

# Ridomil® Bravo® 81W

## Fungicide

For the control of certain diseases in broccoli, cabbage, cauliflower, cucurbit vegetables, onions, potatoes, and tomatoes

### Active Ingredients:

Metalaxyl: *N*-(2,6-dimethylphenyl)-*N*-(methoxyacetyl) alanine methyl ester...9.0%  
Chlorothalonil: Tetrachloro-isophthalonitrile ....72.0%

Inert Ingredients: 19.0%

Total: 100.0%

Ridomil Bravo 81W is a wettable powder.

EPA Reg. No. 100-658

Keep Out of Reach of Children.

## DANGER/PELIGRO

PRECAUCION AL USUARIO: Si usted no lee ingles, no use este producto hasta que la etiqueta haya sido explicado ampliamente.

See additional precautionary statements on back of bag.

### Statement of Practical Treatment

If in eyes: Flush with water.

If swallowed:

Do not induce vomiting.

Get medical attention.

For first aid:

Wash with water.

Wash thoroughly.

## Five Pounds

Net Weight

See directions for use on back of bag

# CIBA-GEIGY

# Ridomil®/Bravo® 81W

## 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

### Conditions of Sale and Warranty

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.

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

Do not apply this product in such a manner as to directly, or through drift, expose workers or other persons, except those knowingly involved in the application. The area being treated must be vacated by unprotected persons.

### Reentry Statements

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

Because certain states may require more restrictive reentry intervals for various crops treated with this product, consult your State Department of Agriculture for further information.

Written or oral warnings must be given to workers who are expected to be in the treated area or in an area about to be treated with this product. Oral warnings must be given which inform workers of areas or fields that may not be entered without specific protective clothing until sprays have dried and appropriate actions to take in case of accidental exposure, as described under **Precautionary Statements** on the back of this label. When oral warnings are given, warnings shall be given in a language customarily understood by workers. Oral warnings must be given if there is reason to believe that written warnings cannot be understood by workers. Written warnings must include the following information: **DANGER** Area treated with Ridomil Bravo 81W on (date of application). Do not enter without appropriate protective clothing until sprays have dried. Flush eyes or skin with plenty of water. Call a physician if irritation persists. Remove contaminated clothing and wash before reuse.

### General Information

Ridomil Bravo 81W contains 9% of the active ingredient metalaxyl and 72% of the active ingredient chlorothalonil. Metalaxyl is a systemic fungicide that provides control of downy mildew and late blight diseases of selected crops. Chlorothalonil is a broad spectrum protectant fungicide that controls many diseases of vegetables.

**Note:** Metalaxyl is a systemic fungicide having a specific mode of action and could be subject to development of resistant strains of fungi. Development of resistance cannot be predicted. Therefore, CIBA-GEIGY cannot assume liability for crop damage resulting from resistant strains of fungi. If treatment is not effective following the use of Ridomil Bravo 81W as recommended, a resistant strain of fungi may be present. If the treatment is ineffective due to the presence of a metalaxyl resistant strain of fungi, neither Ridomil Bravo 81W nor any other fungicide with similar action will effectively control that disease. Consideration should then be given to the prompt use of other types of suitable fungicides. Consult with your State Agricultural Experiment Station or Extension Service Specialist for guidance in your particular crop and disease control situation.

### Mixing Instructions

Ridomil Bravo 81W is an effective fungicide when used according to label directions for control of a broad spectrum of plant diseases. Thorough, uniform coverage is essential for disease control. Ridomil Bravo 81W should be added slowly into the spray tank during filling. With concentrate sprays, premix the required amount of Ridomil Bravo 81W with water in a clean container and add to the spray tank as follows: (1) Add 1/4 - 1/2 of the required amount of water to the spray tank. (2) Add the proper amount of Ridomil Bravo 81W, then add the rest of the water. (3) Use a pump with capacity to maintain 35-40 psi at nozzles, and provide sufficient agitation in tank to keep the mixture in suspension. Do this by recirculating 20 gal./min. 100 gal./tank size through correctly positioned sparger tubes or jets.

Use screens to protect the pump and to prevent nozzles from plugging. Screens placed on the suction side of the pump should be 16 mesh or coarser. Do not place a screen in the recirculation line. Use 50 mesh or coarser screens between the pump and boom, and where required, at the nozzles. Check nozzle manufacturer's recommendations.

To assure compatibility of Ridomil Bravo 81W with other products, it is being mixed with other pesticides, surfactants, or fertilizers, pour the products into a container of water in the correct proportions. After thorough mixing, let stand for five minutes; if the combination remains mixed or can be remixed readily, the mixture should be considered compatible.

