

PM 23

100 - 691

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

Karen S. Stumpf  
CIBA-GEIGY CORP.  
P.O. BOX 18300  
Greensboro, N.C. 27419

JAN 14 1994

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

Subject: Label Amendment Submission of 08/09/93 in Response to PR Notice 93-7  
EPA REG. NO. 100-691  
PENNANT LIQUID HERBICIDE

Dear Registrant:

The labeling cited above and submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is accepted. A copy of your proposed labeling stamped "ACCEPTED WITH COMMENTS" is enclosed.

**WHAT THIS ACCEPTANCE MEANS:**

Based on your certification, the Agency has accepted the labeling changes that are necessary to comply with the Worker Protection Standard (WPS) labeling requirements of 40 CFR part 156, subpart K, described in PR Notices 93-7 and 93-11. Any other labeling changes submitted in connection with this amendment application but not directly related to compliance with the WPS have not been reviewed or accepted by the Agency. If you wish to make such changes, you must submit a separate amendment application proposing them. If your product is currently suspended, the acceptance of this labeling amendment does not affect the suspension in any way.

**WHAT YOU NEED TO DO NEXT:**

Send to EPA one (1) copy of the final printed labeling:

- BEFORE selling or distributing any product bearing the final printed labeling
- AND
- WITHIN one year from date of this acceptance.



Recycled/Recyclable  
Printed with Soy/Canola Ink on paper that  
contains at least 50% recycled fiber

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Page 2

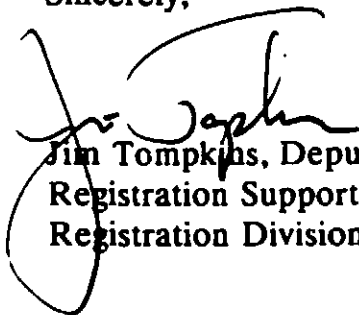
Submit the final printed labeling via the U.S. Postal Service to:

Document Processing Desk (FIN-LABEL)  
Office of Pesticide Programs (7505C)  
U.S. Environmental Protection Agency  
401 M Street, SW  
Washington, D.C. 20460-0001

Hand or courier deliveries of final printed labeling may be made to:

Document Processing Desk (FIN-LABEL)  
Office of Pesticide Programs  
Room 266A, Crystal Mall 2  
1921 Jefferson Davis Highway  
Arlington, VA 22202

Sincerely,



Jim Tompkins, Deputy Chief  
Registration Support Branch  
Registration Division (7505W)

Attachment

WPS  
(Front Label)

Pennant®

Liquid Herbicide

For weed control in nurseries, turf, and  
landscape plantings.

ACCEPTED  
with COMMENTS  
in EPA Letter Dated

JAN 14 1994

Under the Federal Insecticide,  
Fungicide, and Rodenticide Act  
as amended, for the pesticide  
registered under EPA Reg. No.  
100-691

Active Ingredient:	
Metolachlor: 2-chloro-N-(2-ethyl-6-methylphenyl)-	
<u>N-(2-methoxy-1-methylethyl) acetamide</u>	<u>85.1%</u>
<u>Inert Ingredients:</u>	<u>14.9%</u>
Total	100.0%

Pennant Liquid contains 7.8 lbs. active ingredient per gallon.

KEEP OUT OF REACH OF CHILDREN

CAUTION

See additional precautionary statements  
and directions for use inside booklet.

EPA Reg. No. 100-691

EPA Est. 42761-MS-1<sup>R</sup>  
EPA Est. 5905-GA-01<sup>H</sup>

Superscript is first letter  
of lot number on jug (gallon)  
bottle (quart and 4 fl. oz.)

One Gallon  
U.S. Standard Measure

One Quart  
U.S. Standard Measure

4 fl. oz.  
U.S. Standard Measure

This booklet manufactured using post-consumer, recycled paper.

CGA 96L1G 083 - 1 gal.  
CGA 96L6E 083 - 1 qt.  
CGA 96L7C 083 - 4 fl. oz.

[GANNONC.LABELP]PENLQWPS - 8/4/93

DIRECTIONS FOR USE AND CONDITIONS OF SALE AND WARRANTY

IMPORTANT: Read the entire Directions for Use and the Conditions of Sale and Warranty before using this product. If terms are not acceptable, return the unopened product container at once.

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Conditions of Sale and Warranty

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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 Ciba-Geigy or the Seller. All such risks shall be assumed by the Buyer.

Ciba-Geigy 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. Ciba-Geigy makes no other express or implied warranty of Fitness or Merchantability or any other express or implied warranty. In no case shall Ciba-Geigy or the Seller be liable for consequential, special, or indirect damages resulting from the use or handling of this product. Ciba-Geigy 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 Ciba-Geigy.

