



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
WASHINGTON, DC 20460

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

Khalid H. Akkari  
Regulatory Manager  
BASF Corporation  
26 Davis Drive  
Research Triangle Park, NC 27709

NOV 15 2006

**Subject:** CYCOCEL Plant Growth Regulator  
EPA Reg. No. 241-74  
Amendment dated 6/16/04; resubmissions 12/15/05, 7/5/06 and 10/30/06  
EPA Decision Number 345462

Dear Dr. Akkari:

The amended label referred to above that adds shadehouses and nurseries to the accepted uses, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act as amended, is acceptable provided the following change is made:

1. In the first paragraph of the section "Conditions of Sale and Warranty", change "All such risks shall be assumed by the Buyer." to "To the extent consistent with applicable law, all such risks shall be assumed by the Buyer."

In addition, you must submit the following conditional data to support the shadehouse and nursery uses before the due date of June 1, 2009:

1. Freshwater Fish Early Life Stage – Bluegill (72-4C, 850.1400)
2. Avian reproduction – Duck (71-4B, 850.2300)
3. Hydrolysis (161-1)
4. Photolysis in water (161-2)
5. Soil Metabolism – anaerobic (162-2)

In addition, the Agency may require that you submit the following conditional data:

6. Bobwhite quail reproduction study (71-4A, 850.2300) may be required later depending on the duck reproduction results.
7. Terrestrial field dissipation (164-1) may be required depending on results of the technical review of MRIDs 124060 and 137650 (DP333237).

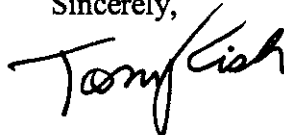
One copy of the label stamped "Accepted with comments" is enclosed for your records. This label supersedes all labels previously accepted for this product. Please submit one copy of the final printed label that incorporates the required changes before the product is released for shipment.

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If you have any questions, please contact Robert Westin by phone at (703) 305-5721 or via email at [westin.robert@epa.gov](mailto:westin.robert@epa.gov).

Sincerely,



Tony Kish  
Product Manager (22)  
Fungicide Branch  
Registration Division (7505P)

Enclosure

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# CYCOCEL®

plant growth regulant

## FOR USE ON ORNAMENTALS

**Active Ingredient:**

Chlormequat (2-chloroethyl)trimethylammonium chloride ..... 11.8%

**Inert Ingredients:** ..... 88.2%

**Total:** ..... 100.0%

(1 gallon contains 1 pound (2-chloroethyl)trimethylammonium chloride)

EPA Reg. No. 241-74

EPA Est. No. \_\_\_\_\_

## KEEP OUT OF REACH OF CHILDREN

## CAUTION/PRECAUCIÓN

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.  
(If you do not understand the label, find someone to explain it to you in detail.)

**In case of emergency endangering life or property involving this product,  
call BASF, day or night 1-800-832-HELP (4357).**

See Additional **First Aid, Precautionary Statements** and **Directions for Use** inside.

**ACCEPTED  
with COMMENTS  
In EPA Letter Dated**

NOV 15 2006

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

241-74

Net Contents: \_\_\_\_\_

BASF Corporation  
Agricultural Products  
26 Davis Drive  
Research Triangle Park, NC 27709

**BASF**  
The Chemical Company

<b>FIRST AID</b>	
<b>If swallowed</b>	<ul style="list-style-type: none"> <li>• Call a poison control center or doctor immediately for treatment advice.</li> <li>• Have person sip a glass of water if able to swallow.</li> <li>• <b>DO NOT</b> induce vomiting unless told to do so by a poison control center or doctor.</li> <li>• <b>DO NOT</b> give anything by mouth to an unconscious person.</li> </ul>
<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 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 15-20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>Note to Physician</b>	The use of Atropine is contraindicated.
<b>HOT LINE</b>	
For further information, you can call BASF day or night 1-800-832-HELP (4357).	

## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

#### CAUTION

Harmful if swallowed or absorbed through the skin. Avoid contact with skin, eyes, or clothing.

#### Personal Protective Equipment (PPE)

**Applicators and other handlers must wear:**

- Long-sleeved shirt and long pants
- Chemical-resistant gloves, 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.

#### User Safety Recommendations

##### Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- 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 wildlife. Keep out of lakes, streams and ponds.

**DO NOT** discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. **DO NOT** discharge effluent containing this product to sewer systems without previously notifying

the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

**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 washwater or rinsate.

Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas.

