

SPECIMEN LABEL

HELENA®



**HERBICIDE
FOR USE IN SELECTED CROPS**

ACTIVE INGREDIENT:

Pendimethalin (N-(1-ethylpropyl)-3,4-dimethyl-2, 6-dinitrobenzenamine).....37.4%

INERT INGREDIENTS:.....62.6%

TOTAL.....100.0%

1 gallon contains 3.3 pounds of pendimethalin

*Contains aromatic naphtha

KEEP OUT OF REACH OF CHILDREN

CAUTION/ PRECAUCION!

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.

(If you do not understand this label, find someone to explain it to you in detail.)

In case of emergency, call ChemTrec at 1-800-424-9300.

See Directions For Use Inside Booklet.

See Inside Booklet For Additional Precautionary Statements.

EPA REG. NO. 241-337-AA-5905

EPA EST. NO. 241-MO-1

SN 0305/0106

- NET CONTENTS: 2.5 Gallon (9.46 Liters)
 30 Gallons (113.55 Liters)
 110 Gallons (416.35 Liters)

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Disclaimer: Always refer to the label on the product before using Helena or any other product.

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HELENA® PENDIMETHALIN plus Sencor^{76 & 6/} Lexone¹

HELENA® PENDIMETHALIN plus Eptam^{65 & 5} plus Sencor^{76 & 6/} Lexone

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HELENA® PENDIMETHALIN followed by SCEPTER® O.T. herbicide

HELENA® PENDIMETHALIN plus Command^{98 & 8}

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HELENA® PENDIMETHALIN plus Dual

HELENA® PENDIMETHALIN plus Lasso

HELENA® PENDIMETHALIN plus Lorox

HELENA® PENDIMETHALIN plus Lorox Plus¹

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HELENA® PENDIMETHALIN plus Preview¹

HELENA® PENDIMETHALIN plus Sencor^{76&8}/Lexone

Special Weeds

Shattercane

Woolly Cupgrass

Red rice/ itchgrass

Rhizome Johnsongrass

Sugarcane (except Hawaii)

General Instructions

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SPECIMEN LABEL

HELENA®



HERBICIDE

FOR USE IN COTTON, DRY BULB ONIONS, DRY BULB SHALLOTS, EDIBLE BEANS, CORN (FIELD, SEED, SWEET), FORAGE LEGUMES, GARLIC, GRAIN SORGHUM, NONBEARING FRUIT, NUT CROPS, AND VINEYARD; PEANUTS, PEAS, POPCORN, POTATOES, RICE, SOYBEANS, SUGARCANE, SUNFLOWERS, SWEET LUPINES, AND TOBACCO

ACTIVE INGREDIENT:

Pendimethalin (N-(1-ethylpropyl)-3,4-dimethyl-2, 6-dinitrobenzenamine).....37.4%

INERT INGREDIENTS*:.....62.6%

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CAUTION/ PRECAUCION!**

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(If you do not understand this label, find someone to explain it to you in detail.)

In case of emergency, call ChemTrec at 1-800-424-9300.

See Directions For Use Inside Booklet.

See Inside Booklet For Additional Precautionary Statements.

HELENA® PENDIMETHALIN SHOULD BE USED IN ACCORDANCE WITH THE DIRECTIONS IN THIS BOOKLET AND IN SUPPLEMENTAL LABELS. FOR REGISTERED USES NOT INCLUDED IN THIS BOOKLET, AVAILABLE THROUGH LOCAL AGRICENTER™ DEALERS. READ ALL DIRECTIONS CAREFULLY BEFORE USING.

**Read all information on pages 6 – 26 before referring to specific crop use.
FOR CONTROL OF MOST ANNUAL GRASSES AND CERTAIN BROADLEAF WEEDS.**

FIRST AID

IF SWALLOWED:

- Call a poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told to do so by a poison control center or doctor.

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.
- Call a poison control center or doctor for treatment advice.

IF ON SKIN:

- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15-20 minutes.
- Call a poison control center or doctor for treatment advice.

NOTE TO PHYSICIAN: Because of increased risk of chemical pneumonia or pulmonary edema caused by aspiration of the hydrocarbon solvent, vomiting should be induced only under professional supervision.

Have the product container or label with you when calling a poison control center or doctor or going for treatment.

EPA REG. NO. 241-337-AA-5905

EPA EST. NO. 241-MO-1

SN 0305/0106

NET CONTENTS: 2.5 Gallon (9.46 Liters)
 30 Gallons (113.55 Liters)
 110 Gallons (416.35 Liters)

**MANUFACTURED FOR
HELENA CHEMICAL COMPANY
225 SCHILING BOULEAVRD, SUITE 300
COLLIERVILLE, TENNESSEE 38017**

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PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS CAUTION!

Harmful if swallowed or absorbed through the skin. Causes moderate eye irritation. Avoid contact with skin, eyes or clothing.

Personal Protective Equipment (PPE):

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category F on an EPA chemical resistance category selection chart.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves, such as barrier laminate, butyl rubber \geq 14 mils, nitrile rubber \geq 14 mils, neoprene rubber \geq 14 mils, or viton \geq 12 mils.
- Shoes plus socks

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

Engineering Controls:

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [(40 CFR 170.240)(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

User Safety Recommendations:

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This product is toxic to fish. **DO NOT** apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent aquatic sites. **DO NOT** contaminate water when disposing of equipment washwaters.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. This label must be in the possession of the user at the time of pesticide application.

Observe all cautions and limitations in this label and the labels of products used in combination with **HELENA® PENDIMETHALIN**. The use of **HELENA® PENDIMETHALIN** not consistent with this label can result in injury to crops, animals, or persons. Keep containers closed to avoid spills and contamination.

DO NOT apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide protection.

DO NOT use in manufacturing products for application to turf and ornamentals.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only

Disclaimer: Always refer to the label **on the product** before using Helena or any other product.

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apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours.

Exception: if the product is soil-injected or soil-incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is:

- Coveralls
- Chemical-resistant gloves, such as barrier laminate, butyl rubber \geq 14 mils, nitrile rubber \geq 14 mils, neoprene rubber \geq 14 mils, or viton \geq 12 mils.
- Shoes plus socks.

STORAGE AND DISPOSAL

DO NOT contaminate water, food, or feed by storage or disposal.

STORAGE:

DO NOT STORE BELOW 40°F. Extended storage at temperatures below 40°F can result in the formation of crystals on the bottom of the container. If crystallization does occur, store the container on its side at room temperature (70°F) and rock occasionally until crystals re-dissolve.

PESTICIDE DISPOSAL:

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL:

For Five Gallons and Under: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

For Bulk and Mini-Bulk: Return empty container to point of purchase for repackaging or recycling.

GENERAL INFORMATION

Special Precautions

HELENA® PENDIMETHALIN herbicide controls most annual grasses and certain broadleaf weeds as they germinate, but it will not control established weeds. Destroy existing weeds before applying **HELENA® PENDIMETHALIN** (except as recommended in specific postemergence combination treatments). Unusually cold, excessively wet, or hot and dry conditions that delay germination or extend germination over a long period of time can reduce weed control.

Over-application can result in crop stand loss, crop injury, or soil residues.

Uneven application or improper soil incorporation can decrease weed control or cause crop injury. Soil incorporation deeper than recommended can reduce weed control.

Seedling disease, cold weather, excessive moisture, shallow or deep planting, low or high soil pH, high soil salt concentration, or drought can weaken seedlings and plants and increase the possibility of crop damage from **HELENA® PENDIMETHALIN**. Under these conditions, crop yields can be reduced.

Use of **HELENA® PENDIMETHALIN** herbicide in accordance with label directions is expected to result in normal growth of rotational crops in most situations; however, various environmental and agronomic factors make it impossible to eliminate all risks associated with the use of this product, and, therefore, rotational crop injury is always possible.

Naturally occurring biotypes* of some of the weeds listed on this labels may not be effectively controlled by this and/or other products with the mitotic inhibiting mode of actions. Other herbicides with the mitotic inhibiting mode of action include other dinitroaniline herbicides such as Treffan¹¹, TRI-4[®] herbicide and Sonolan¹¹. If naturally occurring mitotic inhibiting resistant biotypes are present in a field, **HELENA® PENDIMETHALIN** and/or any other mitotic inhibiting mode of action herbicide should be tank-mixed or applied sequentially with an appropriate registered herbicide having a different mode of action to ensure control.

- A weed biotype is a naturally occurring plant within a given species that has a slightly different, but distinct, genetic makeup from other plants.

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See your Helena Chemical Company representative for additional information.

MIXING INSTRUCTIONS

1. Fill tank one-half to three-quarters full with clean water or liquid fertilizer and agitate. Prior to mixing **HELENA® PENDIMETHALIN** or **HELENA® PENDIMETHALIN** tank mixtures in liquid fertilizer, refer to appropriate label sections (see table of contents for page numbers) for recommended uses in liquid fertilizers, application instructions, and compatibility determinations.
2. **HELENA® PENDIMETHALIN Alone**
When using **HELENA® PENDIMETHALIN** alone, add **HELENA® PENDIMETHALIN** to the partially-filled tank while agitating and then fill the remainder of the tank with water or liquid fertilizer.
3. **HELENA® PENDIMETHALIN Tank Mixtures**
Add the tank mixture ingredients in the order listed below prior to adding **HELENA® PENDIMETHALIN** (For tank mixtures with Butyrac 200, Gramoxone Extra or Roundup see mixing instructions at the end of this section).
 - (a) **Wettable powder formulations**
Make a slurry of the wettable powder in water (1 part WP + 2 parts water). Add the slurry slowly into the partially-filled tank while agitating. If tank mixing more than one wettable powder formulation, add the first one while agitating. Continue agitation and add second wettable powder only after complete mixing of the first wettable powder has occurred.
 - (b) **Dry flowable/water dispersible granule formulations**
Add the granules to the partially-filled tank while agitating. Make a slurry of the granules in water before adding to liquid fertilizer.
 - (c) **Flowable formulations**
Add the flowable to the partially-filled tank while agitating.
 - (d) **Water soluble concentrate formulations**
Add the water soluble concentrate to the partially-filled tank while agitating.
 - (e) **Emulsifiable concentrate formulations**
Add the emulsifiable concentrate to the partially-filled tank while agitating.

After complete mixing, add **HELENA® PENDIMETHALIN** to the tank.

- (f) **NOTE: For tank mixes including Butyrac⁴, Gramoxone⁶ Extra or Roundup⁵**
After complete mixing of **HELENA® PENDIMETHALIN**, continue filling the sprayer with water and add Butyrac or Gramoxone Extra or Roundup near the end of the filling process.

If Gramoxone Extra is included in the tank mixture, add 8 oz. of Ortho X-77 spreader or similar non-ionic surfactant per 100 gallons of total spray mixture as the last ingredient in the tank.

Fill the remainder of the tank with water or liquid fertilizer while agitating.

4. **MAINTAIN CONTINUOUS AGITATION WHILE ADDING HERBICIDES AND UNTIL SPRAYING IS COMPLETED.** If the spray mixture is allowed to settle for any period of time, thorough agitation is essential to resuspend the mixture before spraying is resumed. Continue agitation while spraying.

GENERAL APPLICATION INSTRUCTIONS

Uniformly apply recommended **HELENA® PENDIMETHALIN** or **HELENA® PENDIMETHALIN** tank mixture treatments in 10 or more gallons of water or 20 or more gallons of liquid fertilizer per acre with ground equipment. Use higher gallonage for fields with heavy weed infestations or excessive crop residues. Refer to Applications with Liquid Fertilizers section (see table of contents for page number) for liquid fertilizer recommended uses, application instructions and compatibility determinations. Apply in 5 or more gallons of water per acre with aircraft. Refer to Spraying Instructions section (see table of contents for page number) for spraying directions. Refer to Application with Dry Bulk Fertilizers section (see table of contents for page number) for **HELENA® PENDIMETHALIN/** dry bulk fertilizer applications.

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RATES

Follow all recommendations in specific crop sections of this label regarding rates per acre of **HELENA® PENDIMETHALIN** and herbicides used in combination with **HELENA® PENDIMETHALIN**. When a rate range is recommended, unless other directions are given in a crop section, the high rate of the range should be used if heavy weed populations are anticipated or if extensive crop residues were present prior to seedbed preparation.

SOIL TEXTURES

The rate tables for recommended **HELENA® PENDIMETHALIN** treatments for each crop refer to coarse, medium, and fine soils. Soil type should be determined since rates for **HELENA® PENDIMETHALIN** treatments will change with soil texture. The following table lists soil types for coarse, medium, and fine soils.

COARSE	MEDIUM	FINE
sands loamy sands sandy loams	sandy clay loams* sandy clays loams silt loams silts	silty clay loams* silty clay clay loams clays

*Sometimes considered transitional soils and may be classified as either medium or fine textured soils.

HELENA® PENDIMETHALIN is not recommended for use on peat or muck soils, unless otherwise specified.

CHEMIGATION

HELENA® PENDIMETHALIN may be applied through sprinkler irrigation systems in cotton, field corn, garlic, dry bulb shallots, and direct-seeded and transplanted dry bulb onions, grain sorghum, nonbearing fruit and nut crops, nonbearing vineyards, peanuts, potatoes, soybeans and sunflowers. Follow all label recommendations for these crops regarding rates per acre, timing of application, special instructions, and precautions.

Apply this product only through a sprinkler including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move irrigation systems. Do not apply this product through any other type of irrigation system.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.

The system must be properly calibrated (with water only) to ensure that the amount of **HELENA® PENDIMETHALIN** applied corresponds to the recommended rate.

Apply **HELENA® PENDIMETHALIN** in ½ to ¾ inches of water during the first sprinkler set. When application is complete, flush the system with water.

If you have any questions about calibration, you should contact State Extension Service specialist, equipment manufacturers, or other experts.

Special Precautions for Chemigation

1. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label prescribed safety devices for public water systems are in place.
2. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.
3. The system must be free of leaks and clogged nozzles.
4. The pesticide must be supplied continuously for the duration of the aqueous application. An uneven application may cause injury to the crop or poor weed control.
5. Agitation must be maintained in the nurse tank.
6. The sprinkler-chemigation system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.

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7. The pesticide injection pipeline must contain a functional, automatic, quick closing check valve to prevent the flow of fluid back toward the injection pump.
8. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation systems either automatically or manually shut down.
9. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
10. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
11. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
12. Do not apply when wind speed favors drift beyond the area intended for treatment.

Chemigation Systems Connected to Public Water Systems

1. Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
2. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.
3. All chemigation systems connected to public water systems must also follow restrictions listed in the preceding section titled "CHEMIGATION".

WEEDS CONTROLLED

The following grass and broadleaf weeds are controlled by treatments of **HELENA® PENDIMETHALIN** in all registered crops at the rates recommended for each soil texture in the respective crop section:

Grasses Controlled

Barnyardgrass
Crabgrass
Crowfootgrass
Field Sandbur
Foxtail (giant)
Foxtail (green)
Foxtail (yellow)
Goosegrass
Johnsongrass, seedling
Panicum, fall
Panicum, Texas
Signalgrass¹
Witchgrass

Broadleaves Controlled

Bugloss, small
Carpetweed
Florida pusley
Kochia
Lambsquarters, common
Lambsquarters, slimleaf
Pigweed (*Amaranthus* spp.)
Purslane
Smartweed, Pennsylvania²
Spurge, annual
Velvetleaf²

¹In cotton and soybeans, effective management can be achieved by utilizing a program involving **HELENA® PENDIMETHALIN** preplant incorporated followed by a labeled postemergence grass product. Signalgrass populations should be managed in all crop rotations for effective control.

²Reduced competition only.

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In addition to the weeds listed above as being controlled, **HELENA® PENDIMETHALIN** (when applied as directed) will control the weeds in the crops indicated in the following table:

WEEDS CONTROLLED – Grasses	CROP
Bluegrass, annual	Nonbearing fruit and nuts and vineyards
Guineagrass	Sugarcane
Itchgrass (Raoulgrass)	Soybeans ¹ Sugarcane ² (except in Hawaii)
Johnsongrass, rhizome	Cotton ¹ Soybeans ¹
Junglerice	Nonbearing fruit and nuts and vineyard Rice Sugarcane
Lovegrass	Nonbearing fruit and nuts and vineyards
Panicum, Browntop	Nonbearing fruit and nuts and vineyard Sugarcane
Red Rice	Soybeans ¹
Shattercane	Field Corn ³ Grain Sorghum ³ Soybeans ¹
Sprangletop (<i>Leptochloa</i> spp.)	Rice Nonbearing fruit and nuts and vineyards
Swollen fingergrass	Sugarcane
Volunteer Sorghum	Cotton ⁶ (except in California and Arizona)
Wild Proso Millet	Field ⁴ and Sweet Corn, Grain Sorghum ³ and Peas
Woolly cupgrass	Field ⁵ and Sweet Corn Nonbearing fruit and nuts and vineyards Soybeans ¹
WEEDS CONTROLLED – Broadleaves	CROPS
Carpetweed	Sunflowers, no-till Nonbearing fruit and nuts and vineyards
Chickweed, common	Nonbearing fruit and nuts, peas and vineyards
Fiddleneck	Nonbearing fruit and nuts and vineyards
Henbit	Nonbearing fruit and nuts and vineyards
Knotweed, prostrate	Nonbearing fruit and nuts and vineyards
London rocket	Nonbearing fruit and nuts and vineyards
Smartweed, Pennsylvania	Field and Sweet Corn Nonbearing fruit and nuts and vineyards
Puncturevine	Nonbearing fruit and nuts and vineyards
Shepherdspurse	Nonbearing fruit and nuts, peas and vineyards
Stinging nettle	Potatoes
Velvetleaf	Field and Sweet Corn Nonbearing fruits and nuts and vineyards

¹ Control or reduced competition (refer to appropriate section for use instructions; see table of contents for page number).

² **HELENA® PENDIMETHALIN** must be applied at the 7.2 pint/acre broadcast rates for itchgrass control. Surface application (no mechanical incorporation) will provide partial itchgrass control. An additional application of 4.8 to 7.2 pints/acre may be made at layby.

³ Control with **CULTI-SPRAY** applications only. Refer to appropriate section for use instructions; see table of contents for page number.

⁴ **HELENA® PENDIMETHALIN** will control wild proso millet when applied as a **CULTI-SPRAY** application. **HELENA® PENDIMETHALIN** will reduce the competition of wild proso millet when applied preemergence. Effective management of wild proso millet can be achieved with a program involving herbicide applications and mechanical cultivation to eliminate weed escapes. **HELENA® PENDIMETHALIN** plus Accent SP, Bladex or Extrazine II applied early postemergence (no later than when corn is in the 4-leaf stage) treatments have provided the most consistent suppression of wild proso millet because: (1) early postemergence treatments provide a burn-down of the initial germination flush of wild proso millet and (2) early postemergence treatments provide residual activity later into the growing season.

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- 5 Effective management of woolly cupgrass can be achieved with a program involving herbicide applications and mechanical cultivation to eliminate weed escapes. **HELENA® PENDIMETHALIN** plus Accent, Bladex, or Extrazine II applied early postemergence (no later than when corn is in the 4-leaf stage) treatments have provided the most consistent control of woolly cupgrass because: (1) early postemergence treatments provide a burn-down of the initial germination flush of woolly cupgrass and (2) early postemergence treatments provide residual activity later into the growing season.
- 6 Use the high rate for each soil texture. Apply broadcast to flat land and mechanically incorporate (two passes at an angle to one another) prior to bedding up.

SPRAYING INSTRUCTIONS

GROUND APPLICATIONS:

Use sprayers with appropriate nozzles that provide uniform spray distribution and minimize drift. Keep the bypass line on or near the bottom of the tank to minimize foaming. Nozzle and in-line screens must be no finer than 50 mesh. DO NOT apply **HELENA® PENDIMETHALIN** during periods of gusty winds. As with all herbicides, windy conditions can cause uneven applications.

BROADCAST TREATMENT – Uniformly apply in 10 or more gallons of water or 20 or more gallons of liquid fertilizer as specified in the appropriate sections of this booklet.

BAND TREATMENT – Uniformly apply the broadcast equivalent rate and volume per acre. To determine these:

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{Broadcast RATE per acre} = \text{Band RATE per acre}$$

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{Broadcast VOLUME per acre} = \text{Band VOLUME per acre}$$

AERIAL APPLICATIONS

Uniformly apply in 5 or more gallons of water per acre. Exercise caution to minimize drift. DO NOT apply during periods of gusty winds or when wind conditions favor drifting. Spray drift can cause injury to sensitive crops. It is recommended that a flagman or an automatic mechanical flagging unit on the aircraft be used to avoid overlapping and possible crop injury.