**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, such as barrier laminate or viton
- shoes plus socks

Non-Agricultural Use Requirements

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Do not enter treated areas without protective clothing until sprays have dried.

FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY RESULT IN POOR WEED CONTROL, CROP INJURY, AND/OR ILLEGAL RESIDUES.

General Information

Pennant Liquid Herbicide controls many annual grasses, certain broadleaf weeds and yellow nutsedge.

Pennant Liquid may be used on commercial and residential turf and other non-crop land including, but not limited to: airports, roadsides, golf courses, sports fields, public recreational areas, ornamental gardens, cemeteries and other landscaped areas. Pennant Liquid may also be used in and around container and field-grown ornamentals, nonbearing nursery stock and on sod farms.

DO NOT USE IN GREENHOUSES OR OTHER ENCLOSED STRUCTURES.

NOTICE TO USER: Plant tolerances to Pennant Liquid Herbicide have been found to be acceptable in the specific genera and species listed on this label. Because of the large number of species and varieties of plants, it is impossible to test each for tolerance to Pennant Liquid. Neither the manufacturer nor the seller has determined whether or not Pennant Liquid can be used safely on plants not specified on this label. Therefore, the professional user should determine if Pennant Liquid can be used safely by testing the recommended rates on a particular group of similar unlabeled ornamental plants in a small area before widespread use or by checking with the local weed specialist for guidance. Likewise, if the professional user plans to apply Pennant Liquid for control of weed species not listed on this label, Pennant Liquid should be tested on a small-scale basis before widespread use or the local weed specialist contacted for guidance.

### Mixing Instructions

Pennant Liquid Alone: Mix Pennant Liquid with water or fluid fertilizer and apply as a spray. Fill the spray tank one-half to three-fourths full with water or fluid fertilizer, start agitation, add the proper amount of Pennant Liquid, then add the rest of the water or fluid fertilizer. Agitate continuously during mixing and application to maintain a uniform emulsion.

Tank Mixtures: Fill the spray tank one-fourth full with water or fluid fertilizer, and start agitation, then add the tank mix partner, allowing it to become dispersed. Then add Pennant Liquid, and finally the rest of the water or fluid fertilizer. Agitate continuously during mixing and application to maintain uniformity. Check compatibility of mixture with fluid fertilizer as described below before mixing in spray tank.

Note: Before using Pennant Liquid in a tank mix with fluid fertilizer or registered pesticides, determine the tolerance of the plant species by applying the combination to a limited area during a period of active growth.

Compatibility Test: Since liquid fertilizers can vary, even within the same analysis, always check compatibility with herbicide(s) each time before use. Be especially careful when using complete suspension or fluid fertilizers as serious compatibility problems are more likely to occur. Commercial application equipment may improve compatibility in some instances. The following test assumes a spray volume of 25 gals. per acre. For other spray volumes, make appropriate changes in the ingredients. Check compatibility using this procedure.

1. Add 1 pint of fertilizer to each of 2 one-quart jars with tight lids.
2. To one of the jars add 1/4 tsp. or 1.1 milliliters of a compatibility agent approved for this use, such as Compex® or Unite® (1/4 tsp. is equivalent to 2 pts. per 100 gals. spray). Shake or stir gently to mix.
3. To both jars add the appropriate amount of herbicide(s). If more than one herbicide is used, add them separately with dry herbicides first, flowables next, and emulsifiable concentrates last. After each addition, shake or stir gently to thoroughly mix. The appropriate amount of herbicides for this test follows:

Dry herbicides: For each pound to be applied per acre, add 1.5 level teaspoons to each jar.

Liquid herbicides: For each pint to be applied per acre, add 0.5 teaspoon or 2.5 milliliters to each jar.

After adding all ingredients, put lids on and tighten, and invert each jar ten times to mix. Let the mixtures stand 15 minutes and then look for separation, large flakes, precipitates, gels, heavy oily film on the jar, or other signs of incompatibility. Determine if the compatibility agent is needed in the spray mixture by comparing the two jars. If either mixture separates, but can be readily remixed, the mixture can be sprayed as long as good agitation is used. If the mixtures are incompatible, test the following methods of improving compatibility: a) slurry the dry herbicide(s) in water before addition, or b) add 1/2 of the compatibility agent to the fertilizer and the other 1/2 to the emulsifiable concentrate or flowable herbicide before the addition to the mixture. If incompatibility is still observed, do not use the mixture.

4. After conducting the compatibility test, any pesticide wastes should be disposed of according to the instructions given in the Storage and Disposal section at the end of this label.

Ground Application: Apply Pennant Liquid alone or in tank mixtures by ground equipment in a minimum of 10 gals. of spray mixture per acre unless otherwise specified.