## 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.

Observe all **Precautionary Statements, Restrictions and Limitations**, and **Application Instructions** on the **CYCOCEL® plant growth regulant** package label. **DO NOT** apply this product through any type of irrigation system.

### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard (WPS), 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
- shoes plus socks

### STORAGE AND DISPOSAL

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

**Pesticide Storage:** Store in original container. **DO NOT** store below freezing temperatures.

**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

Read all sections of this label before using **CYCOCEL®** plant growth regulant.

**CYCOCEL** is a plant growth regulator for use on bedding plants and containerized ornamentals in greenhouses, shadehouses, and nurseries. **FOR USE ONLY ON ORNAMENTALS GROWN IN COMMERCIAL OR RESEARCH GREENHOUSES, SHADEHOUSES AND NURSERIES. IN PRODUCTION AREAS NOT UNDER COVER, USE IS RESTRICTED TO CONTAINERIZED ORNAMENTALS. DO NOT** apply to field-grown ornamentals. **CYCOCEL** enhances the crops' aesthetic appeal and improves durability during postproduction shipping and handling. Treated crops are more compact with shorter internodes, stronger stems and greener leaves.

**CYCOCEL** should be used on healthy plants grown under proper conditions and is not a replacement for good cultural practices. **CYCOCEL** contains a wetting agent; therefore, additional wetting agents are not needed. An additional wetting agent can be added if desired. If any adjuvants or other chemicals are applied with **CYCOCEL**, small test areas should be treated first to insure that no crop injury will occur. Plants treated with **CYCOCEL** may use less water, and irrigation schedules may need to be adjusted to prevent over irrigation.

\*Use on containerized ornamentals without impervious floors not permitted by the Arizona Department of Environmental Quality.

### GROWTH REGULATION WITH CYCOCEL:

**CYCOCEL** will normally reduce internode elongation for a period of 1 to 3 weeks following spray treatment, depending on crop culture, environmental conditions and plant growth habit. Multiple applications can be applied as needed. **CYCOCEL** has greatest effect on final plant height when applied at the beginning of rapid stem elongation and will have less effect if applied when shoots are not elongating or at the end of an elongation phase. **CYCOCEL** application rate, timing and frequency should be adjusted depending on individual grower preferences for crop development.

### CYCOCEL PHYTOTOXICITY:

Foliar spray applications of **CYCOCEL** often will cause slight yellowing near leaf margins or at the tip of leaves that are small and rapidly enlarging at time of application. The discoloration appears about 3 to 5 days after the spray treatment. Mature leaves at time of spray and leaves formed after application are not affected. Discolored areas usually regain most or all green color by the end of the crop cycle. The degree of yellowing is related to **CYCOCEL** application rate. The lowest rates do not cause any phytotoxicity or temporary discoloration. Before application rates of 1,500 ppm or greater are used, trials should be conducted to insure that the amount of leaf spotting is not unacceptable to the user. **CYCOCEL** application rates that are too high may cause brown necrotic areas on leaf margins, which will not recover green color. If the amount of yellowing is too great, **CYCOCEL** application rates should be lowered to reduce phytotoxicity or temporary discoloration and more frequent applications at lower rates should be made to achieve desired height control.

Users should not apply **CYCOCEL** near the end of a crop unless they have conducted adequate trials to insure the **CYCOCEL** rate is low enough to avoid an undesirable appearance during the sales period.

### FACTORS AFFECTING ACTIVITY OF CYCOCEL:

Plant growth and response to **CYCOCEL** is affected by several factors. The optimum **CYCOCEL** rate and frequency of application will vary depending on how the crop is grown.

**ENVIRONMENTAL FACTORS:**

- Crops produced under low light levels and/or high humidity conditions will have a less compact growth habit and will generally require more **CYCOCEL** plant growth regulant than the same crop produced at higher light levels and/or low humidities.
- Likewise, crops produced at higher temperatures or higher DIF (difference between day and night temperatures) will generally have greater stem elongation and require more **CYCOCEL** to produce the desired final plant height.

**CULTURAL FACTORS:**

- Crops grown with greater amounts of irrigation, higher fertilization rates, or high amounts of ammoniacal nitrogen will be more lush and taller than crops grown "harder" with less irrigation, lower fertilizer, and predominately nitrate-nitrogen. The more lush crops normally require higher amounts of **CYCOCEL** or more frequent applications.
- Plants that are spaced close together will elongate rapidly when leaves begin to overlap, and more **CYCOCEL** is needed under these conditions to produce plants with the desired final heights.
- The production schedule for photoperiodic crops and varieties, such as poinsettias and chrysanthemums, influences final plant size, and the amount of chemical needed to achieve the desired final plant height will vary with the production schedule. Crops that are grown under long schedules with more time between planting and start of flower initiation or between final pinch and flower initiation will be taller than crops grown using short production schedules.

