

Crop\$mart™

Mepiquat

Plant Growth Regulator. For Use on Cotton

ACTIVE INGREDIENTS:

Mepiquat chloride:
N,N-dimethylpiperidinium chloride 4.2%

INERT INGREDIENTS: 95.8%

TOTAL: 100.0%

*Equivalent of 0.35 pounds per gallon

EPA Reg. No. 82070-2-85945 EPA Est. No. 37429-GA-001

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

See other panels for additional precautionary information.

FIRST AID

If in eyes:	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If swallowed:	<ul style="list-style-type: none"> • 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. • Do not give anything by mouth to an unconscious person.
If on skin or clothing:	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 to 20 minutes. • Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. In case of large scale spillage involving this product, call CHEMTREC at 1-800-424-9300



Distributed by: CropSmart, LLC • PO Box 342 • Morrisville, NC 27560

Net Contents: 2.5 gal (9.46 Liters)

Version 20070614



**PRECAUTIONARY STATEMENTS
HAZARD TO HUMANS AND DOMESTIC ANIMALS**

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

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 resistant category selection chart.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves made of any waterproof material (such as nitrile, butyl, neoprene and/or barrier laminate)
- 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.

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.

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.

ENVIRONMENTAL HAZARDS

Do not apply directly to water, 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.

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 made of any waterproof material (such as nitrile, butyl, neoprene and/or barrier laminate)
- Shoes plus socks

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage and 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: Pesticide wastes are toxic. Waste resulting from this product may be disposed of on site or at an approved waste disposal facility. Improper disposal of excess pesticide, spray mix, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact the State Agency responsible for pesticide regulation or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL:

Plastic Containers: Triple rinse container (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.

GENERAL INFORMATION

Mepiquat is a foliar applied plant regulator which modifies the cotton plant in several beneficial ways. It allows the grower to manage the cotton plant for short-season production leading to reduced risk of yield and quality loss due to delayed and prolonged harvest. The use of Mepiquat will also result in several or all of the following:

- Height reduction and more open canopy
- Better early boll retention and/or larger bolls
- Less boll rot
- Improved defoliation
- Reduced trash and lower ginning costs
- Better harvest efficiency
- Darker green leaf color

Most of these effects often favorably influence the yield potential of the cotton plant. The pink color of Mepiquat may fade under some conditions; however, effectiveness is not related to color of spray solution or the color of Mepiquat.





Spray Coverage

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

Cleaning Application Equipment

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

APPLICATION INSTRUCTIONS

On both short-staple and Pima cotton, the grower has the option of low-rate multiple applications, (see Table 1) or higher, less frequent dosages (see Table 2) which greatly facilitates management flexibility. The multiple application option gives the grower the ability to discontinue usage of Mepiquat if any significant stresses occur after an earlier application. In such a case, the total quantity of Mepiquat used over a season may be reduced. If stress is relieved, the grower has the option of continuing treatments with Mepiquat. In addition, the rate and timing ranges indicated in the Application Rates and Timing Tables allow the grower to tailor usage of Mepiquat to the degree of vegetative vigor in a given field. In areas where insecticides, miticides or foliar fertilizers are frequently applied, the timings are such that tank mixing is often possible. (See section General Restrictions and Limitations)

Fields should be carefully scouted and Mepiquat should not be applied if plants are under severe stress from weather factors, mite, insect or nematode damage, disease stress, herbicide injury, or fertility stress. In the absence of these stresses, up to five low-rate multiple applications can be made each season. After the first application (at matchhead square in the absence of stress), the rate and timing of subsequent applications will depend on vegetative vigor. Under good growing conditions, additional treatments should be made at 7 to 14 day intervals. However, if new growth at any time is excessive, higher rates of Mepiquat be used. If significant loss of squares or young bolls has occurred earlier due to insect pressure or other stresses, but now these stresses have been alleviated, the need for Mepiquat is increased since excess vegetative growth is likely due to the poor fruit load.

Late Season Cutout Application

Late application of Mepiquat (approximately during the fourth to sixth week of blooming) can provide certain benefits to cotton. However, it should not and does not substitute for early season use—the time of the greatest benefit from the use of Mepiquat. Late season application can lead to one or more of the following:

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

Some of these effects may favorably influence the yield potential

and fiber quality. A late season application of Mepiquat should be applied only if fields are not drought or nutrient stressed; that is, those fields likely to experience additional vegetative growth or regrowth. 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

1. On 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 is often, but not always, 5 to 6 weeks after the first bloom.
2. On fields where cotton never completely cuts out: Apply NAWF when there are 4 to 6 nodes above the white flower (NAWF). Measure NAWF 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 leaf at least the size of a quarter. Generally, the NAWF first reaches 4 to 6 nodes during the fourth to sixth week of bloom. During this time, the NAWF should be decreasing about one node every 5 to 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 to 6, apply Mepiquat.

Use Rate for Late Season Application

Apply 8 to 24 fluid ounces of Mepiquat per acre. Use the lower rate on cotton with only moderate additional growth potential, and the higher rate on fields likely to continue vigorous growth.

Spray Volume

Ground Application

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

Air Application

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

Oil as Diluent: Use a minimum of 1 quart of oil per acre. When using oil as a diluent, the oil concentrate must contain either a petroleum or vegetable oil base and must meet all of the following criteria:

- Be nonphytotoxic
- Contain only EPA-exempt ingredients
- Provide good mixing quality in the jar test
- 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 Mepiquat without using emulsifiers. Highly refined vegetable oils have proven more satisfactory than unrefined vegetable oils. For additional information, see Compatibility Test for Mix Components.





Table 1.