Use sprayers that provide accurate and uniform application. For Pennant Liquid tank mixtures with wettable powder or dry flowable formulations, screens and strainers should be no finer than 50-mesh. Rinse sprayer thoroughly with clean water immediately after use.

Calculate the amount of herbicide needed for band treatment by the formula:

$$\frac{\text{band width in inches}}{\text{row width in inches}} \times \text{broadcast rate} = \text{amount needed per acre of field}$$

Aerial Application (Sod Farms Only): Apply Pennant Liquid in water alone or in tank mixtures with AAtrex®, Princep® or other herbicides registered for use on sod farms in a minimum total volume of 2 gals. per acre by aircraft. Avoid application under conditions where uniform coverage cannot be obtained or where excessive spray drift may occur. In order to assure that spray will be controllable within the target area when used according to label directions, make applications at a maximum height of 10 ft., using low drift nozzles at a maximum pressure of 40 psi, and restrict application to periods when wind speed does not exceed 10 mph. To assure that spray will not adversely affect adjacent sensitive nontarget plants, apply Pennant Liquid or Pennant Liquid mixtures at a minimum upwind distance of 400 ft. from sensitive plants.

Avoid application to humans or animals. Flagmen and loaders should avoid inhalation of spray mist and prolonged contact with skin.



Overhead or Microjet Irrigation Application: Pennant Liquid alone or in tank mixture with other herbicides which are registered for overhead or microjet application may be applied in irrigation water at rates recommended on this label. Apply this product only through an overhead or microjet irrigation system. Do not apply this product through any other type of irrigation system. Crop injury or lack of effectiveness can result from nonuniform distribution of treated water. If you have questions about calibration, you should contact State Extension specialists, equipment manufacturers or other experts. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Operation Instructions

1. The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water-source contamination from backflow.
2. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
3. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
4. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
5. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Do not apply when wind speed favors drift beyond the area intended for treatment.

8. Prepare a mixture with a minimum of 1 part of water to 1 part herbicide(s) and inject this mixture into the overhead or microjet system. Injecting a larger volume of a more dilute mixture per hour will usually provide more accurate calibration of metering equipment. Maintain sufficient agitation to keep the herbicide in suspension.
9. Meter into irrigation water during entire period of water application.
10. Apply in 1/2-1 inch of water. Use the lower water volume (1/2 inch) on coarser-textured soils and the higher volume (1 inch) on finer-textured soils. More than 1 inch of water at application may reduce weed control by moving the herbicide below the effective zone in the soil.

Precaution for overhead or microjet applications: Where sprinkler distribution patterns do not overlap sufficiently, unacceptable weed control may result. Where sprinkler distribution patterns overlap excessively, injury to desirable plants may result.

#### Dry Bulk Granular Fertilizers

Many dry bulk granular fertilizers may be impregnated or coated with Pennant Liquid alone or with selected Pennant Liquid tank mixtures which are registered and not prohibited from use on dry bulk granular fertilizers.

When applying Pennant Liquid or Pennant Liquid mixtures with dry bulk granular fertilizers, follow all directions for use and precautions on the respective product labels regarding target crops, rates per acre, soil texture, application methods (including timing of application), and rotational crops.

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

Prepare the granular herbicide/fertilizer mixtures by using any closed drum, belt, ribbon, or other commonly used dry bulk fertilizer blender. Nozzles used to spray Pennant Liquid or Pennant Liquid tank mixtures onto the fertilizer must be placed to provide uniform spray coverage.

If the herbicide/fertilizer mixture is too wet, use a highly absorptive material, such as Agsorb® granules, Microcel E (Johns-Manville Products Corporation), diatomaceous earth or finely powdered clay, to obtain a dry free-flowing mixture. Add the absorptive material separately and uniformly to the herbicide/fertilizer mixture and blend to form a suitable free-flowing mixture. Gener-

ally, less than 2% by weight of absorptive material will be needed.

Calculate amounts of Pennant Liquid and other herbicides needed by the following formula:

$$\frac{2,000 \text{ lbs. or fertilizer per acre}}{\text{pts./acre of liquid or flowable product}} = \frac{\text{pts. of liquid or flowable product per ton of fertilizer}}{\text{lbs./acre of dry product}}$$

$$\frac{2,000 \text{ lbs. of fertilizer per acre}}{\text{lbs./acre of dry product}} = \frac{\text{lbs. of dry product per ton of fertilizer}}{\text{lbs./acre of dry product}}$$

Precautions: To avoid potential for explosion, (1) Do not impregnate Pennant Liquid or Pennant Liquid mixtures on ammonium nitrate, potassium nitrate or sodium nitrate either alone or in blends with other fertilizers. (2) Do not combine mixtures of Pennant Liquid plus any other herbicide with single superphosphate (0-20-0) or treble superphosphate (0-46-0). (3) Do not use Pennant Liquid or Pennant Liquid mixtures on straight limestone, since absorption will not be achieved. Fertilizer blends containing limestone can be impregnated.