**VARIETY DIFFERENCES:**

- Varieties within a species often vary greatly in their growth habits and the amount of **CYCOCEL** required for optimum final height.
- Also, colors within a bedding plant series will vary in sensitivity to **CYCOCEL**.
- Generally, more vigorous, taller varieties require greater amounts of **CYCOCEL** than do less vigorous, shorter varieties.

Users should consult with plant and seed suppliers and breeder companies for information on growth habit of varieties with which the user is not familiar.

**DETERMINING OPTIMUM CYCOCEL USAGE:**

The optimum usage of **CYCOCEL** varies depending on the crop, the individual user's production situation and the desired final plant height and appearance. Users should determine the optimum **CYCOCEL** rate, timing, and frequency under their individual production situations. Users should obtain experience in small-scale trials under the different conditions where **CYCOCEL** is to be used before **CYCOCEL** is used on an entire crop. The **CYCOCEL** rates recommended in this label are general guidelines to be used by growers in trials to determine specific, optimum usage appropriate for their operations.

**APPLICATION INSTRUCTIONS**

In spray applications, **CYCOCEL** enters the plant through young expanding leaves, mature leaves and stems. Maximum effect occurs when **CYCOCEL** is applied to thoroughly cover plant leaves and stems. The spray volume providing thorough plant coverage will vary with plant size and foliage cover.

- For spray applications in shadehouses and container nursery production, apply **CYCOCEL** at a rate of 1 gallon of spray per 200 sq ft of growing area, regardless of plant spacing. Use 0.5 to 1 gallon of spray per 200 sq ft of growing area for small plants in small containers or plug trays that are closely spaced. A maximum spray volume of 1.5 gallons per 200 sq ft of growing area is recommended for larger plants with well-developed canopies.
- For spray applications in shadehouses and container nursery production, **DO NOT** exceed the maximum recommended application rate of 3.7 lbs ai/A for single applications and not more than 33.3 lbs/A/year total. Single rates (lbs ai/A) should determine the maximum number of seasonal applications allowed but not to exceed 33.3 lbs ai/A/year.
- Interval between repeat applications to the same crop can range from 5 to 21 days, if required.

**CYCOCEL** penetrates into the plant to provide maximum effect while the spray solution stays wet. Therefore, greater effect is obtained if sprays are applied under conditions that support slow drying of spray solutions. It is desirable to time **CYCOCEL** applications so that overhead irrigation or rain will not occur for a period of 6 hours after sprays are applied.

Unless otherwise stated in the section under **Specific Perennial Crops**, **CYCOCEL** spray application rates range from 600 to 2,000 ppm depending on the crop and individual user's desired results. The suggested initial **CYCOCEL** rate for small-scale trials is 1,250 ppm. All references to ppm are based on total **CYCOCEL** product.

**DRENCH APPLICATIONS:**

**CYCOCEL** can be applied as a drench to the growing medium. It is taken up by the plant through the roots and transported to the stem tips where it is active. Drench applications do not cause leaf yellowing and provide longer and more uniform control of stem elongation. In a drench treatment, it is the total amount of **CYCOCEL** active ingredient applied to each container that determines the reduction in stem elongation. Therefore, users must insure that both the amount of solution applied to each container and the concentration of **CYCOCEL** in ppm are correct.

Drenches should be applied so that the potting medium is uniformly saturated or non uniform heights will result when there are multiple plants in a container. Apply the drench to a moist medium and not when crops need irrigation. A good procedure is to irrigate crops one day and apply the

**CYCOCEL® plant growth regulant** drench the next day.

**CYCOCEL** application rates for drench treatments range from 2,000 to 3,000 ppm of **CYCOCEL**. Users should do trials to determine the optimum rates under their particular conditions. The following table gives suggested volumes of dilute **CYCOCEL** solution to be applied to different size containers. Volumes listed in **Table 2** are considered adequate for container production media.

