Albaugh, Inc.

Mep Star™

For use on cotton

ACTIVE INGREDIENT:	
Mepiquat Chloride: N,N-dimethylpiperidinium chloride	4.2%
OTHER INGREDIENTS:	95.8%
TOTAL:	100.0%

Mep Star™ contains 0.35 lbs. active ingredient per gallon.

KEEP OUT OF REACH OF CHILDREN

CAUTION

PRECAUTIONARY STATEMENTS

ENVIRONMENTAL HAZARDS

Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

PERSONAL PROTECTIVE EQUIPMENT

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

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves Category A, such as butyl rubber ≥ 14 mils, or natural rubber ≥ 14 mils, or neoprene rubber ≥ 14 mils or nitrile rubber ≥ 14 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 STATEMENT

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.

EPA Reg. No. 42750-

Manufactured by:
Albaugh, Inc.
Ankeny, IA 50021

ACCEPTED
MAY 14 2004
Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under
42750-74

EPA Est. No.

NET CONTENTS
Gals. (Liters)

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.

DIRECTIONS FOR USE

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

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 regulation.

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 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 12 hours.

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 Category A, such as butyl rubber $\geq$ 14 mils, or natural rubber $\geq$ 14 mils, or neoprene rubber $\geq$ 14 mils or nitrile rubber $\geq$ 14 mils
- Shoes plus socks

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

Pesticide Storage: Do not store below 32°F or above 100°F. Store in a dry place away from heat or open flame.

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

GENERAL INFORMATION

Mep Star™ is a foliar applied plant regulator for use on cotton. Mep Star™ allows growers to manage the cotton plant for short-season production leading to reduced risk of yield and quality loss due to delayed and prolonged harvest. Benefits obtained from the use of Mep Star™ include less boll rot,

improved defoliation, reduced plant height providing a more open canopy, increased early boll retention and/or larger bolls, less trash and lower ginning costs, better harvest efficiency and a darker leaf cooler. These benefits often favorably influence the yield potential of the cotton plant.

Spray Coverage

Water is the recommended diluent under most circumstances, however, oil is permitted in the following states for ultra low volume (ULV) aerial applications: Alabama, Arkansas, Florida, Georgia, Louisiana, Missouri, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee and Texas. Refer to the **Air** and **Ground Application** sections for recommended spray volumes. Thorough coverage of the cotton foliage is required regardless of the application method or gallonage of application used.

Cleaning Application Equipment

Before and after applying this product, clean application equipment thoroughly using a strong detergent or commercial sprayer cleaner according to the manufacturer's directions, particularly if a product with the potential to injure weeds was used.

APPLICATION INSTRUCTIONS

Early Application

On both short-staple and Pima cotton, growers have the option of low-rate multiple applications (see Table 1) or higher, less frequent dosages (see Table 2). These options provide maximum flexibility under a variety of growing conditions. The multiple application method gives the grower the ability to discontinue using Mep Star™ if any significant stresses occur after an earlier application. If the stress is relieved, the grower has the option of continuing treatments. In addition, the rate and timing ranges indicated in the **Application Rates and Timings Tables** enable the grower to tailor usage of Mep Star™ based on the degree of vegetative vigor in a given field. Mep Star™ may be tank mixed with insecticides, miticides or foliar fertilizers when application timings coincide (Refer to the **General Restrictions and Limitations** section of this label).

Fields should be carefully scouted. Mep Star™ should not be applied if plants are under any form of stress. In the absence of stress, a maximum of 5 low rate applications can be made each season. The first application may be applied at matchhead square in the absence of stress. The rate and timing of subsequent applications will depend on vegetative vigor. Additional treatments should be made at 7-14 day intervals under good growing conditions. However, if excessive growth is observed at any time, higher rates of Mep Star™ can be used.

If insect pressure or other stresses have caused early and significant loss of squares or young bolls, and these stresses have been alleviated, the need for Mep Star™ is increased since excess vegetative growth is likely due to poor fruit loading.

