



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF  
PREVENTION, PESTICIDES  
AND TOXIC SUBSTANCES

SEP 19 2005

Jean Butler  
Micro-Flo Company LLC  
P.O. Box 772099  
Memphis, TN 38117-2099

Dear Ms. Butler:

Subject: Revised Labeling  
Ethephon 3.9% S & O  
EPA Registration No. 51036-304  
Your Submission Dated June 1, 2005

The amendment referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended is acceptable provided that you:

1. Make the labeling changes listed below before you release the product for shipment bearing the amended labeling:

a. In the Note to Physician reinstate the following:

Treat symptomatically. Consideration should be given to the possibility that over exposure to materials other than this product may have occurred. No specific antidote is available.

b. At the beginning of the list of Personal Protective Equipment (PPE) within the Precautionary Statements, add the statements "Some of the 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." In addition, revise the requirement for "waterproof gloves" to a requirement for "chemical-resistant gloves made of any waterproof material such as polyethylene or polyvinyl chloride."

c. Within the list of PPE for early re-entry in the Agricultural Use Requirements box, revise the requirement for "waterproof gloves" to a requirement for "chemical-resistant gloves made of any waterproof material."

d. In the container disposal section specify "..., or by incineration...". In hybrid seed production specify "...conditions at time of treatment." In flower forcing section specify "two weeks prior to or for....". In the Roses section modify the last sentence to read similar to "Do not apply to sensitive varieties..."

e. Proof read the label corrected mis-spellings including the following:

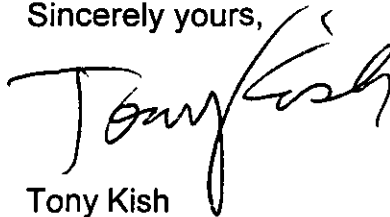
Lantana, (monoecious), bromeliad, Geranium, stimulated

f. In the "For Both Stock And Finished Plants" section delete the extra parentheses "(" and ")".

2. Submit one (1) copy of your final printed labeling before you release the product for shipment.

A stamped copy of the labeling is enclosed for your records

Sincerely yours,



Tony Kish  
Acting Product Manager (22)  
Herbicide Branch  
Registration Division (7505C)

Enclosure

**ETHEPHON 3.9% S&O**

For Use in Production of Cucumber, Squash and Pumpkin Hybrid Seed,  
For Inducing Flowering of Ornamental Bromeliads, For Reducing  
Plant Height of Potted Daffodils and Stem Topple of Potted  
Hyacinths and For Increased Lateral Branching in Ornamentals

**ACTIVE INGREDIENT:**

Ethephon, [(2-chloroethyl) phosphonic acid]\*..... 3.9%

INERT INGREDIENTS: ..... 96.1%

TOTAL: .....100.0%

\*This product contains 0.33 lbs. Ethephon per gallon

KEEP OUT OF REACH OF CHILDREN

**CAUTION****FIRST AID**

<b>IF IN EYES:</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>IF ON SKIN OR CLOTHING:</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15 to 20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>

**ACCEPTED  
with COMMENTS  
In EPA Letter Dated:**

SEP 19 2005

Under the Federal Insecticide,  
Fungicide, and Rodenticide Act,  
as amended, for the pesticide  
registered under EPA Reg. No.

51036-304

4 813

**NOTE TO PHYSICIAN**

Probable mucosal damage may contraindicate the use of gastric lavage.

**EMERGENCY TELEPHONE NUMBERS:** Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact:

- (800) 424-9300 CHEMTREC (transportation and spills)
- (800) 832-HELP (4357) (human health)
- (800) 345-4735 ASPCA (animal health)

EPA Reg. No. 51036-304  
AD 120398

EPA Est. No. 51036-GA-1

NET CONTENTS:

Manufactured By:  
MICRO FLO COMPANY LLC  
P.O. BOX 772099  
MEMPHIS, TN 38117

**PRECAUTIONARY STATEMENTS**

**HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**CAUTION**

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

**PERSONAL PROTECTIVE EQUIPMENT (PPE)**

Applicators and other handlers must wear:

1. Coveralls over long-sleeved shirt and long pants
2. Chemical-resistant gloves
3. Chemical-resistant footwear plus socks.
4. Eye protection.
5. Chemical-resistant headgear for overhead exposure.

6. Chemical-resistant apron when mixing or loading or cleaning equipment.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate.

Do not reuse them. Follow manufacturer's instruction for cleaning/maintaining PPE. If no such instruction for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

#### USER SAFETY RECOMMENDATIONS

Users should:

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

#### 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 disposing of equipment washwaters.

Avoid spray drift to nearby crops as this product may cause temporary modifications in plant growth. Do not contaminate water used for irrigation or domestic purposes.