**MIXING INSTRUCTIONS:**

**TABLE 1. PREPARATION OF CYCOCEL SOLUTIONS FOR SPRAY AND DRENCH APPLICATIONS**

Concentration (ppm)*	CYCOCEL (fl oz/gal)	CYCOCEL (mL/gal)	CYCOCEL (mL/L)
200	0.22	6.4	1.7
460	0.50	14.7	3.9
800	0.87	25.7	6.8
1,000	1.08	32.1	8.4
1,250	1.36	40.1	10.6
1,500	1.63	48.1	12.7
2,000	2.17	64.2	16.9
3,000	3.25	96.3	25.4

\*ppm calculations based on total **CYCOCEL**.

**TABLE 2. CYCOCEL PLANT GROWTH REGULANT - DILUTE SOLUTION PER CONTAINER SIZE FOR DRENCH APPLICATIONS**

Pot diameter (inches)	Fluid ounces of dilute solution per pot	Number of pots treated with 1 gal of solution
2¼ to 3	2	64.0
4	3	42.5
5	4	32.0
6	6	21.5
8	8	16.0

**CYCOCEL/B-NINE® TANK MIX SPRAY APPLICATION:**

A tank mix combination of **B-Nine** plus **CYCOCEL** has been shown to provide optimum retardation with minimizing marginal chlorosis. The tank mix can be targeted to those plants less responsive to **CYCOCEL** alone. Users should recognize that this tank mix of **CYCOCEL** and **B-Nine** is more active than using either chemical alone.

- Users of the tank mix should follow the guidelines given on the labels of both products. Users must test the use of the tank mix on a small scale before general use.
- The tank mix is to be applied only as a foliar spray.
- Optimum rates of each product will vary depending on the crop, and the individual production situation as described for using **CYCOCEL** alone.
- The application rate for **CYCOCEL** and **B-Nine** can be altered to adjust the degree of height reduction desired resulting from a spray treatment of the tank mix.
- In general, the highest **CYCOCEL** rate that does not cause excessive leaf yellowing can be used, and then the **B-Nine** rate can be raised or lowered to adjust the activity of the tank mix application.

**TABLE 3. The following table provides general guidelines for recommended rates based on the desired level of activity of the tank mix.**

ACTIVITY LEVEL	CYCOCEL (PPM)	B-NINE (PPM)
Very High	1,500	5,000
High	1,200	2,500
Medium	1,000	1,200
Low	600	800

**RESTRICTIONS AND LIMITATIONS**

**GREENHOUSE USE:**

- **DO NOT** apply more than 6 applications of **CYCOCEL** plant growth regulant per production crop cycle (including any **B-Nine** tank mix combinations).
- **DO NOT** exceed 1,500 ppm in a single spray and 3000 ppm in a single drench application.
- Restricted-Entry Interval (REI): **12 hours**.
- **DO NOT** apply to plants that are experiencing stress or other production limitations or undesirable plant injury may occur.
- **DO NOT** apply through any type of irrigation equipment.
- **DO NOT** apply to plants grown for feed or food purposes.

**SHADEHOUSE OR CONTAINER NURSERY USE:**

- **DO NOT** apply more than 3 applications of **CYCOCEL** plant growth regulant per production crop cycle (including any **B-Nine** tank mix combinations).
- Apply only as a foliar spray. **DO NOT** apply as a drench application.
- Restricted-Entry Interval (REI): **12 hours**.
- Mechanical (tractor) multi-nozzle sprayer applications to container nursery pots on gravel or landscape barrier fabric production beds cannot exceed one (1) acre of plants per day, per mixer/loader/applicator.
- **DO NOT** apply to plants that are experiencing stress or other production limitations or undesirable plant injury may occur.
- **DO NOT** apply through any type of irrigation equipment.
- **DO NOT** apply to plants grown for feed or food purposes.

**CYCOCEL USE IN PRODUCTION**

**GREENHOUSE GROWN PRODUCTION**

**POINSETTIAS:**

**CYCOCEL** plant growth regulant can be used to reduce stem elongation of all poinsettia varieties. It can be applied, as needed, to stock plants, cuttings during propagation, and before or after pinching plants grown for flowering.

Use of **CYCOCEL** on poinsettias is limited to one growing cycle per year.

Response of poinsettias to **CYCOCEL** varies with variety and geographical region of the United States. Higher rates and more frequent applications are needed in warmer production areas. For natural-season crops in the north,

**CYCOCEL® plant growth regulant** should not be used after October 15, except that reduced rates can be used until October 21 if conditions are warm and sunny. In the South, **CYCOCEL** should not be used after November 1. Late application times or excessive rates can cause reduced bract size and/or delayed flowering. If the crop is being produced for other than natural-season, the last application should be no later than 6 weeks prior to flower maturity.