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops:

1. The distance of the outermost nozzles on the boom must not exceed $\frac{3}{4}$ the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees.

Where states have more stringent regulations, they should be observed.

The applicator should be familiar with and take into account the information covered in the Aerial Drift Reduction Advisory Information presented below.

INFORMATION ON DROPLET SIZE:

The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see WIND, TEMPERATURE AND HUMIDITY, and TEMPERATURE INVERSIONS).

CONTROLLING DROPLET SIZE

- Volume – Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- Pressure – Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.

Disclaimer: Always refer to the label on the product before using Helena or any other product.

SPECIMEN LABEL

- Number of Nozzles – Use the minimum number of nozzles that provide uniform coverage.
- Nozzle Orientation – Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is recommended practice. Significant deflection from the horizontal will reduce droplet size and increase drift potential.
- Nozzle Type – Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

BOOM LENGTH

For some use patterns, reducing the effective boom length to less than $\frac{3}{4}$ of the wingspan or rotor length may further reduce drift without reducing swath width.

APPLICATION HEIGHT

Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making application at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

SWATH ADJUSTMENT

When applications are made with a crosswind, the swath will be displaced downward. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller droplets, etc.).

WIND

Drift potential is lowest between wind speeds of 2 – 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

TEMPERATURE AND HUMIDITY

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

TEMPERATURE INVERSIONS

Applications should not occur during a temperature inversion because drift potential is high. Temperature inversion restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable wind common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

SENSITIVE AREAS

The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, or non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas).

INCORPORATION INSTRUCTIONS

Break up clods before a pre-plant incorporated application.

1. Flat-planted crop

HELENA® PENDIMETHALIN is to be incorporated prior to planting and within 7 days of application. When **HELENA® PENDIMETHALIN** is applied to flat land that will not be bedded, mechanical incorporation should be into the top 1 or 2 inches of soil. Mechanical incorporation of **HELENA® PENDIMETHALIN** into the top 1 or 2 inches of soil can be achieved by the following:

- (a) Disk harrow set to cut 3 to 4 inches deep and operated in two different directions at 4 to 6 mph. The second pass should be made at an angle to the first.
- (b) PTO-driven equipment (tillers, cultivator, hoes) set to cut 2 inches deep and operated one time at 4 mph or less.
- (c) Rolling cultivator set to cut 2 to 3 inches deep and operated two times at 6 to 8 mph. The second pass should be made at an angle to the first. Use only on coarse and medium textured soils.

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- (d) Field cultivator set to cut 3 inches deep operated two times at more than 5 mph. The second pass should be made at an angle to the first. Equipment must have 3 or 4 rows of sweeps, spaced at intervals of 7 inches or less and staggered so that no soil is left unturned. Do not use chisel points.
- (e) LELY-ROTERRA¹² set and operated according to the manufacturer's directions to thoroughly incorporate **HELENA® PENDIMETHALIN** to a depth of 1 to 2 inches.
- (f) Do-All set and operated according to the manufacturer's directions to thoroughly incorporate **HELENA® PENDIMETHALIN** to a depth of 1 to 2 inches.

NOTE: **HELENA® PENDIMETHALIN** can be incorporated in a single pass when the soil is of good tilth with moderate moisture and relatively free of clods and trash. Implements must be properly set up to thoroughly incorporate **HELENA® PENDIMETHALIN** into the top 1 or 2 inches of soil. Recommended implements include: (1) C-shank or S-shank field cultivators equipped with flexline drag or rolling basket attachment and (2) the combination disk/field cultivator implement equipped with flexline drag or rolling basket attachment. Field cultivators must have 3 or 4 rows of sweeps spaced at intervals of 7 inches or less and staggered so that no soil is left unturned. Implements must be operated at 6 to 8 miles per hour and set to cut 3 to 4 inches deep.

2. **Bedded Crop – Application Over Beds**

HELENA® PENDIMETHALIN is to be incorporated prior to planting and within 7 days of application. When **HELENA® PENDIMETHALIN** is applied over beds, mechanical incorporation should be into the top 1 or 2 inches of soil. Mechanical incorporation of **HELENA® PENDIMETHALIN** into the top 1 or 2 inches of soil can be achieved by the following:

- (a) Rolling cultivator set to cut 2 to 3 inches deep and operated two times at 6 to 8 mph. Use only on coarse and medium textured soils.
- (b) PTO-driven equipment (tillers, cultivators, hoes) set to cut 2 inches deep and operated one time at 4 mph or less.
- (c) Bed conditioner set to cut 2 to 3 inches deep and operated one time at 4 to 6 mph.

During planting, or if beds must be reshaped prior to planting, avoid tillage that will bring untreated soil to the surface or expose untreated soil in the seedbed or in the furrow.

3. **Bedded Crop – Application Prior to Bedding**

HELENA® PENDIMETHALIN is to be incorporated prior to planting and within 7 days of application. When **HELENA® PENDIMETHALIN** is applied to flat land prior to bedding, mechanical incorporation should be of sufficient depth so that bedding does not bring up untreated soil. Mechanical incorporation of **HELENA® PENDIMETHALIN** can be achieved by the following:

- (a) Disk harrow set to cut 4 to 6 inches deep and operated in two different directions at 4 to 6 mph. The second pass should be made at an angle to the first.
- (b) PTO-driven equipment (tillers, cultivators, hoes) set to cut 3 to 4 inches deep and operated one time at 4 mph or less. During planting, or if beds must be reshaped prior to planting, avoid tillage that will bring untreated soil to the surface or expose untreated soil on the seedbed or in the furrow.

APPLICATIONS WITH LIQUID FERTILIZERS

HELENA® PENDIMETHALIN alone or in tank mix combinations with wettable powders (WP), dry flowables (DF), flowables (F), water soluble concentrates (S) or emulsifiable concentrates (EC) may not combine properly with some liquid fertilizer materials. Small quantities should always be tested before full scale mixing. Follow the testing procedure below to determine compatibility and if a compatibility agent is needed.

Follow all **HELENA® PENDIMETHALIN** label recommendations regarding registered crops, rates per acre, timing of application, special instructions and precautions. Apply treatments in 20 or more gallons of liquid fertilizer per acre with ground equipment. **DO NOT** apply **HELENA® PENDIMETHALIN** postemergence in liquid fertilizers.

All individual state regulations relating to fluid fertilizer mixing, registration, labeling and application are the responsibility of the individual and/or company selling the **HELENA® PENDIMETHALIN** liquid fertilizer mixture.

SPECIMEN LABEL
LIQUID FERTILIZER COMPATIBILITY DETERMINATIONS

If liquid fertilizer/herbicide(s) mixture separates in the spray tank, clogged equipment and uneven application can result, which can cause poor weed control and crop injury. Always predetermine the compatibility of **HELENA® PENDIMETHALIN** alone or with other herbicides in the specific liquid fertilizer to be used according to the following directions:

1. Add 1 pint of fertilizer to a quart jar
2. Add 1 to 4 teaspoon(s) of the DF, WP, AS, F or L formulation (depending on mixing ratio required) to the liquid fertilizer. The number of teaspoons of the formulation to add can be determined by the following formula:

$$\frac{\text{Lbs. or pts of product/acre}}{\text{Gallons of fertilizer/acre}} \times 11.4 = \text{number of teaspoons of herbicide to add to 1 pint of fertilizer.}$$

3. Close the jar and agitate until the herbicide(s) are evenly dispersed in the liquid fertilizer. If the materials do not disperse well, it may be necessary to slurry the chemicals in water before adding to the fertilizer.
4. After dispersing the materials (step 2) add the appropriate number of teaspoons of **HELENA® PENDIMETHALIN** (see formula in step 2) to the jar and shake well. Add water soluble concentrate herbicides to the mixture last and agitate. Let the mixture stand for 30 minutes and then observe the results. Look for signs of separation, an oily layer or globules, sludge, flakes or other precipitates.
5. Determine compatibility.
 - (a) If the herbicide(s) and liquid fertilizer mixture does not separate, use this mixture in your spray tank.
 - (b) If the mixture separates, but mixes readily with shaking, the mixture can be used providing good agitation is maintained in the spray tank.
 - (c) If separation of the mixture occurs and agitation does not correct this problem, a compatibility agent* is needed.
6. If the need for a compatibility agent* is demonstrated, the following procedure is recommended: Using a clean quart jar, repeat step one above and add ½ teaspoon of the compatibility agent to the liquid fertilizer. Mix well and repeat steps 2, 3, and 4. If separation or precipitation occurs with the compatibility agent, DO NOT use **HELENA® PENDIMETHALIN** with that specific liquid fertilizer.

An effective compatibility agent will cause the mixture to remain uniformly dispersed with little or no separation (oil rising to the surface) for one half hour or longer. If slight separation occurs, 2 to 3 inversions of the jar should be sufficient to redisperse the mixture uniformly.

Use a clean jar for each test. A compatible mixture will have a uniform appearance and will be relatively easy to redisperse with gentle agitation of the jar.

*Compex-Kalo Laboratories Incorporated, Kansas City, MO; Sponto 168-D-Witco Chemical Company, Houston, TX; Unite-Hopkins Agricultural Chemical Company, Madison, WI; or other comparable adjuvants.

APPLICATIONS WITH DRY BULK FERTILIZERS

HELENA® PENDIMETHALIN may be impregnated on dry bulk fertilizers. When applied as directed, **HELENA® PENDIMETHALIN** dry bulk fertilizer mixtures provide weed control equal to that provided by the same rates of **HELENA® PENDIMETHALIN** applied in water.

Follow all **HELENA® PENDIMETHALIN** label recommendations regarding rates per acre, registered crops, incorporation, special instructions and precautions. Apply **HELENA® PENDIMETHALIN** dry bulk fertilizer mixtures only with ground equipment.

All individual state regulations relating to dry bulk fertilizer blending, registration, labeling, and application are the responsibility of the individual and/or company selling the **HELENA® PENDIMETHALIN** dry bulk fertilizer mixture.

A minimum of 200 pounds of dry bulk fertilizer impregnated with the recommended amount of **HELENA® PENDIMETHALIN** must be applied per acre.

DO NOT impregnate **HELENA® PENDIMETHALIN** onto coated ammonium nitrate or limestone because these materials will not absorb the herbicide. Dry fertilizer blends containing mixtures of ammonium nitrate or limestone may be impregnated with **HELENA® PENDIMETHALIN**. A

SPECIMEN LABEL

minimum of 200 pounds of impregnated dry bulk fertilizer, excluding the weight of ammonium nitrate or limestone, *must* be applied per acre.

Refer to appropriate crop section in **HELENA® PENDIMETHALIN** herbicide booklet to determine the rate of **HELENA® PENDIMETHALIN** per acre. Use the following table to determine the amount of **HELENA® PENDIMETHALIN** to be impregnated on a ton of dry bulk fertilizer based on the rate of fertilizer which will be applied per acre.

**Rate Chart for Impregnation of Dry Bulk Fertilizers with HELENA® PENDIMETHALIN
(Pints of HELENA® PENDIMETHALIN per ton of Fertilizer)**

HELENA® PENDIMETHALIN Rate Per Acre (recommended rate for crop and soil texture)					
Fertilizer Rate (lbs/acre)	1.2 Pint	1.8 pint	2.4 pint	3.0 pint	3.6 pint
200	12 pts/ton	18 pts/ton	24 pts/ton	30 pts/ton	36 pts/ton
250	9.6 pts/ton	14.4 pts/ton	19.2 pts/ton	24 pts/ton	28.8 pts/ton
300	8 pts/ton	12 pts/ton	16 pts/ton	20 pts/ton	24 pts/ton
350	6.9 pts/ton	10.3 pts/ton	13.7 pts/ton	17.1 pts/ton	20.6 pts/ton
400	6 pts/ton	9 pts/ton	12 pts/ton	15 pts/ton	18 pts/ton
450	5 1/3 pts/ton	8 pts/ton	10 2/3 pts/ton	13 1/3 pts/ton	16 pts/ton

For those rates not listed in this table, calculate the pints of **HELENA® PENDIMETHALIN** to be impregnated on a ton of dry bulk fertilizer by using the following formula:

$$\begin{array}{r}
 \underline{2000} \\
 \text{Pounds of dry} \\
 \text{fertilizer per acre}
 \end{array}
 \times
 \begin{array}{r}
 \text{Pints of} \\
 \text{HELENA® PENDIMETHALIN} \\
 \text{per acre} \\
 \text{(recommended} \\
 \text{rate for crop and} \\
 \text{soil texture)}
 \end{array}
 =
 \begin{array}{r}
 \text{pints of} \\
 \text{HELENA® PENDIMETHALIN} \\
 \text{per ton of} \\
 \text{fertilizer}
 \end{array}$$

To impregnate **HELENA® PENDIMETHALIN** on bulk fertilizer, use a closed rotary-drum mixer or other commonly used dry bulk fertilizer blender equipped with suitable spray equipment. Spray nozzles must be placed to provide uniform coverage of **HELENA® PENDIMETHALIN** onto the fertilizer during mixing.

Apply the **HELENA® PENDIMETHALIN** dry bulk fertilizer mixture with an accurately calibrated dry fertilizer spreader. The **HELENA® PENDIMETHALIN** dry bulk fertilizer mixture must be spread uniformly on the soil surface. Uneven spreading can cause poor weed control and crop injury.

Refer to Incorporation Instructions section (see table of contents for page number) for incorporation directions.

CULTURAL PRACTICES FOLLOWING APPLICATION

Should weeds develop, a shallow cultivation or rotary hoeing will generally result in better weed control. A **HELENA® PENDIMETHALIN** treatment may be followed by any registered herbicide to control weeds not listed on the **HELENA® PENDIMETHALIN** label.

FOLLOW CROP RESTRICTIONS

1. Land treated with **HELENA® PENDIMETHALIN** may be planted to other crops the following year. See restrictions below for sugar beets, red beets, and spinach.
2. Winter wheat, winter barley

SPECIMEN LABEL

Winter wheat and winter barley may be planted in the fall 4 months after a **HELENA® PENDIMETHALIN** application in any registered crop. Winter wheat and winter barley may be planted in the fall 3 months after a **HELENA® PENDIMETHALIN CULTI-SPRAY** application in irrigated field corn or grain sorghum. The treated crop must be grown to maturity and harvested before planting wheat or barley.

In areas where irrigation is necessary to produce the crop treated with **HELENA® PENDIMETHALIN**, DO NOT plant winter wheat or winter barley as follow crops if crop failure/ destruction occurs and land is fallowed during the summer as crop injury may result.

DO NOT plant winter wheat or winter barley as follow crops in treated land if **HELENA® PENDIMETHALIN** is applied at 4.8 pints or higher until the next growing season.

DO NOT feed forage or graze livestock for 75 days after planting wheat or barley in treated land.

3. Sugar beets, red beets, spinach

To avoid crop injury, do not plant sugar beets, red beets or spinach for 12 months following a **HELENA® PENDIMETHALIN** application. To insure thorough mixing of soil, land should be plowed using a moldboard plow to a depth of 12 inches prior to planting these crops.

4. When **HELENA® PENDIMETHALIN** is used in tank-mix or sequential combinations, refer to label of other herbicides for additional follow crop restrictions.

Use of **HELENA® PENDIMETHALIN** herbicide in accordance with label directions is expected to result in normal growth of rotational crops in most situations; however, various environmental and agronomic factors make it impossible to eliminate all risks associated with the use of this product and therefore, rotational crop injury is always possible.

FIELD CORN

GENERAL INSTRUCTIONS

HELENA® PENDIMETHALIN may be applied in conventional, minimum or no-till as a preemergence, early postemergence or **CULTI-SPRAY** (postemergence incorporated) application in field corn.

DO NOT APPLY PREPLANT INCORPORATED or serious corn injury can result.

DO NOT apply **HELENA® PENDIMETHALIN** in no-till in California.

With the exception of minimum or no-tillage systems (see below) plant into a seed bed that is firm and free of clods and trash. Use only where adequate tillage is practiced to provide good soil coverage of the corn seed. **PLANT CORN AT LEAST 1 1/2 INCHES DEEP. CORN SEED MUST BE COMPLETELY COVERED WITH SOIL.**

HELENA® PENDIMETHALIN or **HELENA® PENDIMETHALIN** tank-mix combination treatments are most effective in controlling weeds when adequate rainfall or overhead irrigation is received within 7 days after application. If cultivation is necessary because of soil crusting, soil compaction or weed germination before rain or irrigation, use shallow tillage (such as rotary hoe), and make certain corn seeds are below the tilled area.

When **HELENA® PENDIMETHALIN** alone is used, if corn loss occurs due to weather conditions, corn or any crop registered for **HELENA® PENDIMETHALIN** pre-plant incorporated use can be replanted the same year without adverse effects. If corn is replanted, seeding depth must be below retilled area or crop injury may occur.

DO NOT exceed the maximum labeled rate for any soil type.

HELENA® PENDIMETHALIN is not recommended for use on peat or muck soils.

Field Corn Grown in Minimum or No-Tillage Systems

HELENA® PENDIMETHALIN alone and **HELENA® PENDIMETHALIN** tank mixtures may be used in field corn in minimum or no-tillage systems. **PLANT CORN AT LEAST 1 1/2 INCHES DEEP. CORN SEED MUST BE COMPLETELY COVERED WITH SOIL.** The use of no-till planters under conditions which do not allow good soil coverage of the corn seed can result in reduced crop stand or injury if **HELENA® PENDIMETHALIN** contacts the germinating corn seed. Check equipment to ensure good seed coverage.

SPECIMEN LABEL
Use Methods and Timings

DO NOT APPLY PREPLANT INCORPORATED or serious corn injury can result.

Preemergence - Apply HELENA® PENDIMETHALIN after planting, but before weeds and crop emerge.

Postemergence – Apply HELENA® PENDIMETHALIN postemergence until corn is 30 inches tall or has 8 visible leaf collar (V8) which ever is more restrictive. Use drop nozzles and apply as directed spray if the corn canopy density prevents applications from reaching the soil and target weeds.

DO NOT apply in liquid fertilizer.

CULTI-SPRAY (postemergence incorporated) - Apply HELENA® PENDIMETHALIN alone or HELENA® PENDIMETHALIN plus atrazine when corn is at least 4 inches tall until layby (last cultivation). Refer to page 18 for complete **CULTI-SPRAY** instructions.

Tank Mixes and Sequential Programs - HELENA® PENDIMETHALIN may be tank mixed with any registered herbicide(s) labels for use in field corn. HELENA® PENDIMETHALIN can be applied based on the timing indicated by the companion label or until corn is 30" tall or 8 visible leaf collars (V8) which ever is more restrictive. Use drop nozzles and apply as a directed spray if the corn canopy density prevents applications from reaching the soil and target weeds.

DO NOT apply in liquid fertilizer.

When using tank mixtures or sequential applications with HELENA® PENDIMETHALIN, always read the companion product label(s) to determine the specific use rates by soil types, weed species, and weed or crop growth stages. In addition, follow all precautions and restrictions including state and local use restrictions that may apply to specific products. Always follow the most restrictive label.

HELENA® PENDIMETHALIN Use Rates in Field Corn

Recommended use rates for HELENA® PENDIMETHALIN alone and in tank mix or sequential applications are given in the following table.

**Broadcast Rate¹ per acre of HELENA® PENDIMETHALIN Preemergence
or Early Postemergence in Field Corn
(Pints per Acre)**

Soil Texture	<1.5% Organic Matter	1.5 – 3.0% Organic Matter	>3.0% Organic Matter
Coarse	1.8 to 2.4 pts	2.4 to 3.6 pts	3.6 pts
Medium	2.4 to 3.6 pts	3.6 pts	3.6 to 4.8 pts
Fine	2.4 to 3.6 pts	3.6 to 4.8 pts	3.6 to 4.8 pts

¹USE THE HIGH RATE FOR EACH SOIL CLASSIFICATION WHEN USING HELENA® PENDIMETHALIN ALONE.

CULTI-SPRAY (POSTEMERGENCE INCORPORATED)

General Instructions

HELENA® PENDIMETHALIN or HELENA® PENDIMETHALIN plus Atrazine tank mixtures applied as a **CULTI-SPRAY** (postemergence incorporated) treatment will control most late season annual grasses and certain broadleaf weeds in field corn. HELENA® PENDIMETHALIN treatments can be applied from the 4-inch growth stage to as late as the last cultivation (layby) of field corn. HELENA® PENDIMETHALIN plus Atrazine must be applied before the field corn reaches 12 inches in height. HELENA® PENDIMETHALIN treatments will not control established weeds. DESTROY EMERGED WEEDS BY CULTIVATION PRIOR TO HELENA® PENDIMETHALIN APPLICATION.