Application

Apply 100-800 pounds of the herbicide/fertilizer mixture per acre. For best results, apply the mixture uniformly to the soil with properly calibrated equipment immediately after blending. Uniform application of the herbicide/fertilizer mixture is essential to prevent possible crop injury. Non-uniform application may also result in unsatisfactory weed control. In areas where conventional tillage is practiced, a shallow incorporation of the mixture into the soil may improve weed control. On fine or medium-textured soils in areas where soil incorporation is not planned, i.e., reduced tillage situations or in some conventional tillage situations, make applications approximately 30 days before planting to allow moisture to move the herbicide/fertilizer mixture into the soil. On coarse-textured soils, make applications approximately 14 days prior to planting.

Precaution: To avoid potential injury of ornamental plants, do not use the herbicide/fertilizer mixture where planting beds are to be formed.

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Nurseries and Landscape Plantings

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Apply Pennant Liquid at rates indicated below to control many annual grasses, certain broadleaf weeds and yellow nutsedge (see

list below). Calibrate applicator before application according to the manufacturer's directions.

Weeds Controlled

annual bluegrass	green foxtail	yellow foxtail
barnyardgrass	prairie cupgrass	<u>yellow nutsedge</u>
(watergrass)	red rice	black nightshade
crabgrass	signalgrass	carpetweed
crowfootgrass	(Brachiaria)	Florida pusley
fall panicum	southwestern cupgrass	galinsoga
foxtail millet	witchgrass	pigweed
giant foxtail		
goosegrass		

Weeds Partially Controlled\*: common purslane, groundsel, hairy nightshade, sandbur, seedling johnsongrass, shattercane and volunteer sorghum.

\*Control of these weeds can be erratic due partially to variable weather conditions.

Application

Apply Pennant Liquid in sufficient carrier to obtain thorough coverage. For liquid carriers, use a minimum of 10 gals./A. Apply before grass, broadleaf weeds, or yellow nutsedge emerge or after existing weeds or nutsedge plants have been removed. A second application may be needed to provide control for an extended period.

Suggested Rates of Pennant Liquid

<u>Soil Texture</u>	<u>Pts./A*</u>	<u>ml/1,000 sq. ft.</u>
Coarse	2-3	22-33
Medium	2-3	22-33
Fine	3-4	33-43

\*Use higher rates for a given soil texture on high organic matter soils and where yellow nutsedge and/or a heavy infestation of weeds is expected. Use the lower rates on soils with low organic matter content, and where light infestations of weeds are expected. In peat and muck soils and soils highly enriched with organic matter (i.e., sawdust) and/or synthetic mixes, the activity of Pennant Liquid may be reduced.

If banded applications are used, refer to the General Information section of this label to calculate the amount of Pennant Liquid needed.

Precautions: 1) To avoid plant injury, do not apply Pennant Liquid to seedbeds, cutting beds, or unrooted cuttings before transplanting or to plants until the soil has firmly settled

around roots. 2) When Pennant Liquid is applied broadcast over-the-top of plant foliage, follow with sufficient overhead irrigation to wash Pennant from the foliage to reduce the chance of injury.

Pennant Liquid has been found to be safe on the following plants.