Spray applications can be made at rates between 800 and 1,500 ppm. A maximum of 4 applications per growing cycle may be made at intervals between 5 and 14 days. Frequent reapplication may be needed if lowest application rates are used. At rates of 1,000 to 1,500 ppm, less frequent reapplication is needed. Higher **CYCOCEL** rates often result in considerable leaf yellowing and are not frequently used, but may be applied if the user has adequately evaluated these rates.

Drench applications can be made to poinsettias using the procedures given in the **Drench Applications** section of this label. Drench application rates are 2,000 to 3,000 ppm. Drench treatments should not be made after the critical cut-off dates given above for **CYCOCEL** applications to poinsettias. A maximum of 2 applications per growing cycle may be made at intervals of 5 to 14 days.

#### **CYCOCEL/B-Nine® Tank Mix Consideration:**

Poinsettias are more sensitive to the combination of **CYCOCEL** and **B-Nine** than are other plant species. Use of tank mix application rates that are too high or application too late in the crop may cause reduced bract size and/or delayed bract coloring.

- The very high activity rates of **CYCOCEL** at 1,500 ppm and **B-Nine** at 5,000 ppm should not be used on poinsettias.
- The high rates of 1,500 ppm **CYCOCEL** and 2,500 ppm **B-Nine** can be used on stock plants during the summer or on crops for flowering in the warmest regions.
- Outside of the warmest regions, growers should use the medium or low activity rates on crops for flowering.
- In all regions, applications to cuttings in propagation should be at the low or medium rates.
- The **CYCOCEL** and **B-Nine** tank mix should not be applied to natural-season poinsettias after September 25th or after start of short-days in photoperiod-controlled crops. After that date, the **B-Nine** should be omitted and **CYCOCEL** used alone as described in the **CYCOCEL** section of this label.
- **DO NOT** exceed 4 applications of **CYCOCEL** (including any **B-Nine** tank mix combinations) during any production crop cycle.

#### **GERANIUMS:**

**CYCOCEL** is recommended for controlling plant size of seed geraniums and vegetatively propagated geranium types. **CYCOCEL** is also recommended for inducing early flowering of seed geraniums. Use of **CYCOCEL** on geraniums is limited to 3 growing cycles per year.

**CYCOCEL** spray application rates on geraniums are from 800 to 1,500 ppm. Generally, first applications are made 2 to 4 weeks after planting plugs or rooted cuttings, after stems have started elongating. A maximum of 3 applications can be made as needed.

To promote earlier flowering of seed geraniums, use 1,500 ppm. Make two spray applications at 35 and 42 days after seeding per growing cycle. Treated plants show decreased days to flowering, compact growth and more lateral breaks. **DO NOT** exceed 3 applications of **CYCOCEL** (including any **B-Nine** tank mix combinations) during any production crop cycle.

#### **BEDDING PLANTS:**

**CYCOCEL** will effectively control the stem elongation of a wide variety of bedding plant crops grown in packs, pots, hanging baskets, and plug trays. Use of **CYCOCEL** on bedding plants is limited to 3 growing cycles per year.

The growth rate of bedding plant crops varies greatly depending on growers' cultural practices. The use of **CYCOCEL** plant growth regulant must be altered depending on grower practices and desired final plant size. Plant growth after transplanting is affected by the amount of **CYCOCEL** or other growth regulator applied to the plant during the plug stage. Therefore, use of **CYCOCEL** during the plug stage will reduce the amount needed after transplanting.

**CYCOCEL** spray application rates on bedding plants are 800 to 1,500 ppm. First **CYCOCEL** sprays should not be applied until after transplanted plugs begin to grow and amount of growth control needed can be determined. For bedding plants in seedling stage, users should start evaluating **CYCOCEL** at one-half the rate used on finished bedding plants. **DO NOT** exceed 6 applications of **CYCOCEL** (including **B-Nine** tank mix combinations) during crop production cycle.

**CYCOCEL/B-Nine** tank mix application is active on a wide range of plant species. Users must evaluate its use under their individual production situations. The tank mix can be used on bedding plant plugs such as pansy and vinca with low risk of excessive reduction in size. It can be used at higher rates on plug crops such as salvia, marigold, and dahlia that require stronger chemical activity to produce desired height control.



