



10182-415 10/10/2000 1/48

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

OCT 10 2000

Michele Schulz
Zeneca Ag Products
1800 Concord Pike
P.O. Box 15458
Wilmington, Delaware 19850-5458

Subject: Abound® Fungicide
EPA Registration Number 10182-415
Your amended labeling dated September 21, 2000

Dear Ms. Schulz,

We have reviewed the subject amended labeling, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended. The amended labeling is acceptable, provided that you comply with the following conditions.

A. You must make the following changes to the labeling.

1. Near the start of the "DIRECTIONS FOR USE" section, directly following the paragraph that begins with "Use of ABOUND Flowable Fungicide is prohibited in Nassau and Suffolk counties in New York State...", add the following text back to the label:

"Use of ABOUND Flowable Fungicide through airblast application equipment on grapes is prohibited in the following townships and boroughs of Erie County, Pennsylvania:

North East, Harborcreek, Lawrence
Park, Erie, Presque Isle, Mill
Creek, Fairview, Girard and
Springfield.

This prohibition is intended to help eliminate phytotoxicity problems with apples observed in this geographic location."

2. In the section labeled "ATTENTION" on both page 7 and page 9, the second sentence of the paragraph that begins "DO NOT use spray equipment which has been previously used to apply HERITAGE to spray apple trees..." must be changed to read (in full) "Even trace amounts can cause unacceptable phytotoxicity to certain apple and crabapple varieties. Please see Table 4 for a list of intolerant plants."
 3. In the "Remarks" column of the specific use directions for canola and potatoes, the application rate of the subject product is expressed only as "oz" in several places. In each of these cases "oz" should be changed to "fl oz". The same is true in the "Remarks" column of the "DIRECTIONS FOR APPLICATION FOR TURF DISEASES" table.
- B. Submit the following data to support the stated label uses (by the stated time).
1. To support late season uses of the subject product, a study(ies) that either provide direct residue data for the subject product or additional bridging residue data from the water dispersible granule product (Reg. No. 10182-408) to the subject product for crops that are representative of the late-season uses of products containing this active ingredient must be submitted by March 31, 2002. The concern here is that all or almost all of the residue data for these crops were generated only for the water dispersible granule formulation of this active ingredient.
 2. To support the use of azoxystrobin on the leafy (except *Brassica*) vegetables and on root and tuber vegetables, additional residue storage stability data (Guideline Requirement Number (GRN) 860.1380) must be submitted by March 31, 2002 for residues of azoxystrobin and its Z isomer that have been stored frozen for 11 months in samples of one representative from each of the following commodity groups: leafy vegetable, root and tuber vegetable, and processed commodities of a root and tuber vegetable. These storage stability studies must have similar storage conditions and intervals of crop samples as the equivalent residue studies themselves.
 3. To support the use on spinach, data for two additional spinach residue field trials (GRN 860.1500) reflecting the maximum proposed seasonal use pattern, one each in U.S. EPA Region 2 and 9, must be conducted, and submitted by March 31, 2002.

4. To support all new uses being registered for the first time on the subject amended label, additional limited field rotational crop residue studies (GRN 860.1850/1900) using 1x the maximum proposed seasonal rate (2.0 lbs ai/A) must be submitted by March 31, 2002. These additional data are needed because the previously submitted field rotational crop studies for annual crops being registered for the first time on the subject label used a rate of only 0.4x the maximum proposed seasonal rate.
 5. A 28-day nose-only inhalation toxicity study using the same form of azoxystrobin to which workers are exposed must be submitted by March 31, 2002. The concern here is that no intermediate-term inhalation data are available for azoxystrobin, but the use pattern indicates that this is a likely exposure scenario.
- C. Submit one copy of your final printed label before you release product bearing this amended labeling for shipment.

Copies of the reviews from which these requirements emerged are attached. In addition to the above requirements a few comments are needed, as follow.

