEDS CONTROLLED	Annual Grasses, Emerged Annual or Perennial Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L - 1.75 L
RATE/HA TANK MIX PARTNER	+ 900 g ae/ha of a registered glyphosate product
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems. Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations, and rotational crop, grazing or other restrictions. Some perennial weeds may not be controlled with this rate of glyphosate. Consult the glyphosate product label regarding perennial weeds controlled. Refer to the glyphosate product label to determine the appropriate rate for the target weeds.
TIMING	Pre-Emergent
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds, Emerged Annual or Perennial Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 2.1 L – 3.1 L AATREX Liquid 480 Herbicide + 900 g ae/ha of a registered glyphosate product
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems. Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations, and rotational crop, grazing or other restrictions. Some perennial weeds may not be controlled with this rate of glyphosate. Consult the glyphosate product label regarding perennial weeds controlled. Refer to the glyphosate product label to determine the appropriate rate for the target weeds. It is recommended that liquid formulations of products be used when tank mixing with a glyphosate product. Consult the glyphosate product label for specific instructions regarding precautions, restrictions, recommended rates and additives.

TIMING	Early Post-Emergent (spike to 2-leaf stage)
WEEDS CONTROLLED	Annual Grasses
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems.
TIMING	Early Post-Emergent (spike to 2-leaf stage)
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 2.1 L – 3.1 L AATREX Liquid 480 Herbicide
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems.

	Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations, and rotational crop, grazing or other restrictions.
TIMING	Early Post-Emergent (spike to 2-leaf stage)
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds including triazine tolerant weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 288 - 600 g a.e./ha of a registered dicamba herbicide OR + 2.3 L AATREX Liquid 480 Herbicide + 288 - 600 g a.e./ha of a registered dicamba herbicide OR + 0.3 L CALLISTO 480SC Herbicide OR + 0.3 L CALLISTO 480SC Herbicide + 2.1 L - 3.1 L AATREX Liquid 480 Herbicide
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations, and rotational crop, grazing or other restrictions. THE TANK MIX WITH CALLISTO 480SC HERBICIDE, CALLISTO 480SC HERBICIDE PLUS AATREX LIQUID 480 HERBICIDE, OR A DICAMBA herbicide IS FOR USE ON FIELD CORN ONLY.
TIMING	Post-Emergent (3 to 6-leaf stage) (hybrid, silage and sweet corn only)
WEEDS CONTROLLED	Annual Grasses
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems. DO NOT USE THIS APPLICATION TIMING ON SEED CORN OR POPCORN.

TIMING	Post-Emergent (spike to 5-leaf stage) (hybrid and silage corn only)
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds including triazine tolerant weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 288 - 600 g a.e./ha of a registered dicamba herbicide OR + 2.3 L AATREX Liquid 480 Herbicide + 288 - 600 g a.e./ha of a registered dicamba herbicide
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems. Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations, and rotational crop, grazing or other restrictions. DO NOT USE THESE TANK MIXES OR THESE TIMINGS ON SEED CORN, SWEET CORN OR POPCORN. Do not apply tank mixes containing dicamba beyond the 5-leaf stage of corn.

TIMING	Post- Emergent (3 to 6-leaf stage) (hybrid, silage and sweet corn only)
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 2.1 L – 3.1 L AATREX Liquid 480 Herbicide
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems. Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations, and rotational crop, grazing or other restrictions. DO NOT USE THIS TANK MIX ON SEED CORN OR POPCORN.

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

For improved burndown of **small** emerged annual weeds, the following adjuvants may be applied in mixtures of Mestalin Herbicide with AATREX Liquid 480 Herbicide:

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

If annual weeds are larger or perennial weeds are present, use a registered glyphosate product in the tank mix (See preceding table).

11.2 Corn (Western Canada Only)

TIMING	Pre-Plant Incorporated
WEEDS CONTROLLED	Green and Yellow Foxtail, Barnyard Grass and Broadleaf Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 2.1 L – 3.1 L AATREX Liquid 480 Herbicide
TIMING	Pre-emergent with irrigation
WEEDS CONTROLLED	Green and Yellow Foxtail, Barnyard Grass and Broadleaf Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 2.1 L – 3.1 L AATREX Liquid 480 Herbicide
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems. Consult the label of the product to be tank mixed with Mestalin Herbicide for specific instructions regarding soil-type variations and other restrictions.

11.3 Soybeans

TIMING	Pre-Plant Surface (up to 30 days before planting)
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds including Nightshade
RATE/HA MESTALIN HERBICIDE	1.15 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 1.0 L - 2.2 L Sencor® 480 F OR + 670 g - 1.5 kg Sencor 75 DF
NOTES	For optimum nightshade control, use the higher rate of Mestalin Herbicide applied pre-emergently and choose a tank mix partner which is also registered for the control of nightshade. Use the higher rate of Mestalin Herbicide for heavier weed problems. For redroot pigweed suppression, apply a minimum of 1.25 L of Mestalin Herbicide per hectare. Do not apply on COARSE soils with less than 2% organic matter. Recommended use rates of Sencor products are dependent upon soil texture and organic matter content of the soil being treated. Consult Sencor product labels for soil type and OM restrictions. Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations and rotational crop, grazing or other restrictions. Apply pre-plant surface applications of Mestalin Herbicide plus Sencor 480 F or Sencor 75 DF only when emerged annual weeds are less than 6 cm tall. If emerged annual weeds are taller than 6 cm, apply a glyphosate product prior to the tank mix application or make an application of a 3-way tank mix of Mestalin Herbicide plus a glyphosate product plus Sencor 480 F or Sencor 75 DF. Consult the tank mix partner label for specific instructions regarding precautions, restrictions, recommended rates and additives.

TIMING	Pre-Plant Surface (up to 30 days before planting)
WEEDS CONTROLLED	Annual Grasses, Nightshade, Emerged Annual or Perennial Weeds
RATE/HA MESTALIN HERBICIDE	1.15 L - 1.75 L
RATE/HA TANK MIX PARTNER	+ 900 g ae/ha of a registered glyphosate product
NOTES	For optimum nightshade control, use the higher rate of Mestalin Herbicide applied pre-emergently and choose a tank mix partner which is also registered for the control of nightshade. Use the higher rate of Mestalin Herbicide for heavier weed problems. For redroot pigweed suppression, apply a minimum of 1.25 L of Mestalin Herbicide per hectare. Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations and rotational crop, grazing or other restrictions. Some perennial weeds may not be controlled with these rates of a glyphosate product. Consult the glyphosate product label regarding perennial weeds controlled. For glyphosate formulations that are not 540 g ae/L, refer to the product label to determine the appropriate rate for the target weeds.