Late Season Application

Certain benefits to cotton can be obtained by a late application of Mep Star™ (approximately during the fourth to sixth week of blooming). However, a late season application should not and does not substitute for early season use – the time of greatest benefit from the use of Mep Star™. Late season application can lead to one or more of the following:

- Better defoliation
- Earlier maturity
- Reduction in late season vegetative growth or regrowth after cutout or defoliation
- More complete and manageable cutout
- Reduction in trash
- Lower ginning costs.

Some of these effects may favorably influence cotton yield potential and fiber quality. A late season application of Mep Star™ should only be applied if fields are not drought or nutrient stressed. However, fields that are very rank and extremely vigorous due to a combination of poor boll load and excellent growing conditions may not respond as much as desired to late season applications at the suggested rates.

Timing for Late Season Applications

Fields where cotton cuts out and then starts regrowth: Apply when regrowth begins, as evidenced by new leaves in the terminal and stem elongation. This application time often, but not always, corresponds to 5-6 weeks after first bloom.

Fields where cotton never completely cuts out: Apply Mep Star™ when there are 4-6 nodes above the white flower (NAWF). NAWF is measured by counting the number of mainstem nodes from the first position white bloom (the one closest to the mainstem) to the terminal. Count the node with the first position white bloom as zero and the last node in the terminal, which is counted, should have a leaf at least the size of a quarter. The NAWF generally reaches 4-6 nodes during the fourth to sixth week of bloom.

During this time, the NAWF should be decreasing about one node every 5-6 days – if its rate of decrease is less, the plant is not cutting out soon enough (the crop is too vigorous). If the fifth week of bloom arrives and NAWF is still above 5-6, apply Mep Star™.

Late Season Application Use Rate

Apply 8-24 fluid ounces of Mep Star™ per acre. The lower rate should be used on cotton with only moderate additional growth potential, and the higher rate on fields likely to continue vigorous growth.

Air Application

Spray Volume

Water as Diluent: In all states except California, use a minimum of 2 gallons of water per acre. In California, use a minimum of 5 gallons per acre.

Oil as Diluent: Use a minimum of 1 quart of oil per acre. When oil is used as a diluent, the oil concentrate must contain either a petroleum or vegetable oil base and must be nonphytotoxic, contain only EPA exempt ingredients, provide good mixing quality in the jar test and be successful in local experience.

The exact composition of suitable products will vary; however, vegetable and petroleum oil concentrates should contain emulsifiers to provide good mixing quality. If the oil does not contain an emulsifier, one must be added during mixing at a volume equal to 3% of the final volume of the mixing tank. Do not apply Mep Star™ ULV without using emulsifiers. Highly refined vegetable oils have proven more satisfactory than unrefined vegetable oils. For additional information, see **Compatibility Test for Mix Components**.

Aerial Application Methods and Equipment

Spray Drift Management

Aerial Drift Management:

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 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. These requirements do not apply to forestry applications, public health uses or to applications using dry formulations.

1. The distance of the outer most nozzles on the boom must not exceed ¾ the length of the wingspan or rotor.
2. Nozzles must always point backwards 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** section below.

Aerial Drift Reduction Advisory Information:

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.
- 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 the recommended practice. Significant deflection from 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 ¾ 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 applications 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 downwind. 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 drops, 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 inversions 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 winds 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, non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas).

Ground Application

Spray Volume

Water as Diluent: In all states except California, use a minimum of 2 gallons of water per acre. In California, use a minimum of 5 gallons per acre.

Table 1. Application Rates and Timing: Low Rate Multiple Applications
Refer to the **General Restrictions and Limitations** section of this label for additional information.