### Application Instructions

Apply Ridomil/Bravo 81W in sufficient water to obtain adequate coverage of foliage. Gallonage needed will vary with crop and amount of plant growth. Apply in a minimum of 20 gal./A for dilute sprays and 5 gal./A for concentrate ground sprays and aerial applications.

To avoid spray drift, do not apply under windy conditions. Avoid spray overlap, as crop injury may result.

### Preharvest Intervals

Unless otherwise stated in the directions for use for a specific crop, there is no preharvest interval.

### Application Through Irrigation Systems

Ridomil/Bravo 81W alone or in combination with other fungicides which are registered for sprinkler irrigation may be applied through irrigation systems.

Apply this product only through center pivot, solid set or moving wheel irrigation systems. 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 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.

### Posting Requirements

Posting of areas to be chemigated is required when (1) any part of a treated area is within 300 feet of sensitive areas such as residential areas, labor camps, businesses, day care centers, hospitals, in-patient clinics, nursing homes or any public areas such as schools, parks, playgrounds, or other public facilities not including public roads, or (2) when the chemigated area is open to the public such as golf courses or retail greenhouses.

Posting must conform to the following requirements. Treated areas shall be posted with signs at all usual points of entry and along likely routes of approach from the listed sensitive areas. When there are no usual points of entry, signs must be posted in the corners of the treated areas and in any other location affording maximum visibility to sensitive areas. The printed side of the sign should face away from the treated area towards the sensitive area. The signs shall be printed in English. Signs must be posted prior to application and must remain posted until foliage has dried and soil surface water has disappeared. Signs may remain in place indefinitely as long as they are composed of materials to prevent deterioration and maintain legibility for the duration of the posting period.

All words shall consist of letters at least 2 1/2 inches tall, and all letters and the symbol shall be a color which sharply contrasts with their immediate background. At the top of the sign shall be the words KEEP OUT, followed by an octagonal stop sign symbol at least 8 inches in diameter containing the word STOP. Below the symbol shall be the words PESTICIDES IN IRRIGATION WATER.

### Operating 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.

### Application Instructions

Ridomil Bravo 81W must be applied on the schedule specified in the specific crop use recommendations, not according to the irrigation schedule. If irrigation schedules are used, ground or aerial applications must supplement chemigation applications to achieve adequate disease control.

With the exception of potatoes, Ridomil Bravo 81W has not been sufficiently tested when applied through irrigation systems to assure consistent product performance for all labeled uses. The following calibration and application techniques are provided for user reference, but do not constitute a warranty of fitness for application through sprinkler irrigation equipment. Users should check with state and local regulatory agencies for potential use restrictions before applying any agricultural chemical through sprinkler irrigation equipment.

**Center Pivot Irrigation Equipment** (Use only with drive systems which provide uniform water distribution.)

1. Determine the size of the area to be treated.
2. Determine the time required to apply 1 inch water over the area to be treated when the system and injection equipment is operated at normal pressures recommended by the equipment manufacturer. Run the system at 80-85% of the manufacturer's rated capacity.
3. Using water, determine the injection pump output when operated at normal line pressure.
4. Determine the amount of Ridomil Bravo 81W required to treat the area covered by the irrigation system.

5. Add the required amount of Ridomil/Bravo 81W and sufficient water to meet the injection time requirements to the solution tank.
6. Maintain constant solution tank agitation during the injection period.
7. Stop injection equipment after treatment is completed. Continue to operate system until the Ridomil/Bravo 81W solution has cleared the sprinkler head.

**Solid Set and Moving Wheel Irrigation Equipment**

1. Determine the acreage covered by the sprinklers.
2. Fill injector solution tank with water and adjust flow rate to use the contents over a 20 to 30 minute interval.
3. Determine the amount of Ridomil/Bravo 81W required to treat the area covered by the irrigation system.
4. Add the required amount of Ridomil/Bravo 81W into the same quantity of water used to calibrate the injection period.
5. Operate system at the same pressure and time interval established during the calibration.
6. Inject Ridomil/Bravo 81W at the end of the irrigation cycle or as a separate application to maximize retention of the fungicide by the foliage.
7. Stop injection equipment after treatment is completed. Continue to operate the system until the Ridomil/Bravo 81W solution has cleared the last sprinkler head.