TIMING	Pre-Plant Surface (up to 30 days before planting)
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds including Nightshade, Emerged Annual or Perennial Weeds
RATE/HA MESTALIN HERBICIDE	1.15 L - 1.75 L
RATE/HA TANK MIX PARTNER	+ 900 g ae/ha of a registered glyphosate product + 1.0 – 2.2 L Sencor 480 F OR 670 g – 1.45 kg Sencor 75 DF
NOTES	For optimum nightshade control, use the higher rate of Mestalin Herbicide applied pre-emergently and choose a tank mix partner which is also registered for the control of nightshade. Use the higher rate of Mestalin Herbicide for heavier weed problems. For redroot pigweed suppression, apply a minimum of 1.25 L of Mestalin Herbicide per hectare. Do not apply on COARSE soils with less than 2% organic matter. Recommended use rates of Sencor products are dependent upon soil texture and organic matter content of the soil being treated. Consult Sencor product labels for soil type and OM restrictions. Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations and rotational crop, grazing or other restrictions. Some perennial weeds may not be controlled with these rates of a glyphosate product. Consult the glyphosate product label regarding perennial weeds controlled. Refer to the glyphosate product label to determine the appropriate rate for the target weeds. It is recommended that liquid formulations of products be used when tank mixing with a glyphosate product. Consult the glyphosate product label for specific instructions regarding precautions, restrictions, recommended rates and

	additives.
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TIMING	Pre-Plant Incorporated
WEEDS CONTROLLED	Nutsedge, Annual Grasses and Nightshade
RATE/HA MESTALIN HERBICIDE	1.15 L - 1.75 L
NOTES	For optimum nightshade control, use the higher rate of Mestalin Herbicide applied pre-emergently and choose a tank mix partner which is also registered for the control of nightshade. Use the higher rate of Mestalin Herbicide for heavier weed problems. For redroot pigweed suppression, apply a minimum of 1.25 L of Mestalin Herbicide per hectare.
TIMING	Pre-Plant Incorporated
WEEDS CONTROLLED	Nutsedge, Annual Grasses and Broadleaf Weeds including Nightshade
RATE/HA MESTALIN HERBICIDE	1.15 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 550 g - 750 g Sencor 75 DF OR + 850 mL - 1.1 L Sencor 480 F OR + 312 mL Pursuit® Herbicide
NOTES	For optimum nightshade control, use the higher rate of Mestalin Herbicide applied pre-emergently and choose a tank mix partner which is also registered for the control of nightshade. Use the higher rate of Mestalin Herbicide for heavier weed problems. For redroot pigweed suppression, apply a minimum of 1.25 L of Mestalin Herbicide per hectare. Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations and rotational crop, grazing or other restrictions. Do not apply Pursuit Herbicide 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 herbicide. Winter wheat should not be planted within 120 days of the application of Pursuit Herbicide.
TIMING	Pre-Emergent
WEEDS CONTROLLED	Annual Grasses and Nightshade
RATE/HA MESTALIN HERBICIDE	1.15 L - 1.75 L
NOTES	For optimum nightshade control, use the higher rate of Mestalin Herbicide applied pre-emergently and choose a tank mix partner which is also registered for the control of nightshade. Use the higher rate of Mestalin Herbicide for heavier weed problems. For redroot pigweed suppression, apply a minimum of 1.25 L of Mestalin Herbicide per hectare.

TIMING	Pre-Emergent
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds including Nightshade
RATE/HA MESTALIN HERBICIDE	1.15 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 850 mL - 2.25 L Sencor 480 F OR + 550 g - 1.5 kg Sencor 75 DF OR + 312 mL - 420 mL Pursuit Herbicide
NOTES	For optimum nightshade control, use the higher rate of Mestalin Herbicide applied pre-emergently and choose a tank mix partner which is also registered for the control of nightshade. Use the higher rate of Mestalin Herbicide for heavier weed problems. For redroot pigweed suppression, apply a minimum of 1.25 L of Mestalin Herbicide per hectare. Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations and rotational crop, grazing or other restrictions. Do not apply Pursuit Herbicide 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 herbicide. Winter wheat should not be planted within 120 days of the application of Pursuit Herbicide.
TIMING	Pre-Emergent
WEEDS CONTROLLED	Annual Grasses, Nightshade, Emerged Annual or Perennial Weeds
RATE/HA MESTALIN HERBICIDE	1.15 L - 1.75 L
RATE/HA TANK MIX PARTNER	+ 900 g ae/ha of a registered glyphosate product
NOTES	For optimum nightshade control, use the higher rate of Mestalin Herbicide applied pre-emergently and choose a tank mix partner which is also registered for the control of nightshade. Use the higher rate of Mestalin Herbicide for heavier weed problems. For redroot pigweed suppression, apply a minimum of 1.25 L of Mestalin Herbicide per hectare. Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations and rotational crop, grazing or other restrictions. Some perennial weeds may not be controlled with these rates of a glyphosate product. Consult the glyphosate product label regarding perennial weeds controlled. Refer to the glyphosate product label to determine the appropriate rate for the target weeds.
TIMING	Pre-Emergent
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds including Nightshade, Emerged Annual or Perennial Weeds
RATE/HA MESTALIN HERBICIDE	1.15 L - 1.75 L

RATE/HA TANK MIX PARTNER	+ 900 g ae/ha of a registered glyphosate product + 850 mL – 2.25 L Sencor 480 F OR 550 g – 1.5 kg Sencor 75 DF OR 312 mL – 420 mL Pursuit Herbicide
NOTES	For optimum nightshade control, use the higher rate of Mestalin Herbicide applied pre-emergently and choose a tank mix partner which is also registered for the control of nightshade. Use the higher rate of Mestalin Herbicide for heavier weed problems. For redroot pigweed suppression, apply a minimum of 1.25 L of Mestalin Herbicide per hectare. Consult the label of the product(s) to be tank mixed with Mestalin Herbicide for specific instructions regarding broadleaf weeds, soil-type variations and rotational crop, grazing or other restrictions. Some perennial weeds may not be controlled with these rates of a glyphosate product. Consult the glyphosate product label regarding perennial weeds controlled. Refer to the glyphosate product label to determine the appropriate rate for the target weeds. It is recommended that liquid formulations of products be used when tank mixing with a glyphosate product. Consult the glyphosate product label for specific instructions regarding precautions, restrictions, recommended rates and additives. Do not apply Pursuit Herbicide 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 herbicide. Winter wheat should not be planted within 120 days of the application of Pursuit Herbicide.

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

Notes for Pre-plant Surface and Pre-emergent Applications ONLY:

For improved burndown of **small** emerged annual weeds, one of the following adjuvants may be applied in mixtures of Mestalin Herbicide with Sencor 480 F, Sencor 75 DF, or Pursuit Herbicide:

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

If annual weeds are larger or perennial weeds are present use a registered glyphosate product in the tank mix (See preceding table).

11.4 Snap Common Beans (Yellow and Green Only) and Lima Beans - Eastern Canada and B.C.

TIMING	Pre-Plant Incorporated
WEEDS CONTROLLED	Annual Grasses and Nutsedge
RATE/HA MESTALIN HERBICIDE	1.15 L – 1.75 L
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems. For redroot pigweed suppression, apply a minimum of 1.25 L of Mestalin Herbicide per hectare. CAUTION: Beans should be seeded at least 4 cm deep or crop injury may result.

11.5 Potatoes

TIMING	Pre-Plant Incorporated
WEEDS CONTROLLED	Nutsedge, Annual Grasses and Broadleaf Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 750 g - 1.5 kg Sencor 75 DF OR + 1.1 L - 2.25 L Sencor 480 F
TIMING	Pre-Emergent
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 750 g - 1.5 kg Sencor 75 DF OR + 1.1 L - 2.25 L Sencor 480 F OR + 1.9 L - 2.3 L Lorox L Herbicide
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems. Do not apply on COARSE soils with less than 2% organic matter. Recommended use rates of Sencor products are dependent upon soil texture and organic matter content of the soil being treated. Consult Sencor product labels for soil type and OM restrictions. Consult the label of the product to be tank mixed with Mestalin Herbicide for specific instructions regarding soil-type variations, weed spectrum controlled and special instructions. CAUTION: Do not apply Mestalin Herbicide at ground crack or if potatoes have emerged. Do not use on the variety Superior.