CULTI-SPRAY (postemergence incorporated) application of HELENA® PENDIMETHALIN or HELENA® PENDIMETHALIN plus atrazine tank mixture can be applied in field corn previously treated with herbicides registered for use in field corn. Consult the labels of those herbicides for suggested treatments, rates to be used, and precautions or restrictions for use in field corn and for Follow Crop Restrictions.

**CULTI-SPRAY
(Postemergence Incorporated)
APPLICATIONS**

HELENA® PENDIMETHALIN alone or HELENA® PENDIMETHALIN plus Atrazine

Disclaimer: Always refer to the label on the product before using Helena or any other product.

SPECIMEN LABEL

1. Cultivate with a sweep-type or rolling cultivator operated at sufficient speed to throw at least one inch of soil over the bases of the field corn plants. This will kill small weed seedlings growing in the field corn row and will prevent direct contact of the zone of brace root formation by **HELENA® PENDIMETHALIN** during application.
2. Apply broadcast with a ground sprayer when corn is at least 4 inches tall up to layby (last cultivation). Use drop nozzles if crop foliage will prevent uniform coverage of the soil surface within the rows.
3. Thoroughly and uniformly incorporate **HELENA® PENDIMETHALIN** treatments into the soil (1) with a sweep-type or rolling cultivator set to provide thorough incorporation in the top 1 inch of soil OR (2) with adequate irrigation water or rainfall. For best results, incorporate **HELENA® PENDIMETHALIN** treatments as soon as possible after application. Incorporation must be completed within 7 days after application. If adequate moisture is not received within 7 days after application, incorporate **HELENA® PENDIMETHALIN** with a sweep-type or rolling cultivator.

Under situations of low rainfall or soil moisture, when deep germinating weeds such as shattercane or field sandbur are anticipated, mechanical incorporation will provide best results.

If cultivation is needed after application and incorporation of **HELENA® PENDIMETHALIN**, the depth of cut should be no deeper than the depth of cut used to incorporate.

Broadcast Rate per acre of **HELENA® PENDIMETHALIN** **CULTI-SPRAY** (Postemergence Incorporated) In Field Corn (Pints per Acre)

Soil Texture	Southern States ¹	Northern States ¹
Coarse	1.2 to 1.8 pts	1.8 to 2.4 pts
Medium	1.8 to 2.4 pts	2.4 to 3.6 pts
Fine	1.8 to 3.6 pts	2.4 to 3.6 pts

For **HELENA® PENDIMETHALIN** plus Atrazine tank mixtures, do not exceed 1.2 lb a.i. per acre of Atrazine.

¹ See map at end of this label for specific states.

NOTE: Livestock can graze or be fed forage from treated field corn after 21 days following application.

SWEET CORN, SEED CORN OR POPCORN

GENERAL INSTRUCTIONS

HELENA® PENDIMETHALIN may be used in conventional tillage sweet corn, seed corn or popcorn as a preemergence or postemergence application.

DO NOT APPLY PREPLANT INCROPORATED or serious corn injury can result.

DO NOT apply **HELENA® PENDIMETHALIN** in reduced, minimum or no-till sweet corn, seed corn or popcorn.

Plant into a seed bed that is firm and free of clods and trash. Use only where adequate tillage is practiced to provide good soil coverage of the corn seed. **PLANT CORN AT LEAST 1 ½ INCHES DEEP. CORN SEED MUST BE COMPLETELY COVERED WITH SOIL.**

HELENA® PENDIMETHALIN alone will not control emerged weeds. **HELENA® PENDIMETHALIN** can be applied as a tank mix with Atrazine or other herbicides labeled for use in sweet corn, seed corn or popcorn. When using tank mixtures with **HELENA® PENDIMETHALIN**, always read the companion product label(s) to determine the specific use rates by soil types, weed species, and weed or crop growth stage. **Always follow the most restrictive label.**

In addition, follow precautions and restrictions including state and local use restrictions that may apply to specific products.

HELENA® PENDIMETHALIN or **HELENA® PENDIMETHALIN** tank-mix combination treatments are most effective in controlling weeds when mechanically incorporated or incorporated by adequate rainfall or overhead irrigation is received within 7 days after application. If cultivation is necessary because of soil crusting, soil compaction or weed germination before rain or irrigation, use shallow tillage.

SPECIMEN LABEL

When **HELENA® PENDIMETHALIN** alone is used, if corn loss occurs due to weather conditions corn or, any crop registered for **HELENA® PENDIMETHALIN** preplant incorporated use can be replanted the same year without adverse effects. If corn is replanted, seeding depth must be below retiled area or crop injury may occur.

DO NOT exceed the maximum labeled rate for any soil type.

HELENA® PENDIMETHALIN is not recommended for use on peat or muck soils.

Use Methods and Timings

DO NOT APPLY PREPLANT INCORPORATED or serious corn injury can result.

Preemergence - Apply **HELENA® PENDIMETHALIN** after planting, but before weeds and crop emerge.

Postemergence – Apply **HELENA® PENDIMETHALIN** postemergence until corn is 20-24 inches tall or has 8 visible leaf collar (V8) which ever is more restrictive. Use drop nozzles and apply as directed spray if the corn canopy density prevents applications from reaching the soil and target weeds.

DO NOT apply in liquid fertilizer.

Tank Mixes and Sequential Programs - **HELENA® PENDIMETHALIN** may be tank mixed with any registered herbicide(s) labeled for use in sweet corn, seed corn and popcorn. **HELENA® PENDIMETHALIN** can be applied based in the timing indicated by the companion label or until corn is 20-24" tall or 8 visible leaf collars (V8) whichever is more restrictive. Use drop nozzles and apply as a directed spray if the corn canopy density prevents applications from reaching the soil and target weeds.

DO NOT apply in liquid fertilizer.

When using tank mixtures or sequential applications with **HELENA® PENDIMETHALIN**, always read the companion product label(s) to determine the specific use rates by soil types, weed species, and weed or crop growth stages. In addition, follow all precautions and restrictions including state and local use restrictions that may apply to specific products. Always follow the most restrictive label.

HELENA® PENDIMETHALIN USE RATES FOR SWEET CORN, SEED CORN OR POPCORN

Recommended use rates for **HELENA® PENDIMETHALIN** alone and in tank mix applications are given in the following table.

Broadcast Rate¹ per Acre of HELENA® PENDIMETHALIN Preemergence or Postemergence (Pints per Acre)

Soil Texture	<1.5%	1.5 – 3.0%	>3.0%
	Organic Matter	Organic Matter	Organic Matter
Coarse	1.8 to 2.4 pts	2.4 to 3.6 pts	3.6 pts
Medium	2.4 to 3.6 pts	3.6 pts	3.6 to 4.8 pts
Fine	2.4 to 3.6 pts	3.6 to 4.8 pts	3.6 to 4.8 pts

¹USE THE HIGH RATE FOR EACH SOIL CLASSIFICATION WHEN USING **HELENA® PENDIMETHALIN** ALONE

RESTRICTIONS FOR POSTEMERGENCE APPLICATIONS

To avoid serious crop injury with early postemergence applications observe the following restrictions:

Plant into a seedbed that is firm. Use only where adequate tillage is practiced to provide good coverage of the corn seed. **PLANT CORN AT LEAST 1 ½ INCHES DEEP. CORN SEED MUST BE COMPLETELY COVERED WITH SOIL.**

- **DO NOT APPLY PREPLANT INCORPORATED or serious corn injury can result.**
- DO NOT apply following **HELENA® PENDIMETHALIN** preemergence applications.
- DO NOT apply with liquid fertilizer as the carrier.

COTTON

GENERAL INSTRUCTIONS

HELENA® PENDIMETHALIN may be applied in conventional, minimum, stale seedbed or no-till as a preplant surface, preplant incorporated or preemergence application in cotton.

Disclaimer: Always refer to the label on the product before using Helena or any other product.

SPECIMEN LABEL

DO NOT use in no-till cotton in California.

Preplant surface, preemergence and layby treatments are most effective in controlling weeds when adequate rainfall or overhead irrigation is received within 7 days after application. A shallow cultivation is recommended if soil crusting or soil compaction occurs. If weeds begin to germinate or adequate moisture is not received within 7 days after application, use shallow tillage (rotary hoe or light harrow) and make sure cotton seeds are below tilled area. Otherwise, the use of a postemergence herbicide treatment may be required to control weed escapes at planting or following cotton emergence.

In the event of a crop loss due to weather conditions, cotton or any crop registered for **HELENA® PENDIMETHALIN** preplant incorporated use can be replanted without adverse effects the same year. If replanting is necessary, DO NOT rework the soil deeper than the treated zone.

There must be an interval of at least 60 days between the last **HELENA® PENDIMETHALIN** application and cotton harvest.

DO NOT feed forage or graze livestock in treated cotton fields.

HELENA® PENDIMETHALIN is not recommended for use on peat or muck soils.

Use Methods and Timings

Preplant Surface – Apply **HELENA® PENDIMETHALIN** up to 15 days prior to planting. Apply **HELENA® PENDIMETHALIN** tank mixes and sequential programs as specified under the tank mix section.

Preplant Incorporated – Apply **HELENA® PENDIMETHALIN** up to 60 days prior to planting and incorporate within 7 days of application. Apply **HELENA® PENDIMETHALIN** tank mixes and sequential programs as specified under the tank mix section.

Preemergence – Apply **HELENA® PENDIMETHALIN** at planting or up to 2 days after planting. Apply to a seedbed which is firm and free of clods. Apply **HELENA® PENDIMETHALIN** tank mixes and sequential programs as specified under the tank mix section.

Preplant Incorporated followed by Preemergence – Apply **HELENA® PENDIMETHALIN** up to 60 days prior to planting and incorporate within 7 days of application. Apply overlay application of **HELENA® PENDIMETHALIN** at planting or up to 2 days after planting. **Total amount of HELENA® PENDIMETHALIN applied per acre cannot exceed the highest labeled rate for a given soil type.** Preplant incorporated and preemergence applications of **HELENA® PENDIMETHALIN** may be applied with labeled tank mix herbicide(s).

Layby Application (At last cultivation) – Apply **HELENA® PENDIMETHALIN** directly to the soil between rows as a directed spray following the last normal cultivation (layby).

Layby applications can be applied in cotton previously treated with **HELENA® PENDIMETHALIN** or any herbicide(s) registered for use in cotton. Consult the labels of those herbicides for suggested treatments, rates to be used, and precautions or restrictions for use in cotton and for follow crop restrictions. **The total amount of HELENA® PENDIMETHALIN applied per acre per season can not exceed the highest labeled rate for a given soil type.**

DO NOT APPLY as a broadcast spray over the top of the cotton or **SERIOUS CROP INJURY CAN RESULT, AVOID CONTACT OF THE SPRAY** to the non-woody portion of the cotton stems and to cotton foliage or **SERIOUS CROP INJURY CAN RESULT.** To reduce the potential for crop injury caused by herbicide contact with cotton foliage and stems, use protective shields when conditions favoring spray drift occur.

Roundup Ultra (or other glyphosate containing products) may be applied at layby with **HELENA® PENDIMETHALIN** in a tank-mixture for enhanced weed control layby in cotton with the Roundup Ready¹ gene. **DO NOT apply Roundup Ultra (or other glyphosate-containing products) at layby on non-Roundup Ready cotton.**

DO NOT APPLY HELENA® PENDIMETHALIN and ROUNDUP ULTRA TANK-MIX AS A BROADCAST SPRAY OVER TOP OF COTTON, OR CROP INJURY MAY RESULT.

Fall Application – **HELENA® PENDIMETHALIN** may be applied for weed control in cotton in the fall, after October 15 (up to 140 days prior to planting cotton) in Arizona, California, Louisiana, New Mexico, Mississippi, Oklahoma and Texas. Apply **HELENA® PENDIMETHALIN** at the broadcast rate of 1.8 pints on coarse soils, 2.4 pints on medium soils and 3.6 pints on fine soils.

HELENA® PENDIMETHALIN Use Rates in Cotton

Recommended use rates for **HELENA® PENDIMETHALIN** alone and in tank mix or sequential applications are given in the following table.

Disclaimer: Always refer to the label on the product before using Helena or any other product.

SPECIMEN LABEL
Broadcast Rate¹ per Acre of HELENA® PENDIMETHALIN in Cotton
(Pints per Acre)

Soil Texture	Conventional or Minimum Tillage	No-Tillage ²
Coarse	1.2 to 2.4 ¹ pts	1.8 to 2.4 pts
Medium	1.8 to 2.4 pts	2.4 to 3.6 pts
Fine	2.4 to 3.6 pts	3.6 to 4.8 pts

¹ DO NOT exceed 1.8 pts./A on coarse textured soils in California.

² This use is not recommended for soils with more than 3% organic matter.

For heavy clay soils, apply **HELENA® PENDIMETHALIN** at the broadcast rate of 3.6 pints per acre.

The high rates for each soil texture above should be used if heavy weed populations are anticipated, extensive crop residues were present prior to seedbed preparation or in no-till.

The total amount of HELENA® PENDIMETHALIN applied per acre per season can not exceed the highest labeled rate for a given soil type.

HELENA® PENDIMETHALIN Tank Mixes and Sequential Programs in Cotton

HELENA® PENDIMETHALIN may be applied in a tank mix or a sequential application with other herbicides registered for use in cotton. **Refer to the companion label for weeds controlled in addition to HELENA® PENDIMETHALIN alone.**

When using tank mixtures or sequential applications with HELENA® PENDIMETHALIN, always read the companion product label(s) to determine the specific use rates by soil types, weed species, and weed or crop growth stage. In addition, follow all precautions and restrictions including state and local use restrictions that may apply to specific products. Always follow the most restrictive label.

Follow additional use directions in this table for HELENA® PENDIMETHALIN tank mixes.
(Refer to the table above to determine HELENA® PENDIMETHALIN use rate)

For no-till, **HELENA® PENDIMETHALIN** alone or **HELENA® PENDIMETHALIN** tank mixes may be used with Gramoxone Extra or Roundup herbicides to kill existing vegetation if present before planting. Refer to these labels for specific use recommendations, rates and weeds controlled.

HELENA® PENDIMETHALIN Plus Fluometuron (i.e. Cotoran) (0.8 to 2.0 lbs ai/A)	<p>Preplant Incorporated followed by preemergence – Apply HELENA® PENDIMETHALIN up to 60 days prior to planting and incorporate within 7 days of application. Apply fluometuron as an overlay preemergence application as directed on the fluometuron label (use the fluometuron alone preemergence rates).</p> <p>Preemergence – Apply immediately after planting (or crop injury may result) in water or nitrogen solution with ground equipment only. DO NOT apply tank mix preemergence in Arizona, California, Oklahoma, New Mexico and West Texas.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the fluometuron label. • Plant cotton seeds 1 inch or deeper below the soil surface. • The use of fluometuron as a preemergence application following the use of a systemic insecticide at planting, may result in injury to cotton. DO NOT plant crops other than cotton within 6 months of the last application of fluometuron or injury may result. • Maintain good agitation at all times until spraying is completed. • DO NOT feed foliage from treated cotton plants or gin trash to livestock.
HELENA® PENDIMETHALIN Plus Prometryn (i.e. Caparol) (1.2 to 2.4 lbs ai/A)	<p>Preplant Incorporated – Apply with ground equipment prior to listing or over partially finished or finished beds. Incorporate immediately after application.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the prometryn label. • DO NOT use on sands or loamy sands. • DO NOT use this tank mix in cut areas of newly leveled fields in areas of excess salt or in areas where flooding over the bed is likely to occur as crop injury may result. Cotton should not be planted in tractor wheel depressions or crop injury may result. • DO NOT use this tank mixture when cotton is irrigated up as crop injury may result. On mulch planted cotton, water back only after cotton seedlings are well established.

Disclaimer: Always refer to the label on the product before using Helena or any other product.

SPECIMEN LABEL

	<ul style="list-style-type: none"> Maintain good agitation at all times until spraying is completed to keep the material in suspension. Mechanical agitation should be used in Arizona and California. If replanting is necessary, do not rework the soil.
HELENA® PENDIMETHALIN Plus Prometryn (i.e. Caparol) For use in specified areas of Oklahoma and Texas.	<p>Preplant Surface – Apply up to 15 days before planting.</p> <p>Preemergence – Apply at planting or up to 2 days after planting before weeds and crops emerge.</p> <ul style="list-style-type: none"> Read and strictly follow all precautions and instructions on the prometryn label. See the prometryn label for use rates and specified areas of Oklahoma and Texas
HELENA® PENDIMETHALIN Plus Diuron (i.e. Karmex) (0.5 to 1.6 lbs ai/A)	<p>Preplant Incorporated followed by preemergence – Apply HELENA® PENDIMETHALIN up to 60 days prior to planting and incorporate within 7 days of application. Apply diuron as an overlay preemergence application as directed on the diuron label (use the diuron alone preemergence rates).</p> <ul style="list-style-type: none"> Read and strictly follow all precautions and instructions on the diuron label. The use of diuron as a preemergence application following the use of a systemic insecticide at planting, may result in injury to cotton.
HELENA® PENDIMETHALIN Plus Zorial Rapid 80 or 80WP (1.25 to 2.5 lbs/A) DO NOT use in Arizona, California, New Mexico, Oklahoma and Texas	<p>Preplant Surface – Apply up to 15 days prior to planting.</p> <p>Preplant Incorporated – Apply up to 30 days prior to planting and incorporate within 7 days of application. DO NOT incorporate deeper than 2-3 inches with commonly used equipment.</p> <p>Preemergence – Apply tank mix with ground equipment immediately after planting or crop injury may result. Make sure cotton seeds are placed 1 inch or deeper below soil surface.</p> <p>Preplant Incorporated followed by preemergence – Apply HELENA® PENDIMETHALIN up to 60 days prior to planting and incorporate within 7 days of application. Apply Zorial as an overlay preemergence application as directed on the Zorial label (use the Zorial alone preemergence rates).</p> <ul style="list-style-type: none"> Read and strictly follow all precautions and instructions on the Zorial label. If the cotton plant is stressed during early development, application of HELENA® PENDIMETHALIN plus Zorial at the label rate may result in temporary bleaching or chlorosis of the leaves from which the plant will recover. Maintain good agitation at all times until application is complete.

Preplant Incorporated Application of HELENA® PENDIMETHALIN for Control of Rhizome Johnsongrass

HELENA® PENDIMETHALIN applied preplant incorporated for two consecutive years will provide control of rhizome johnsongrass (*Sorghum halepense*) in cotton at the rates recommended for soil textures listed below. This use is not recommended for Arizona, New Mexico and California. Rhizome johnsongrass will be suppressed after the first year and controlled after the second year.

Before application, use a chisel plow or similar implement to bring johnsongrass rhizomes to the surface. Chop rhizomes into small pieces with a disk harrow set to cut 4 to 6 inches deep and operated in two different directions at 4 to 6 mph.

HELENA® PENDIMETHALIN is to be incorporated into the soil within 7 days after application prior to planting. For maximum control of rhizome johnsongrass, incorporate **HELENA® PENDIMETHALIN** as soon as possible after application. Deep and thorough incorporation of **HELENA® PENDIMETHALIN** is necessary for control of rhizome johnsongrass. Mechanical incorporation can be achieved by the following methods:

- a) Disk harrow set to cut 4 to 6 inches deep and operated in two different directions at 4 to 6 mph.
- b) PTO-driven equipment (tillers, cultivators, hoes) set to cut 3 to 4 inches deep and operated one time at 4 mph or less.

For johnsongrass escapes during the crop season, cultivation and/or application of registered postemergence herbicides is recommended. Follow the directions for use on the labels of the respective herbicides.

SPECIMEN LABEL
**Broadcast Rate Per Acre of HELENA® PENDIMETHALIN Preplant Incorporated
 For Control of Rhizome Johnsongrass in Cotton
 APPLY FOR TWO CONSECUTIVE YEARS**

Soil Texture (Up to 3% organic matter ¹)	HELENA® PENDIMETHALIN (pints)
Coarse	2.4
Medium	3.6
Fine	4.8

¹This use is not recommended for soils with more than 3% organic matter.

NOTE: DO NOT feed forage or graze livestock in treated cotton fields.