Container-Grown Plants

<u>Scientific Name</u>	<u>Common Name/Variety</u>
<i>Abelia grandiflora</i>	Glossy Abelia
<i>Acer rubrum</i>	Red Maple
<i>Ajuga reptans</i>	Ajuga
<i>Aucuba japonica variegata</i>	Variegated Aucuba
<i>Betula nigra</i>	River Birch
<i>Buxus</i> spp.	Boxwood
<i>Carex</i> spp.	Carex
<i>Cornus</i> spp.	Dogwood
<i>Cotoneaster</i> spp.	Cotoneaster
<i>Euonymus fortunei</i>	Euonymus
<i>Euonymus kiautschovicus</i>	Manhattan Euonymus
<i>Forsythia</i> spp.	Forsythia
<i>Gardenia jasminoides</i>	Gardenia
<i>Hedera helix</i>	English Ivy
<i>Hosta lancifolia</i>	Variegated Hosta
<i>Ilex attenuata</i>	Savannah Holly
<i>Ilex cornuta</i>	Dwarf Burford Holly
<i>Ilex crenata</i>	Japanese Holly
<i>Juniperus chinensis</i>	Chinese Juniper
<i>Juniperus horizontalis</i>	Juniper
<i>Juniperus sabina</i>	Hick's Juniper/Foemina
<i>Juniperus virginiana</i>	Eastern Red Cedar
<i>Kalmia</i> spp.	Mountain Laurel
<i>Leucothoe fontanesiana</i>	Leucothoe
<i>Ligustrum japonicum</i>	Ligustrum or Privet
<i>Liriope muscara</i>	Liriope
<i>Liriope spicata</i>	Green Liriope
<i>Myrica cerifera</i>	Wax Myrtle
<i>Ophiopogon japonicus</i>	Mondo Grass
<i>Pachysandra terminalis</i>	Japanese Pachysandra
<i>Pinus strobus</i>	White Pine
<i>Pinus thunbergii</i>	Japanese Black Pine
<i>Pittosporum tobira</i>	Pittosporum
<i>Quercus phellos</i>	Willow Oak
<i>Rhododendron catawbiense</i>	Catawba Azalea
<i>Rhododendron indica</i>	Formosa/Indica Azalea
<i>Rhododendron obtusum</i>	Kurume Azalea
<i>Taxus cuspidata</i>	Yew
<i>Thuja occidentalis</i>	Globe Arborvitae
<i>Tsuga canadensis</i>	Hemlock
<i>Viburnum</i> spp.	Viburnum
<i>Yucca</i> spp.	Yucca

### Field- and Liner\*-Grown Plants and Plants in Landscape Plantings

\*Plants transplanted normally in rows in a nursery or similar area for further growth before transplanting to final growing location (place of establishment).

<u>Scientific Name</u>	<u>Common Name/Variety</u>
<i>Abelia</i> spp.	Glossy Abelia
<i>Abies</i> spp.	Fir
<i>Acer</i> spp.	Maple
<i>Achillea</i> spp.	Yarrow
<i>Agapanthus africanus</i>	African Lily
<i>Ageratum</i> spp.	Blue Ageratum
<i>Ajuga reptans</i>	Ajuga
<i>Allium</i> spp.	Allium
<i>Allyssum</i> spp.	Allyssum
<i>Antirrhinum majus</i>	Snapdragon
<i>Aquilegia</i> spp.	Columbine
<i>Artemisia stoleriana</i>	Dusty Miller
<i>Asclepias</i> spp.	Milkweed
<i>Aster</i> spp.	Aster
<i>Aucuba</i> spp.	Aucuba
<i>Berberis</i> spp.	Barberry
<i>Betula</i> spp.	Birch
<i>Bougainvillea</i> spp.	Bougainvillea
<i>Buxus</i> spp.	Boxwood
<i>Camellia</i> spp.	Camellia
<i>Campanula carpatica</i>	Bellflower
<i>Canna indica</i>	Canna Lily
<i>Carex</i> spp.	Carex
<i>Chrysanthemum</i> spp.	Chrysanthemum, Daisy
** <i>Citrus</i> spp.	Citrus
<i>Coreopsis</i> spp.	Coreopsis
<i>Cornus</i> spp.	Dogwood
<i>Cortaderia selkiana</i>	Pampas Grass
<i>Cotoneaster</i> spp.	Cotoneaster
<i>Crocus</i> spp.	Crocus
<i>Cryophytum crystallinum</i>	Ice Plant
<i>Cytisus racemosus</i>	Sweet Broom
<i>Daucus carota</i>	Queen Anne's Lace
<i>Delphinium</i> spp.	Delphinium
<i>Dianthus barbatus</i>	Sweet William
<i>Eleagnus</i> spp.	Eleagnus
<i>Endymion</i> spp.	Endymion
<i>Escallonia fradesii</i>	Escallonia
<i>Euonymus</i> spp.	Euonymus
<i>Ficus</i> spp.	Fig
<i>Forsythia</i> spp.	Forsythia
<i>Fraxinus</i> spp.	Ash
<i>Gaillardia</i> spp.	Gaillardia
<i>Gardenia jasminoides</i>	Gardenia
<i>Gazania splendens</i>	Gazania Gold Rush