11.6 First-Year (Non-Bearing) Apple, Apricot, Sweet and Sour Cherry, Peach, Pear, and Plum Trees

TIMING	Post Planting, Pre-Emergent to Weeds
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds (Late-season emerging fall panicum and crabgrass may not be controlled by this treatment)
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
NOTES	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. Use only a tractor-mounted boom sprayer to apply. Use the higher rate of Mestalin Herbicide for heavier weed problems.

11.7 Established (Bearing) Apple, Apricot, Sweet and Sour Cherry, Peach, Pear, and Plum Trees

TIMING	Post Planting, Pre-Emergent to Weeds
WEEDS CONTROLLED	Annual Grasses
RATE/HA Mestalin Herbicide	1.75 L
NOTES	Apply once per year as a band under the trees. Avoid contact with trunk and leaves of trees. Do not use on sandy soils with less than 2% organic matter. Use only a tractor-mounted boom sprayer to apply.

11.8 Processing Peas (Eastern Canada Only)

TIMING	Pre-Emergent
WEEDS CONTROLLED	Eastern Black Nightshade, Annual Grasses
RATE/HA MESTALIN HERBICIDE	1.25 L - 1.75 L
NOTES	Make one application per year. Apply in 150 - 250 L water/ha. Apply by ground application equipment only. Use the higher rate of Mestalin Herbicide for heavier weed problems.

11.9 Rutabagas (Eastern Canada Only)

TIMING	Pre-Plant Incorporated
WEEDS CONTROLLED	Annual Grasses and Nutsedge
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems. To control nutsedge, Mestalin Herbicide must be applied as a pre- planted incorporated spray.
TIMING	Pre-Emergent
WEEDS CONTROLLED	Annual Grasses
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems.

11.10 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	Pre-Emergent or Early Post-Emergent to Weeds
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L - 1.75 L
NOTES	Apply to spruce and pine in forest tree nurseries prior to budbreak. DO NOT APPLY MESTALIN HERBICIDE 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. Use the higher rate of Mestalin Herbicide for heavier weed problems.

11.11 Sweet White Lupins

TIMING	Pre-Emergent
WEEDS CONTROLLED	Annual Grasses
RATE/HA MESTALIN HERBICIDE	1.10 L – 1.75 L
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems. For redroot pigweed suppression apply a minimum of 1.25 L of Mestalin Herbicide per hectare. Make one treatment per year with ground application equipment. Apply in 200 - 300 L of total volume per hectare.

11.11.1 Sweet White Lupins – Tank Mixtures (Maritimes Only)	
TIMING	At Planting or Pre-Emergent
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds including Nightshade
RATE/HA MESTALIN HERBICIDE	1.10 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 675 g Sencor 75D F OR + 1.0 L Sencor 480 F
NOTES	For optimum nightshade control and for heavier weed problems, use the higher rate of Mestalin Herbicide. For redroot pigweed suppression apply a minimum of 1.25 L of Mestalin Herbicide per hectare. Do not apply on COARSE soils with less than 2% organic matter. Recommended use rates of Sencor products are dependent upon soil texture and organic matter content of the soil being treated. Consult Sencor product labels for soil type and OM restrictions. Consult the label of the product to be tank mixed with Mestalin Herbicide for additional specific instructions regarding broadleaf weeds, soil- type variations and rotational crop, grazing or other restrictions. 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, melons, tobacco and non-triazine tolerant canola are sensitive to Sencor 75 DF or Sencor 480 F and may be injured if planted into soil treated with Sencor 75 DF or Sencor 480 F 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.

11.12 Transplanted Tomatoes Grown for Processing – Tank Mixtures

TIMING	Pre-Plant Incorporated
WEEDS CONTROLLED	Annual Nightshades (American Nightshade, Eastern Black Nightshade), Nutsedge, Annual Grasses and Broadleaf Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 0.5 L - 1.4 L Sencor 480 F
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems. Do not apply on COARSE soils with less than 2% organic matter. Recommended use rates of Sencor products are dependent upon soil texture and organic matter content of the soil being treated. Consult Sencor product labels for soil type and OM restrictions. Consult the label of the product to be tank mixed with Mestalin Herbicide for specific instructions regarding weeds, rates, soil-type and organic matter variations and other restrictions. CAUTION: DO NOT APPLY MESTALIN HERBICIDE ON DIRECT- SEEDED TOMATOES. NOTE: MESTALIN HERBICIDE 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.

12.0 MINOR USES

READ THE FOLLOWING BEFORE USING THIS PRODUCT FOR THE INDICATED SPECIAL USE APPLICATIONS

NOTE TO USER:

The DIRECTIONS FOR USE for the uses described in this section of the label were developed by persons other than Zhongshan Chemical Canada Corp. under the User Requested Minor Use Label Expansion program. For these uses, Zhongshan Chemical Canada Corp. has not fully assessed performance (efficacy) and/or crop tolerance (phytotoxicity) under all environmental conditions or for all crop varieties when used in accordance with the label. The user should test the product on a small area first, under local conditions and using standard practices, to confirm the product is suitable for widespread application.

12.1 Asian Radish

TIMING	Pre-Plant Incorporated OR Pre-Emergent (to both crop and weeds)
WEEDS CONTROLLED	American Nightshade, Fall Panicum, Eastern Black Nightshade, Foxtail (green, yellow, giant), Crabgrass (smooth, hairy), Old Witchgrass, Barnyard Grass, Yellow Nutsedge
WEEDS SUPPRESSED	Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	Mineral Soils: 1.2 L – 1.5 L
WEEDS SUPPRESSED	American Nightshade, Fall Panicum, Eastern Black Nightshade, Foxtail (green, yellow, giant), Crabgrass (smooth, hairy), Old Witchgrass, Barnyard Grass, Yellow Nutsedge and Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	Muck Soils (organic matter > 20%): 1.5 L – 1.75 L
NOTES	Make only one application per year. Use the higher rate of Mestalin Herbicide for heavier weed problems. Apply in 150-300 L water/ha. Ground application only. Do not harvest within 40 days of application. Reduced levels of weed control may be observed when weed densities are high. On muck soils: Irrigate immediately after application with 0.5 inches of water. CAUTION: Use in soils with high organic matter will result in reduced efficacy. A representative bioassay of the field must be conducted with rotational crops to evaluate potential crop sensitivity. NOTE: LEVEL AND DURATION OF WEED SUPPRESSION MAY BE REDUCED IN MUCK SOILS WITH HIGHER ORGANIC MATTER CONTENT. For American Nightshade and Eastern Black Nightshade, pre-emergent treatments sometimes give better control than pre-plant incorporated treatments. For Yellow Nutsedge, pre-plant incorporated treatment only. Extended periods of dry hot weather following application may result in reduced nutsedge control.