If cotton crop loss occurs due to weather conditions, cotton or soybeans can be replanted the same year into treated soil without adverse effects. If replanting is necessary, DO NOT rework the soil deeper than the treated zone.

EDIBLE BEANS
**Dry, Lima, Snap, Chickpeas (Garbanzo beans),
 Southern Peas (Cowpeas) and Sweet Lupines**

GENERAL INSTRUCTIONS

HELENA® PENDIMETHALIN may only be applied preplant incorporated in chickpeas (garbanzo beans), dry beans (such as navy, great northern, red kidney, black turtle, cranberry and small white type), lima beans, snap beans, and southern peas (cowpeas).

HELENA® PENDIMETHALIN may be applied preplant incorporated or preemergence in sweet lupines.

DO NOT feed lupine hay and forage or graze livestock in treated lupine fields.

In the event of a crop loss due to weather conditions, beans or any crop registered for **HELENA® PENDIMETHALIN** preplant incorporated use can be replanted without adverse effects the same year. If replanting is necessary, DO NOT rework the soil deeper than the treated zone.

HELENA® PENDIMETHALIN is not recommended for use on peat or muck soils.

Use Methods and Timings

Preplant Incorporated – Apply **HELENA® PENDIMETHALIN** up to 60 days prior to planting and incorporate within 7 days of application. Apply **HELENA® PENDIMETHALIN** tank mixes as specified under the tank mix section.

Preemergence – Apply **HELENA® PENDIMETHALIN** to sweet lupines only at planting or up to 2 days after planting. Apply to a seedbed which is firm and free of clods. DO NOT APPLY **HELENA® PENDIMETHALIN** PREEMERGENCE (surface treatments) to chickpeas, dry beans, lima beans, snap beans, and southern peas (cowpeas) after planting or serious crop injury can result.

HELENA® PENDIMETHALIN Use Rates in Edible Beans

Recommended use rates for **HELENA® PENDIMETHALIN** alone and in tank mix applications are given in the following table.

**Broadcast Rate¹ per Acre of HELENA® PENDIMETHALIN
 in Edible Beans (Pints per Acre)**

Soil Texture	Southern States ¹	Northern States ¹	
		<3% Organic Matter	>3% Organic Matter
Coarse	1.2 to 1.8 pts	1.2 to 2.4 pts	2.4 pts
Medium	1.8 to 2.4 pts	1.8 to 3.0 pts	3.0 to 3.6 pts
Fine	1.8 to 3.6 pts	2.4 to 3.6 pts	3.6 pts

¹See map at the end of this label for specific states.

Use the 3.6 pint rate for heavy clay soils.

Disclaimer: Always refer to the label on the product before using Helena or any other product.

SPECIMEN LABEL
HELENA® PENDIMETHALIN Tank Mixes in Edible Beans

HELENA® PENDIMETHALIN may be applied in a tank mix with Dual, Eptam, Lasso or Micro-Tech. **Refer to the companion label for weeds controlled in addition to HELENA® PENDIMETHALIN alone.**

When using tank mixtures with HELENA® PENDIMETHALIN, always read the companion product label(s) to determine the specific use rates by soil types, weed species, and weed or crop growth stage. In addition, follow all precautions and restrictions including state and local use restrictions that may apply to specific products. Always follow the most restrictive label.

**Follow additional use directions in this table for HELENA® PENDIMETHALIN tank mixes.
 (Refer to the table above to determine HELENA® PENDIMETHALIN use rate)**

<p>HELENA® PENDIMETHALIN Plus Dual (1.5 to 3.0 pts/A)</p> <p>For use in dry, lima or snap beans, chickpeas, and southern peas</p>	<p>Preplant Incorporated – Apply up to 14 days prior to planting and incorporate within 7 days of application.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the Dual label. • DO NOT apply preemergence to dry, lima or snap beans, chickpeas or southern peas. • DO NOT graze or feed forage or fodder. • DO NOT apply to sweet lupines.
<p>HELENA® PENDIMETHALIN Plus Eptam (2.5 to 4.5 pts/A)</p> <p>For use in Dry and Snap Beans only.</p>	<p>Preplant Incorporated – Apply with ground sprayer up to 2 days prior to planting. Incorporate immediately (within minutes) after application to prevent loss of Eptam. Whenever possible, application and incorporation should be done in the same application.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the Eptam label. • <u>Incorporation Instructions:</u> Use power driven cultivation equipment set to cut to a depth of 2 to 4 inches or tandem disks set to cut to a depth of 4 to 6 inches, operated at 4 to 6 mph, followed by a spike-toothed harrow or some other leveling device which extends beyond the ends of the disks. For thorough mixing, disk in two different directions (cross disk). • DO NOT exceed 3.5 pints Eptam per acre on small white beans on coarse-textured soils. • DO NOT use this tank mixture on Adzuki beans, chickpeas, southern peas (cowpeas, including blackeye peas, blackeye beans), soybeans, lima beans or other flat podded beans. • DO NOT feed bean hay, vines and forage or graze livestock in treated bean fields. • For nutsedge control, use 4.5 pints of Eptam per acre.
<p>HELENA® PENDIMETHALIN Plus Lasso or Micro-Tech (2.5 to 3.0 qts/A) Or Partner WDG (3.8 to 4.8 lbs/A)</p> <p>For use only in Dry Beans west of the Mississippi river. DO NOT use in California.</p>	<p>Preplant Incorporated – Apply within 7 days prior to planting and incorporate within 7 days of application.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the Lasso or Micro-Tech label. • Apply in water with ground equipment only. • This tank mixture may delay crop maturity and/or reduce yield if cold, wet soil conditions occur after planting.

FORAGE LEGUMES

GENERAL INSTRUCTIONS

HELENA® PENDIMETHALIN may be used in forage legumes used as a cover crop in federal set-aside or conservation reserve program areas.

Some stand reduction of the legume cover crop may occur with this use. Consult local county extension service or the local ASC committee for recommended cover crops.

If loss of cover crop occurs due to adverse weather conditions, any crop registered for **HELENA® PENDIMETHALIN** preplant incorporated use can be replanted the same year into **HELENA® PENDIMETHALIN** treated soil without adverse effects. If replanting is necessary, DO NOT rework the soil deeper than the **HELENA® PENDIMETHALIN** treated zone.

DO NOT feed or graze legume cover crops established following **HELENA® PENDIMETHALIN** application.

Disclaimer: Always refer to the label on the product before using Helena or any other product.

SPECIMEN LABEL

The cover crop residue should ultimately be destroyed by tillage or left on the surface to retard erosion or as directed by the local ASC committee.

Use Methods and Timings

HELENA® PENDIMETHALIN may be applied preplant incorporated or preemergence for weed control in legume cover crops. Refer to the **Mixing, Application and Incorporation Instructions, Weeds Controlled and Follow Crop Restrictions** sections (see table of contents for page numbers).

HELENA® PENDIMETHALIN Use Rates in Forage Legumes

Recommended use rates for **HELENA® PENDIMETHALIN** alone is given in the following table.

Broadcast Rate Per Acre of HELENA® PENDIMETHALIN Preplant Incorporated in Forage Legumes (Pints per Acre)

Soil Texture	Rate
Coarse	1.2 to 1.8 pts
Medium	1.8 to 2.4 pts
Fine	2.4 to 3.0 pts

GARLIC, DRY BULB SHALLOTS, AND DIRECT-SEEDED AND TRANSPLANTED DRY BULB ONIONS

GENERAL INSTRUCTIONS

Uniformly apply in 10 or more gallons of water per acre with ground equipment, or 5 or more gallons of water per acre with aircraft. CHEMIGATION: **HELENA® PENDIMETHALIN** may only be applied through center pivot, solid set or hand move irrigation. **DO NOT** apply through other irrigation systems. Apply **HELENA® PENDIMETHALIN** between the 2 to 9 true leaf stage (2 to 6 true leaf stage in California) only unless otherwise specified in the Additional Use sections below. **DO NOT** irrigate in excess of 0.5 inches of water. Refer to page 13 for CHEMIGATION directions.

HELENA® PENDIMETHALIN treatments are most effective when adequate rainfall or overhead irrigation is received within 7 days after application.

DO NOT mechanically incorporate except as specified for use on dry bulb onions in Colorado and the Texas High Plains.

DO NOT apply to green (bunching) onions or leeks.

Use Directions for Mineral Soils

Broadcast Rate per Acre of HELENA® PENDIMETHALIN Herbicide For Use on Mineral Soils in All States (Pints per Acre)

Soil Texture	Rate
Coarse	1.2 to 1.8 pts
Medium	1.8 to 2.4 pts
Fine	1.8 to 3.6 pts

DO NOT exceed 3.6 pints per acre per crop (except Idaho, Oregon and Washington). **DO NOT** apply within 60 days of harvest in California and within 45 days of harvest in all other states. **DO NOT** feed or graze these crops.

If loss of treated crop occurs due to adverse weather conditions, any crop registered for preplant incorporated use of **HELENA® PENDIMETHALIN** can be replanted the same year. If replanting is necessary, **DO NOT** rework the soil deeper than 2 inches.

GARLIC

HELENA® PENDIMETHALIN may be applied to garlic in the following ways:

- (a) Preemergence after planting but before crop and weeds emerge.
- (b) Postemergence to the garlic at the 1 to 5 true leaf growth stage.
- (c) As a split application, apply at both preemergence and postemergence timings.

Disclaimer: Always refer to the label on the product before using Helena or any other product.

SPECIMEN LABEL
DRY BULB SHALLOTS AND DIRECT-SEEDED AND
TRANSPLANTED DRY BULB ONIONS

In All States Except California:

Apply **HELENA® PENDIMETHALIN** as a broadcast treatment when onions or shallots have 2 to 9 true leaves.

Additional Use in Colorado, Kansas and Nebraska:

HELENA® PENDIMETHALIN may be applied sequentially in seeded onions. Apply first application of **HELENA® PENDIMETHALIN** at loop stage. Apply sequential application of **HELENA® PENDIMETHALIN** early postemergence (2 to 9 true leaf stage). **DO NOT** exceed the maximum labeled rate for a given soil texture. **DO NOT** apply **HELENA® PENDIMETHALIN** at loop stage through the 9 true leaf stage if heavy rains are expected or severe crop injury may result.

Additional Use in Colorado and the Texas High Plains:

For transplanted onions only, apply and shallow incorporate (less than 2" deep) **HELENA® PENDIMETHALIN** into preformed beds prior to transplanting.

Additional Use in Idaho, Oregon and Washington

Apply **HELENA® PENDIMETHALIN** as a broadcast treatment when onions or shallots are between the flag leaf to 9 true leaf stage.

HELENA® PENDIMETHALIN may be used at 3.6 to 4.8 pints per acre for dodder control on medium and fine textured soils. **DO NOT** apply **HELENA® PENDIMETHALIN** using chemigation at the dodder control rate.

HELENA® PENDIMETHALIN may be applied in the fall or spring to the furrow area of land bedded in the fall in preparation for planting seed of dry bulb onions the following spring. Apply **HELENA® PENDIMETHALIN** as a banded application at rates based on appropriate soil texture. Band width should be approximately ½ the width of the row spacing. Keep **HELENA® PENDIMETHALIN** away from the area where onion seed will be planted. Harrow-off tops of beds following **HELENA® PENDIMETHALIN** furrow applications prior to planting onions. For selective weed control in the onion row, apply **HELENA® PENDIMETHALIN** as a banded postemergence application to flag leaf onions at the labeled rates based on soil texture. Apply **HELENA® PENDIMETHALIN** only once to the furrow area and once to the onion row as a postemergence application.

Additional Use in Michigan:

For mineral soils containing >10% organic matter, follow the directions for muck soils (see below).

In California:

HELENA® PENDIMETHALIN may only be applied as a single application when onions or shallots have 2 to 6 true leaves.

Use Directions for Muck Soils (Onions Only)

On MUCK SOILS in All States Except California:

HELENA® PENDIMETHALIN may be applied sequentially to **ONIONS ONLY** on muck soils as follows:

**Broadcast Rate per Acre and Application
Timing of HELENA® PENDIMETHALIN Herbicide for Muck Soils
(Pints per Acre)**

Application Timing and Growth Stage	Rate
Preemergence through loop Stage	2.4 to 4.8 pts
Early Postemergence (2 to 6 true leaf stage)	3.6 to 4.8 pts
Late Postemergence (6 to 9 true leaf stage)	3.6 to 4.8 pts

DO NOT apply more than 14.4 pints per acre per growing season on muck soils. To maximize crop safety, ensure good soil coverage during planting or transplanting and delay preemergence applications to the loop stage if possible.

DO NOT apply **HELENA® PENDIMETHALIN** preemergence through the loop stage if heavy rains are expected or else severe crop injury may result. If irrigating immediately after **HELENA® PENDIMETHALIN** application at the preemergence through loop stage, **DO NOT** irrigate in excess of 0.5 inches of water.

DO NOT apply within 45 days of harvest.

SPECIMEN LABEL

DO NOT plant sugar beets, red beets, spinach, winter wheat, or winter barley as rotational crops on muck soils for 12 months from the time of last application if more than 3.6 pints per acre of **HELENA® PENDIMETHALIN** is applied to the onion crop; see the **HELENA® PENDIMETHALIN** leaflet label for additional follow crop restrictions.

If loss of onion crop occurs due to adverse weather conditions, **DO NOT** replant any crop other than onions in muck soil during the same cropping year and **DO NOT** rework the soil deeper than 2 inches.

DO NOT use on muck soils in California.

GRAIN SORGHUM

HELENA® PENDIMETHALIN or **HELENA® PENDIMETHALIN** plus atrazine may be applied as a **CULTI-SPRAY** (postemergence incorporated) application in grain sorghum grown in all states.

In addition, **HELENA® PENDIMETHALIN** plus atrazine may be applied early postemergence in grain sorghum grown in states east of the Mississippi River and in Arkansas, East Texas, Louisiana, and the Missouri "bootheel".

CULTI-SPRAY (POSTEMERGENCE INCORPORATED)

For use in all states

GENERAL INSTRUCTIONS

HELENA® PENDIMETHALIN or **HELENA® PENDIMETHALIN** plus atrazine tank mixtures applied as a **CULTI-SPRAY** (postemergence incorporated) treatment will control most late season annual grasses and certain broadleaf weeds in grain sorghum.

HELENA® PENDIMETHALIN treatments can be applied from the 4-inch growth stage to as late as the last cultivation (layby) of grain sorghum.

HELENA® PENDIMETHALIN plus atrazine must be applied before the grain sorghum reaches 12 inches in height.

HELENA® PENDIMETHALIN treatments will not control established weeds. DESTROY EMERGED WEEDS BY CULTIVATION PRIOR TO **HELENA® PENDIMETHALIN** APPLICATION.

CULTI-SPRAY (postemergence incorporated) applications of **HELENA® PENDIMETHALIN** or **HELENA® PENDIMETHALIN** plus atrazine tank mixture can be applied in grain sorghum previously treated with herbicides registered for use in grain sorghum. Consult the labels of those herbicides for suggested treatments, rates to be used, and precautions or restrictions for use in grain sorghum and for Follow Crop Restrictions.

DO NOT APPLY HELENA® PENDIMETHALIN in grain sorghum preplant incorporated or preemergence as serious crop injury can result.

DO NOT APPLY HELENA® PENDIMETHALIN in grain sorghum which is planted in double row beds since this cultural practice does not permit adequate soil coverage of the bases of the grain sorghum plants with cultivation.

CULTI-SPRAY (Postemergence Incorporated) APPLICATIONS HELENA® PENDIMETHALIN alone or HELENA® PENDIMETHALIN plus Atrazine Tank Mixtures

1. Cultivate with a sweep-type or rolling cultivator operated at sufficient speed to throw at least one inch of soil over the bases of the grain sorghum plants. This will kill small weed seedlings growing in the grain sorghum row and will prevent direct contact of the zone of brace root formation by **HELENA® PENDIMETHALIN** during application.
2. Apply broadcast with a ground sprayer when grain sorghum is at least 4 inches tall up to layby or last cultivation (atrazine must be applied before grain sorghum reaches 12 inches tall). Use drop nozzles if crop foliage will prevent uniform coverage of the soil surface within the rows.
3. Thoroughly and uniformly incorporate **HELENA® PENDIMETHALIN** treatments into the soil (1) with a sweep-type or rolling cultivator set to provide thorough incorporation in the top 1 inch of soil OR (2) with adequate irrigation water or rainfall. For best results, incorporate **HELENA® PENDIMETHALIN** treatments as soon as possible after application. Incorporation must be completed within 7 days after application. If adequate moisture is not received within 7 days after application, incorporate **HELENA® PENDIMETHALIN** with a sweep-type or rolling cultivator.

Under situations of low rainfall or soil moisture, when deep germinating weeds such as shattercane or field sandbur are anticipated, mechanical incorporation will provide best results.

Disclaimer: Always refer to the label **on the product** before using Helena or any other product.

SPECIMEN LABEL

If cultivation is needed after application and incorporation of **HELENA® PENDIMETHALIN**, the depth of cut should be no deeper than the depth of cut used to incorporate.

DO NOT APPLY **HELENA® PENDIMETHALIN** in grain sorghum more than once per crop season.

**Broadcast Rate Per Acre of HELENA® PENDIMETHALIN
CULTI-SPRAY (Postemergence Incorporated)
in Grain Sorghum (Pints per Acre)**

Soil Texture	Southern States¹	Northern States¹
Coarse	1.2 to 1.8 pts	1.8 to 2.4 pts
Medium	1.8 to 2.4 pts	2.4 to 3.6 pts
Fine	1.8 to 3.6 pts	2.4 to 3.6 pts

¹See map at end of this label for specific states

For HELENA® PENDIMETHALIN plus atrazine tank mixtures, apply 1.0 lb a.i. per acre of atrazine. DO NOT apply tank mixture on coarse textured soils.

NOTE: Livestock can graze or be fed forage from treated grain sorghum after 21 days following application. Observe all precautions, limitations, and follow crop restrictions on atrazine labels.

**EARLY POSTEMERGENCE-For use in states east of
the Mississippi River, plus Arkansas, East Texas,
Louisiana, and the Missouri “bootheel” only.**

Application Instructions

The seedbed should be firm and free of clods and trash. Use only where adequate tillage is practiced to provide good seed coverage. Plant grain sorghum AT LEAST 1 ½ inches deep to ensure good seed coverage.

Uniformly apply **HELENA® PENDIMETHALIN** plus atrazine tank mix treatment in water by ground equipment or by aircraft. Apply **HELENA® PENDIMETHALIN** plus atrazine tank mixture only after grain sorghum has reached the 2-leaf stage and when weeds are no more than 1 inch tall.

DO NOT APPLY **HELENA® PENDIMETHALIN** in grain sorghum preplant incorporated or preemergence as serious crop injury can result.

DO NOT apply in liquid fertilizer.

HELENA® PENDIMETHALIN plus atrazine treatments are most effective in controlling weeds when adequate rainfall or overhead irrigation is received within 7 days after application. If cultivation is necessary because of soil crusting, soil compaction, or weed germination before rain or irrigation, use shallow tillage (such as rotary hoe), and make certain grain sorghum seeds are below the tilled area. Wait 7 to 10 days after application before cultivating.

**Broadcast Rate per Acre for
Early Postemergence Application of HELENA® PENDIMETHALIN
Plus Atrazine in Grain Sorghum**

Soil Texture	HELENA® PENDIMETHALIN + Atrazine
Coarse	DO NOT USE
Medium	1.8 to 2.4 pts + 1.0 to 1.2 lbs. a.i.
Fine	2.4 pts + 1.0 to 1.2 lbs. a.i.

The high rate for each soil texture above should be used if heavy weed populations are anticipated.

NOTE: DO NOT replant grain sorghum if crop loss occurs due to weather conditions. Observe all precautions, limitations and follow crop restrictions on atrazine labels. Livestock can graze or be fed forage from **HELENA® PENDIMETHALIN** plus atrazine treated grain sorghum fields after 21 days following application.

**NONBEARING FRUIT AND NUT CROPS
AND VINEYARDS**

SPECIMEN LABEL
GENERAL INSTRUCTIONS

HELENA® PENDIMETHALIN may be applied for preplant incorporated, preplant surface or preemergence control of most grasses and certain broadleaf weeds in several nonbearing fruit, nutcrops and Vineyards. **HELENA® PENDIMETHALIN** may be used before or after transplanting the following nonbearing crops:

Almond	Lemon	Pistachio
Apple	Nectarine	Plum
Apricot	Orange	Prune
Cherry	Peach	Tangelo
Citrus	Pear	Tangerine
Grape	Pecan	Walnut, English
Grapefruit		

HELENA® PENDIMETHALIN treatments are most effective in controlling weeds when adequate rainfall or irrigation is received within 21 days after application.