<i>Gelsemium sempervirens</i>	Carolina Jessamine
<i>Geranium</i> spp.	Geranium
<i>Geum</i> spp.	Geum
<i>Gingko biloba</i>	Gingko
<i>Gladiolus x hortulanus</i>	Gladiolus
<i>Gleditsia triacanthos</i>	Honey Locust
<i>Hedera</i> spp.	English Ivy
<i>Hemerocallis</i> spp.	Daylily
<i>Hibiscus</i> spp.	Hibiscus
<i>Hosta lancifolia</i>	Hosta
<i>Hyacinthus</i> spp.	Hyacinth
<i>Hydrangea</i> spp.	Hydrangea
<i>Hypericum</i> spp.	St. John's Wort
<i>Ilex</i> spp.	Holly
<i>Illicium</i> spp.	Spicebush
<i>Impatiens</i> spp.	Impatiens
<i>Iris</i> spp.	Iris
<i>Jasmine</i> spp.	Jasmine
<i>Juniperus</i> spp.	Juniper
<i>Kalmia</i> spp.	Kalmia
<i>Lagerstroemia</i> spp.	Crepe Myrtle
<i>Leucothoe</i> spp.	Leucothoe
<i>Ligustrum</i> spp.	Privet
<i>Lilium</i> spp.	Lily
<i>Liquidambar</i> spp.	Sweetgum
<i>Liriodendron tulipifera</i>	Tulip Tree
<i>Liriope</i> spp.	Liriope
<i>Lonicera</i> spp.	Honeysuckle
<i>Lupinus</i> spp.	Lupines
<i>Lythrum</i> spp.	Loosestrife
<i>Magnolia</i> spp.	Magnolia
** <i>Malus</i> spp.	Crabapple, Apple
<i>Mesembryanthemum crystallinum</i>	Ice Plant
<i>Morea</i> spp.	Fortnight Lily
<i>Muscari armeniacum</i>	Muscari
<i>Myrica</i> spp.	Wax Myrtle
<i>Nandina domestica</i>	Bamboo
<i>Narcissus</i> spp.	Narcissus
<i>Nerium oleander</i>	Oleander
<i>Oenothera</i> spp.	Primrose
<i>Ophiopogon japonicus</i>	Mondo Grass
<i>Ornithogalum umbellatum</i>	Star of Bethlehem
<i>Osmanthus</i> spp.	Osmanthus
<i>Pachysandra</i> spp.	Pachysandra
<i>Pelargonium x hortorum</i>	Geranium
<i>Petunia</i> spp.	Petunia
<i>Phlox</i> spp.	Phlox
<i>Photinia</i> spp.	Photinia
<i>Physocarpus</i> spp.	Ninebark
<i>Physostegia</i> spp.	Physostegia
<i>Picea</i> spp.	Spruce
<i>Pieris japonica</i>	Japanese Andromeda
<i>Pinus</i> spp.	Pine
<i>Pittosporum</i> spp.	Pittosporum
<i>Podocarpus</i> spp.	Podocarpus



<i>Populus</i> spp.	Poplar
<i>Potentilla</i> spp.	<i>Potentilla</i> (Cinquefoil)
** <i>Prunus</i> spp.	Cherry
<i>Pseudotsuga menziesii</i>	Douglas Fir
<i>Pyracantha</i> spp.	Firethorn
** <i>Pyrus</i> spp.	Pear
<i>Quercus</i> spp.	Oak
<i>Raphiolepis</i> spp.	Indian Hawthorne
<i>Rhododendron</i> spp.	Rhododendron/Azalea
<i>Robinia</i> spp.	Locust
<i>Rosa</i> spp.	Rose
<i>Rumohra adiantiformis</i>	Leatherleaf Fern
<i>Salix</i> spp.	Willow
<i>Scilla</i> spp.	Scilla
<i>Sedum</i> spp.	Stone Crop
<i>Senecio doronicum</i>	Leopard's-bane
<i>Spiraea</i> spp.	<i>Spiraea</i>
<i>Stachys</i> spp.	<i>Stachys</i>
<i>Statice sinnata</i>	Annual <i>Statice</i>
<i>Symphoricarpos</i> spp.	Snowberry
<i>Syringa</i> spp.	Lilac
<i>Tagetes</i> spp.	Marigold
<i>Taxodium distichum</i>	Bald Cypress
<i>Taxus</i> spp.	Yew
<i>Ternstroemia gymanathera</i>	Cleyera
<i>Thuja</i> spp.	Arborvitae
<i>Tsuga</i> spp.	Hemlock
<i>Tulipa</i> spp.	Tulip
<i>Veronica</i> spp.	<i>Veronica</i>
<i>Viburnum</i> spp.	<i>Viburnum</i>
<i>Vinca</i> spp.	Periwinkle
<i>Viola x Wittrockiana</i>	Pansy
<i>Washingtonia robusta</i>	Mexican Fan Palm
<i>Weigela</i> spp.	<i>Weigela</i>
<i>Wisteria senensis</i>	<i>Wisteria</i>
<i>Yucca</i> spp.	<i>Yucca</i>
<i>Zinnia</i> spp.	<i>Zinnia</i>

\*\* Do not apply to trees or plants that will bear harvestable fruit within 12 months, or illegal residues may result.