Geographic Area	Application Timing	Fields with Moderate Vegetative Vigor: Rate per Acre	Fields with High Vegetative Vigor: Rate per Acre
AL, AR, AZ, CA, FL, GA, LA, MO, MS, NC, NM, OK, SC, TN, TX, VA	**First application:** Optimal results will be achieved when plants are in the matchhead square[1] stage of growth.	2 fluid ounces	4 fluid ounces
	Second application: Apply 7-14 days later, or when regrowth occurs.	2 fluid ounces	4 fluid ounces
	Third application: Apply 7-14 days later, or when regrowth occurs.	2-4 fluid ounces[2]	4-8 fluid ounces[2]
	Fourth application: Apply 7-14 days later, or when regrowth occurs.	2-8 fluid ounces[2]	4-12 fluid ounces[2]
	Fifth application (if needed): Apply 7-14 days later, or when regrowth occurs.	4-8 fluid ounces[2]	4-12 fluid ounces[2]
	Late season: Refer to the **Late Season Application** section of this label.	8-16 fluid ounces[2]	12-24 fluid ounces[2]

[1]Matchhead square is when the first square of a typical cotton plant is 1/8-1/4 inches in diameter. The first application should be applied when 50% of the plants have one or more matchhead squares
[2]Use the higher rates if previous application was not made or if growing conditions are conducive to vigorous growth.

Table 2. Application Rates and Timing
Refer to the **General Restrictions and Limitations** section of this label for additional information.

Geographic Area	Application Timing	Rate per Acre
AL, AR, AZ, CA, FL, GA, LA, MO, MS, NM, NC, SC, TN, VA	**First application:** Apply Mep Star™ to actively growing cotton that is 20-30" tall, provided cotton is not more than 7 days beyond early bloom stage (5-6 blooms per 25 row feet). If cotton is 24" tall and has no blooms, apply Mep Star™. Where excessive vegetative growth is not likely to be a problem, use 8-16 fluid ounces per acre. Use 16 fluid ounces per acre in areas tending to have excessive vegetative growth.	8-16 fluid ounces
	Second application for control of excessive vegetative growth: Make a second application 2-3 weeks after the first application if the cotton field has a history of vigorous growth or if conditions after the first application of Mep Star™ favor vigorous growth.	8-16 fluid ounces
	Third application for control of excessive vegetative growth: Make a third application 1-2 weeks after the first application if the cotton field has a history of vigorous growth or if conditions continue to favor vigorous growth.	8-16 fluid ounces
	Late season application: Refer to the **Late Season Application** section of this label.	8-24 fluid ounces
OK, TX (except Rio Grande Valley)	**Areas where excessive vegetative growth is not a problem** **First application:** Apply Mep Star™ in the early bloom stage (5-6 blooms per 25 row feet) to actively growing cotton. Apply Mep Star™ if no blooms are present and the cotton is 20" tall and actively growing.	8 fluid ounces
	Second application: Make a second application 2-3 weeks after the first application if conditions after the first application favor vigorous growth.	8 fluid ounces
	Third application: Make a third application 1-2 weeks after the second application if conditions after the second application continue to favor vigorous growth.	8 fluid ounces
	Late season application: Refer to the **Late Season Application** section of this label.	8-24 fluid ounces
OK, TX (including Rio Grande Valley)	**Areas where excessive vegetative growth is a problem** **First application:** Apply Mep Star™ to actively growing cotton that is 20-30" tall, provided cotton is not more than 7 days beyond early bloom stage (5-6 blooms per 25 row feet). If cotton is 24" tall and has no blooms, apply Mep Star™.	16 fluid ounces

	Second application for control of excessive vegetative growth: Make a second application 2-3 weeks after the first application if cotton field has a history of vigorous growth, or conditions after the first application favor vigorous growth.	8-16 fluid ounces
	Third application: Make a third application 1-2 weeks after the second application if conditions after the second application continue to favor vigorous growth.	8-16 fluid ounces
	Late season application: Refer to the **Late Season Application** section of this label.	8-24 fluid ounces

ADDITIVES

If rain is expected within 8 hours, use a high quality EPA-exempt surfactant to make Mep Star™ rain-safe after 4 hours.