HELENA® PENDIMETHALIN herbicide controls most annual grasses and certain broadleaf weeds as they germinate, but it will not control established weeds. Destroy existing weeds before or during application of **HELENA® PENDIMETHALIN**.

PRECAUTIONS:

Apply the spray directly to the ground beneath the trees or vines. **DO NOT** apply over the top of trees or vines with leaves or buds. Contact with leaves, shoots or buds by the spray mixture may cause malformed plant tissues.

DO NOT apply to newly transplanted trees or vines until ground has settled and no cracks are present.

DO NOT feed forage or graze livestock in treated fields.

FOR NEWLY TRANSPLANTED AND ONE YEAR OLD GRAPEVINES: Apply only to dormant grapevines. **DO NOT** apply if buds have started to swell. Application after buds have started to swell may result in leaf distortion.

Use Methods and Timing

Preplant surface – Prior to transplanting, uniformly apply in 10 or more gallons of water per acre (broadcast basis) with ground or aerial equipment. Use **HELENA® PENDIMETHALIN** use rates listed in the table below. **HELENA® PENDIMETHALIN treatments are most effective in controlling weeds when adequate rainfall or irrigation is received within 21 days after application.**

Avoid root contact with treated soil when placing transplants into the hole or injury may occur.

Preplant Incorporated – Uniformly apply **HELENA® PENDIMETHALIN** prior to transplanting but before weeds emerge. Use **HELENA® PENDIMETHALIN** rates listed in the table below. Incorporate **HELENA® PENDIMETHALIN** to a depth of 1 to 2 inches. For mechanical incorporation of **HELENA® PENDIMETHALIN**, use Flex-tyne drag or diamond-toothed harrows operated two times at more than 5 mph with the second pass made at an angle to the first. Application and incorporation must be made prior to transplanting to avoid mechanical injury to the crop.

Avoid root contact with treated soil when placing transplants into the hole or injury may occur.

Chemigation - **HELENA® PENDIMETHALIN** may be applied through properly equipped chemigation systems.

Preemergence (postplant)- Uniformly apply in 10 or more gallons of water per acre (broadcast basis) with ground equipment. Applications may be band or broadcast.

HELENA® PENDIMETHALIN Use Rates

Recommended use rates for **HELENA® PENDIMETHALIN** alone and in tank mix applications are given in the following table.

SPECIMEN LABEL
Broadcast Rates Per Acre of HELENA® PENDIMETHALIN
Preplant or Preemergence in Nonbearing Fruit and
Nut Crops and Vineyards (Quarts per Acre)

Short-term control (4 months)	2.4 qts
Long-term control (6 to 8 months)	4.8 qts

HELENA® PENDIMETHALIN Tank Mixes

HELENA® PENDIMETHALIN may be used in combination with a contact herbicide registered for use in the specific nonbearing crop to remove existing vegetation. Consult contact herbicide label for all directions, precautions and restrictions.

CHEMIGATION

HELENA® PENDIMETHALIN may be applied to nonbearing tree and vine crops through solid set, hand move, low volume sprinkler (micro sprinkler) and drip (trickle) irrigation systems. Follow all recommendations, special instructions, and precautions in the general section covering Chemigation at the beginning of this label.

DO NOT apply this product to nonbearing tree and vine crops through any other type of irrigation system.

Low Volume Sprinkler (micro sprinkler) and drip (trickle) Irrigation Instructions.

Low volume sprinkler – 4 to 50 gallons per hour (gph) per emitter, drip – 0.5 to 3 gph per emitter. Point of application should be above ground.

Irrigation system should run a sufficient amount of time prior to **HELENA® PENDIMETHALIN** injection to have all emitters functioning properly. After system is operating properly, length of injection should be such that at one period of time during the injection, the first and last emitters in the system contain **HELENA® PENDIMETHALIN** treated water. Add **HELENA® PENDIMETHALIN** to the supply tank already filled with the volume of water required for the injection period. Maintain proper agitation in **HELENA® PENDIMETHALIN** injection tank. **HELENA® PENDIMETHALIN** should be mixed in clean water and injected down-line from filters. Following **HELENA® PENDIMETHALIN** injection, system should be flushed for a period of time sufficient to clear the line of **HELENA® PENDIMETHALIN**. (If **HELENA® PENDIMETHALIN** application is made during a normal irrigation cycle, injection should be made during the last stage.)

Chemigation Calibration (for low volume micro sprinklers)

Calculation of use rate is based on **wetted area** around emitters – **NOT** on tree acres. To determine correct amount of **HELENA® PENDIMETHALIN**, use the following formula:

1. Treated area per each emitter = A
 $A = 3.14 \times (\text{radius} \times \text{radius})$
 Example: If the average distance from emitter to perimeter of wetted area measured one inch below soil surface is 13 inches, then
 $A = 3.14 \times (13'' \times 13'')$
 $A = 3.14 \times (169'')$
 $A = 530.7$ square inches

2. The area in square feet wet in each acre = B
 $B = \frac{A \times \text{emitters/acre}}{144}$
 Example: If there are 300 emitters per acre, then
 $B = 530.7 \times 300 / 144 = B = 1105.6$ square feet wetted per acre

3. The total area (in square feet) wet by your system = C
 $C = B \times \text{acres covered by system}$
 Example: If the system covers 20 acres, then
 $C = 1105.6$ square feet per acre \times 20 acres
 $C = 22,112$ square feet wetted by system

4. Amount of **HELENA® PENDIMETHALIN** to inject = S
 Rate per treated acre of **HELENA® PENDIMETHALIN** = R
 $S = \frac{C}{144} \times R = \text{quarts of HELENA® PENDIMETHALIN}$

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SPECIMEN LABEL

43,560

Example: If the desired application rate per treated acre is 2.4 qts of **HELENA® PENDIMETHALIN**, then
 $S = \frac{22,112}{43,560} \times 2.4 = S = 1.22$ quarts of **HELENA® PENDIMETHALIN** should be injected into system.

NOTE: Select the proper rate (R) based on length of control required.

PEANUTS

GENERAL INSTRUCTIONS

HELENA® PENDIMETHALIN may be applied preplant incorporated in peanuts.

DO NOT use in California.

In the event of a crop loss due to weather conditions, peanuts or any crop registered for **HELENA® PENDIMETHALIN** preplant incorporated use can be replanted without adverse effects the same year. If replanting is necessary, DO NOT rework the soil deeper than the treated zone.

Use Methods and Timing

Preplant Incorporated – Apply **HELENA® PENDIMETHALIN** up to 60 days prior to planting and incorporate within 7 days of application. Apply **HELENA® PENDIMETHALIN** tank mixes as specified under the tank mix section.

HELENA® PENDIMETHALIN Use Rates in Peanuts

Recommended use rates for **HELENA® PENDIMETHALIN** alone and in tank mix applications are given in the following table.

**Broadcast Rate per Acre of HELENA® PENDIMETHALIN in Peanuts
(Pints per Acre)**

Region	Rate
Texas, Oklahoma and New Mexico	1.2 to 2.4 pts
Other peanut growing states	1.8 to 2.4 pts

For heavy weed infestations, especially of *Texas panicum*, up to 3.6 pints of **HELENA® PENDIMETHALIN** can be used in Alabama, Georgia or Florida.

HELENA® PENDIMETHALIN Tank Mixes in Peanuts

HELENA® PENDIMETHALIN may be applied in a tank mix with PURSUIT, Dual or Vernam. **Refer to the companion label for weeds controlled in addition to HELENA® PENDIMETHALIN alone.**

When using tank mixtures with HELENA® PENDIMETHALIN, always read the companion product label(s) to determine the specific use rates by soil types, weed species, and weed or crop growth stage. In addition, follow all precautions and restrictions including state and local use restrictions that may apply to specific products. Always follow the most restrictive label.

**Follow additional use directions in this table for HELENA® PENDIMETHALIN tank mixes.
(Refer to the table above to determine HELENA® PENDIMETHALIN use rate)**

HELENA® PENDIMETHALIN Plus PURSUIT (4 oz/A) Or PURSUIT DG (1.4 oz/A)	Preplant Incorporated – Apply by ground equipment only up to 45 days prior to planting and incorporate within 7 days of application. If crop will be planted on beds, apply and incorporate after bed formation. <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the PURSUIT label. • DO NOT apply tank mix preplant incorporated in West Texas, New Mexico and Arizona.
HELENA® PENDIMETHALIN Plus Dual (1.25 to 2.0 pts/A)	Preplant Incorporated – Apply up to 14 days prior to planting and incorporate within 7 days of application. If crop will be planted on beds, apply and incorporate after bed formation. <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the Dual label.
HELENA® PENDIMETHALIN Plus	Preplant Incorporated – Apply with ground sprayer only up 10 days prior to planting. Incorporate IMMEDIATELY (within minutes) after application to prevent loss of Vernam herbicide. Whenever possible,

Disclaimer: Always refer to the label on the product before using Helena or any other product.

SPECIMEN LABEL

Vernam 7E (2 1/3 to 3.0 pts/A)	application and incorporation should be done in the same operation. Incorporation Instruction – Use power driven cultivation equipment set to cut to a depth of 2 to 3 inches or tandem disks set to cut to a depth of 4 to 6 inches, operated at 4 to 6 mph, followed by a spike-toothed harrow or some other leveling device which extends beyond the ends of the disks. For thorough mixing, disk in two different directions (cross disk). Prior to second disking, raise the disk to prevent cutting deeper than 4 to 6 inches. <ul style="list-style-type: none">• Read and strictly follow all precautions and instructions on the Vernam label.• DO NOT plant seed deeper than 2 inches.
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PEAS (English, Dry, Garden, Dwarf, Green, Pigeon, Edible Pod, and Lentils)

GENERAL INSTRUCTIONS

HELENA® PENDIMETHALIN may be applied preplant incorporated for weed control in peas.

DO NOT use in California.

DO NOT apply **HELENA® PENDIMETHALIN** preemergence in peas.

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

DO NOT USE on peat or muck soils.

NOTE: If loss of pea crop occurs due to adverse weather conditions, peas or any crop registered for **HELENA® PENDIMETHALIN** preplant incorporated use can be replanted the same year into **HELENA® PENDIMETHALIN** treated soils without adverse effects. If replanting is necessary, **DO NOT** rework the soil deeper than the **HELENA® PENDIMETHALIN** treated zone.

Any crop registered for **HELENA® PENDIMETHALIN** preplant incorporated use can be double cropped after peas.

DO NOT apply **HELENA® PENDIMETHALIN** more than once per cropping season.

DO NOT apply to peas, lentils, pea or lentil forage, pea silage, pea hay, or pea straw grown for livestock feed.

When **HELENA® PENDIMETHALIN** is used in tank-mix or sequential combinations, refer to labels of other herbicides for additional follow crop restrictions. Always follow the most restrictive label.

Use Methods and Timings

Preplant Incorporated – Uniformly apply **HELENA® PENDIMETHALIN** in 10 or more gallons of water per acre or in 20 or more gallons of liquid fertilizer per acre by ground equipment. Apply in 5 or more gallons of water per acre by aircraft.

Thoroughly mix the previous crop residues into the soil to a depth of 4 to 6 inches by plowing or disking prior to application. **HELENA® PENDIMETHALIN** may be applied immediately before planting or up to 60 days prior to planting.

After application, rotary hoeing, shallow cultivation/tillage, or hand hoeing can be practiced without reducing weed control. Avoid tillage that will bring untreated soil to the surface.

A **HELENA® PENDIMETHALIN** treatment may be followed by any registered herbicide to control weeds not listed on the **HELENA® PENDIMETHALIN** label.

DO NOT apply **HELENA® PENDIMETHALIN** preemergence in peas.

HELENA® PENDIMETHALIN Use Rates in Peas

Recommended use rates for **HELENA® PENDIMETHALIN** alone and in tank mix applications are given in the following table.

Disclaimer: Always refer to the label on the product before using Helena or any other product.

SPECIMEN LABEL
Broadcast Rate Per Acre of HELENA® PENDIMETHALIN
Preplant Incorporated in Peas (Pints per Acre)

Soil Texture*	HELENA® PENDIMETHALIN
Coarse	1.2 to 1.8 pts.
Medium	1.8 to 2.4 pts.
Fine	2.4 pts to 3.6 pts.

*Refer to the **HELENA® PENDIMETHALIN** leaflet label for soil texture classification.

The high rate for each soil texture above, where listed, should be used if heavy weed populations are anticipated or if extensive crop residues are present prior to seedbed preparation. Use the 3.6 pint rate for heavy clay soils.

POTATOES

GENERAL INSTRUCTIONS

HELENA® PENDIMETHALIN may be applied preemergence, preemergence incorporated or early postemergence in potatoes. **DO NOT** apply to sweet potatoes or yams. Apply to a seedbed which is firm and free of clods and trash.

DO NOT apply prior to planting crop.

HELENA® PENDIMETHALIN treatments are most effective in controlling weeds when adequate rainfall or irrigation is received within 7 days of application.

DO NOT make more than one application of **HELENA® PENDIMETHALIN** per season.

In the event of crop loss due to weather conditions, any crop registered for **HELENA® PENDIMETHALIN** preplant incorporated use can be replanted without adverse effects the same year. If replanting is necessary, **DO NOT** rework the soil deeper than the treated zone.

Application of **HELENA® PENDIMETHALIN** on White Rose variety potatoes during or followed by cool and/or wet weather conditions may result in crop injury.

HELENA® PENDIMETHALIN is not recommended for use on peat or muck soils.

Use Methods and Timings

Preemergence – Apply **HELENA® PENDIMETHALIN** after planting but before potatoes and weeds emerge or after drag-off where this operation is practiced. Apply **HELENA® PENDIMETHALIN** tank mixes as specified under the tank mix section.

Preemergence Incorporated – Apply **HELENA® PENDIMETHALIN** and incorporate after planting but before potatoes and weeds emerge. Where drag-off is practiced, apply **HELENA® PENDIMETHALIN** and incorporate before, at or after drag-off but before potatoes and weeds emerge. Incorporate **HELENA® PENDIMETHALIN** within 7 days of application. Apply **HELENA® PENDIMETHALIN** tank mixes as specified under the tank mix section.

HELENA® PENDIMETHALIN must be thoroughly and uniformly incorporated into the top 1 to 2 inches of soil. Care must be taken so that incorporation equipment does not damage seed pieces or elongating sprouts.

Mechanical incorporation is not required if adequate rainfall for good crop and weed emergence occurs or irrigation is received within 7 days after application.

Early Postemergence – Apply **HELENA® PENDIMETHALIN** from crop emergence to the 6-inch stage of growth. **DO NOT** apply **HELENA® PENDIMETHALIN** postemergence if potatoes are under stress from cold/wet or hot/dry conditions or crop injury may occur. **HELENA® PENDIMETHALIN** treatments will not control established weeds. Emerged weeds must be destroyed prior to application. Apply **HELENA® PENDIMETHALIN** tank mixes as specified under the tank mix section.

Sprinkler Irrigation Systems – Apply **HELENA® PENDIMETHALIN** alone preemergence after planting, but before potatoes and weeds have emerged, or after drag-off where this operation is practiced, or early postemergence through sprinkler irrigation systems. See **Chemigation** section for complete instructions (see table of contents for page numbers)

SPECIMEN LABEL
HELENA® PENDIMETHALIN Use Rates in Potatoes

Recommended use rates for **HELENA® PENDIMETHALIN** alone and in tank mix applications are given in the following table.

**Broadcast Rate¹ per Acre of HELENA® PENDIMETHALIN
in Potatoes (Pints per Acre)**

Soil Texture	<3% Organic Matter	>3% Organic Matter
Coarse	1.2 to 1.8 pts	1.2 to 1.8 pts
Medium	1.8 to 2.4 pts	2.4 to 3.6 pts
Fine	2.4 to 3.6 pts	3.6 pts

¹ Use the high rate for **Helena® Pendimethalin** alone applications.

HELENA® PENDIMETHALIN Tank Mixes in Potatoes

HELENA® PENDIMETHALIN may be applied in a tank mix with Eptam, Lorox, Sencor/Lexone or Eptam plus Sencor/Lexone. **Refer to the companion label for weeds controlled in addition to HELENA® PENDIMETHALIN alone.**

When using tank mixtures with HELENA® PENDIMETHALIN, always read the companion product label(s) to determine the specific use rates by soil types, weed species, and weed or crop growth stage. In addition, follow all precautions and restrictions including state and local use restrictions that may apply to specific products. Always follow the most restrictive label.

Follow additional use directions in this table for **HELENA® PENDIMETHALIN** tank mixes.
(Refer to the table above to determine **HELENA® PENDIMETHALIN** use rate)

HELENA® PENDIMETHALIN Plus Eptam (3.0 to 3.5 pts/A)	<p>Preemergence Incorporated – Apply and incorporate after planting but before potatoes and weeds emerge. In areas where potatoes are normally dragged-off, apply and incorporate following drag-off but before potatoes and weeds emerge. Incorporate immediately after application.</p> <ul style="list-style-type: none"> • <u>Incorporation Instructions:</u> Thoroughly and uniformly incorporate into the top 1 to 2 inches of soil. Whenever possible, application and incorporation should be done in the same operation. Care must be taken so that incorporation equipment does not damage seed pieces or elongating sprouts. <p>Early Postemergence – Apply through SPRINKLER IRRIGATION SYSTEMS ONLY from crop emergence to the 6-inch stage of growth. HELENA® PENDIMETHALIN plus Eptam will not control established weeds. EMERGED WEEDS MUST BE DESTROYED PRIOR TO APPLICATION. DO NOT apply if potatoes are under stress from cold/wet or hot/dry conditions or crop injury may result.</p> <ul style="list-style-type: none"> • Read and strictly follow all precaution and instructions on the Eptam label. • The Superior variety potato is sensitive to EPTAM and under stress conditions, early season stunting may occur. • For nutsedge control, use 4.5 to 7.0 pints of Eptam per acre.
HELENA® PENDIMETHALIN Plus Lorox L (1.5 to 4.0 lbs/A) Or Lorox DF (1.5 to 4.0 lbs/A) For use on potatoes grown East of the Rocky Mountains only.	<p>Preemergence – Apply after planting but before potatoes and weeds emerge or after drag-off or hilling where these operations are practiced.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the Lorox label. • Plant seed pieces at least two inches deep. • DO NOT use on sands and loamy sands (except in Wisconsin -Central Sands Area), gravelly soils or exposed subsoils or on soils containing less than 1% organic matter as injury to the treated crop or subsequent crops may result. • Wisconsin-Central Sands Area Only: HELENA® PENDIMETHALIN plus Lorox tank mixture may be used on sands and loamy sands. • Sands – Apply 1.2 to 1.8 pints of HELENA® PENDIMETHALIN plus 1 pound of Lorox DF or 1 pint of Lorox L per acre. • Loamy Sand – Apply 1.2 to 1.8 pints of HELENA® PENDIMETHALIN plus 2 pounds of Lorox DF or 2 pints of Lorox L per acre.
HELENA® PENDIMETHALIN Plus Sencor DF/Loxone DF (0.33 to 0.67 lbs/A)	<p>Preemergence – Apply after planting but before potatoes and weeds emerge or after drag-off where this operation is practiced.</p> <p>Early Postemergence – Apply from crop emergence to the 6-inch stage of growth. For optimum control of</p>

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SPECIMEN LABEL

<p>Or Sencor F (0.5 to 1.0 pt/A)</p>	<p>weeds apply before weeds are 1 inch tall. DO NOT apply within 24 hours of application of other pesticides. DO NOT apply within three days after periods of cool, wet or cloudy weather or crop injury may result. DO NOT use on early maturing, smooth-skinned white or red-skinned varieties of potatoes.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instruction on the Sencor or Lexone label. Observe organic matter restrictions on the labels. • This combination may be applied through sprinkler irrigation systems.
<p>HELENA® PENDIMETHALIN Plus Eptam (3.0 to 3.5 pts/A) Plus Sencor/Lexone DF (0.33 to 0.67 lbs/A) Or Sencor F (0.5 to 1.0 pt/A) DO NOT use in California</p>	<p>Early Postemergence – Apply through SPRINKLER IRRIGATION SYSTEMS ONLY from crop emergence to the 6-inch stage of growth. For optimum control of weeds apply before weeds are 1 inch tall.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the Eptam and Sencor/Lexone labels. Observe organic matter restrictions on the Sencor/Lexone labels. • DO NOT apply within 24 hours of application of other pesticides. • DO NOT apply within three days after periods of cool, wet or cloudy weather or crop injury may result. • DO NOT use on early maturing, smooth-skinned white or red-skinned varieties of potatoes. • The Superior variety potato is sensitive to EPTAM and under stress conditions, early season stunting may occur. • DO NOT apply within 60 days of potato harvest. • For nutsedge control, use 4.5 to 7.0 pints of Eptam per acre.
<p>HELENA® PENDIMETHALIN Plus Eptam (3.0 to 3.5 pts/A) Plus Sencor/Lexone DF (0.33 to 0.67 lbs/A) Or Sencor F (0.5 to 1.0 pt/A) For use in Idaho, Oregon and Washington only.</p>	<p>Preemergence – Apply with GROUND EQUIPMENT ONLY after planting but before potatoes and weeds emerge.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the Sencor or Lexone label. Observe organic matter restrictions on the label. • The Superior variety potato is sensitive to EPTAM and under stress conditions, early season stunting may occur. • DO NOT make more than one application per season.
<p>HELENA® PENDIMETHALIN Plus Eptam (3.0 to 3.5 pts/A) Plus metribuzin (0.33 to 0.67 lbs/A) For use in Idaho, Oregon and Washington only</p>	<p>Preemergence – SPRINKLER IRRIGATION SYSTEMS – after planting but before potatoes and weeds emerge.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the metribuzin label. Observe organic matter and variety restrictions on the label. • Add metribuzin first and thoroughly mix before adding Eptam. After complete mixing add HELENA® PENDIMETHALIN. Maintain continuous agitation while adding herbicides and until spraying is completed. • The Superior variety potato is sensitive to EPTAM and under stress conditions, early season stunting may occur. • DO NOT make more than one application per season.
<p>HELENA® PENDIMETHALIN Plus Matrix (1.0 to 1.5 oz/A)</p>	<p>Preemergence – Apply after planting but before potatoes and weeds emerge or after drag-off where this operation is still practiced.</p> <ul style="list-style-type: none"> • DO NOT apply by air. • DO NOT use on potatoes grown for seed. • Use the most restrictive rotational crop interval. • To avoid injury to desirable crops, follow “Sprayer Tank Cleanout” instructions on the Matrix label. <p>Read and follow all precautions on the Matrix label.</p>

SPECIMEN LABEL
RICE

GENERAL INSTRUCTIONS

HELENA® PENDIMETHALIN plus Facet 75 DF, propanil (or Arrosolo) or propanil plus Londax may be applied as an early postemergence application in dry-seeded rice.