Prolonged exposures to spray deposits can damage acrylic plastics, certain paints, and metals. Remove automobiles and other vehicles from the treatment area prior to application to prevent spray deposits from falling on vehicles and potentially damaging finishes. Rinse acrylic plastic materials and painted surfaces exposed to inadvertent spray deposits using soap and water within an hour after exposure.

#### DIRECTIONS FOR USE

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

Do not apply through any type of irrigation system.

Read entire label before using this product.

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 regulations.

#### 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 expectations pertaining to the statements on this label about personal protective equipment (PPE), notification to workers and restricted-entry intervals. 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 48 hours.

The REI increases to 72 hours in outdoor areas where average rainfall is less than 25 inches a year.

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:

1. Coveralls over short-sleeved shirt and short pants.
2. Waterproof gloves.
3. Chemical-resistant footwear plus socks.
4. Chemical-resistant headgear for overhead exposure.
5. Protective eyewear.

Notify workers of the application by warning them orally and posting warning signs at entrances to treated areas.

#### STORAGE AND DISPOSAL

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

**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 open burning. If container is burned stay out of smoke.

#### GENERAL INFORMATION

For ground application only.

Apply ETHEPHON 3.9% S&O spray solution within 4 hours after mixing. Mix only the amount of spray you plan to use immediately.

DO NOT save unused diluted spray solutions as they will not be as effective as fresh solutions.

Plants sprayed with ETHEPHON 3.9% S&O often flower 7 to 10 days earlier than untreated. Therefore pollen source plants should be seeded prior to seed parent to insure adequate pollen availability for hybrid seed production.

Temporary growth inhibition resulting from shortened internodes may be observed.

#### FLOWER INDUCTION OF BROMELIADS

A foliar spray of ETHEPHON 3.9% S&O initiates flowering of ornamental bromeliads such as ANANAS, AECHMEA, NEOREGELIA, VRIESIA, and BILLBERGIA.

#### HYBRID SEED PRODUCTION

A foliar spray of ETHEPHON 3.9% S&O Plant Growth Regulator will modify sex expression and flowering pattern of cucumbers and squash to facilitate hybrid seed production. Do not use on cucumbers or squash to be harvested for fresh or processed markets.

#### DEFOLIATION

A foliar spray of ETHEPHON 3.9% S&O applied after buds are matured, will initiate earlier leaf drop of Roses, Tallhedge, and Apple nursery stock (in Washington only). This will allow digging of stock plants prior to the onset of unfavorable weather.

#### INCREASING LATERAL BRANCHING

(Varieties such as Azalea, Begonia, Chrysanthemum, Geranium, Impatiens, Latana, Verbena, Vinca)

A foliar spray of ETHEPHON 3.9% S&O in conjunction with hand pinching will increase the number of lateral branches on

ornamental plant species. When used on Geranium stock plants prior to normal pinching time, an increase in the number of lateral branches to be used as cutting material can be expected. Bougainvillea will be defoliated by applications of ETHEPHON 3.9% S&O but nodes will break a few weeks after treatment.

#### REDUCTION OF PLANT HEIGHT AND STEM TOPPLE

A foliar spray of ETHEPHON 3.9% S&O will aid in reducing total plant height of potted daffodils and stem topple of potted hyacinths at time of full flower.

#### HYBRID SEED PRODUCTION

ETHEPHON 3.9% S&O modifies sex expression and flowering pattern of cucumber, squash and pumpkins to facilitate hybrid seed production.

Application of ETHEPHON 3.9% S&O increases the number of pistillate (female) and decreases the number of staminate (male) flowers. ETHEPHON 3.9% S&O brings about earlier formation of female flowers at lower nodes where normally only male flowers are formed in standard (monoecious) cucumber, squash and pumpkin varieties.

Sexual modification towards femaleness in treated plants is temporary (5 to 15 nodes). Variety, location, climate and cultural practices may influence the best rate for treatment. Due to the wide range in sensitivity of cucumber and squash cultivars excessive injury may result from ETHEPHON 3.9% S&O application even when all label directions are followed. Treatment cultivars classified as strongly male (Straight Neck, Crookneck) may result in an unacceptable level of male flowers remaining. New breeding lines will require trial applications before full scale treatments are made.

#### HYBRID SEED PRODUCTION IN CUCUMBER AND SQUASH

Amounts To Use: Apply 1 quart per acre of ETHEPHON 3.9% S&O in 40 to 100 gallons of water (100 to 250 ppm). The actual amount needed to achieve a satisfactory level of performance without excessive injury is dependent on the specific cultivar and environmental conditions at the time of treatment. Spray plants at the two leaf stage.