12.2 Asparagus (Established Beds)

WARNING: Application of Mestalin Herbicide may result in injury to the asparagus crop, which may include potential stand loss, delayed maturity, and even loss of yield.

TIMING	In the spring, apply to dormant asparagus beds prior to emergence OR Post-harvest
WEEDS CONTROLLED	American Nightshade, Eastern Black Nightshade, Crabgrass (smooth, hairy), Barnyard Grass, Fall Panicum, Foxtail (green, yellow, giant), Old Witchgrass
WEEDS SUPPRESSED	Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	1.55 L - 1.75 L
NOTES	Make only one application per year. Apply by ground application equipment only. PHI is 16 days.

12.3 Carrots

TIMING	Pre-Emergent (after planting, prior to carrot and weed emergence)
WEEDS CONTROLLED	American Nightshade, Fall Panicum, Eastern Black Nightshade, Foxtail (green, yellow, giant), Crabgrass (smooth, hairy), Old Witchgrass, and Barnyard Grass
WEEDS SUPPRESSED	Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	Mineral Soils: 1.2 L – 1.5 L
WEEDS SUPPRESSED	American Nightshade, Fall Panicum, Eastern Black Nightshade, Foxtail (green, yellow, giant), Crabgrass (smooth, hairy), Old Witchgrass, Barnyard Grass and Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	Muck Soils (organic matter > 20%): 1.5 L – 1.75 L
TIMING	Post-Emergent (crop at 3 – 5-leaf stage and weeds prior to 2-leaf stage)
WEEDS CONTROLLED	American Nightshade, Fall Panicum, Eastern Black Nightshade, Foxtail (green, yellow, giant), Crabgrass (smooth, hairy), Old Witchgrass, and Barnyard Grass
WEEDS SUPPRESSED	Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	1.2 L – 1.5 L
NOTES	Make only one application per year. Do not follow a pre-emergent application with a post-emergent spray later in the season. Apply by ground (broadcast) application (pre- or post-emergent application). Pre-emergent application can also be made by banded spray. Make pre-emergent applications to clean-tilled soils. Use lower rates on medium-textured soils and higher rates on fine-textured soils. Do not apply more than 1.5 L/ha of Mestalin Herbicide to mineral soils. Do not apply more than 1.75 L/ha of Mestalin Herbicide to muck soils (organic matter > 20%). To help avoid crop injury, do not apply Mestalin Herbicide in areas where water is likely to pool. Apply in 150 – 300 L water/ha. Reduced levels of weed control may be observed when weed densities are high. Do not harvest carrots within 30 days of application. NOTE: LEVEL AND DURATION OF WEED SUPPRESSION MAY BE REDUCED IN MUCK SOILS WITH HIGHER ORGANIC MATTER CONTENT. NOTE: APPLICATIONS OF MESTALIN HERBICIDE MAY CAUSE SIGNIFICANT INJURY TO CARROTS, RESULTING IN REDUCED YIELDS.

12.4 Celery

TIMING	After Transplanting Celery and Prior to Weed Emergence
WEEDS CONTROLLED	American Nightshade, Fall Panicum, Eastern Black Nightshade, Foxtail (green, yellow, giant), Crabgrass (smooth, hairy), Old Witchgrass, and Barnyard Grass
WEEDS SUPPRESSED	Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	Mineral Soils: 1.2 L – 1.5 L
WEEDS SUPPRESSED	American Nightshade, Fall Panicum, Eastern Black Nightshade, Foxtail (green, yellow, giant), Crabgrass (smooth, hairy), Old Witchgrass, Barnyard Grass and Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	Muck Soils (organic matter > 20%): 1.5 L – 1.75 L
NOTES	Apply in 150-200 L water/ha. Directed or broadcast spray. Ground application only. Do not harvest the crop within 62 days of application. In general, the risk of crop injury is less with post-directed than from post over-the-top post-transplanting applications. The use of a spray adjuvant or the addition of another registered herbicide as a tank mixture with MESTALIN HERBICIDE will increase the risk of crop injury from post-emergence applications. MESTALIN HERBICIDE may also be used to treat row-middles in bedded crops, as long as the total amount of MESTALIN HERBICIDE applied does not exceed 1.75 L/ha in that crop. Use lower rates of MESTALIN HERBICIDE on coarse-textured soils and higher rates on fine-textured soils. On muck soils: Apply prior to weed emergence. Use the higher rate of application. Irrigate immediately after application with 0.5 inches of water. Apply prior to weed emergence. CAUTION: Use in soils with high organic matter will result in reduced efficacy. A representative bioassay of the field must be conducted with rotational crops to evaluate potential crop sensitivity. NOTE: MESTALIN HERBICIDE 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. Use the higher rate of Mestalin Herbicide for heavier weed problems.

12.5 Conifers (Established for Field Production)

Mestalin Herbicide has been tested on Balsam fir, Fraser fir, White pine, and White spruce. Mestalin Herbicide may be applied to other non-listed conifer species; however, non-listed conifer species may vary in tolerance to herbicides, including Mestalin Herbicide. First use of Mestalin Herbicide to any non-listed conifer species should be limited to a small number of plants to confirm tolerance prior to adoption as a large scale practice.

TIMING	Pre-Emergent to Weeds as per label directions
WEEDS CONTROLLED	Annual Broadleaf and Grass Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
NOTES	Make only one ground application per year, banded over top of trees. Apply in a minimum of 300 L water/ha. Use the higher rate of Mestalin Herbicide for heavier weed problems.
TIMING	Pre-Emergent or Early Post-Emergent (before 2-leaf stage) to Weeds
WEEDS CONTROLLED	Labelled Weeds – See Simazine 480 Herbicide label for further information
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 4.7 L – 7.0 L Simazine 480 Herbicide
NOTES	Make only one ground application per year. Apply in a minimum of 150 L water/ha. Use the higher rate of Mestalin Herbicide for heavier weed problems. Use the lowest rate of Simazine 480 Herbicide in sandy or low organic matter soils; use highest rate in clay or high organic matter soils

12.6 Cranberry Beans Eastern Canada Only

TIMING	Pre-Plant Incorporated or Pre-Emergent Soil Application
WEEDS CONTROLLED	American Nightshade, Eastern Black Nightshade, Fall Panicum, Foxtail (green, yellow, giant), Crabgrass (smooth, hairy), Old Witchgrass, Barnyard Grass, Yellow Nutsedge
WEEDS SUPPRESSED	Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	1.15 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 0.312 L Pursuit Herbicide
NOTES	Make only one application per year. Apply by ground application equipment only. CAUTION: Beans should be seeded at least 4 cm deep or crop injury may result. Use the higher rate of Mestalin Herbicide for heavier weed problems. Consult the label of the product to be tank mixed with Mestalin Herbicide for specific instructions regarding soil-type variations and other restrictions. For American Nightshade and Eastern Black Nightshade, pre-emergent treatments sometimes give better control than pre-plant incorporated treatments. For Yellow Nutsedge, pre-plant incorporated treatment only. Extended periods of dry hot weather following application may result in reduced nutsedge control.