HELENA® PENDIMETHALIN alone or in a tank mix with Facet 75 DF, Bolero 8 EC or glyphosate may be applied as a delayed preemergence application in **drilled**, dry-seeded rice.

DO NOT use on water-seeded rice, except as specified in other Helena Chemical Company labeling.

This pesticide is toxic to fish and aquatic organisms. Fish may be killed at application rates recommended on the label. DO NOT contaminate water by cleaning of equipment or disposal of wastes.

DO NOT apply to rice fields if fields are used for fish production, especially catfish or crayfish farming.

DO NOT exceed the maximum labeled rate for any soil type in one season.

DO NOT bale or use rice straw from treated fields for feed or bedding.

DO NOT use water containing **HELENA® PENDIMETHALIN** residues from rice cultivation to irrigate food or feed crops which are not registered for use with **HELENA® PENDIMETHALIN**.

DO NOT plant crops in **HELENA® PENDIMETHALIN** treated fields unless **HELENA® PENDIMETHALIN** is registered for use on these crops.

In case of a crop failure due to weather conditions or disease following treatment with **HELENA® PENDIMETHALIN** alone or in a tank mixture, only drilled dry-seeded rice may be immediately replanted; however, the grower assumes all risks and consequences associated with replanting of rice because there is the potential for stand reduction or stunting. A 10 percent increase in seeding rate is recommended. Replant seed below the herbicide layer because reduced stand or stunting may occur if **HELENA® PENDIMETHALIN** contacts germinating rice seed. DO NOT replant with gibberellic acid-treated seed. DO NOT reapply **HELENA® PENDIMETHALIN** alone or in a tank mixture.

When using tank mixes with **HELENA® PENDIMETHALIN**, always read the companion product label(s) and follow all precautions and restrictions. Always follow the most restrictive label.

HELENA® PENDIMETHALIN is not recommended for use on peat or muck soils.

**Early Postemergence Applications
in Dry Seeded Rice**

HELENA® PENDIMETHALIN plus Arrosolo or propanil

HELENA® PENDIMETHALIN plus Arrosolo or propanil are postemergence treatments that combine the direct contact action of propanil and the residual activity of **HELENA® PENDIMETHALIN**. Since the residual activity of **HELENA® PENDIMETHALIN** provides preemergence control of certain annual grasses which can germinate after this tank-mix treatment is applied, flooding after application can be delayed.

For maximum weed control with this treatment, it is important to carefully follow the directions below for (1) adequate spray coverage of weeds and soil and (2) proper timing of application, when barnyardgrass (watergrass) is in the 1 to 3 leaf stage of growth with an occasional 4 leaf plant (make application when sprangletop is less than ½ inch in height).

The seedbed should be firm and free of clods and trash. The seedbed must be prepared to allow for good seed coverage. Previous crop residues should be thoroughly mixed into the soil to a depth of 4 to 6 inches by plowing or disking before planting rice.

Uniformly apply recommended **HELENA® PENDIMETHALIN** plus Arrosolo or **HELENA® PENDIMETHALIN** plus propanil treatment by aircraft or ground equipment after rice emergence, according to spraying instruction on page 41, when barnyardgrass is in the 1 to 3 leaf growth stage with an occasional 4 leaf plant (make application when sprangletop is less than ½ inch). **THE GROWER SHOULD INSPECT FIELDS FREQUENTLY TO CHECK GROWTH OF BARNYARDGRASS AND/OR SPRANGLETOP TO DETERMINE PROPER APPLICATION TIMING.** Timing of applications should be based on the growth stage of barnyardgrass and/or sprangletop and not on the growth stage of rice. If rice is too small to maintain a flood on the field, the treatment can still be applied since flooding can be delayed because of the residual activity of **HELENA® PENDIMETHALIN**.

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While the residual activity of **HELENA® PENDIMETHALIN** allows flooding to be delayed, proper water management practices must be followed for normal rice growth. Flooding should not be delayed if weeds begin to develop after application. Since soil and weeds must be completely exposed to spray coverage, no flood water should be on field at time of application. If necessary, fields may be flushed prior to treatment to produce vigorous rice and weed growth.

Since the residual activity of **HELENA® PENDIMETHALIN** is activated by moisture, **HELENA® PENDIMETHALIN** is most effective in controlling emerging weeds when adequate rainfall or irrigation (flush) is received within 7 days after application. For maximum direct contact activity of propanil or Arrosolo, delay application if there is a chance of rain within 6 to 8 hours.

DO NOT apply this tank mixture within 14 days before or after insecticide applications because serious damage to rice may occur.

Broadcast Rate per Acre of **HELENA® PENDIMETHALIN** plus Arrosolo or Propanil Tank Mixtures in Rice (Pints per Acre)

Soil Texture	HELENA® PENDIMETHALIN	Arrosolo or Propanil ¹
Coarse	1.8 pts	6.0 to 8.0 pts
Medium	1.8 to 2.4 pts	6.0 to 8.0 pts
Fine	1.8 to 2.4 pts	6.0 to 8.0 pts

¹Based on 4 lb. a.i. per gallon.

Use the high rate of Arrosolo or propanil if the following situations exist at the time of application: (1) unseasonably cool weather, (2) barnyardgrass has progressed to predominantly the 3 to 4 leaf stage, or (3) emerged sprangletop (less than ½ inch) is present.

HELENA® PENDIMETHALIN plus propanil plus Londax

Preflood Application

HELENA® PENDIMETHALIN plus propanil (or Arrosolo) may be tank mixed with Londax for early postemergence weed control. Londax will provide improved control of certain broadleaves and sedges when applied as a preflood postemergence application. Refer to the Londax label for specific weeds controlled. Apply Londax at 0.75 to 1.0 oz per acre with **HELENA® PENDIMETHALIN** plus propanil 1 to 7 days prior to establishment of the permanent flood. Weeds should be actively growing at the time of application.

Preflood Sequential Applications

HELENA® PENDIMETHALIN plus propanil (or Arrosolo) plus Londax may be applied in a sequential application with Londax plus propanil (or Arrosolo). Apply Londax at 0.50 to 0.75 oz per acre with **HELENA® PENDIMETHALIN** plus propanil when broadleaf weeds are in the cotyledon to 4-leaf stage and the sedges are 3 to 6 inches tall. Apply the second application, if needed, of Londax plus propanil 1 to 7 days prior to establishment of the permanent flood.

HELENA® PENDIMETHALIN plus Facet 75 DF

HELENA® PENDIMETHALIN plus Facet 75 DF herbicides may be tank mixed for early postemergence weed control in dry-seeded rice. This mixture will provide broad spectrum grass and certain broadleaf weed control, especially where sprangletop (*Leptochloa* spp.) is a problem.

Facet 75 DF will control the emerged grasses and broadleaves listed on its label. Refer to the Facet 75 DF label for weed size limitations.

HELENA® PENDIMETHALIN will provide residual control of labeled grass weeds which can germinate after this tank mixture is applied and which Facet 75 DF does not control.

For maximum weed control, it is important to carefully follow the directions below for (1) adequate spray coverage of weeds and soil and (2) proper timing of application. **HELENA® PENDIMETHALIN** will not control emerged weeds. Facet 75 DF does not control sprangletop. Therefore, schedule spraying before sprangletop has emerged.

HELENA® PENDIMETHALIN plus Facet 75 DF tank mixture may be applied early postemergence as follows:

1. Treatments may be applied to conventional, reduced or minimum tillage, and no-till (stale seed-bed) rice. The seedbed should be firm and free of clods. The seedbed must be prepared to allow for complete soil coverage of the rice seed. The use of a planter under conditions which do not allow good soil coverage of the rice seed can result in reduced stand or stunting if **HELENA® PENDIMETHALIN** contacts germinating rice seed.
2. Apply when soil surface is dry, moist, or wet without standing water. If necessary, fields may be flushed prior to treatment to produce vigorous rice and weed growth. Since soil and weeds must be completely exposed to spray coverage, no flood water should be on the

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field at time of application. Cloddy soil, standing water (puddles) at the time of application, or cracks in the soil that form after application may result in reduced weed control.

- 3. Uniformly apply the recommended **HELENA® PENDIMETHALIN** plus Facet 75 DF treatment after rice emergence (spiking) and at the correct timing for Facet 75 DF, by aircraft or ground equipment according to spraying instructions on page 41. Refer to timing instructions and illustrations in the Facet 75 DF label. THE GROWER SHOULD INSPECT FIELDS FREQUENTLY TO CHECK GROWTH OF SPRANGLETOP, OTHER LABELED WEEDS AND RICE TO DETERMINE PROPER APPLICATION TIMING.
- 4. For maximum direct contact activity of Facet 75 DF, delay application of the tank mix if there is a chance of rain within 6 to 8 hours.
- 5. Because the residual activity of the **HELENA® PENDIMETHALIN** plus Facet 75 DF allows for delayed flooding, this treatment may be applied if rice is too small to maintain a flood on the field for weed control. However, proper water management practices must be followed for normal rice growth and activity of **HELENA® PENDIMETHALIN** and Facet 75 DF. Refer to the Water Management section of the Facet 75 DF label. Flooding should not be delayed if weeds begin to develop after application.

Since the residual activity of **HELENA® PENDIMETHALIN** and Facet 75 DF is activated by moisture, the tank mix is most effective in controlling emerging weeds when adequate rainfall or irrigation (flush) is received within 3-7 days after application or when new grass/weeds have emerged and are less than one inch tall.

Broadcast Rate per Acre of HELENA® PENDIMETHALIN plus Facet 75 DF Early Postemergence Tank Mixture in Rice

Soil Texture	HELENA® PENDIMETHALIN (pints)	Facet 75 DF (pounds)
Coarse	1.8	0.50
Medium	1.8 to 2.4	0.50
Fine	1.8 to 2.4	0.50

Use the high rate of **HELENA® PENDIMETHALIN** for each soil texture if heavy weed populations are anticipated.

Mixing Instructions

Refer to the Facet 75 DF label for sections on mixing/spraying and on adjuvant for postemergence application. ADDITION OF CROP OIL CONCENTRATE IS REQUIRED WITH FACET 75 DF APPLICATION. **DO NOT** use liquid fertilizer solution. Add Facet 75 DF to a half-full spray tank of clean water with agitation running. After the Facet 75 DF is thoroughly mixed, add **HELENA® PENDIMETHALIN**. Mix thoroughly and then add the recommended amount of crop oil concentrate (see Facet 75 DF label) and remaining volume of water. Constantly agitate during application.

Delayed (Late) Preemergence Applications

HELENA® PENDIMETHALIN herbicide alone, or a tank mixture of **HELENA® PENDIMETHALIN** plus Roundup (glyphosate), Facet 75 DF or Bolero 8 EC herbicides may be applied for delayed (late) preemergence weed control in grain-drilled, dry-seeded rice.

The tank mixtures will provide broad spectrum grass and certain broadleaf weed control. Tank mixtures are especially effective where sprangletop (*Leptochloa* spp.) is a problem. **HELENA® PENDIMETHALIN** alone will not control broadleaf weeds; a postemergence application of propanil, Arrosolo, Bolero, Facet 75 DF or Londax herbicide may be necessary for season-long weed control.

Glyphosate or Facet 75 DF will control the emerged grasses and broadleaves listed on their label. **HELENA® PENDIMETHALIN** will provide residual control of labeled grass weeds which can germinate after the tank-mixture is applied and which Facet 75 DF does not control. **HELENA® PENDIMETHALIN** will not control emerged weeds. Facet 75 DF does not control sprangletop. Therefore, schedule spraying before sprangletop has emerged.

For maximum weed control and rice stand, it is important to carefully follow the directions below for (1) adequate spray coverage of soil and (2) proper timing of application.

- 1. Treatments may be applied to conventional, reduced or minimum tillage, no-till (stale seed-bed) rice. The seedbed should be firm and free of clods, and must be prepared to allow for good seed coverage. Plant rice with a grain drill at a depth that provides complete soil coverage of the rice seed. The use of a planter under conditions which do not allow good soil coverage of the rice seed can result in reduced stand or stunting if **HELENA® PENDIMETHALIN** contacts germinating rice seed.
- 2. Apply **HELENA® PENDIMETHALIN** alone or in tank mixture to levees after the levees are pulled and planted. Exposed seeds that come in contact with **HELENA® PENDIMETHALIN** or Facet 75 DF may be injured.

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- Uniformly apply the recommended **HELENA® PENDIMETHALIN** plus glyphosate after rice planting (as described below) and before rice emergence (spiking), by aircraft or ground equipment according to spraying instructions on page 41. **THE GROWER SHOULD INSPECT FIELDS FREQUENTLY TO CHECK GROWTH OF RICE TO DETERMINE PROPER APPLICATION TIMING.**

Uniformly apply the recommended rate of **HELENA® PENDIMETHALIN** alone, **HELENA® PENDIMETHALIN** plus Facet 75 DF or **HELENA® PENDIMETHALIN** plus Bolero 8 EC after rice planting (as described below) and before rice and weed emergence (spiking), by aircraft or ground equipment according to spraying instructions on page 41. **THE GROWER SHOULD INSPECT FIELDS FREQUENTLY TO CHECK GROWTH OF RICE AND WEEDS TO DETERMINE PROPER APPLICATION TIMING.**

- Apply **ONLY** when growing conditions favor vigorous rice growth. The seedbed should have adequate moisture for seed germination. If there is insufficient moisture, **flushing is recommended before HELENA® PENDIMETHALIN application** to supply moisture for root (radicle) initiation and for vigorous rice and weed growth.
DO NOT apply **HELENA® PENDIMETHALIN** and then flush for germination. **DO NOT** apply to stressed rice. Stress factors include cold or hot temperature extremes, excessive moisture or drought, problem soils, poor field drainage or deep water after application. **DO NOT** apply early preemergence nor preplant incorporated as severe rice injury is possible.
- Apply when soil surface is dry, moist, or wet without standing water. Since soil and weeds (only for glyphosate) must be completely exposed to spray coverage, no flood water should be on the field at time of application. Cloddy soil, standing water (puddles) at the time of application, or cracks in the soil that form after application may result in reduced weed control.
- Apply after the rice seed has absorbed water and germinated and after the soil has been previously sealed over the seed by at least 1 inch of rainfall or by irrigation (flush). If the soil has not been sealed by rain or flush, apply when 80 percent of germinated seeds have a primary root (radicle) or shoot at least ½ inch long.

If applied to soil prior to these conditions, or to cracked soil, then stand reduction or stunting of rice may occur; Facet 75 DF may cause buggywhipping. Under some conditions, use of gibberellic acid-treated seed, **HEAVY RAINFALL AFTER APPLICATION, OR FLUSHING AFTER APPLICATION** may result in herbicide injury to rice. Rice can overcome moderate injury with appropriate cultural practices.

- For maximum direct contact activity of glyphosate, delay application of the tank mix if there is a chance of rain within 6 to 8 hours.
- Because the residual activity of **HELENA® PENDIMETHALIN** alone, **HELENA® PENDIMETHALIN** plus Facet 75 DF or **HELENA® PENDIMETHALIN** plus Bolero 8EC tank mix allows for delayed flooding, this treatment may be applied if rice is too small to maintain a flood on the field for weed control. However, proper water management practices must be followed for normal rice growth and activity of **HELENA® PENDIMETHALIN**, Facet 75 DF or Bolero 8 EC. Refer to the Water Management section of the Facet 75 DF label. Flooding should not be delayed if weeds begin to develop after application.

Residual activity of **HELENA® PENDIMETHALIN**, Facet 75 DF and Bolero 8 EC are most effective when applied to moist soil. Soil should be kept moist after application and not be allowed to crust or crack.

**Broadcast Rate per Acre of HELENA® PENDIMETHALIN Alone,
HELENA® PENDIMETHALIN plus Facet 75 DF, HELENA® PENDIMETHALIN plus Bolero 8EC or HELENA® PENDIMETHALIN
plus Glyphosate Tank Mixture for Delayed Preemergence Application in Rice**

Soil Texture	HELENA® PENDIMETHALIN (pints)	Facet 75 DF (pounds)	Bolero 8 EC (pints)
Sands, loamy sands	DO NOT USE	DO NOT USE	DO NOT USE
Sandy loams	1.8	0.33 to 0.44	2 to 3
Loams, silt loams, silts, sandy clay loams	1.8 to 2.4	0.44 to 0.5	3 to 4
Silty clay loams, clay loams, sandy clays, silty clays, clays	1.8 to 2.4	0.5 to 0.67	3 to 4

Use the higher rate of **HELENA® PENDIMETHALIN** for each soil texture if heavy weed populations are anticipated.

See the glyphosate label for recommended rates.

SPECIMEN LABEL
Mixing Instructions

HELENA® PENDIMETHALIN plus glyphosate tank mix: Refer to the Mixing Instructions in the **HELENA® PENDIMETHALIN** leaflet label and to Mixing, Additives and Application Instructions in the glyphosate label. ADDITION OF NONIONIC SURFACTANT MAY BE REQUIRED WITH GLYPHOSATE APPLICATION (seed product label) and use of ammonium sulfate may increase performance.

HELENA® PENDIMETHALIN plus Facet 75 DF tank mix: Refer to the **HELENA® PENDIMETHALIN** and Facet 75 DF labels for sections on mixing and spraying. **DO NOT** use liquid fertilizer solution. Add Facet 75 DF to a half-full spray tank of clean water with agitation running. After the Facet 75 DF is thoroughly mixed, add **HELENA® PENDIMETHALIN**. Mix thoroughly and then add the remaining volume of water. Constantly agitate during application.

HELENA® PENDIMETHALIN plus Bolero 8 EC tank mix: Add **HELENA® PENDIMETHALIN** to the half-full spray tank of clean water with agitator running. After **HELENA® PENDIMETHALIN** is thoroughly mixed, add Bolero 8 EC and mix thoroughly. Then add the remaining volume of water. Constantly agitate during application.

Spraying Instructions

Spray drift can cause injury to sensitive crops. See the propanil or Arrosolo, Facet 75 DF, Bolero 8 EC and glyphosate labels for sensitive crops: follow all recommendations to minimize drift.