Compatibility Test for Mix Components

Add components in the following sequence using 2 teaspoons for each pound or 1 teaspoon for each pint of recommended label rate per acre.

1. Water: Use 3.3 cups (800 ml) for 20 gallons per acre spray volume. Adjust rates accordingly for other spray volumes. Use only water from the intended source at the source temperature.
2. Products in PVA bags: Cap the jar and invert 10 cycles.
3. Water-dispersible products: (dry flowables, wettable powders, suspension concentrates, or suspo-emulsions) Cap the jar and invert 10 cycles.
4. Water-soluble products: Cap the jar and invert 10 cycles.
5. Emulsifiable concentrates: oil concentrate. Cap the jar and invert 10 cycles.
6. Water-soluble additives: Cap the jar and invert 10 cycles.
7. Let the solution stand for 15 minutes.
8. Evaluate the solution for uniformity and stability. The spray solution should not have free oil on the surface, nor fine particles that precipitate to the bottom, nor thick (clabbered) texture. Do not use any spray solution that could clog spray nozzles.

MIXING ORDER

1. Water: Begin by agitating a thoroughly clean sprayer tank half full of clean water.
2. Products in PVA bags: Rinse the tank thoroughly before adding any material in PVA bags as boron residue will prevent adequate mixing. Place the water-soluble PVA bag into the mixing tank. The water-soluble PVA bag will dissolve in water to allow the contents to disperse. Wait until all water-soluble PVA bags have fully dissolved and the plant regulator is evenly mixed in the spray tank before continuing.
3. To prepare spray solution for aerial application, use a mixing tank or mixing vat first to get the product into suspension before transferring suspension to air application equipment.
4. Water-dispersible products: (dry flowables, wettable powders, suspension concentrates, or suspo-emulsions)
5. Water-soluble products
6. Emulsifiable concentrates
7. Remaining quantity of water

Only moderate agitation should be used while mixing and transporting.

GENERAL TANK MIXING INFORMATION

Mep Star™ is compatible with most insecticides and miticides. Mep Star™ may be combined with foliar fertilizers if prior experience has shown the original liquid formulation of Mep Star™ to be compatible and noninjurious under your conditions. Always perform a **Compatibility Test for Mix Components** before preparing a tank mix application.

Read and follow the applicable **Restrictions and Limitations** and **Directions for Use** on all products involved in tank mixing. The most restrictive labeling applies to tank mixes.

GENERAL RESTRICTIONS AND LIMITATIONS

- Maximum seasonal use rate: Do not apply more than a total of 48 fluid ounces (3 pints) of Mep Star™ (0.132 pounds a.i.) per acre, per season.
- The sum of all products and formulations containing mepiquat chloride must not exceed 0.132 pounds of mepiquat chloride per acre per season.
- Preharvest Interval (PHI): Do not apply within 30 days of harvest.
- Do not plant another crop within 75 days of last treatment.
- Stress: Do not apply to cotton plants under severe stress. If using the low-rate multiple option, discontinue use until the stress is alleviated. Do not apply a single application of 8-16 fluid ounces of Mep Star™ to cotton that is stressed due to lack of soil moisture.
- Do not graze or feed cotton forage to livestock.
- Do not apply through any type of irrigation equipment.

Table 3. Restrictions and Limitations

Crop	Preharvest Interval (PHI)	Maximum Application Rate per Acre	Maximum Rate per Acre per Season	Livestock Grazing or Feeding	Aircraft Application
Cotton	30 days	24 fluid ounces (1.5 pints)	48 fluid ounces (3 pints)	NO	YES

CONDITIONS OF SALE AND WARRANTY

The DIRECTIONS FOR USE of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness, or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of ALBAUGH, INC., its Supplemental Distributors, or the Seller. All such risks shall be assumed by the Buyer.

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