**Cole Crops (Broccoli, Cabbage, and Cauliflower)\***

\* Broccoli, Chinese broccoli (gai lan, white flowering broccoli), cabbage, Chinese cabbage (bok choy and napa) and cauliflower only

Ridomil/Bravo 81W, when used as a foliar application in a preventive disease control program, provides effective control of downy mildew and Alternaria leaf spot.

**Downy Mildew:** Apply 1 1/2-2 lbs /A. Begin applications when conditions are favorable for disease, but before infection and continue at 14-day intervals until the threat of disease is over. Use the higher rate under severe disease pressure.

**Alternaria Leaf Spot:** Apply 1 1/2-2 lbs /A. Begin applications when conditions are favorable for disease, but before infection, and continue at 14-day intervals until the threat of disease is over. Under severe disease pressure, use other effective EPA-registered fungicides according to label directions between the Ridomil/Bravo 81W sprays.

**Notes:** (1) Do not apply within 7 days of harvest, or illegal residues may result. (2) To minimize the potential for resistance, do not make more than 4 applications of Ridomil/Bravo 81W per crop.

**Cucurbit Vegetables \***

\* Cucumber, cantaloupe, casaba, crenshaw, honeydew melon, honey balls, muskmelon, Persian melon, watermelon, pumpkin, summer squash, winter squash and cucurbit hybrids only.

Ridomil/Bravo 81W, when used as a foliar spray in a preventive disease control program, provides effective control of many diseases of cucurbit vegetables.

**Downy Mildew:** Apply 1 1/2-2 lbs /A. Begin applications when conditions are favorable for disease, but before infection, and continue at 14 day intervals until the threat of disease is over. Use the higher rate under severe disease pressure.

**Anthraxnose, Cercospora Leaf Spot, Gummy Stem Blight, Leaf Blight and Scab:** Apply 2-3 lbs /A. Begin applications when conditions are favorable for disease, but before infection, and continue at 10-14 day intervals. Under severe disease pressure, alternate Ridomil/Bravo 81W sprays with other effective EPA registered fungicides every 7 days.

**Note:** To minimize the potential for resistance, do not make more than 4 applications of Ridomil/Bravo 81W per crop.

**Onions (Dry Bulb, Seed and Green Onions)**

Ridomil/Bravo 81W, when used as a foliar spray in a preventive disease control program, provides effective control of downy mildew, Botrytis leaf blight and purple blotch.

**Downy Mildew:** Apply 1 1/2-2 lbs /A. Begin applications when conditions are favorable for disease, but before infection, and continue at 14 day intervals until the threat of disease is over. Use a compatible spreader/sticker at rates recommended on the product label. Use the higher rate under severe disease pressure.

**Botrytis Leaf Blight (Bleed) and Purple Blotch:** Apply 2 lbs /A on a 14 day schedule and apply other effective EPA registered fungicides between the Ridomil/Bravo 81W sprays, or apply 2 lbs /A of Ridomil/Bravo 81W on a 7 day schedule.

**Notes:** (1) Do not apply to sweet Spanish onions if they have received or will receive additional chlorothalonil applications and (2) Do not apply to dry bulb onions within 7 days of harvest or to green onions within 21 days of harvest or illegal residues may result. (3) Do not make more than 3 applications to green onions per season. If more than 14 days remain after 3 applications of Ridomil/Bravo 81W, it is recommended that another EPA registered fungicide which does not contain chlorothalonil be used. (4) To minimize the potential for resistance, do not make more than 4 applications of Ridomil/Bravo 81W to dry bulb or seed onions.

**Potatoes**

Ridomil/Bravo 81W, when used as a foliar spray in a preventive disease control program, provides effective control of late blight, early blight and Botrytis vine rot. Two to three applications will also provide control of tuber rot caused by *Phytophthora* spp. and storage rot caused by *Pythium* and *Phytophthora* spp.

**Late Blight:** Apply 1 1/2-2 lbs /A. Begin applications when conditions are favorable for disease, but before infection, and continue at 14 day intervals until threat of disease is over. Use the higher rate under severe disease pressure.

**Tuber Rot and Storage Rot (*Phytophthora* and *Pythium* spp.):** Apply 2 lbs /A. Make one application at flowering and another 14 days later. If the field has a history of tuber rot or if foliar late blight is present, make a third application 14 days after the second.

**Early Blight and Botrytis Vine Rot:** Apply 1 1/2-2 lbs /A. Begin applications when plants are six inches high or when conditions are favorable for disease, but before infection, and continue at 14-day intervals until the threat of disease is over. Under severe disease pressure, use 1 1/2 lbs /A on a 7-day schedule or use other effective EPA-registered fungicides between the Ridomil/Bravo 81W sprays.