DO NOT apply **HELENA® PENDIMETHALIN** through any type of irrigation system.

DO NOT apply in liquid fertilizer.

Aerial Application

For aerial application, apply the recommended rate in 5 to 10 (10 to 12 for propanil and Arrosolo) gallons of water per acre to ensure adequate coverage. To minimize drift, DO NOT apply during periods of gusty wind or when wind conditions favor drifting. It is recommended that a flagman or an automatic mechanical flagging unit on the aircraft be used to avoid overlapping and possible crop injury.

Ground Application

For ground equipment, apply the recommended rate in 10 to 20 (15 to 25 for propanil and Arrosolo) gallons of water per acre to ensure adequate coverage. Use a properly calibrated low-pressure (20 to 40 psi) sprayer equipped with 8002 or larger size Tee-Jet or comparable nozzles to achieve uniform spray distribution and minimize drift. Keep the bypass line on or near the bottom of the tank to minimize foaming. Nozzle screens must be no finer than 50 mesh. DO NOT apply **HELENA® PENDIMETHALIN** during periods of gusty winds or when wind velocity is greater than 20 mph.

SOYBEANS

GENERAL INSTRUCTIONS

HELENA® PENDIMETHALIN may be applied in conventional, minimum or no-till as a fall surface, fall incorporated, preplant surface, preplant incorporated or preemergence application in soybeans, including Round-up Ready⁵ Soybeans.

DO NOT APPLY POSTEMERGENCE or serious crop injury can result.

DO NOT make applications of HELENA® PENDIMETHALIN pre-emergence north of Interstate 80, except as specified in other supplemental Helena labeling.

DO NOT use **HELENA® PENDIMETHALIN** in soybeans in California.

Preplant surface and preemergence treatments are most effective in controlling weeds when adequate rainfall or overhead irrigation is received within 7 days after application. If moisture is insufficient to activate **HELENA® PENDIMETHALIN**, a shallow cultivation (preferably with a rotary hoe) should be made after emergence of soybeans, but while weeds are small enough to be controlled by mechanical cultivation. Otherwise, the use of a postemergence herbicide treatment may be required to control weed escapes at planting or following soybean emergence.

In the event of a crop loss due to weather conditions, soybeans or any crop registered for preplant incorporated use can be replanted without adverse effects the same year. If replanting is necessary, DO NOT rework the soil deeper than the treated zone.

Livestock can graze or be fed forage from treated soybean fields.

HELENA® PENDIMETHALIN is not recommended for use on peat or muck soils.

Disclaimer: Always refer to the label on the product before using Helena or any other product.

SPECIMEN LABEL
Use Methods and Timing

Fall Applied – HELENA® PENDIMETHALIN may be surface applied or incorporated in the fall. October 1 to December 31, in states north of I-80 and the entire states of Iowa, Oklahoma and Texas. Fall applications of HELENA® PENDIMETHALIN will not provide season long weed control. For season long weed control, fall applications of HELENA® PENDIMETHALIN should be followed by a postemergence program using PURSUIT, RAPTOR, or other registered postemergence herbicide.

Preplant Surface – Apply HELENA® PENDIMETHALIN up to 15 days prior to planting. HELENA® PENDIMETHALIN may be applied up to 45 days prior to planting when used in a tank mix or applied sequentially with PURSUIT or SCEPTOR herbicides. Preplant surface applications of HELENA® PENDIMETHALIN alone should be followed by a postemergence program using RAPTOR or PURSUIT herbicide. Apply HELENA® PENDIMETHALIN tank mixes and sequential programs as specified under the tank mix section.

Preplant Incorporated – Apply HELENA® PENDIMETHALIN up to 60 days prior to planting and incorporate within 7 days of application. Apply HELENA® PENDIMETHALIN tank mixes and sequential programs as specified under the tank mix section.

Preemergence – Apply HELENA® PENDIMETHALIN at planting or up to 2 days after planting. Apply to a seedbed which is firm and free of clods. **DO NOT make applications of HELENA® PENDIMETHALIN preemergence north of Interstate 80, except as specified in other supplemental Helena Chemical Company labeling.** Apply HELENA® PENDIMETHALIN tank mixes and sequential programs as specified under the tank mix section.

DO NOT apply HELENA® PENDIMETHALIN postemergence or serious crop injury can result.

HELENA® PENDIMETHALIN Use Rates in Soybeans

Recommended use rates for HELENA® PENDIMETHALIN alone and in tank mix combinations or sequential applications with other herbicides are given in the following tables.

Broadcast Rate Per Acre of HELENA® PENDIMETHALIN
Fall Surface, Fall Incorporated, Preplant Surface or Preplant Incorporated in Soybeans
(Pints per Acre)

Soil Texture	<3% Organic Matter	>3% Organic Matter
Coarse	1.2 to 1.8 pts	2.4 pts
Medium	1.8 to 3.0 ¹ pts	3.0 to 3.6 pts
Fine	2.4 to 3.6 pts	3.6 pts

¹DO NOT EXCEED 2.4 PTS/A FOR SOUTHERN STATES. SEE MAP AT THE END OF THIS LABEL FOR SPECIFIC STATES.

For heavy clay soils, apply HELENA® PENDIMETHALIN at the broadcast rate of 3.6 pints per acre.

The high rates for each soil texture above should be used if heavy weed populations are anticipated, extensive crop residues were present prior to seedbed preparation or in no-till.

Broadcast Rate Per Acre of HELENA® PENDIMETHALIN
Preemergence in Soybeans
(Pints per Acre)

Soil Texture	<3% Organic Matter	>3% Organic Matter
Coarse	1.2 to 1.8 pts	1.8 pts
Medium	1.8 to 2.4 pts	1.8 to 2.4 pts
Fine	1.8 to 2.4 pts	2.4 to 3.0 pts

The high rates for each soil texture above should be used if heavy weed populations are anticipated, extensive crop residues were present prior to seedbed preparation or in no-till.

HELENA® PENDIMETHALIN Tank-Mixes and Sequential Programs in Soybeans

HELENA® PENDIMETHALIN may be applied in a tank mix with PURSUIT, SCEPTER, Command, Canopy, Dual, Lasso, Lorox, Lorox Plus, Preview, -and Sencor/Lexone. HELENA® PENDIMETHALIN may be applied in a sequential application with PURSUIT, RAPTOR, SCEPTER, SCEPTER O.T., Lorox and Sencor/Lexone. **Refer to the companion label for weeds controlled in addition to HELENA® PENDIMETHALIN alone.**

SPECIMEN LABEL

When using tank mixtures or sequential applications with **HELENA® PENDIMETHALIN**, always read the companion product label(s) to determine the specific use rates by soil types, weed species, and weed or crop growth stage. In addition, follow all precautions and restrictions including state and local use restrictions that may apply to specific products. Always follow the most restrictive label.

For no-till, **HELENA® PENDIMETHALIN** alone or **HELENA® PENDIMETHALIN** tank mixes may be used with Gramoxone Extra, Roundup, 2-4,D or Butyrac 200 (2-4,DB) to kill existing vegetation, if present prior to planting. Refer to these labels for specific use recommendations, restrictions, rates and weeds controlled. **HELENA® PENDIMETHALIN** alone will control weeds as they germinate, but it will not control emerged weeds.

**Follow additional use directions in this table for HELENA® PENDIMETHALIN tank mixes
(Refer to page 38 to determine HELENA® PENDIMETHALIN use rate)**

<p>HELENA® PENDIMETHALIN plus PURSUIT (4 oz/A) or PURSUIT DG (1.4 oz/A)</p>	<p>Preplant Surface – Apply up to 45 days prior to planting.</p> <p>Preplant Incorporated – Apply up to 45 days prior to planting and incorporate within 7 days of application.</p> <p>Preemergence – Apply at planting or up to 2 days after planting before weeds and crops emerge.</p> <p>Preplant Surface, preplant incorporated or preemergence followed by Early Postemergence – Apply HELENA® PENDIMETHALIN as described above. Follow with a early postemergence treatment of PURSUIT as directed on the PURSUIT label.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the PURSUIT label. • Preplant surface applications of HELENA® PENDIMETHALIN alone should be followed by a postemergence program using PURSUIT herbicide. • DO NOT graze or feed treated soybean forage, hay or straw to livestock
<p>HELENA® PENDIMETHALIN followed by RAPTOR (4 oz/A)</p>	<p>Preplant Surface followed by Early Postemergence – Apply HELENA® PENDIMETHALIN up to 15 days prior to planting. Follow with an early postemergence treatment of RAPTOR as directed on the RAPTOR label.</p> <p>Preplant Incorporated followed by Early Postemergence – Apply HELENA® PENDIMETHALIN up to 60 days prior to planting and incorporate within 7 days of application. Follow with an early postemergence treatment of RAPTOR as directed on the RAPTOR label.</p> <p>Preemergence followed by Early Postemergence – Apply HELENA® PENDIMETHALIN at planting or up to 2 days after planting. Follow with a postemergence treatment of RAPTOR as directed on the RAPTOR label.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the RAPTOR label.
<p>HELENA® PENDIMETHALIN plus SCEPTER (0.67 pt/A) or SCEPTER 70DG (2.8 oz/A)</p>	<p>Preplant Surface – Apply up to 45 days prior to planting.</p> <p>Preplant Incorporated – Apply up to 45 days prior to planting (30 days in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee and Texas) and incorporate within 7 days of application.</p> <p>Preemergence – Apply at planting or up to 2 days after planting before weeds and crops emerge.</p> <p>Preplant Surface, preplant incorporated or preemergence followed by Early Postemergence – Apply HELENA® PENDIMETHALIN as described above. Follow with an early postemergence treatment of SCEPTER as directed on the SCEPTER label.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the SCEPTER label. • DO NOT graze or feed treated soybean forage, hay or straw to livestock.
<p>HELENA® PENDIMETHALIN followed by SCEPTER O.T. (1.0 pt/A)</p>	<p>Preplant Surface followed by Early Postemergence – Apply HELENA® PENDIMETHALIN up to 15 days prior to planting. Follow with an early postemergence treatment of SCEPTER O.T. as directed on the SCEPTER O.T. label.</p> <p>Preplant Incorporated followed by Early Postemergence – Apply HELENA® PENDIMETHALIN up to 60 days prior to planting and incorporate within 7 days of application. Follow with an early postemergence treatment of SCEPTER O.T. as directed on the SCEPTER O.T. label.</p>

Disclaimer: Always refer to the label on the product before using Helena or any other product.

SPECIMEN LABEL

	<p>Preemergence followed by Early Postemergence – Apply HELENA® PENDIMETHALIN at planting or up to 2 days after planting. Follow with a postemergence treatment of SCEPTER O.T. as directed on the SCEPTER O.T. label.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the SCEPTER O.T. label.
<p>HELENA® PENDIMETHALIN plus Command 4EC (0.75 to 1.5 pts/A)</p>	<p>Preplant Incorporated- Apply to the soil surface and uniformly incorporate. See the Command label for incorporation requirements and instructions.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the Command label. • Apply with calibrated ground equipment in 10 to 40 gallons of water per acre. The use of an agriculturally approved drift reduction agent is required at finished spray volumes of 10 to 15 gallons per acre. • Do not apply this tank mix to overly moist or wet soils. • Command is a volatile compound. Off-site movement of spray drift or vapors of Command can cause foliar whitening or yellowing of some plant parts. • DO NOT allow livestock to graze on soybean vines or use the vines for feed. Cover crops may be planted anytime but stand reductions may occur. DO NOT graze or use the cover crop for feed.
<p>HELENA® PENDIMETHALIN plus Canopy (6 to 12 oz/A)</p>	<p>Preplant Surface – Apply up to 30 days before planting.</p> <p>Preplant Incorporated – Apply up to 14 days prior to planting and incorporate within 7 days of application.</p> <p>Preemergence – Apply at planting or up to 2 days after planting before weeds and crops emerge.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the Canopy label. Observe all soil type, soil pH and soybean variety restrictions. • DO NOT apply to soils with less than 0.5% organic matter. • Continuous agitation in the spray tank is required to keep the material in suspension. • Avoid overlap and shut off spray booms while starting, turning, slowing or stopping, or crop injury may result.
<p>HELENA® PENDIMETHALIN plus Dual (1.5 to 3.0 pts/A)</p>	<p>Preplant Surface – Apply up to 15 days before planting.</p> <p>Preplant Incorporated – Apply up to 14 days prior to planting and incorporate within 7 days of application. Use a preplant incorporated application if furrow irrigation is used or when a period of dry weather after application is expected. If soybeans are planted on beds, apply and incorporate after bed formation.</p> <p>Preemergence – Apply at planting or up to 2 days after planting before weeds and crops emerge.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instruction on the Dual label.
<p>HELENA® PENDIMETHALIN plus Lasso (2.5 to 4.0 qts/A)</p>	<p>Preplant Surface – Apply up to 15 days before planting.</p> <p>Preplant Incorporated- Apply up to 7 days prior to planting and incorporate within 7 days of application.</p> <p>Preemergence – Apply at planting or up to 2 days after planting before weeds and crops emerge. This treatment must be applied within 5 days of the last preplant tillage.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the Lasso label. • Apply with ground equipment. • Incorporation on coarse soils may reduce length of control due to leaching of Lasso with rainfall or irrigation. • Incorporation is not recommended on coarse soils in the Southeastern States. • High intensity or excessive rainfall or excessive irrigation after preemergence application may reduce weed control.
<p>HELENA® PENDIMETHALIN plus Lorox DF (1.0 to 2.5 lbs/A) or</p>	<p>Preplant Surface- Apply up to 15 days before planting.</p> <p>Preplant Incorporated followed by Preemergence- Apply HELENA® PENDIMETHALIN up to 60 days prior to planting and incorporate within 7 days of application. Follow with a preemergence treatment of Lorox as directed on the Lorox label.</p>

SPECIMEN LABEL

<p>Lorox L (1.0 to 2.5 pts/A)</p>	<p>Preemergence – Apply at planting or up to 2 days after planting before weeds and crops emerge.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the Lorox label. • Do not use on sands, loamy sands, gravelly soils or soils containing less than ½% organic matter.
<p>HELENA® PENDIMETHALIN plus Lorox Plus (12 to 18 oz/A)</p>	<p>Preplant Surface – Apply up to 30 days before planting.</p> <p>Preplant Incorporated – Apply up to 30 days prior to planting and incorporate within 7 days of application.</p> <p>Preemergence – Apply at planting or up to 2 days after planting before weeds and crops emerge.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the Lorox Plus label. Observe all soil type, soil pH and soybean variety restrictions. • DO NOT apply to soils with less than 0.5% organic matter. • Continuous agitation in the spray tank is required to keep the material in suspension. • Avoid overlap and shut off spray booms while starting, turning, slowing or stopping, or crop injury may result.
<p>HELENA® PENDIMETHALIN plus Preview (6 to 10 oz/A)</p>	<p>Preplant Surface – Apply up to 30 days before planting.</p> <p>Preplant Incorporated- Apply up to 14 days prior to planting and incorporate within 7 days of application.</p> <p>Preemergence – Apply at planting or up to 2 days after planting before weed and crops emerge.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the Preview label. Observe all soil type, soil pH and soybean variety restrictions. • DO NOT apply to soils with less than 0.5% organic matter. • Continuous agitation in the spray tank is required to keep the material in suspension. • Avoid overlap and shut off spray booms while starting, turning, slowing or stopping, or crop injury may result.
<p>HELENA® PENDIMETHALIN plus Sencor/Lexone DF (0.33 to 0.67 lbs/A) or Sencor F (0.5 to 1.0 pt/A)</p>	<p>Preplant Surface – Apply up to 15 days before planting.</p> <p>Preplant Incorporated – Apply up to 7 days prior to planting and incorporate within 7 days of application.</p> <p>Preplant Incorporated followed by Preemergence – Apply HELENA® PENDIMETHALIN up to 60 days prior to planting and incorporate within 7 days of application. Follow with a preemergence treatment of Sencor/Lexone as directed on the Sencor or Lexone label.</p> <p>Preemergence – Apply at planting or up to 2 days after planting before weeds and crops emerge.</p> <ul style="list-style-type: none"> • Read and strictly follow all precautions and instructions on the Sencor/Lexone label. Observe all soil type, soil pH, soybean variety and incorporation restrictions. • DO NOT use on sands. DO NOT use on loamy sands or on sandy loams that contain less than 0.5% organic matter as crop injury may result. This tank mixture is not recommended for use on soils with less than 2% organic matter in the Coastal Plain of New Jersey or the Delmarva Peninsula. • Soybean seed should be planted at least 1.5 inches below the soil surface. • If replanting is necessary, DO NOT rework the soil.

Special Weeds

1. **Shattercane/Woolly Cupgrass**
Preplant incorporated treatments of **HELENA® PENDIMETHALIN** alone, **HELENA® PENDIMETHALIN** plus SCEPTER or **HELENA® PENDIMETHALIN** plus Sencor/Lexone preplant incorporated tank mixtures, or preplant incorporated **HELENA® PENDIMETHALIN** applications followed by registered sequential preemergence or postemergence herbicides will control shattercane (wild cane) (*Sorghum bicolor*).

SPECIMEN LABEL

Preplant incorporated treatments of **HELENA® PENDIMETHALIN** plus PURSUIT® or preplant incorporated **HELENA® PENDIMETHALIN** applications followed by an early postemergence application of PURSUIT herbicide or other registered sequential preemergence or postemergence herbicides will control woolly cupgrass (*Eriochloa villosa*).

Shattercane and woolly cupgrass are difficult to control in many soybean growing areas because of their ability to germinate from a greater depth in the soil than most other weeds. Shattercane and woolly cupgrass can emerge throughout the growing season depending on soil temperature, moisture, and seed dormancy.

Thoroughly mix previous crop residues into the soil and destroy any existing vegetation prior to herbicide application. Apply **HELENA® PENDIMETHALIN** or **HELENA® PENDIMETHALIN** combinations at the recommended rates listed in tables following. See **Incorporation Instructions** section (see table of contents for page number) for incorporation directions. Thoroughly and uniformly mechanically incorporate **HELENA® PENDIMETHALIN** into TOP 2 INCHES of soil. Acceptable results CANNOT be expected if **HELENA® PENDIMETHALIN** is applied preemergence. Cultivation may be necessary to control escapes and late germinating shattercane or woolly cupgrass during the crop season.

**Broadcast Rate Per Acre of HELENA® PENDIMETHALIN Preplant Incorporated
For Control of Shattercane or Woolly Cupgrass in Soybeans
(Pints per Acre)**

Soil Texture	< 3% Organic Matter	> 3% Organic Matter
Coarse	2.4 pts	2.4 pts
Medium	3.0 pts	3.6 pts
Fine	3.6 pts	3.6 pts

**Broadcast Rate Per Acre of HELENA® PENDIMETHALIN Plus Sencor/Lexone
Preplant Incorporated Tank Mixture for
Control of Shattercane in Soybeans¹**

Soil Texture ¹	HELENA® PENDIMETHALIN + Sencor/Lexone DF 0.5% to 3% Organic Matter	HELENA® PENDIMETHALIN + Sencor/Lexone ² DF More than 3% Organic Matter
Coarse	1.8 pts + 0.5 lb.	1.8 pts + 0.5 lb.
Medium	2.4 pts + 0.5 lb.	2.4 pts + 0.5 to 0.67 lb.
Fine	2.4 pts + 0.5 to 0.67 lb.	3.0 pts + 0.67 lb.

¹ DO NOT USE on sands. DO NOT USE on loamy sands or on sandy loams that contain less than 1% organic matter, or on other soils with less than ½% organic matter as crop injury may result.

² Read and strictly follow all precautions and instructions on the Sencor/Lexone label. Observe all soil type, soil pH and soybean variety restrictions.

2. **Red Rice, Itchgrass**

HELENA® PENDIMETHALIN applied preplant incorporated will provide control of red rice (*Oryza sativa*) and aid in the control of and reduce competition from itchgrass (*Rottboellia exaltata*) at rates listed in the following table.

**Broadcast Rate Per Acre of HELENA® PENDIMETHALIN Preplant Incorporated
For Control of Red Rice and Suppression of Itchgrass in Soybeans
(Pints per Acre)**

Soil Texture	Up to 3% Organic Matter ¹
Coarse	2.4 to 3.6 ² pts
Medium	3.6 pts
Fine	4.8 pts

¹This use is not recommended for soils with more than 3% organic matter.

²The higher rate should be used if heavy red rice or itchgrass populations are anticipated.