12.7 Cucurbit Vegetables - Crop Group 9

CROP	Cucurbit Vegetables - Crop Group 9: Citron melon (<i>Citrullus lanatus</i> var. <i>citroides</i>), Muskmelon (hybrids and/or cultivars of <i>Cucumis melo</i>) (includes true cantaloupe, cantaloupe, casaba, crenshaw melon, golden pershaw melon, honeydew melon, honey balls, mango melon, Persian melon, pineapple melon, Santa Claus melon and snake melon), Watermelon (includes hybrids and/or varieties of <i>Citrullus lanatus</i>), Chayote (fruit) (<i>Sechium edule</i>), Chinese waxgourd (Chinese preserving melon) (<i>Benincasa hispida</i>), Gherkin (<i>Cucumis anguria</i>), Gourd, edible (<i>Lagenaria</i> spp.) (includes hyotan, cucuzza), Gourd, edible (<i>Luffa acutangula</i> , <i>L. cylindrica</i>) (includes hechima, Chinese okra), <i>Momordica</i> spp. (includes balsam apple, balsam pear, bitter melon, Pumpkin (<i>Cucurbita</i> spp.)), Squash, summer (<i>Cucurbita pepo</i> var. <i>meloepo</i>) (includes crookneck squash, scallop squash, straightneck squash, vegetable marrow, zucchini), Squash, winter (<i>Cucurbita maxima</i> , <i>C. moschata</i>) (includes butternut squash, calabaza, hubbard squash); (<i>C. mixta</i> , <i>C. pepo</i>) (includes acorn squash, spaghetti squash), excluding Cucumber (<i>Cucumis sativus</i>)
TIMING	Transplanted: Prior to transplanting or within 48 hours after transplanting. Direct seeded: Pre-emergence or early post-emergent to crop (1 to 2 leaf stage). All applications should be pre-emergent to labeled weeds.
WEEDS CONTROLLED	Nightshade and Annual Grasses
WEEDS SUPPRESSED	Redroot Piqweed
RATE/HA MESTALIN HERBICIDE	Banded to row middles after plastic mulch has been laid: 1.15 L – 1.56 L Broadcast: 1.15 L
NOTES	Ground application; Banded to row middles or broadcast. Make only 1 application per year. PHI is 30 days. Apply in a minimum of 150 L water/ha. Application of Mestalin Herbicide may result in injury to the crop which may include stand loss, delayed maturity and even loss of yield. Risk of crop injury increases with cool and wet conditions. Care should be taken to minimize foliar contact with Mestalin Herbicide as this can increase potential to cause crop injury. Avoid overspray. Reduced control in heavy weed populations may occur. Do not use on sandy soils with less than 2% organic matter. The use of another registered herbicide as a tank mixture with MESTALIN HERBICIDE will increase the risk of crop injury.

12.8 Dry Common Beans (*Phaseolus vulgaris* species only)

TIMING	Pre-Plant Incorporated or Pre-Emergent Soil Application
WEEDS CONTROLLED	American Nightshade, Fall Panicum, Eastern Black Nightshade, Foxtail (green, yellow, giant), Crabgrass (smooth, hairy), Old Witchgrass, Barnyard Grass, Yellow Nutsedge
WEEDS SUPPRESSED	Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	1.15 L – 1.75 L
NOTES	Make only one application per year. Apply in 150 L water/ha. Apply by ground application equipment only. NOTE: Dry common bean varieties may vary in their tolerance to herbicides, including to Mestalin Herbicide. Since not all dry common bean varieties have been tested for tolerance to Mestalin Herbicide, first use of Mestalin Herbicide should be limited to a small area of each variety to confirm tolerance prior to adoption as a general field practice. Additionally, consult your seed supplier for information on the tolerance of specific varieties of dry common beans to Mestalin Herbicide. CAUTION: Beans should be seeded at least 4 cm deep or crop injury may result. Use the higher rate of Mestalin Herbicide for heavier weed problems. For American Nightshade and Eastern Black Nightshade, Pre-emergent treatments sometimes give better control than pre-plant incorporated. For Yellow Nutsedge, pre-plant incorporated treatment only. Extended periods of dry hot weather following application may result in reduced nutsedge control.

12.9 Dry Common Beans (*Phaseolus vulgaris* species only)–Eastern Canada Only

TIMING	Pre-Plant Incorporated
WEEDS CONTROLLED	American Nightshade, Eastern Black Nightshade, Fall Panicum, Foxtail (green, yellow, giant), Crabgrass (smooth, hairy), Old Witchgrass, Barnyard Grass, Yellow Nutsedge
WEEDS SUPPRESSED	Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	1.15 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 0.312 L Pursuit Herbicide
NOTES	Make only one application per year. Apply in 150 L – 400 L water/ha. Apply by ground application equipment only. DO NOT harvest within 100 days of treatment. NOTE: Dry common bean varieties may vary in their tolerance to herbicides, including to Mestalin Herbicide. Since not all dry common bean varieties have been tested for tolerance to the tank mix of Pursuit plus Mestalin Herbicide, first use of this tank mix should be limited to a small area of each variety to confirm tolerance prior to adoption as a general field practice. Additionally, consult your seed supplier for information on the tolerance of specific varieties of dry common beans to the tank mix of Pursuit plus Mestalin Herbicide. CAUTION: Beans should be seeded at least 4 cm deep or crop injury may result. Use the higher rate of Mestalin Herbicide for heavier weed problems. Refer to the Pursuit Herbicide label for additional recommendations, precautions and restrictions not specified on this label. For Yellow Nutsedge, extended periods of dry hot weather following application may result in reduced nutsedge control.

12.10 Eggplant (Transplants Only)

TIMING	Post-Emergent: apply within 48 hours of transplanting, but before weed emergence
WEEDS CONTROLLED	Nightshade, Annual Grasses
RATE/HA MESTALIN HERBICIDE	1.15 L – 1.25 L
NOTES	Use lower rate of MESTALIN HERBICIDE on coarse-textured soil and higher rates on fine-textured soil or for heavier weed infestations. In general, the risk of crop injury is greater on lighter textured soils and with higher application rates. Risk of crop injury increases with early transplanting and soil temperatures below 10°C. Applications made more than 48 hours after transplanting may increase the risk of foliar injury. One application per year only. Ground application only. Apply in a minimum of 150 L of water. Do not apply more than 1.25 L of Mestalin Herbicide on eggplant per year. Do not harvest eggplant within 60 days of application.

12.11 Field Peppers

TIMING	Post-Emergent: apply within 48 hours of transplanting, but before weed emergence
WEEDS CONTROLLED	Nightshade, Annual Grasses
RATE/HA MESTALIN HERBICIDE	1.15 L - 1.25 L
NOTES	Apply in a minimum of 150 L water/ha. Apply by ground application equipment only. Do not harvest within 80 days of treatment. Risk of crop injury increases with early transplanting and soil temperatures below 10°C. Applications made more than 48 hours after transplanting may increase the risk of foliar injury. Using the lower application rate for field peppers may result in reduced control in heavy weed populations. Use the higher rate of Mestalin Herbicide for heavier weed problems. NOTE: DO NOT tank mix Mestalin Herbicide with fluid fertilizers, oils, oil concentrates or surfactants when applying post-emergent.