Pennant Liquid may be applied in tank mixtures with Goal®, Prin-  
cep, Ronstar®, Roundup® or other compatible herbicides  
registered for use on ornamentals. Refer to the respective  
product labels for weeds controlled and for plants on which they  
are registered for use. When applying Pennant Liquid in tank  
mixtures, observe the more restrictive directions for use, pre-  
cautions, and limitations on this laeal or the respective tank  
mix product label.

Turfgrass

Warm Season Grasses (Bermudagrass, Centipedegrass,  
St. Augustinegrass, Bahiagrass and Zoysiagrass)

Apply Pennant Liquid before weeds emerge. Since soil moisture  
is necessary to activate Pennant Liquid, irrigate with 1/2 inch  
of water if rainfall does not occur within 7 days after treat-  
ment. (See Precautions below).

Weeds Controlled:

<u>Scientific Name</u>	<u>Common Name</u>	<u>Rate of* Pennant</u>
<i>Cyperus compressus</i>	Annual sedge	4 pts./A
<i>Cypereus esculentus</i>	Yellow nutsedge	4 pts./A
<i>Digitaria ischaemum</i>	Smooth crabgrass	4 pts./A
<i>Digitaria sanguinalis</i>	Large crabgrass	4 pts./A
<i>Leptochloa fascicularis</i>	Bearded sprangletop	2-4 pts./A
<i>Leptochloa uninervia</i>	Mexican sprangletop	2-4 pts./A
<i>Poa annua</i>	Annual bluegrass	2-4 pts./A

\*2 pts./A = 22 ml/1,000 sq. ft.

4 pts./A = 43 ml/1,000 sq. ft.

Note: To minimize potential turf injury, do not apply more than  
once per year.

Commercial St. Augustinegrass Sod Production

Apply Pennant Liquid before weeds emerge. Since soil moisture  
is necessary to activate Pennant Liquid, irrigate with 1/2 inch  
of water if rainfall does not occur within 7 days after treat-  
ment (See Precautions below).

Weeds Controlled:

<u>Scientific Name</u>	<u>Common Name</u>	<u>Rate of* Pennant</u>
<i>Cyperus compressus</i>	Annual sedge	4 pts./A
<i>Cypereus esculentus</i>	Yellow nutsedge	4 pts./A
<i>Digitaria ischaemum</i>	Smooth crabgrass	4 pts./A
<i>Digitaria sanguinalis</i>	Large crabgrass	4 pts./A
<i>Leptochloa fascicularis</i>	Bearded sprangletop	2-4 pts./A
<i>Leptochloa uninervia</i>	Mexican sprangletop	2-4 pts./A
<i>Poa annua</i>	Annual bluegrass	2-4 pts./A

\*2 pts./A = 22 ml/1,000 sq. ft.  
 4 pts./A = 43 ml/1,000 sq. ft.

Notes: (1) Do not apply more than once every six weeks. (2) Do not apply more than a total of 8 pts./A/year.

Precautions for all uses on turf. Temporary slowing of growth and yellowing may occur following application. To avoid turf injury, 1) use only on turfgrass not under stress from infestations of insects, nematodes, or diseases; 2) do not use on golf greens, tees, or aprons; 3) do not apply over the rooting area of trees or ornamentals not listed on this label; 4) do not seed or overseed with desirable turfgrass 4 months before or 6 months after treatment and 5) do not apply this product to newly seeded grasses until they have overwintered and have a well-developed rhizome system. 6) Before using Pennant Liquid in the tank mix with fluid fertilizer or other registered pesticides, determine the tolerance of the turf species by applying the combination to a limited area during a period of active growth. 7) In turfgrass areas which have heavy thatch, the weed control of Pennant Liquid may be reduced.

Note: To avoid possible illegal residues, do not graze or feed turf clippings to animals.

Storage and Disposal

Pesticide Disposal

Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited. Wastes resulting from the use of this product are toxic. Improper disposal of unused pesticide, spray mixture, or rinsate is a violation of federal law. Pesticide, spray mixture, or rinsate that cannot be used according to label instructions must be disposed of according to federal, state or local procedures. For guidance in proper disposal methods, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office.

Container Disposal

Do not reuse empty container. Triple rinse (or equivalent), puncture and dispose of in a sanitary landfill, or by incineration, or by open burning, if allowed by state and local authorities. Keep out of smoke from burning containers.

This product may be stored at temperatures down to 30 degrees below 0°F.

For minor spills, leaks, etc., follow all precautions indicated on this label and clean up immediately. Take special care to avoid contamination of equipment and facilities during cleanup procedures and disposal of wastes. In the event of a major spill, fire or other emergency, call 1-800-888-8372 day or night.

Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION

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

Statement of Practical Treatment

If in eyes: Flush eyes with plenty of water. Call a physician if irritation persists.

