



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

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JAN 25 1994

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

**Subject:** Label Amendment Submission of 08/19/93 in Response to PR Notice 93-7  
EPA Reg. No. 5905-472  
HELENA BRAVO S

**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 30% recycled fiber

Latest EPA-stamped approved label submitted for WPS 8/19/93

**BRAVO<sup>®</sup> S**  
**AGRICULTURAL FUNGICIDE/MITICIDE**  
**WITH ADJUVANTS**

ACTIVE INGREDIENTS:	BY WEIGHT
Sulphur .....	27.25%
Chlorothalonil (tetrachloroisophthalonitrile)** .....	19.15%
INERT INGREDIENTS .....	<u>53.60%</u>
TOTAL .....	100.00%

Contains 2.96 pounds Sulphur and 2.08 pounds Chlorothalonil per gallon.  
BRAVO is a registered trademark of (Fermenta ASC)

\*\*Covered under U.S. Patent No. 3,290,353, No. 3,331,735 and No. 3,948,636

ACCEPTED  
with COMMENTS  
in EPA Letter Dated

**KEEP OUT OF REACH OF CHILDREN**

**CAUTION**

JAN 25 1994  
Under the Federal Insecticide,  
Fungicide, and Rodenticide Act  
as amended, for the pesticide  
registered under EPA Reg. No.  
5905-472

SEE ADDITIONAL PRECAUTIONARY STATEMENTS AND DIRECTIONS FOR USE INSIDE  
BOOKLET.

EPA REG. NO. 5905-472  
EPA EST. NO.

NET CONTENTS:

MANUFACTURED BY  
HEI.ENA CHEMICAL COMPANY  
MEMPHIS, TN 38119

**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS AND DOMESTIC ANIMALS  
CAUTION**

**CAUSES EYE IRRITATION, SKIN SENSITIZER.** Do not get in eyes, or on clothing. Harmful if swallowed. Avoid breathing spray mist. May cause irritation of nose, throat, or skin. Do not store near feed or food-stuffs.

**IF SWALLOWED:** Give one or two glasses of water and induce vomiting by touching finger to back of throat.

**IF ON SKIN:** Wash thoroughly with soap and water.

**IF IN EYES:** Flush eyes with plenty of water immediately for at least 15 minutes. Call a physician.

May produce temporary allergic side effects characterized by redness of the eyes, mild bronchial irritation and redness or rash on exposed skin area.

Note to Physician: Persons having an allergic reaction respond to treatment with antihistamines or steroid creams and/or systemic steroids.

**PERSONAL PROTECTIVE EQUIPMENT**

- Applicators and other handlers must wear:
- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks
- Protective eyewear

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.

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.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

**ENVIRONMENTAL HAZARDS**

This product is toxic to fish, aquatic invertebrates, and marine/estuarine organisms. Runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not apply when weather conditions favor drift from treated areas. Do not contaminate water when disposing of equipment washwaters.

### **DIRECTIONS FOR USE**

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

#### **AGRICULTURAL USE REQUIREMENTS**

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 48 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
- Waterproof gloves
- Shoes plus socks
- Protective eyewear

#### **STORAGE AND DISPOSAL**

Do not contaminate water, food, or feed by storage or disposal. Store in a cool place. Protect from excessive heat. If frozen may generally be restored after thawing and mixing. Repeated freezing-thawing cycles may impair utility.

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.

Pesticide wastes are toxic. Improper disposal of excess pesticide spray or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

#### **GENERAL DIRECTIONS**

Note to User: This product may produce temporary allergic side effects characterized by redness of eyes, mild bronchial irritation and redness or rash on exposed skin areas. Persons having allergic reaction should contact a physician.

Note to User: Do not rotate to crops other than those listed on labels within 12 months of the last treatment. After 12 months from the last application, leafy vegetables (i.e. spinach, lettuce, kale,

etc.) may also be rotated.