12.12 Highbush Blueberries (New and Established Plantings)

TIMING	Pre-Emergent to Weeds
WEEDS CONTROLLED	Nightshade (American and Eastern black), Crabgrass (smooth, hairy), Barnyard Grass, Fall Panicum, Foxtail (green, yellow, giant), Old Witchgrass
WEEDS SUPPRESSED	Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	1.25 L - 1.75 L
NOTES	Make only one application per year. Apply in 150 - 300 L water/ha. DO NOT apply by air, ground application only. DO NOT harvest within 30 days of treatment. Apply to the soil as a banded application, directed to the base of the highbush blueberry plants. Avoid contact with the highbush blueberry trunk and foliage. Crop injury and yield reduction may occur if any part of the highbush blueberry plants are contacted through spray or drift.

12.13 Kidney Beans – Eastern Canada Only

TIMING	Pre-Plant Incorporated or Pre-Emergent Soil Application
WEEDS CONTROLLED	American Nightshade, Eastern Black Nightshade, Fall Panicum, Foxtail (green, yellow, giant), Crabgrass (smooth, hairy), Old Witchgrass, Barnyard Grass, Yellow Nutsedge
WEEDS SUPPRESSED	Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	1.15 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 0.312 L Pursuit Herbicide
NOTES	Make only one application per year. Apply by ground application equipment only. CAUTION: Beans should be seeded at least 4 cm deep or crop injury may result. Use the higher rate of Mestalin Herbicide for heavier weed problems. Consult the label of the product to be tank mixed with Mestalin Herbicide for specific instructions regarding soil-type variations and other restrictions. For American Nightshade and Eastern Black Nightshade, pre-emergent treatments sometimes give better control than pre-plant incorporated treatments. For Yellow Nutsedge, pre-plant incorporated treatment only. Extended periods of dry hot weather following application may result in reduced nutsedge control.

12.14 Mustard Greens – Transplanted Only (DO NOT apply to direct seeded crop)

TIMING	Pre-Emergent or Post-Emergent (Weeds at 2-leaf stage or less)
WEEDS CONTROLLED	Annual Broadleaf and Grass Weeds
RATE/HA MESTALIN HERBICIDE	1.2 L – 1.5 L
NOTES	Make only one ground application per year. Apply in a minimum of 150-300 L/ha water. PHI is 30 days. Yield losses may be observed when this product is applied to transplanted mustard greens. Reduced levels of weed control may be observed when weed densities are high.

12.15 Outdoor Ornamentals**OUTDOOR ORNAMENTALS (Woody and Herbaceous): Container-, Field- and Liner*-Grown Plants and Plants in Landscape Plantings**

*Plants transplanted normally in rows in a nursery or similar area for further growth before transplanting to final growing location (place of establishment).

The following plant species have been tested results indicated that they are tolerant to Mestalin Herbicide when the product is applied according to the label.

Tolerance Plant Species

Plant Category	Common name	Scientific name
Broadleaf	Burning bush	<i>Euonymous</i> spp.
	Rhododendron	<i>Rhododendron</i> spp.
Herbaceous	Daylily	<i>Hemerocallis</i> spp.
	Hosta	<i>Hosta</i> spp.
Conifer	Juniper	<i>Juniperus</i> spp.
	Eastern white-cedar	<i>Thuja</i> spp.

Mestalin Herbicide may be applied to other non-listed plant species. However, non-listed plant species may vary in their tolerance to herbicides, including Mestalin Herbicide. First use of Mestalin Herbicide to any non-listed plant species should be limited to a small number of plants to confirm tolerance prior to adoption as a large scale practice.

TIMING	Pre-emergence (prior to weed emergence) OR Early Post-emergent (1-2 leaf weed stage)
WEEDS CONTROLLED	Nightshade and Annual Grasses
WEEDS SUPPRESSED	Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	1.25 L - 1.75 L
NOTES	Make only one application per year. Apply in a minimum of 150 – 200 L water/ha. Apply by ground application equipment only. To avoid plant injury, do not apply to seedbeds, cutting beds, or uprooted cuttings before transplanting and to plants until the soil has firmly settled around roots.

When applied broadcast over-the-top of plant foliage, follow with sufficient overhead irrigation to wash Mestalin Herbicide from the foliage to reduce the chance of injury. Do not apply to trees or plants that will bear harvestable fruit within 12 months, or illegal residues may result.

Do not use this product in residential areas where bystanders including children, may be potentially exposed during or after spraying.

12.16 Parsnips

TIMING	Pre-Emergent (after planting, prior to parsnip and weed emergence)
WEEDS CONTROLLED	American Nightshade, Fall Panicum, Eastern Black Nightshade, Foxtail (green, yellow, giant), Crabgrass (smooth, hairy), Old Witchgrass, and Barnyard Grass
WEEDS SUPPRESSED	Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	Mineral Soils: 1.2 L – 1.5 L
WEEDS SUPPRESSED	American Nightshade, Fall Panicum, Eastern Black Nightshade, Foxtail (green, yellow, giant), Crabgrass (smooth, hairy), Old Witchgrass, Barnyard Grass and Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	Muck Soils (organic matter > 20%): 1.5 L – 1.75 L
TIMING	Post-Emergent (crop at 3 – 5-leaf stage and weeds prior to the 2-leaf stage)
WEEDS CONTROLLED	American Nightshade, Fall Panicum, Eastern Black Nightshade, Foxtail (green, yellow, giant), Crabgrass (smooth, hairy), Old Witchgrass, and Barnyard Grass
RATE/HA MESTALIN HERBICIDE	Mineral Soils: 1.2 L – 1.5 L
NOTES	Make only one application per year. Do not follow a pre-emergent application with a post-emergent spray later in the season. Use the higher rate of Mestalin Herbicide for heavier weed problems. Apply in 150-300 L water/ha. Ground application only. Do not harvest within 60 days of application. Reduced levels of weed control may be observed when weed densities are high. On muck soils: Apply prior to weed emergence. Irrigate immediately after application with 0.5 inches of water. CAUTION: Use in soils with high organic matter will result in reduced efficacy. A representative bioassay of the field must be conducted with rotational crops to evaluate potential crop sensitivity. Application of MESTALIN HERBICIDE may result in injury to the crop which may include stand loss, delayed maturity, and even loss of yield. For American Nightshade and Easter Black Nightshade, pre-emergent treatments sometimes give better control than post-emergent treatments.

12.17 Peanuts (Ontario Only)

TIMING	Pre-Plant Incorporated OR Pre-Emergent to Peanut Germination and Labelled Weeds
WEEDS CONTROLLED	Nutsedge, Annual Grasses and Nightshade
RATE/HA MESTALIN HERBICIDE	1.15 L – 1.55 L
NOTES	Make only one application per year. Apply in 150 L water/ha. DO NOT apply by air. Ground application only. Do not graze or feed peanut forage or fodder to livestock for 30 days following application. Do not harvest crop within 90 days of application. For use in Ontario only. Application of MESTALIN HERBICIDE may result in injury to the peanut crop which may include stand loss, delayed maturity and even loss of yield. Use the higher rate of Mestalin Herbicide for heavier weed problems. Pre-emergent treatments sometimes give better control than pre-plant incorporated treatments. To control nutsedge, Mestalin Herbicide must be applied as a pre- plant incorporated spray.