**Notes:** (1) Do not apply within 7 days of harvest, or illegal residues may result. (2) To minimize the potential for resistance, do not make more than 4 applications of Ridomil/Bravo 81W per crop.

**Tomatoes**

Ridomil/Bravo 81W, when used as a foliar spray in a preventive disease control program, provides effective control of several tomato diseases.

**Late Blight and Fruit Rot Caused by *Phytophthora* spp.:** Apply 1 1/2-2 lbs /A. Begin applications when conditions are favorable for disease, but before infection, and continue at 14-day intervals until threat of disease is over. Use the higher rate under severe disease pressure.

**Early Blight, Gray Leaf Spot, Gray Leaf Mold, and Septoria Leaf Spot:** Apply 2 lbs /A. Begin applications when conditions are favorable for disease, but before infection, and continue at 14-day intervals. Under severe disease pressure, use other effective EPA-registered fungicides between the Ridomil/Bravo 81W sprays.

**Anthraxnose, Alternaria Fruit Rot (Black Mold), Rhizoctonia Fruit Rot and Botrytis Gray Mold:** Apply 2-3 lbs /A. Begin applications when conditions are favorable for disease, but before infection, and continue at 10-14 day intervals. Under severe disease pressure, use other effective EPA-registered fungicides between the Ridomil/Bravo 81W sprays.

**Note:** To minimize the potential for resistance, do not make more than 4 applications of Ridomil/Bravo 81W per crop.

**Rotation (Plant Back) Restrictions**

Rotation Crop	Planting Time From Last Application of Ridomil/Bravo 81W
Apples*	0 Days
Asparagus	12 Months
Avocados*	
Broccoli	0 Days
Citrus*	
Corn	9 Months
Cabbage	0 Days
Celery	18 Months
Cauliflower	0 Days
Carrots	9 Days
Cranberry*	0 Days
Brussels Sprouts	18 Months
Eggplant	12 Months
Mint	18 Months
Grass Grown for Seed	0 Days
Shallots	18 Months
Garlic	
Papaya*	0 Days
Peppers	12 Months
Potatoes	
Cotton	0 Days
Cucurbit Vegetables**	
Other Cucurbit Vegetables	12 Months
Deciduous Fruits and Nuts*	0 Days
Hops	
Head Lettuce	12 Months
Dry Beans	
Snap Beans	0 Days
Peas	12 Months
Onions (Bulb, Green and Seed)	0 Days
Peanuts	
Pineapples	12 Months
Raspberries	
Soybeans	0 Days
Spinach	
Tobacco	12 Months
Tomatoes	0 Days
Wheat	
Root Crops	12 Months
Crops Not Intended for Food or Feed	0 Days
All Other Crops Intended for Food or Feed	18 Months

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\* These crops may be planted immediately following last application of Ridomil/Bravo 81W, provided they will not bear harvestable fruit within 12 months.

\*\* Cucurbit vegetables including cucumbers, cantaloupes, casabas, crenshaws, honeydew melons, honey balls, muskmelons, Persian melons, and their hybrids, watermelons, watermelon hybrids, pumpkins; summer and winter squash.

## Storage and Disposal

### Pesticide

Store in a dry place. Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited. Wastes resulting from the use of this pesticide are acutely hazardous. Improper disposal of unused pesticide, spray mixture, or rinseate is a violation of federal law. Pesticide, spray mixture, or rinseate 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

Completely empty bag into application equipment. Dispose of empty bag in a sanitary landfill, by incineration or, if allowed by state and local authorities, by burning. Stay out of smoke from burning bags.

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 (919) 292-7100 day or night.

## Precautionary Statements

### Hazards to Humans and Domestic Animals

#### DANGER

Corrosive. Causes irreversible eye damage. May be fatal if swallowed or inhaled. Harmful if absorbed through skin. Do not get in eyes, on skin, or on clothing. Wear goggles or face shield when handling this product. Do not breathe spray mist. Wear a mask or a jointly approved pesticide respirator (by the Mining Enforcement and Mining Administration and the National Institute for Occupational Safety and Health) when handling this product. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco. Remove contaminated clothing and wash before reuse.

### Environmental Hazards

This product is toxic to fish. Do not apply directly to water. Apply only as specified on this label. Do not apply when weather conditions favor drift from treated area. Do not contaminate water when cleaning equipment or disposing of wastes.

Ridomil® trademark of CIBA-GEIGY Corporation for metalaxyl.

Bravo® trademark of Fermenta Plant Protection Company for chlorothalonil.

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