**BRAVO S** makes an excellent fungicide combination when used according to label directions for control of a broad spectrum of plant diseases.

**BRAVO S** can be used effectively in dilute or concentrate sprays. Through, uniform coverage is essential for disease control. **DO NOT** combine **BRAVO S** in the spray tank with pesticides, surfactants, or fertilizers, unless prior use has shown the combination physically compatible, effective and noninjurious to the crop under your conditions for use.

The sulphur in **BRAVO S** may cause injury to plants if used improperly or under unfavorable weather conditions. During periods of high temperature sulphur may burn foliage. Do not make **BRAVO S** application at such times.

**NOTE:** Sulphur will cause severe fruit and leaf injury to sulphur sensitive crops. Do not apply or allow to drift to apricots, d'Anjou and Comice pears, cranberries, cucurbits (cucumbers, cantaloupes, melons, squash), filberts, spinach, tung trees, walnuts, or other sensitive plants.

Dosage rates on this label indicate pints of **BRAVO S** per acre, unless otherwise stated. Under conditions favoring disease development the high rate specified and shortest application interval should be used. Applications should be made in sufficient water to obtain adequate coverage of foliage. Gallonage to be used will vary with crop and amount of plant growth. Spray volume will usually range from 20 to 150 gallons (approximately 80 to 600 liters) per acre for dilute sprays and 5 to 10 gallons (approximately 20 to 40 liters) per acre for concentrate ground sprays and aircraft applications. Both ground and aircraft methods of application are recommended unless specific directions are given for a crop. See application and calibration instructions below.

#### **DIRECTIONS FOR CHEMIGATION SYSTEMS**

Apply this product only through: sprinkler; including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move, irrigation system(s). Do not apply this product through any other type of irrigation system.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.

If you have questions about calibration, you should contact State Extension Service specialist, 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.

**FOR SPRINKLER CHEMIGATION SYSTEMS CONNECTED TO PUBLIC WATER SYSTEMS.**<sup>5</sup>  
Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

The pesticide injection pipeline must 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.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.

Systems must use a metering pump, such as a positive displacement injection pump (e.g., constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock).

Do not apply when wind speed favors drift beyond the area intended for treatment.

See "Application and Calibration Techniques For Sprinkler Irrigation" for further directions.

**FOR SPRINKLER CHEMIGATION SYSTEMS NOT CONNECTED TO PUBLIC WATER SYSTEMS.**

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.

The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

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.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

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.

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.

Do not apply when wind speed favors drift beyond the area intended for treatment.

#### **Application and Calibration Techniques for Sprinkler Irrigation**

##### **A. Center Pivot and Traveling Gun Irrigation Equipment -**

Operate system and injection equipment at normal pressures recommended by the manufacturer of injection equipment used. Fill tank of injection equipment with water. Operate system for one complete circle for center pivot or one complete run for traveling gun equipment, measuring time required, amount of water injected, and acreage contained in circle or run. Mix recommended amount of BRAVO S for acreage to be covered into same amount of water used during calibration and inject into system continuously for one revolution or run. Use constant agitation in the supply tank, do not allow mixture to stand during mixing or application. Shut off injection equipment after one revolution or run, but continue to operate irrigation system until BRAVO S has been cleared from last sprinkler head.

##### **B. Solid Set and Portable (Wheel Move) Irrigation Equipment -**

Determine acreage covered by sprinkler. Fill tank of injection equipment with water and adjust flow to use contents over a thirty to forty-five minute period. Mix desired amount of BRAVO S for acreage to be covered into quantity of water used during calibration and operate entire system at normal pressures recommended by the manufacturer of injection equipment used for amount of time established during calibration. Use constant agitation in the supply tank, do not allow mixture to stand during mixing or application. BRAVO S can be injected at the beginning or the end of the irrigation cycle or as a separate application. Stop injection equipment after treatment is completed and continue to operate irrigation system until BRAVO S has been cleared from last sprinkler head.