12.18 Pearl Millet Grown for Animal Feed (Grain or Forage) (Eastern Canada Only)

TIMING	Early Post-Emergent to Crop (1-2 leaf stage) OR Pre to Early Post-Emergent to Weeds (up to 1-leaf stage)
WEEDS SUPPRESSED	Smooth Crabgrass, Green Foxtail, Barnyard Grass
RATE/HA MESTALIN HERBICIDE	0.625 L
NOTES	Make only one application per year. Apply by ground application only. DO NOT apply by air. Apply in 200 L water/ha. Do not harvest pearl millet for forage within 45 days of application. Do not harvest pearl millet for grain within 130 days of application. For use in pearl millet for animal feed only. Treated grain millet is not intended for human consumption. Application of MESTALIN HERBICIDE will result in injury to the pearl millet crop which may include stand loss, delayed maturity and even loss of yield. AVOID SPRAY OVERLAP. Millet should be seeded at least 2.5 cm deep or crop injury may result. Use on soil that has a minimum of 2.5% organic matter.

12.19 Red Beets

TIMING	Pre-Emergent to Weeds and Crop
WEEDS CONTROLLED	Nightshade (American and Eastern Black), Crabgrass (Smooth, Hairy), Barnyard Grass, Fall Panicum, Foxtail (Green, Yellow, Giant), Old Witchgrass
WEEDS SUPPRESSED	Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	1.25 L
NOTES	Make only one application per year. Apply in 150 L water/ha minimum. Apply by ground application equipment only. Do not use more than 1 application per year. DO NOT apply by air. Application of Mestalin Herbicide may result in injury to the red beet crop which may include stand loss, delayed maturity and even loss of yield. Irrigate after application to activate the herbicide if rainfall is not expected, but use only 0.5 inches of water to incorporate the herbicide. Excessive irrigation will increase the risk of crop injury. Mechanical incorporation of Mestalin Herbicide will increase the risk of crop injury. DO NOT use Mestalin Herbicide if the planting operation creates a furrow or trough over the seed-row into which rain or irrigation water will collect and thus concentrate the herbicide over the row. Do not enter or allow worker entry into the treated areas during the restricted entry interval (REI) of 12 hours.

12.20 Soybeans

TIMING	Pre-Emergent
WEEDS SUPPRESSED	Tall Waterhemp
RATE/HA MESTALIN HERBICIDE	1.75 L
NOTES	Make only one application per year. Apply in a minimum of 150 L water/ha. Apply by ground application equipment only.

12.21 Strawberries

Strawberry cultivars may vary in their tolerance to herbicides, including Mestalin Herbicide. Since not all strawberry cultivars have been tested for tolerance to Mestalin Herbicide, first use of Mestalin Herbicide should be limited to a small area of each variety to confirm tolerance prior to adoption as a general field practice. Additionally, consult your supplier for information on the tolerance of specific cultivars of strawberry to Mestalin Herbicide. **Do not apply to the cultivar Joliette.**

TIMING	Bearing years: After mulch removal but before weed emergence
WEEDS CONTROLLED	Annual Broadleaf and Grass Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L - 1.75 L
NOTES	Make only one application per year. Apply after mulch removal but before weed emergence. Some initial injury may occur but will be outgrown with no reduction in yield. Apply by ground application equipment only. Apply in 150 L/ha of water. Do not harvest berries within 30 days of application. Use the higher rate of Mestalin Herbicide for heavier weed problems.
TIMING	Newly planted: Pre-Plant Incorporated or Pre-Emergent (post transplanting)
WEEDS CONTROLLED	Annual Grasses and Nutsedge
RATE/HA MESTALIN HERBICIDE	1.25 L - 1.75 L
NOTES	Make only one application per year. Apply as either a pre-plant incorporated or pre-emergent (post-transplanting) treatment. Some initial injury may occur but will be outgrown with no reduction in yield. Apply by ground application equipment only. Apply in 150 L/ha of water. Do not harvest berries within 30 days of application. Use the higher rate of Mestalin Herbicide for heavier weed problems. For Yellow Nutsedge, pre-plant incorporated treatment only. Extended periods of dry hot weather following application may result in reduced nutsedge control

12.22 Sugar Beets

TIMING	Post-Emergent: apply within the period from cotyledon to 4 leaf stage of sugar beets, but before weed emergence
WEEDS CONTROLLED	Nightshade, Annual Grasses
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
NOTES	Make only one application per year. Apply in 150 L – 300 L water/ha. Apply by ground application equipment only. Do not use more than 1 application per year. Do not harvest within 120 days of treatment. DO NOT USE SUGAR BEET TOPS FOR FEEDING TO LIVESTOCK. Use the higher rate of Mestalin Herbicide for heavier weed problems. NOTE: DO NOT tank mix Mestalin Herbicide with fluid fertilizers, oils, oil concentrates or surfactants when applying post-emergent.

12.23 Sweet Corn

TIMING	Pre-Emergent
WEEDS CONTROLLED	Annual Grasses and Broadleaf Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L
RATE/HA TANK MIX PARTNER	+ 2.1 L – 3.1 L AATREX Liquid 480 Herbicide
NOTES	Make only one application per year. Apply as pre-emergent treatment. Apply in 150 L water/ha minimum. Do not harvest sweet corn within 45 days of treatment. Apply by ground equipment only.

12.24 Sweet Potatoes

TIMING	Early Post-Emergent (2 – 5 days after transplanting)
WEEDS CONTROLLED	Annual Broadleaf and Grass Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
NOTES	Make only one application per year. Apply foliar by ground application only. Apply using a spray volume of 200 - 400 L water/ha. PHI is 105 days.

12.25 Transplanted Cabbage, Transplanted Cauliflower, Transplanted Broccoli

TIMING	Post-Transplant - Apply within 2 days after transplanting and prior to weed emergence. Do not incorporate.
WEEDS CONTROLLED	Nightshade and Annual Grasses
WEEDS SUPPRESSED	Redroot Pigweed
RATE/HA MESTALIN HERBICIDE	1.25 L - 1.75 L
NOTES	Make one application per year. Apply in 300 L water/ha. Apply by ground application equipment only. Use the higher rate of Mestalin Herbicide for heavier weed problems.

12.26 Transplanted Tomatoes Grown for Processing

TIMING	Pre-Plant Incorporated
WEEDS CONTROLLED	Annual Nightshades (American Nightshade, Eastern Black Nightshade), Nutsedge, Annual Grasses and Broadleaf Weeds
RATE/HA MESTALIN HERBICIDE	1.0 L - 1.25 L
RATE/HA TANK MIX PARTNER	+ 330 g - 660 g Sencor 75 DF +1.0 L – 2.0 L Treflan™ Liquid EC Herbicide OR + 500 mL - 1 L Sencor 480 F + 1.0 L – 2.0 L Treflan Liquid EC Herbicide
NOTES	Use the higher rate of Mestalin Herbicide for heavier weed problems and for control of nightshade. Consult the label of the product to be tank mixed with Mestalin Herbicide for specific instructions regarding weeds, rates, soil-type and organic matter variations and other restrictions. Use lower rates on light textured soils, higher rates on heavier soils. Make Only One Application Per Year. Do Not Apply Within 60 Days Of Harvest. CAUTION: DO NOT APPLY ON DIRECT-SEEDED TOMATOES. NOTE: Mestalin Herbicide 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.