DO NOT HARVEST ANY TREATED CUCUMBERS OR SQUASH FOR HUMAN OR ANIMAL CONSUMPTION. TREATMENTS ARE TO BE MADE FOR SEED PRODUCTION ONLY



9 7 13

When germination is variable,, a repeat application 7-10 days after the first may be necessary.

#### HYBRID SEED PRODUCTION IN PUMPKINS (ILLINOIS ONLY)

Amounts To Use: Apply 3 quarts of ETHEPHON 3.9% S&O per acre in 40 to 100 gallons of water (300 to 750 ppm) per acre. Apply no more than 6 spray applications per year at 7-10 day intervals beginning at the 2-4 leaf stage. Do not harvest within 42 days of last application.

Do not harvest any treated pumpkins for human or animal consumption. Treatments are to be made for seed production only.

#### HYBRID SEED PRODUCTION IN CUCUMBERS, PUMPKINS, AND SQUASH (CALIFORNIA ONLY)

Amounts To Use: Apply up to 3 quarts per acre of ETHEPHON 3.9% S&O in 40 to 100 gallons of water (300 to 750 ppm) by ground application. Apply no more than 6 spray applications per year at 3 to 10 day intervals beginning at the first true leaf stage.

Do not harvest within 60 days of last application.

Do not harvest any treated pumpkins for human or animal consumption. Treatments are to be made for seed production only.

The actual amount and number of applications needed to achieve a satisfactory level of performance without excessive injury is dependent on the specific cultivar and environmental conditions at time treatment.

#### FLOWER INDUCTION OF BROMELIADS

ETHEPHON 3.9% S&O initiates flowering of ornamental bromeliads such as ANANAS, AECHMEA, NEOREGELIA, VRIESIA and BILLBERGLA.

#### AMOUNTS TO USE

For most bromeliad varieties, mix 8 fluid ounces of ETHEPHON 3.9% S&O per gallon of water. This prepares a spray concentration of approximately 2,500 ppm of ethephon. Spray all surfaces of the plant to "wet". Avoid overspraying to "runoff" which may cause damage to leaves or the growing points. For treating groups of plants, use approximately ½ pint of spray solution per 10 square feet of greenhouse bench or outdoor bed area.

Apply ETHEPHON 3.9% S&O spray solutions within 4 hours after mixing. Mix up only the amount of spray you plan to use immediately. DO NOT save unused diluted spray solutions as they will not be as effective as fresh solutions.

The degree of flower induction with a given rate of ETHEPHON 3.9% S&O is influenced by the plant age, variety, growth rate, climate and cultural conditions. Lower rates may force flowering or produce desirable foliage coloring on certain varieties. Trial applications at lower rates are suggested before making extensive treatments.

#### GUIDELINES FOR CONSISTENT FLOWER FORCING

1. Grow plants on photoperiods regulated to maintain plants vegetatively active prior to treatment; long days for ANANAS, BILLBERGIA, NEOREGELIA, and short days for AECHMEA, and VRIESIA.
2. Treat mature plants that have well established root systems. Treatments too early in the development of the plant will cause erratic flower initiation and the few flowers formed will be small.
3. Remove water at base of leaves. Allow foliage to dry prior to treatment. Water may be replaced 24 hours after treatment.
4. A minimum night temperature of 65-70° or higher should be maintained throughout the forcing period.
5. Do not apply fertilizer two weeks prior or for two weeks after treatment.

NOTE: Inconsistent results may be obtained if the local surface is covered with algae.

#### DEFOLIATION

A foliar spray of ETHEPHON 3.9% S&O will cause earlier leaf drop of roses, tallhedge and apple nursery stock. Apply only after the buds are mature or some injury may result.

FOR ROSES: Mix 1 quart of ETHEPHON 3.9% S&O in 10 gallons of water and apply to thoroughly wet foliage. Amount of spray used will depend on the size of the rose bush. Amount of defoliation

11 8 13

obtained will depend on the variety and temperature. The addition of 1 pint of nonionic surfactant such as Tween 20 or X-77 per 100 gallons of spray solution will improve defoliation. Do not sensitive varieties such as Red American Beauty as bud injury may result.

FOR TALLHEDGE BUCKTHORN: Mix 5 to 10 quarts ETHEPHON 3.9% S&O in 10 gallons water and apply to thoroughly wet foliage. Amount of spray used will depend on size of tallhedge. Use the higher rate when temperatures are cool or earlier defoliation is desired.

FOR APPLE NURSERY STOCK IN WASHINGTON: Mix 1-2 pints ETHEPHON 3.9% S&O plus 3 quarts Dupont Surfactant WK in 50 gallons water and apply no more solution than is necessary to moisten foliage without runoff. A second treatment 3-7 days later using the above rates may be applied. Apply no more than 4 pints ETHEPHON 3.9% S&O per season. Do not use on Rome apples as defoliation will not be satisfactory. Amount of defoliation obtained will depend on variety and temperatures.