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**CYCOCEL® plant growth regulant will reduce the stem elongation on these and other bedding plant crops:**

Ageratum	Jerusalem cherry
Celosia	Marigold
Dahlia	Nasturtium
Dianthus	Salvia
Cleome	Sunflower
Coleus	Verbena
Gomphrena	Vinca
Hypoestes	Zinnia

**GREENHOUSE, SHADEHOUSE OR CONTAINER NURSERY PRODUCTION**

**OTHER HERBACEOUS PLANTS:**

**CYCOCEL** can be used to reduce stem elongation in other herbaceous crops not specifically listed, such as flowering potted plants, tropical and temperate perennials, and foliage plants. **CYCOCEL** can be applied to these crops either as a foliar spray or drench to the growing medium. A maximum of 3 growing cycles are permitted per year. The optimum **CYCOCEL** rate, timing of application and frequency will vary for different crops and amount of height control desired by individual users. Application rates of 200 to 1,500 ppm can be made, not to exceed 3 applications. Users should conduct trials with a small number of plants before **CYCOCEL** is used on entire crops, and follow the recommended maximum application limits listed in **Table 2** for drench application and pot size. **DO NOT** exceed 3 applications of **CYCOCEL** (including **B-Nine®** tank mix combinations) during production crop cycle.

**Examples of other herbaceous crops that can be treated with CYCOCEL plant growth regulant**

Achimenes	Ivy
Aster	Kalanchoe
Astilbe	<i>Lilium</i> spp.
Begonia, hiemalis	Morningglory
Begonia, tuberous	Pachystachys
Calceolaria	<i>Pilea</i> spp.
Carnation	Pentas
Chrysanthemum	<i>Salvia</i> spp.
Columbine	Schefflera
Easter Lily	<i>Sedum</i> spp.
Gynura aurantiaca	Sunflower

**HIBISCUS:**

**CYCOCEL** is recommended to improve flowering and to produce compact plants with uniform shoot growth of *Hibiscus* spp. The **CYCOCEL** spray application rate range is between 200 and 600 ppm depending on variety growth habit and amount of control desired. Users should start with 460 ppm in trials. **CYCOCEL** should be applied in multiple applications to produce the most uniform growth. **CYCOCEL** can be applied once before first and second pinches to produce more compact plants before final pinch. To produce the most compact flowering plants

(height less than 18" in 6-inch pot), applications may be needed after the final pinch, and first application should be made when laterals are 0.5- to 1- inch long. **DO NOT** exceed 2 applications of **CYCOCEL** in a crop production cycle. A maximum of 3 growing cycles are permitted per year.

**AZALEAS:**

**CYCOCEL** produces earlier budded plants with multiple buds per shoot. Treated azaleas also have more compact, symmetrical heads. For crops produced out of season in a year-round production system, **CYCOCEL** can be used to induce flower bud set.

Azalea growth habit and response to **CYCOCEL** varies with variety, geographical region and production system. Optimum **CYCOCEL** spray rates generally range between 1,000 and 2,000 ppm in most situations. Two to three multiple applications may be needed starting 3 to 5 weeks after last pinch (when laterals are about 2 inches long). Treated plants may flower a few days later than nontreated plants. A maximum of 3 growing cycles are permitted per year. **DO NOT** exceed 3 applications in a crop production cycle.

**OTHER WOODY FLOWERING PLANTS:**

Other woody flowering crops can be treated with **CYCOCEL** plant growth regulant to produce more compact growth and earlier flower bud initiation. Plants can be treated prior to pinching or after the last pinch, as needed. Optimum application rates, timing, and frequency will be different for different crops using rate range of 200-2,000 ppm, not to exceed 3 applications (including any **B-Nine** combinations) in a production cycle. Users should evaluate **CYCOCEL** in small-scale trials to determine how best to apply it under their individual situations. Tank mix applications with **B-Nine** may be made on a specific species if the grower has determined in small-scale trial that rates produced desirable activity level and not plant phytotoxicity. A maximum of 3 growing cycles are permitted per year. **DO NOT** exceed 3 applications of **CYCOCEL** (including **B-Nine** tank mix combinations) during a production crop cycle.