Geographic Area	Time of Application	Fields with Moderate Vegetative Vigor:	Fields with High Vegetative Vigor:
All States	First application: Pinhead to matchhead square** stage of growth.	2 fluid ounces	4 fluid ounces
	Second application: 7 to 14 days later, or when regrowth occurs.	2 fluid ounces	4 fluid ounces
	Third application: 7 to 14 days later, or when regrowth occurs.	2-4 fluid ounces	4-8 fluid ounces
	Fourth application: 7 to 14 days later, or when regrowth occurs.	2-8 fluid ounces*	4-16 fluid ounces*
	Fifth application (if needed): 7 to 14 days later, or when regrowth occurs.	4-8 fluid ounces	4-16 fluid ounces*
	Late season: Refer to Late Season Application of Mepiquat.	8-16 fluid ounces	12-24 fluid ounces
* Use higher rates if previous application was not made or if growing conditions are conducive to vigorous growth.			
** When the first square of a typical cotton plant is 1/8 to 1/4 inch in diameter. The first application should be made when 50% of the plants have one or more squares.			

Table 2. Application Rates and Timing

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

Spray Drift Management

The interaction of many equipment and weather-related factors determines the potential for spray drift. The applicator is responsible for considering all these factors when making application decisions.

AVOIDING SPRAY DRIFT IS THE RESPONSIBILITY OF THE APPLICATOR.

Importance of Droplet Size

The most effective way to reduce drift potential is to apply large droplets (>150-200 microns). The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. The presence of sensitive species nearby, the environmental

conditions, and pest pressure may affect how an applicator balances drift control and coverage. 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** sections of this label.

Controlling Droplet Size: General Techniques

- **Volume:** Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure:** Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. WHEN HIGHER FLOW RATES ARE





NEEDED, USE A HIGHER-CAPACITY NOZZLE INSTEAD OF INCREASING PRESSURE.

- **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.

Controlling Droplet Size: Aircraft

- **Number of Nozzles:** Use the minimum number of nozzles with the highest flow rate that provide uniform coverage.
- **Nozzle Orientation:** Orienting nozzles so that the spray is emitted backwards, parallel to the airstream will produce larger droplets than other orientations.
- **Nozzle Type:** Solid stream nozzles (such as disc and core with swirl plate removed) oriented straight back produce larger droplets than other nozzle types.
- **Boom Length:** The boom length should not exceed 3/4 of the wing or rotor length—longer booms increase drift potential.
- **Application Height:** Application more than 10 ft above the canopy increases the potential for spray drift.

Boom Height

Setting the boom at the lowest labeled height (if specified) which provides uniform coverage reduces the exposure of droplets to evaporation and wind. For ground equipment, the boom should remain level with the crop and have minimal bounce.

Wind

Drift potential increases at wind speeds of less than 3 mph (due to inversion potential) or more than 10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given wind speed. AVOID GUSTY OR WINDLESS CONDITIONS. **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 hot and dry conditions, set up equipment to produce larger droplets to reduce effects of evaporation.

Temperature Inversions

Drift potential is high during a temperature inversion. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain close to the ground and move laterally in a concentrated cloud. Temperature inversions are characterized by increasing temperature 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.

Shielded Sprayers

Shielding the boom or individual nozzles can reduce the effects of wind. However, it is the responsibility of the applicator to verify that the shields are preventing drift and not interfering with uniform deposition of the product.

ADDITIVES

If rain is expected within 8 hours, use a high-quality EPA-exempt

surfactant to make Mepiquat 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: For 20 gallons per acre spray volume, use 3.3 cups (800 ml) of water. For other spray volumes, adjust rates accordingly. 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 (such as Mepiquat): Cap the jar and invert 10 cycles.
- 5) Emulsifiable Concentrates (oil concentrates): 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. 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.
- 3) Water-Dispersible Products: (dry flowables, wettable powders, suspension concentrates, or suspo-emulsions)
- 4) Water-Soluble Products (such as Mepiquat)
- 5) Emulsifiable Concentrates
- 6) Remaining quantity of water

Only moderate agitation should be used while mixing and transporting.

GENERAL TANK MIXING INFORMATION

Mepiquat has an aqueous base, and as such, is compatible with most insecticides and miticides. You may combine Mepiquat with foliar fertilizers if prior experience has shown the original liquid formulation of Mepiquat 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 Mepiquat (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. This maximum equals 48 fluid ounces (3 pints) of Mepiquat (0.132 pounds a.i. per gallon).
- Preharvest Interval (PHI): Do not apply within 30 days of harvest.
- Restricted Entry Interval (REI): 12 hours.
- Do not plant another crop within 75 days of last treatment.
- Stress: Do not apply to cotton plants under severe stress due to adverse weather conditions, mite, insect, or nematode damage, disease, herbicide injury, or fertility stress. If using the low-rate multiple option, discontinue use until the stress is alleviated. Do not apply a single application of 8 to 16 fluid ounces of Mepiquat to cotton that is stressed due to a lack of soil moisture.
- Do not graze or feed cotton forage to livestock.
- Do not apply through any type of irrigation equipment.

NOTICE TO BUYER: Purchase of this material does not confer any rights under patents of countries outside of the United States.

CONDITIONS OF SALE AND LIMITATION OF WARRANTY

Seller warrants that this product conforms with its specifications and is reasonably fit for the purposes stated on the label when used in accordance with its directions under normal conditions of use. To the extent permitted by applicable law, buyer assumes the risk of any use contrary to such directions. Seller makes no other express or implied warranty of fitness or merchantability and no agent or reseller is authorized to do so except by Seller in writing with a specific reference to this warranty. To the extent consistent with applicable law, in no event shall Seller's liability for any breach of warranty exceed the purchase price of the material on which claim is made.

Mepiquat is a trademark of CropSmart, LLC

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