#### INCREASED LATERAL BRANCHING

A foliar spray of ETHEPHON 3.9% S&O will increase lateral branching in the following ornamental species: Azalea, Garden Chrysanthemum (perennial species) Fuchsia, Zonal Geranium, Ivy Geranium, Lantana, Verbena, Vinca vines (vinca major). To minimize the risk of unacceptable plant injury do not use ETHEPHON 3.9% S&O on ornamental varieties or species not specifically listed on the label.

When applied to plants ETHEPHON 3.9% S&O readily enters the plant and breaks down to ethylene, a naturally occurring plant hormone.

Ethylene production within the plant is stimulate by stress. For this reason, it is important that plants being treated are not under stress from drought, high temperature, disease or other environmental stresses. Treating stressed plants can cause severe injury such as defoliation or leaf scorching. While injury from ETHEPHON 3.9% S&O usually does not kill the plant, it can render the plant unsightly and unfit for sale. The activity of ETHEPHON 3.9% S&O is linked to plant growth activity and is therefore slower acting when temperatures are below 60F or very high above 95F.

FOR STOCK PLANTS (EXCEPT AZALEA): Mix 1 pint (16 fluid ounces) of ETHEPHON 3.9% S&O in 10 gallons of water (500 ppm) and spray to thoroughly wet foliage, but not to runoff. Make applications at normal pinching times instead of hand pinching. To optimize the vigor of cuttings, do not make applications for 2 weeks prior to

harvesting cuttings from stock plants.

FOR FINISHED PLANTS (EXCEPT AZALEA): Mix 1 pint (16 fluid ounces of ETHEPHON 3.9% S&O in 10 gallons of water (500 ppm) and spray to thoroughly wet foliage, but not runoff. Make applications at normal pinching time instead of hand pinching. To ensure flowering and full foliage on finished plants do not make applications for 6 to 8 weeks prior to bloom or planned sale.

FOR (BOTH STOCK AND FINISHED PLANTS Mix 2.5 to 5 quarts of ETHEPHON 3.9% S&O in 10 gallons of water (2,500 to 5,000) ppm) and apply to thoroughly wet foliage. The amount of spray will depend upon the size of the plant being treated. Application should be made at normal pinching times and can be used in conjunction with hand pinching or chemical pinching agents. Use the higher rate on vigorous tolerant varieties as determined by experience. To prevent unacceptable plant injury, do not treat sensitive varieties such as Sweetheart, and other varieties as determined by experience. To optimize the vigor of cuttings, do not make application for 2 weeks prior to harvesting cuttings from stock plants. To ensure full foliage and on finished plants, do not make applications for 6 to 8 weeks prior to bloom or planned sale.

#### REDUCTION OF HYACINTH STEM TOPPLE AND DAFFODIL PLANT HEIGHT

To reduce potted hyacinth Stem topple at time of full flower, apply a foliar spray of ETHEPHON 3.9% S&O before florets have opened. Most cultivars will respond to applications of ETHEPHON 3.9% S&O at 1000 to 2000 ppm (1/2 to 1 pint in 2.5 gallons of water) of ETHEPHON 3.9% S&O. Bismarck, Jan Bos, Blue Giant, Delft Blue, and Madame Kruger may benefit from a second spray 2 days after the first.

To reduce total plant height of potted daffodils, apply a foliar spray of ETHEPHON 3.9% S&O when the shoots are 3 to 4 inches tall. Most cultivars will respond to 2000 ppm (1 pint in 2.5 gallons) sprays of ETHEPHON 3.9% S&O. For earlier forcing, Dutch Master, Joseph MacLeod, Flower Record, and Barret Browning will benefit from a second spray 2 or 3 days after the first. Bridal Crown and Geranium require only 1000 ppm (1/2 pint in 2.5 gallons of water). Gold Medal, Van Sion, February Gold, and Tete-a-Tete do not require ETHEPHON 3.9% S&O treatment.

13 8 13

### **CONDITIONS OF SALE AND LIMITED WARRANTY:**

The Directions For Use of this product reflects 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 use of the product in a manner inconsistent with its labeling, all of which are beyond the control of MICRO FLO COMPANY (MICRO FLO) or the SELLER. All such risks shall be assumed by the Buyer.

MICRO FLO warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the Directions For Use, subject to the inherent risks, referred to above.

MICRO FLO MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY. TO THE EXTENT PERMITTED BY LAW, MICRO FLO AND THE SELLER DISCLAIM ANY LIABILITY FOR CONSEQUENTIAL, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT. MICRO FLO and the SELLER offer this product, and the Buyer and User accept it, subject to the foregoing Conditions of Sale and Warranty which may be varied only by agreement in writing signed by a duly authorized representative of MICRO FLO.