**Examples of flowering woody crops that can be treated with CYCOCEL:**

Baleria cristata	Hydrangea
Bougainvillea	Lantana
Camellia	Potted rose
Gardenia	<i>Pseuderanthemum lactiflora</i>
Fuchsia	Rhododendron
Hollies	

**Table 4. Use Rate Range of CYCOCEL® plant growth regulant and B-Nine® Recommendations For Specific Herbaceous Plants:**

This is a guideline to help you determine the proper control in your geographic area and under your growing conditions. When referencing labels of two products make sure you understand and follow each label for optimum effectiveness and application techniques. It is strongly recommended to perform limited trials on a few plants before applying to large numbers of plants. When a tank mix of **CYCOCEL** and **B-Nine** is recommended, consult the rate column for appropriate ppm of each product. The rate of **CYCOCEL** in ppm is listed first followed by the rate of **B-Nine** in ppm times (x) the number of applications recommended for a desirable plant response. **DO NOT** exceed 6 applications of **CYCOCEL** (including any **B-Nine** tank mix combinations) during a production crop cycle.

Botanical Name	Cultivar	Common Name	Product	Spray Rate (ppm) x No. Applications*	Precautions/Remarks
<i>Pseuderanthemum lactifolia</i>			<b>CYCOCEL/B-Nine</b>	1500/2500 x 1	
<i>Asclepias tuberosa</i>	'Royal Red'	Butterfly weed	<b>CYCOCEL/B-Nine</b>	1500/2500 x 1	
<i>Balaria cristata</i>		Phillipine Violet	<b>CYCOCEL/B-Nine</b>	1000/1000 x 2	
<i>Achillea</i>	'Paprika'	Yarrow	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	
<i>Chrysanthemum parthenium</i>		Feverfew	<b>CYCOCEL</b>	750 x 1	
<i>Coreopsis grandiflora</i>	Baby Sun	Tickseed	<b>CYCOCEL/B-Nine</b>	1500/>2500 x 1	
<i>Coreopsis grandiflora</i>	'Sunray'	Tickseed	<b>CYCOCEL/B-Nine</b>	1500/>2500 x 1	
<i>Coreopsis verticillata</i>	'Zagreb'	Thread Leaf Coreopsis	<b>CYCOCEL/B-Nine</b>	1500/>2500 x 2	
<i>Coreopsis verticillata</i>	Golden Gain	Thread Leaf Coreopsis	<b>CYCOCEL/B-Nine</b>	1500/>2500 x 1	Southern rates listed
<i>Dendranthema zawadskii</i>	Clara Curtis	Garden Mum	<b>CYCOCEL</b>	1500/>2500 x 1	Multiple applications required (Maximum of 3)
<i>Echinacea purpurea</i>	'Bravado'	Purple Coneflower	<b>CYCOCEL</b>	1500 x 3	Discolored leaves
<i>Echinacea purpurea</i>	'Magnus'	Purple Coneflower	<b>CYCOCEL/B-Nine</b>	1500/B-Nine x 1	May require multiple applications at 10-14 day intervals (Maximum of 3)
<i>Gaillardia x grandiflora</i>	'Burgundy'	Blanket flower	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	
<i>Heliopsis helianthoides</i>	'Summer Sun'	False sunflower, Sunflower	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	
<i>Leucanthemum x superbum</i>	'Becky'	Shasta Daisy	<b>CYCOCEL/B-Nine</b>	1500/>5000 x 1	
<i>Rudbeckia triloba</i>		Three-lobed Coneflower	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	
<i>Rudbeckia triloba</i>		Three-lobed Coneflower	<b>CYCOCEL</b>	1500 x 1	No phytotoxicity, multiple application may be required (Maximum of 3)
<i>Stokesia laevis</i>	'Purple Parasols'	Stoke's Aster	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	

\* Rates listed are in the order of **CYCOCEL** ppm/**B-Nine** ppm respectively for each product.

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**Table 4. Use Rate Range of CYCOCEL® plant growth regulant and B-Nine® Recommendations For Specific Herbaceous Plants (Continued)**