#### **DIRECTIONS FOR MIXING**

Slowly invert container several times to assure uniform mixture. Pour recommended amount in partially filled spray tank. Keep agitator running during filling and spraying operation. **DO NOT ALLOW MIXTURE TO STAND.** Failure to maintain agitation will cause the sulphur in BRAVO S to settle and may necessitate manual stirring to redisperse.

**DO NOT USE WITHIN FOUR (4) WEEKS OF AN OIL SPRAYING.  
SULPHUR IS HIGHLY CORROSIVE AND EQUIPMENT SHOULD BE CLEANED  
THOROUGHLY AFTER EACH DAY'S SPRAYING.**

## RECOMMENDATIONS

When growing crops for processing, consult the processor before applying BRAVO S.

**BEAN (SNAP):** Rust - 4-8 pints per acre. Botrytis blight (gray mold), Powdery mildew, Red Spider Mites - 8 pints. Use in sufficient water to obtain adequate coverage. Begin application during early bloom stage or when disease first threatens and repeat at weekly intervals or as necessary to maintain control. DO NOT apply within 7 days of harvest. DO NOT graze treated areas or feed treated plant parts to livestock.

**CABBAGE, CAULIFLOWER, BROCCOLI, BRUSSELS SPROUTS:** Alternaria leaf spot, Downy Mildew - 4-1/2 pints. Use in sufficient water to obtain adequate coverage. Begin applications after transplants are set in field or shortly after emergence of field seeded crop, or when conditions favor disease development. Repeat at 7 to 10 day intervals or as necessary to maintain control. Ring spot (California only) - 5-1/2 pints. For field-seeded brussels sprouts, begin applications at time of early sprout development or when conditions favor disease development. Repeat at 7 to 10 day intervals or as necessary to maintain control. Powdery mildew, Red Spider mites - 5-1/2 pints. Apply in 8 gallons of water by air. Apply at first sign of infection and repeat at 3 week intervals.

**PEANUT:** Early leaf spot (Cercospora), Late leaf spot (Cercosporidium) - 3 to 4-1/2 pints. Rust, Web blotch - 4-1/4 pints. Use in sufficient water to obtain adequate coverage. Start applications when disease first appears and repeat at 10 to 14 day intervals or as necessary to maintain control. Under severe disease condition, use the 4-1/4 pints per acre rate. DO NOT apply within 14 days of harvest. DO NOT allow livestock to graze treated areas. DO NOT feed hay or threshings from treated fields to livestock. BRAVO S may be applied through sprinkler irrigation equipment. Use 4-1/4 pints per acre in solid set, portable wheel move, center pivot or travelling gun sprinkler irrigation equipment. See calibration directions preceding this section.

**POTATO:** Early blight, Late blight, Botrytis vine rot (Botrytis spp.) - 3 to 4-1/4 pints. Early blight, Late blight (Dryland culture only) - 2-1/2 to 4-1/4 pints. Use in sufficient water to obtain adequate coverage. Begin applications when plants are 6 to 8 inches high or when disease threatens, and continue at 7 to 10 day intervals or as needed to maintain disease control. Under severe disease conditions, use 4-1/4 pints per acre on a 7 day schedule. BRAVO S may be applied through sprinkler irrigation equipment (solid set, portable wheel move or center pivot systems only.) DO NOT exceed a 10 day interval between applications when using this technique. See calibration directions preceding this section. Powdery mildew - 4-1/3 pints. Apply in 8 gallons of water by air. Apply at first sign of infection and repeat at 3 week intervals.

**TOMATO:** Early blight, Late blight, Gray leaf spot, Gray leaf mold, Septoria leaf spot - 4-1/2 to 5-1/2 pints. Anthracnose - 5-1/2 to 8-1/2 pints. Rhizoctonia fruit rot, Botrytis gray mold, Tomato russet mite - 8-1/2 pints. Apply in sufficient water to obtain adequate coverage. Begin applications when disease threatens and repeat at 7 to 10 day intervals. Under moderate to severe disease conditions, use the highest rate specified and shorten spray interval. BRAVO S may be applied through sprinkler irrigation equipment (solid set or portable wheel move systems only). See calibration directions preceding this section.