NOTE: Livestock can graze or be fed forage from treated soybean fields. If soybean crop loss occurs due to weather conditions, cotton or soybeans can be replanted the same year into treated soil without adverse effects. If replanting is necessary, DO NOT rework the soil deeper than the treated zone.

3. **Rhizome Johnsongrass**

SPECIMEN LABEL

HELENA® PENDIMETHALIN applied preplant incorporated for two consecutive years will provide control of rhizome johnsongrass (*Sorghum halepense*) in soybeans at the rates recommended for soil textures listed in the following table. This use is not recommended for Arizona, New Mexico and California. Rhizome johnsongrass will be suppressed after the first year and controlled after the second year.

Before application, use a chisel plow or similar implement to bring johnsongrass rhizomes to the surface. Chop rhizomes into small pieces with a disk harrow set to cut 4 to 6 inches deep and operated in two different directions at 4 to 6 mph.

HELENA® PENDIMETHALIN is to be incorporated into the soil within 7 days after application prior to planting. For maximum control of rhizome johnsongrass, incorporate **HELENA® PENDIMETHALIN** as soon as possible after application. Deep and thorough incorporation of **HELENA® PENDIMETHALIN** is necessary for control of rhizome johnsongrass. Mechanical incorporation can be achieved by the following methods:

- (a) Disk harrow set to cut 4 to 6 inches deep and operated in two different directions at 4 to 6 mph.
- (b) PTO-driven equipment (tiller, cultivators, hoes) set to cut 3 to 4 inches deep and operated one time at 4 mph or less.

For johnsongrass escapes during the crop season, cultivation and/or application of registered postemergence herbicides are recommended. Follow the directions for use on the labels of the respective herbicides.

**Broadcast Rate Per Acre of HELENA® PENDIMETHALIN Preplant Incorporated
For Control of Rhizome Johnsongrass
APPLY FOR TWO CONSECUTIVE YEARS
(Pints per Acre)**

Soil Texture	Up to 3% Organic Matter ¹
Coarse	2.4 pts
Medium	3.6 pts
Fine	4.8 pts

¹ This use is not recommended for soils with more than 3% organic matter.

SUGARCANE (except Hawaii)

GENERAL INSTRUCTIONS

HELENA® PENDIMETHALIN may be applied to newly planted or ratoon sugarcane preemergence through layby and again in late summer or early fall to the newly planted sugarcane.

DO NOT apply through irrigation systems on sugarcane.

DO NOT make aerial applications at close-in because complete and uniform coverage cannot be obtained.

DO NOT apply more than 14.4 pints per acre of **HELENA® PENDIMETHALIN** during one growing season.

HELENA® PENDIMETHALIN is not recommended for use on peat or muck soils.

DO NOT apply within 90 days of harvest.

DO NOT graze treated fields or feed treated forage or fodder to livestock.

Use Methods and Timings

HELENA® PENDIMETHALIN may be applied preemergence through layby, to newly planted or ratoon sugarcane, and again in late summer or early fall to the newly planted sugarcane. Applications may be made band or broadcast. Although there may be adequate crop tolerance for postemergence applications at layby, the spray must be directed under the sugarcane canopy in order to obtain effective weed control.

SPECIMEN LABEL
HELENA® PENDIMETHALIN Use Rates

Broadcast Rate of HELENA® PENDIMETHALIN for use in Sugarcane (except Hawaii)

Apply 4.8 to 7.2 pints of **HELENA® PENDIMETHALIN** but **DO NOT** exceed 14.4 pints per acre in one growing season. See spraying instructions for calculation of band treatment rate.

Use the 7.2 pint rate:

- a. heavy clay soils;
- b. if no mechanical incorporation is planned;
- c. if heavy weed populations are anticipated;
- d. if itchgrass infestation is anticipated;
- e. or if no shaving is planned.

INCORPORATION INSTRUCTIONS

HELENA® PENDIMETHALIN must be thoroughly and uniformly incorporated into the soil with either (a) mechanical incorporation equipment as outlined below, or (b) with rainfall or irrigation, if rainfall or irrigation is adequate for good crop and weed emergence and received within 7 days after application. If rainfall or irrigation is not obtained, **HELENA® PENDIMETHALIN** should be mechanically incorporated.

Mechanical Incorporation

HELENA® PENDIMETHALIN herbicide should be applied to loosened beds and incorporated into the top 1 to 2 inches of soil within 7 days after application. Ratoon sugarcane must be lightly shaved in early spring to remove the old stubble before incorporation over the line of sugarcane is possible. Carefully adjust equipment to incorporate without causing excessive damage to emerging shoots. Mechanical incorporation can be achieved by the following:

- a. Rolling cultivator (Lilliston type – Lely Roterra) set to cut 2 or 3 inches deep and operated two times at 6 to 8 mph. This technique may be used with all application timings.
- b. Rolling disc cultivator (Hipper) set to cut 2 to 3 inches deep and operated two times at 6 to 8 mph. This technique may be used to incorporate between sugarcane lines (rows) at layby only.

HELENA® PENDIMETHALIN Tank Mixes

HELENA® PENDIMETHALIN may be used in combination with any registered herbicide. Consult labels for all directions, precautions and restrictions. Always check compatibility when applying in a tank mix and follow the most restrictive label.

**SUGARCANE
(for use in Hawaii)**

GENERAL INSTRUCTIONS

HELENA® PENDIMETHALIN may be applied preemergence through layby in plant or ratoon sugarcane.

DO NOT apply through irrigation systems on sugarcane.

DO NOT make aerial applications at close-in because complete and uniform coverage cannot be obtained.

DO NOT apply more than 14.4 pints per acre of **HELENA® PENDIMETHALIN** during one growing season.

HELENA® PENDIMETHALIN is not recommended for use on peat or muck soils.

DO NOT apply within 90 days of harvest.

DO NOT graze treated fields or feed treated forage or fodder to livestock.

Use Methods and Timing

Disclaimer: Always refer to the label on the product before using Helena or any other product.

SPECIMEN LABEL

HELENA® PENDIMETHALIN may be applied twice per season, preemergence through layby, in plant or ratoon sugarcane. Applications may be made band or broadcast. Although there may be adequate crop tolerance for postemergence applications at layby, the spray must be directed under the sugarcane canopy in order to obtain effective weed control.

HELENA® PENDIMETHALIN Use Rates

Broadcast Rate of HELENA® PENDIMETHALIN for Sugarcane Grown in Hawaii

Apply 4.8 to 9.7 pints per acre of **HELENA® PENDIMETHALIN** but **DO NOT** exceed 14.4 pints per acre in one growing season. See spraying instructions for calculation of band treatment rate.

Use the higher rates:

- a. for dark clay soils;
- b. if no mechanical incorporation is planned;
- c. if heavy weed populations are anticipated;
- d. or if no shaving is planned.

HELENA® PENDIMETHALIN Tank Mixes

HELENA® PENDIMETHALIN may be used in combination with any registered herbicide. Consult labels for all directions, precautions and restrictions. Always check compatibility when applying in a tank mix and follow the most restrictive label.

SUNFLOWERS

GENERAL INSTRUCTIONS

HELENA® PENDIMETHALIN may be applied preplant incorporated in the spring in sunflowers in all states.

HELENA® PENDIMETHALIN alone may be applied preplant incorporated in the fall in sunflowers in the states of North Dakota, South Dakota, and Minnesota only.

HELENA® PENDIMETHALIN plus Eptam tank mixture may be applied preplant incorporated in the fall in sunflowers in the states of North Dakota and Minnesota only.

HELENA® PENDIMETHALIN may be applied as preplant surface or preemergence application in no-till sunflowers in the states of Colorado, Kansas, Minnesota, Nebraska, North Dakota, Oklahoma, South Dakota and Texas.

HELENA® PENDIMETHALIN may be applied as a preemergence application in conventional tillage sunflowers in the states of Colorado, Kansas, Minnesota, Nebraska, North Dakota and South Dakota.

In the event of a crop loss due to weather conditions, sunflowers or any crop registered for **HELENA® PENDIMETHALIN** preplant incorporated use can be replanted without adverse effects the same year. If replanting is necessary, **DO NOT** rework the soil deeper than the treated zone.

DO NOT feed forage or graze livestock in treated sunflower fields.

HELENA® PENDIMETHALIN is not recommended for use on peat or muck soils.

Use Methods and Timing

Preplant Incorporated (Spring) – Apply **HELENA® PENDIMETHALIN** up to 60 days prior to planting and incorporate within 7 days of application.

Preplant Incorporated (Fall) – Apply **HELENA® PENDIMETHALIN** or **HELENA® PENDIMETHALIN** plus Eptam and immediately incorporate in late fall prior to planting sunflowers the following spring. Refer to **Incorporation Instructions** section (see table of contents for page number) for incorporation directions and the Eptam label for incorporation instructions. Destroy existing weeds before applying **HELENA® PENDIMETHALIN** or **HELENA® PENDIMETHALIN** tank mixture. The soil should be dry enough to permit good incorporation.

DO NOT apply **HELENA® PENDIMETHALIN** plus Eptam tank mixture by air.

Disclaimer: Always refer to the label on the product before using Helena or any other product.

SPECIMEN LABEL

Apply **HELENA® PENDIMETHALIN** or **HELENA® PENDIMETHALIN** plus EPTAM tank mixture in the late fall when soil temperatures are 45°F or below but before the ground freezes. DO NOT apply when the air temperature is below 45°F.

Prior to sunflower planting in the spring, fields treated with **HELENA® PENDIMETHALIN** or **HELENA® PENDIMETHALIN** plus Eptam 7E should receive at least one shallow additional incorporation. Spring incorporation should be at an angle to the last tillage operation.

Preemergence (Spring) – **HELENA® PENDIMETHALIN** may be applied immediately after planting. DO NOT apply **HELENA® PENDIMETHALIN** postemergence since sunflowers exposed at the time of application will be killed or injured. **HELENA® PENDIMETHALIN** is most effective in controlling weeds when adequate rainfall or irrigation is received within 7 days after application. Otherwise, a registered postemergence grass herbicide treatment may be required.

Existing living vegetation must be controlled at or before the application of **HELENA® PENDIMETHALIN**.

A registered contact herbicide for use in sunflowers may be applied sequentially or in a tank mix with **HELENA® PENDIMETHALIN**. Consult the contact herbicide label for all directions, precautions and restrictions.

Preemergence applications of **HELENA® PENDIMETHALIN** on conventional tillage sunflowers may increase the likelihood of crop injury and decrease herbicide performance compared to Preplant Incorporated applications. If dry conditions with limited precipitation exist or unseasonably cool temperatures following planting are forecasted, apply **HELENA® PENDIMETHALIN** prior to planting and mechanically incorporate with tillage.

HELENA® PENDIMETHALIN Use Rates in Sunflowers

Recommended use rates for **HELENA® PENDIMETHALIN** are given in the following tables.

**Broadcast Rate per Acre of HELENA® PENDIMETHALIN
for Spring Preplant Incorporated or preemergence in Sunflowers
(Pints per Acre)**

Soil Texture	Southern States ¹	Northern States ¹	
		< 3% Organic Matter	> 3% Organic Matter
Coarse	1.2 to 1.8 pts	1.2 to 2.4 pts	2.4 pts
Medium	1.8 to 2.4 pts	1.8 to 3.0 pts	3.0 to 3.6 pts
Fine	1.8 to 3.6 pts	2.4 to 3.6 pts	3.6 pts

¹ See map at the end of this label for specific states.

Use the 3.6 pint rate for heavy clay soils.

**Broadcast Rate per Acre of HELENA® PENDIMETHALIN
for Fall Preplant Incorporated Application
in Sunflowers¹
(Pints per Acre)**

Soil Texture	< 3% Organic Matter	> 3% Organic Matter
Coarse	1.8 to 3.0 pts	3.0 pts
Medium	2.4 to 3.6 pts	3.6 to 4.2 pts
Fine	3.0 to 4.2 pts	4.2 pts

¹ For use in North Dakota, South Dakota and Minnesota only.

Use the high rate for each soil texture if heavy weed pressure is anticipated.

**Broadcast Rate per Acre of HELENA® PENDIMETHALIN Plus Eptam 7E
for Fall Preplant Incorporated Tank Mixture
Application in Sunflowers¹
(Pints per Acre)**

HELENA® PENDIMETHALIN Plus Eptam 7E

Soil Texture	< 3% Organic Matter	> 3% Organic Matter
Coarse	1.2 to 2.4 + 2.25	2.4 + 2.25
Medium	2.8 to 3.0 + 2.25	3.0 to 3.6 + 2.25
Fine	2.4 to 3.6 + 2.25	3.6 + 2.25

¹ For use in North Dakota and Minnesota only.

Disclaimer: Always refer to the label on the product before using Helena or any other product.

SPECIMEN LABEL

Use the high rate for each soil texture if heavy weed pressure is anticipated.

Read and strictly follow all precautions and instructions on the Eptam label.

No-Till Sunflowers

**For use in Colorado, Kansas, Minnesota, Nebraska, North Dakota,
Oklahoma, South Dakota, and Texas**

HELENA® PENDIMETHALIN may be applied immediately after planting, or up to 30 days before planting. DO NOT apply **HELENA® PENDIMETHALIN** postemergence since sunflowers exposed at the time of application will be killed. **HELENA® PENDIMETHALIN** is most effective in controlling weeds when adequate rainfall or irrigation is received within 7 days after application. Otherwise, a registered postemergence grass herbicide treatment may be required.

Uniformly apply **HELENA® PENDIMETHALIN** alone or in combination with other herbicides registered for gallonage for fields with history of heavy weed infestations or if the field has excessive crop residues.

Existing living vegetation must be controlled at or before the application of **HELENA® PENDIMETHALIN**.

A registered contact herbicide for use in sunflowers may be applied sequentially or in a tank mix with **HELENA® PENDIMETHALIN**. Consult the contact herbicide label for all directions, precautions and restrictions.

Broadcast Rate per Acre of HELENA® PENDIMETHALIN Applied Preplant Surface or Preemergence in No-Till Sunflowers (Pints per Acre)

Soil Texture	< 3% Organic Matter	> 3% Organic Matter
Coarse	3.0 to 3.6 pts	3.6 pts
Medium	3.6 pts	3.6 pts
Fine	3.6 pts	DO NOT USE

TOBACCO

GENERAL INSTRUCTIONS

HELENA® PENDIMETHALIN may be applied preplant incorporated or as a layby application in transplanted tobacco.

In the event of a crop loss due to weather conditions, transplanted tobacco or any crop registered for **HELENA® PENDIMETHALIN** preplant incorporated use can be replanted without adverse effects the same year. If replanting is necessary, DO NOT rework the soil deeper than the treated zone.

HELENA® PENDIMETHALIN is not recommended for use on peat or muck soils.

Use Methods and Timing

Preplant Incorporated – Apply **HELENA® PENDIMETHALIN** with ground sprayer up to 60 days prior to transplanting tobacco and incorporate within 7 days of application.

Applied according to directions and under normal growing conditions, **HELENA® PENDIMETHALIN** will not harm transplanted tobacco. Under stress conditions for plant growth such as cold/wet or hot/dry weather, **HELENA® PENDIMETHALIN** can produce a temporary retardation of tobacco development.

Layby – **HELENA® PENDIMETHALIN** may be applied as a directed spray following the last normal cultivation (layby), usually 4 to 6 weeks after transplanting tobacco. Apply **HELENA® PENDIMETHALIN** in a 16 to 24-inch band in the middle of the row between the crop rows. The spray should not contact tobacco plants. If the spray nozzles on the ends of the spray boom pass over the same row middle twice, use nozzles which apply one-half (½) the normal number of gallons per acre to prevent over-application.

Layby applications can be applied in tobacco previously treated with herbicides registered for use in tobacco. Consult the labels of those herbicides for suggested treatments, rates to be used, and precautions for use in tobacco and for follow crop restrictions.

HELENA® PENDIMETHALIN is most effective in controlling weeds when adequate rainfall or irrigation is received within 7 days after application.

SPECIMEN LABEL

HELENA® PENDIMETHALIN will not control established weeds. DESTROY EMERGED WEEDS PRIOR TO APPLICATION.

DO NOT APPLY AS A BROADCAST SPRAY OVER TOP OF TOBACCO LEAF. CONTACT MAY CAUSE MALFORMED LEAVES.

HELENA® PENDIMETHALIN Use Rates in Transplanted Tobacco

Recommended use rates for **HELENA® PENDIMETHALIN** alone is given in the following table.

**Broadcast Rate¹ per Acre of HELENA® PENDIMETHALIN Preplant Incorporated
in Transplanted Tobacco
(Pints per Acre)**

REGION	SOIL TEXTURE	HELENA® PENDIMETHALIN (pints)
Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida	COARSE	1.8 to 2.4
	MEDIUM	
	sandy clay loams, loams	1.8 to 2.4
	silt loams, silts	2.4 to 3.0
	FINE	2.4 to 3.0
Other tobacco- growing states	COARSE	1.8 to 2.4
	MEDIUM	3.0 to 3.6
	FINE	3.0 to 3.6

**Broadcast Rate¹ per Acre of HELENA® PENDIMETHALIN Layby Application
in Transplanted Tobacco
(Pints per Acre)**

Soil Texture	Rate²
Coarse	1.2 to 1.8 pts
Medium	1.8 to 2.4 pts
Fine	1.8 to 2.4 pts

¹ For calculation of band treatment, see **Spraying Instructions** section (see table of contents for page number).

² The high rate for each soil texture above should be used if a registered herbicide treatment was not applied prior to layby.

Footnotes

- ¹ Accent SP, Basis Gold, Bladex, Extrazine II, Karmex, Londax, Lorox, Lorox Plus, Lexone, Matrix, Canopy and Preview are trademarks of E.I. du Pont de Nemours and Company.
- ² Beacon, Bicep, Bicep II, Dual, Dual II, Cotoran, Exceed, Caparol, Zorial are trademarks of Novartis Crop Protection.
- ³ Balance, Buctril, and Butyrac are trademarks of Rhone-Poulenc Ag Company.
- ⁴ Harness, Harness Xtra, Lariat, Bullet, Lasso, Micro-Tech, Partner WDG, Permit, Roundup, and Roundup Ready are trademarks of Monsanto Agricultural Products Company.
- ⁵ Surpass, Surpass 100, Eptam, Vernam, Gramoxone Extra and Arrosolo are trademarks of Zeneca Inc.
- ⁶ Sencor is a trademark of Bayer Corporation.
- ⁷ Banvel, Clarity, Facet 75 DF, Frontier, Guardsman, Laddok S-12, Marksman, Poast Plus, and SR Sethoxydim-resistant Field corn are trademarks of BASF Corporation.
- ⁸ Command is a trademark of FMC Corporation.
- ⁹ Bolero 8EC is a trademark of Valent.
- ¹⁰ Hornet, Python WDG, Treflan, Scorpion III and Sonolan are trademarks of Dow Agrosiences.
- ¹¹ LELY-ROTERA is a trademark of Lely.

**SPECIMEN LABEL
REGIONAL MAP FOR RATE DETERMINATION**



**CONDITIONS OF SALE - LIMITED WARRANTY
AND LIMITATIONS OF LIABILITY AND REMEDIES**

Read the Conditions of Sale - Warranty and Limitations of Liability and Remedies before using this product. If the terms are not acceptable, return the product, unopened, and the full purchase price will be refunded.

The directions on this label are believed to be reliable and should be followed carefully. Insufficient control of pests and/or injury to the crop to which the product is applied may result from the occurrence of extraordinary or unusual weather conditions or the failure to follow the label directions or good application practices, all of which are beyond the control of Helena Chemical Company (the "Company") or seller. In addition, failure to follow label directions may cause injury to crops, animals, man or the environment. The Company warrants that this product conforms to the chemical description on the label and is reasonably fit for the purpose referred to in the directions for use subject to the factors noted above which are beyond the control of the Company. The Company makes no other warranties or representations of any kind, express or implied, concerning the product, including no implied warranty of merchantability or fitness for any particular purpose, and no such warranty shall be implied by law.

The exclusive remedy against the Company for any cause of action relating to the handling or use of this product shall be limited to, at Helena Chemical Company's election, one of the following:

1. Refund of the purchase price paid by buyer or user for product bought, or
2. Replacement of the product used

To the extent allowed by law, the Company shall not be liable and any and all claims against the Company are waived for special, indirect, incidental, or consequential damages or expense of any nature, including, but not limited to, loss of profits or income. The Company and the seller offer this product and the buyer and user accept it, subject to the foregoing conditions of sale and limitation of warranty, liability and remedies.

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