12.27 Transplanted Tomatoes – Field Tomatoes Grown for Fresh Market

TIMING	Pre-Plant Incorporated
WEEDS CONTROLLED	Annual Nightshades (American Nightshade, Eastern Black Nightshade), Nutsedge, and Annual Grasses
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
WEEDS CONTROLLED	Annual Nightshades (American Nightshade, Eastern Black Nightshade), Nutsedge, Annual Grasses and Broadleaf Weeds
RATE/HA MESTALIN HERBICIDE	1.25 L – 1.75 L
RATE/HA TANK MIX PARTNER	+ 0.5 L – 1.4 L Sencor 480 F
NOTES	Apply in 150 - 300 L water/ha. Make only one application per year. Do not harvest within 60 days after application. Use the higher rate of Mestalin Herbicide for heavier weed problems. Consult the label of the product to be tank mixed with Mestalin Herbicide for specific instructions regarding weeds, rates, soil-type and organic matter variations and other restrictions. CAUTION: DO NOT APPLY MESTALIN HERBICIDE ON DIRECT- SEEDED TOMATOES. NOTE: Mestalin Herbicide 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. Tomato varieties differ in tolerance to Mestalin Herbicide. Since not all tomato varieties have been tested for tolerance to Mestalin Herbicide, first use of Mestalin Herbicide should be limited to a small area of each variety to confirm tolerance prior to adoption as a general field practice. Additionally, consult your plant supplier for information on the tolerance of specific tomato varieties to Mestalin Herbicide.

12.28 Transplanted Field Tomatoes – For Fresh Market or Processing

TIMING	Pre-plant Incorporated <i>followed by</i> Post-transplant
WEEDS CONTROLLED	Smooth crabgrass, green foxtail, barnyard grass
RATE/HA MESTALIN HERBICIDE	0.87 L [pre-plant incorporation] + 0.44 L – 0.87 L [post-transplant]
NOTES	Apply in 150 – 300 L water/ha. Make the post-transplant application within 7 to 14 days after transplanting. The interval between pre-plant incorporation and post-transplant applications should be no longer than 14 days. Do not apply Mestalin Herbicide within 7 days of transplanting. Use the higher rates of Mestalin Herbicide for heavier weed problems. Do not exceed 1.75 L of MESTALIN HERBICIDE on tomatoes per year. Do not harvest within 30 days after application. DO NOT APPLY MESTALIN HERBICIDE ON DIRECT-SEEDED TOMATOES. Use the higher rate of Mestalin Herbicide for heavier weed problems. NOTE: Mestalin Herbicide 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. Tomato varieties differ in tolerance to Mestalin Herbicide. Since not all tomato varieties have been tested for tolerance to Mestalin Herbicide, first use of Mestalin Herbicide should be limited to a small area of each variety to confirm tolerance prior to adoption as a general field practice. Additionally, consult your plant supplier for information on the tolerance of specific tomato varieties to Mestalin Herbicide.

12.29 Crop Subgroup 13-07A – Caneberries (new and established plantings)

TIMING	Pre-emergent to labelled weeds
WEEDS CONTROLLED	Control of nightshade (American and Eastern black), crabgrass (smooth, hairy), barnyard grass, fall panicum, foxtail (green, yellow, giant), old witchgrass, suppression of redroot pigweed
RATE/HA MESTALIN HERBICIDE	1.15 – 1.75 L/ha
NOTES	Make only one application per year. Apply in a 150 L water/ha minimum. Apply by ground application equipment only. DO NOT apply by air DO NOT harvest within 28 days of treatment. Apply to the soil in the early spring as a banded application to both sides of the plant row prior to weed emergence. The application should be directed to the soil surface to avoid direct contact with the crop foliage. Application of Mestalin Herbicide to crop foliage may result in crop injury and illegal residues. Not all caneberry types, cultivars or hybrids have been tested so injury from Mestalin Herbicide may occur on some crops. First use should be limited to treatment of a few plants to confirm tolerance prior to adoption as a general field practice. The risk of crop injury from Mestalin Herbicide is greater at the higher use rates. Caneberry plants that have been established for less than one year may be more sensitive to applications of Mestalin Herbicide than those plants established for more than one year. For this reason, the lower rates are suggested on newer plantings. Use the lower end of the Mestalin Herbicide rate range for soils that are relatively coarse textured and the higher rates on fine textured soils.

13.0 RESISTANCE MANAGEMENT RECOMMENDATIONS

For resistance management, Mestalin Herbicide is a Group 15 herbicide. Any weed population may contain or develop plants naturally resistant to Mestalin Herbicide and other Group 15 herbicides. The resistant biotypes may dominate the weed population if these herbicides are used repeatedly in the same field. Other resistance mechanisms that are not linked to site of action, but specific for individual chemicals, such as enhanced metabolism, may also exist. Appropriate resistance-management strategies should be followed.

To delay herbicide resistance:

- Where possible, rotate the use of Mestalin Herbicide or other Group 15 herbicides within a growing season (sequence) or among growing seasons with different herbicide groups that control the same weeds in a field.
- Use tank mixtures with herbicides from a different group when such use is permitted. To delay resistance, the less resistance-prone partner should control the target weed(s) as effectively as

the more resistance-prone partner.

- Herbicide use should be based on an integrated weed management program that includes scouting, historical information related to herbicide use and crop rotation, and considers tillage (or other mechanical control methods), cultural (for example, higher crop seeding rates; precision fertilizer application method and timing to favour the crop and not the weeds), biological (weed-competitive crops or varieties) and other management practices.
- Monitor weed populations after herbicide application for signs of resistance development (for example, only one weed species on the herbicide label not controlled). If resistance is suspected, prevent weed seed production in the affected area if possible by an alternative herbicide from a different group. Prevent movement of resistant weed seeds to other fields by cleaning harvesting and tillage equipment when moving between fields, and planting clean seed.
- Have suspected resistant weed seeds tested by a qualified laboratory to confirm resistance and identify alternative herbicide options.
- Contact your local extension specialist or certified crop advisors for any additional pesticide resistance-management and/or integrated weed-management recommendations for specific crops and weed biotypes.
- For further information and to report suspected resistance, contact Zhongshan Chemical Canada Corp. at +16137472870.

13.1 Pre-Harvest Intervals (PHIs)

Crop	Pre-Harvest Interval (days)
Corn, hybrid, silage, field, seed	80
Corn, sweet	45
Dry Common Beans	100
Asian Radish	40
Asparagus	16
Crop Subgroup 13-07A – Caneberries (new and established plantings)	28
Carrots	30
Celery	62
Cucurbit Vegetables (Crop Group 9, excluding cucumber)	30
Eggplant	60
Highbush Blueberries (new and established plantings)	30
Mustard Greens	30
Outdoor Ornamentals (Woody and Herbaceous): Container-, Field- and Liner-Grown Plants and Plants in Landscape Plantings, Burning bush, Rhododendron, Daylily, Hosta, Juniper, Eastern white-cedar	Do not apply to trees or plants that will bear harvestable fruit within 12 months
Parsnip	60
Peanut	90
Pearl Millet for Animal Feed (grain)	130
Pearl Millet for Animal Feed (forage)	45
Peppers (field)	80
Strawberries, bearing years	30
Sugarbeets (post-emergent timing only)	120
Sweet Lupins	80
Sweet Potatoes	105
Tomatoes (transplanted and grown for processing)	60
Tomatoes (transplanted and grown for fresh market)	60

Consult the label of products to be tank mixed or split applied with Mestalin Herbicide 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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