### TREE AND ORCHARD CROPS

Apply BRAVO S in sufficient water and proper calibration to obtain uniform coverage of tree



canopy. Application through ground equipment is recommended. When concentrate sprays are used or when treating non-bearing or immature trees, the lower rate of BRAVO S listed may be used. The following spray volumes are recommended as gallons of spray per acre.

CROP	SPRAY VOLUME (GALLONS PER ACRE)	
	DILUTE	CONCENTRATE
Peach, Plum, Nectarine, Prune, Tart Cherry, Apricots	300	50 to 150
Sweet Cherry	400	65 to 200

CROP	DISEASES	BRAVO S RATE PER	
		ACRE	100 GAL*
Peach, Nectarine, Cherry, Plum, Prune, Apricots	Leaf curl, Coryneum blight (Shothole) on peach nectarine, apricot	9-12 pints	3-4 pints

APPLICATION - DIRECTIONS: Use only full dilute spray volumes for dormant applications. Make one application in late autumn to early winter before hard freezing occurs. Make one or two additional applications in mid to late winter before buds begin to swell. Where Coryneum blight (Shothole) occurs, apply once at petal fall or at shuck-split to prevent fruit infections.

Brown rot blossom blight, Powdery mildew on peaches, nectarines, Scab on peaches, nectarines.	12-16 pints	3-4 pints
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APPLICATION - DIRECTIONS: Use 12-16 pints per acre on trees taller than 20 ft. and 9-12 pints per acre on smaller trees. Make one application at popcorn (pin, red or early white bud) and a second application at full bloom. If weather conditions favor disease development, make an additional application at petal fall.

Cherry, leafspot Peach, Nectarine, Apricot Scab	9-12 pints	3-4 pints
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APPLICATION - DIRECTIONS: In addition to the bloom applications listed above, make one application at shuck-split. DO NOT apply BRAVO S after shuck-split and before harvest. If additional disease control is needed before harvest, use another registered fungicide. For control of cherry leafspot after harvest, make one application to foliage within 7 days after fruit is removed. In orchards with a history of high leafspot incidence, make a second application 10-14 days later.

\*Volumetric rates to be used only with full dilute spray volume specified on this label for tree and orchard crops.

**CONDITIONS OF SALE - LIMITED WARRANTY  
AND LIMITATIONS OF LIABILITY AND REMEDIES**

The directions on this label are believed to be reliable and should be followed carefully. Insufficient control of pests and/or injury to the crop to which the product is applied may result from the occurrence of extraordinary or unusual weather conditions, the failure to follow the label directions, or good application practices, all of which are beyond the control of Helena Chemical Company (the "Company") or seller. In addition, failure to follow label directions may cause injury to crops, animals, man or the environment. The Company warrants that this product conforms to the chemical description on the label and is reasonably fit for the purpose referred to in the directions for use subject to the factors noted above which are beyond the control of the Company. The Company makes no other warranties or representations of any kind, express or implied, concerning the product, including no implied warranty of merchantability or fitness for any particular purpose, and no such warranty shall be implied by law.

The exclusive remedy against the Company for any cause of action relating to the handling or use of this product is a claim for damage and in no event shall damages or any other recovery of any kind against the Company exceed the price of the product which causes the alleged loss, damage, injury, or other claim. The Company shall not be liable and any and all claims against the Company are waived for special, indirect, incidental, or consequential damages or expense of any nature, including, but not limited to, loss of profits or income.

The Company and the seller offer this product and the buyer and user accept it, subject to the foregoing conditions of sale and limitation of warranty, liability and remedies.