If swallowed: Call a physician or Poison Control Center. Drink one or two glasses of water and induce vomiting by touching back of throat with finger or, if available, by administering syrup of ipecac. Do not induce vomiting or give anything by mouth to an unconscious person.

If inhaled: Remove victim to fresh air.

If on skin: Wash with plenty of soap and water.

Note to Physician: If Pennant Liquid is ingested, induce emesis and lavage stomach. The use of an aqueous slurry of activated charcoal can be considered.

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 H on an EPA chemical resistance category selection chart.

**Applicators and other handlers must wear:**

- Long-sleeved shirt and long pants
- Chemical-resistant gloves, such as barrier laminate or viton
- 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 Statements:** When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

**User Safety Recommendations:**

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

**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 disposing of equipment wash waters or rinsate.

**Ground Water and Surface Water Advisory**

Metolachlor has been identified in limited sampling of ground water and there is the possibility that it may leach through the soil to ground water, especially where soils are coarse and ground water is near the surface. Following application and during rainfall events that cause runoff, metolachlor may reach surface water bodies including streams, rivers, and reservoirs.

Care must be taken when using this product to prevent back siphoning into wells, spills, or improper disposal of excess pesticide, spray mixtures, or rinsates.

Check valves or antisiphoning devices must be used on all mixing and/or irrigation equipment.

AAtrex® and Princep® trademarks of Ciba-Geigy Corporation

Agisorb® trademark of Oil-Dri Corporation

Roundup® trademark of Monsanto Co. for glyphosate.

Compex® trademark of KALO Agricultural Chemicals, Inc.

Goal® trademark of Rohm and Haas Company for oxyfluorfen

Pennant® trademark of Ciba-Geigy Corporation for metolachlor  
U.S. Patent No. 4,022,611

Ronstar® trademark of Rhone-Poulenc Ag Company for oxidiazon

Unite® trademark of HACO, Inc.

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Ciba Plant Protection  
Turf and Ornamental Products  
Ciba-Geigy Corporation  
Greensboro, NC 27419

CGA 96L1G 083 - 1 gal.  
CGA 96L6E 083 - 1 qt.  
CGA 96L7C 083 - 4 fl. oz.

Revised 6/26/90  
Turf Uses

Revised 2/15/91  
zoysizgrass - add weed  
species, containerized  
plants

Revised 10/3/91  
poa annua, Env. Hazards

Revised 3/20/92  
All turf

Revised 8/4/93 - WPS

[GANNONC.LABELP]PENLQWPS - 8/4/93

(CONTAINER LABEL)

Pennant®

Liquid Herbicide

For weed control in nurseries, turf, and landscape plantings

Active Ingredient:

Metolachlor: 2-chloro-N-(2-ethyl-6-methylphenyl)- N-(2-methoxy-1-methylethyl) acetamide .....	85.1%
<u>Inert Ingredients:</u>	<u>14.9%</u>
Total	100.0%

Pennant Liquid contains 7.8 lbs. active ingredient per gallon.

See directions for use in attached booklet.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to supplemental labeling under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

EPA Reg. No. 100-691

EPA Est. 42761-MS-1<sup>R</sup>  
EPA Est. 5905-GA-01<sup>H</sup>

Superscript is first letter  
of lot number on jug (gallon)  
bottle (quart and 4 fl. oz.)

One Gallon  
U.S. Standard Measure

One Quart  
U.S. Standard Measure

4 fl. oz.  
U.S. Standard Measure

KEEP OUT OF REACH OF CHILDREN

CAUTION



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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 disposing of equipment wash waters or rinsate.

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Care must be taken when using this product to prevent back siphoning into wells, spills, or improper disposal of excess pesticide, spray mixtures, or rinsates.

Check valves or antisiphoning devices must be used on all mixing and/or irrigation equipment.

Chemigation

Refer to supplemental labeling in attached booklet for use directions for chemigation. Do not apply this product through any irrigation system unless the supplemental labeling on chemigation is followed.

Container Disposal

Do not reuse empty container. Triple rinse (or equivalent), puncture and dispose of in a sanitary landfill, or by incineration, or by open burning, if allowed by state and local authorities. Keep out of smoke from burning containers.

This product may be stored at temperatures down to 30 degrees below 0°F.

Pennant® trademark of Ciba-Geigy Corporation for metolachlor  
U.S. Patent 4,022,611

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Turf and Ornamental Products  
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Greensboro, North Carolina 27419

CGA 96L1G 083 - 1 gal.  
CGA 96L6E 083 - 1 qt.  
CGA 96L7C 083 - 4 fl. oz.

[GANNONC.LABELP]PENLQWPS - 8/4/93