Botanical Name	Cultivar	Common Name	Product	Spray Rate (ppm) x No. Applications*	Precautions/Remarks
<i>Stokesia laevis</i>	'Klaus Jelitto'	Stoke's Aster	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	Moderate control. Apply at 10 -14 day intervals.
<i>Heliotropium arborescens</i>	Fragrant Blue	Heliotrope	<b>CYCOCEL/B-Nine</b>	1500/<5000 x 1	
<i>Erysimum linifolium</i>		Wallflower	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	May require multiple applications (Maximum of 3).
<i>Campanula carpatica</i>	'Blue Chips'	Carpathian Harebell	<b>CYCOCEL</b>	Less than 1500 x 3	Excessive height reduction. Reduce rate or frequency.
<i>Lobelia x speciosa</i>	'Compliment Scarlet', 'Queen Victoria'	Hybrid Lobelia	<b>CYCOCEL</b>	1500 x 3	
<i>Sedum x telephium</i>	'Autumn Joy'	Autumn Joy Sedum	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	Moderate control. Multiple applications may be required (Maximum of 3).
<i>Scabiosa caucasica</i>	Butterfly Blue	Pincushion Flower	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	Multiple applications may be effective (Maximum of 3).
<i>Scabiosa columbaria</i>	Pink Mist	Pincushion Flower	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	Moderate control; multiple applications may be required. Southern rates listed (Maximum of 3).
<i>Coleus</i>	'Solar Storm'	Coleus	<b>CYCOCEL/B-Nine</b>	1500/2500 x 1	
<i>Agastache x</i>	Blue Fortune	Anise Hyssop	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	Note: PGRs are not labeled for use on edible herbs. Specify for ornamental use only.
<i>Perovskia atriplicifolia</i>		Russian Sage	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	
<i>Salvia greggii</i>		Texas Sage, Cherry Sage	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	
<i>Salvia leucantha</i>		Velvet Sage; Mexican Sage	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	
<i>Salvia leucantha</i>		Velvet Sage; Mexican Sage	<b>CYCOCEL</b>	1500 x 1	
<i>Hibiscus moscheutos</i>	Disco Belle Mixed	Rose Mallow	<b>CYCOCEL</b>	1000 x 3	Multiple applications necessary (Maximum of 3).
<i>Gaura lindheimeri</i>	Corrie's Gold	White gaura	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	
<i>Gaura lindheimeri</i>	Whirling Butterflies	White gaura	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	Moderate control; multiple applications may be required.
<i>Phlox paniculata</i>	'Blue Boy', 'Charles Curtis'	Garden Phlox	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	Multiple applications required (Maximum of 3).

\* Rates listed are in the order of **CYCOCEL** ppm/**B-Nine** ppm respectively for each product.

**Table 4. Use Rate Range of CYCOCEL® plant growth regulant and B-Nine® Recommendations For Specific Herbaceous Plants (Continued)**

Botanical Name	Cultivar	Common Name	Product	Spray Rate (ppm) x No. Applications*	Precautions/Remarks
<i>Polemonium caeruleum</i>		Jacob's Ladder	<b>CYCOCEL/B-Nine</b>	1500/2500 x 1	
<i>Pentas lanceolata</i>	Lavender	Pentas	<b>CYCOCEL/B-Nine</b>	1500/1500 x 1	
<i>Pentas lanceolata</i>	Orchid Illusion	Pentas	<b>CYCOCEL/B-Nine</b>	1500/1500 x 1	
<i>Pentas lanceolata</i>	Red	Pentas	<b>CYCOCEL/B-Nine</b>	1500/1500 x 1	
<i>Astilbe chinensis</i>	Purpurkerze	Chinese Astilbe	<b>CYCOCEL/B-Nine</b>	1500/<5000 x 1	Reduce both <b>CYCOCEL</b> and <b>B-Nine</b> rates. Southern rates listed.
<i>Astilbe chinensis</i>	Purpurkerze	Chinese Astilbe	<b>CYCOCEL</b>	1500 x 1	Moderate control. Southern rates listed.
<i>Penstemon digitalis</i>	Huskers Red	Smooth White Penstemon	<b>CYCOCEL/B-Nine</b>	1500/5000x 1	
<i>Veronica alpine</i>	'Goodness Grows'	Alpine Speedwell	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	
<i>Veronica spicata</i>	'Red Fox'	Spike Speedwell	<b>CYCOCEL/B-Nine</b>	1500/5000 x 2	
<i>Veronica x</i>	'Sunny Border Blue'	Hybrid Speedwell	<b>CYCOCEL/B-Nine</b>	1500/5000 x 1	
<i>Veronica x</i>	'Sunny Border Blue'	Hybrid Speedwell	<b>CYCOCEL</b>	750 to 1500 x 1	
<i>Verbena canadensis</i>	'Homestead Purple'	Clump Verbena	<b>CYCOCEL/B-Nine</b>	1500/5000x 1	Multiple applications may be required (Maximum of 3).

\* Rates listed are in the order of **CYCOCEL** ppm/**B-Nine** ppm respectively for each product.

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**Conditions of Sale and Warranty**

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BASF Corporation  
Agricultural Products  
2E Davis Drive  
Research Triangle Park, NC 27709



The Chemical Company