- The Agency has concerns about the potential for negative impacts to estuarine/marine invertebrates that could result from the use of azoxystrobin to treat citrus fruits, corn, tuber vegetables, leafy vegetables, peanuts, and soybeans that are grown very near to tidal waters. We expect to keep an eye on incident data and any monitoring data that may become available. If a problem appears, we may require that additional restrictions on use of azoxystrobin near tidal waters be added to the labeling.
- The submitted data from South Africa are insufficient to support a tolerance that would also include use on imported citrus. If you desire a citrus fruits tolerance high enough to cover imported citrus, then you must provide the Agency with additional information describing both the countries in which azoxystrobin is intended for use on citrus that is to be imported into the U.S. and the intended use patterns in those countries. Because the data from South Africa indicate the potential for higher residues in imported citrus, additional field trial data from countries which represent the major importing regions for citrus (including juice) would also need to be submitted. Those data should reflect the maximum intended use patterns in those countries. When (if) such data are submitted, an appropriate tolerance level for citrus fruits (to include use on imported citrus fruits) should also be proposed.

- The proposed tolerance for inadvertent residues of azoxystrobin in/on apples has been denied because it is not Agency policy to establish such a tolerance based on concerns about the possibility of spray drift or contaminated equipment.
- The proposed tolerance for residues of azoxystrobin in/on wild rice has been denied because no residue data were submitted for wild rice and because the geographic area in which and cultural practices used to grow rice are considered to make translation of rice residue data to wild rice inappropriate.

Other comments concerning the submission are present in the attached reviews and risk assessment. If you have any questions about this letter, please contact John Bazuin at (703)305-7381.

Sincerely yours,

(S)

Dan Kenny
Acting Product Manager (22)
Fungicide Branch
Registration Division (7505C)

Attachments: 1) Label stamped "ACCEPTED with COMMENTS"
 2) Residue chemistry, dietary risk, and environmental fate and effects reviews
 3) Human health risk assessment

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

OCT 10 2000

**Under the Federal Insecticide,
Fungicide, and Rodenticide Act,
as amended, for the pesticide
registered under EPA Reg. No.
10182-415**

Page 1 of 44
ABOUND Flowable
ABOUND Tier V September 21, 2000
EPA requested changes

**ABOUND® Flowable
Fungicide**

Broad spectrum fungicide for control of plant diseases

ACTIVE INGREDIENT:

Azoxystrobin: methyl (E)-2-{2-[6-(2-cyanophenoxy)
pyrimidin-4-yloxy]phenyl}-3-methoxyacrylate* 22.9%

INERT INGREDIENTS: 77.1%

TOTAL 100.0%

Contains 2.08 lbs of active ingredient per gallon

*IUPAC

EPA REG NO. 10182-415
EPA EST. NO.

NET WT.

KEEP OUT OF REACH OF CHILDREN

CAUTION

**SEE INSIDE FOR STATEMENT OF PRACTICAL TREATMENT
AND PRECAUTIONARY STATEMENTS**

Reformulation is prohibited. See individual container labels for repackaging limitations.

Manufactured in the UK for distribution by:
Zeneca Ag Products
Zeneca Inc.
Wilmington DE 19850-5458

**CONDITIONS OF SALE
AND LIMITATION OF WARRANTY AND LIABILITY**

NOTICE: Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product should be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of ZENECA or Seller. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold ZENECA and Seller harmless for any claims relating to such factors.

ZENECA warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. This warranty does not extend to the use of this product contrary to label instructions, or under abnormal conditions or under conditions not reasonably foreseeable to or beyond the control of Seller or ZENECA, and Buyer and User assume the risk of any such use. ZENECA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

In no event shall ZENECA or Seller be liable for any incidental, consequential or special damages resulting from the use or handling of this product. **THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF ZENECA AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF ZENECA OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

ZENECA and Seller offer this product, and Buyer and User accept it, subject to the foregoing conditions of sale and limitations of warranty and of liability, which may not be modified except by written agreement signed by a duly authorized representative of ZENECA.

STATEMENT OF PRACTICAL TREATMENT

IF ON SKIN: Wash with plenty of soap and water. If symptoms persist, get medical attention.

FOR 24-HOUR EMERGENCY MEDICAL ASSISTANCE, CALL 1-800-F-A-S-T-M-E-D (327-8633).

FOR CHEMICAL EMERGENCY: Spill, leak, fire, exposure, or accident, call CHEMTREC, 1-800-424-9300.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

HARMFUL IF ABSORBED THROUGH SKIN. Avoid contact with eyes, skin, or clothing. Wear long-sleeved shirt and long pants, socks and shoes and waterproof gloves. Wash thoroughly with soap and water after handling.

PERSONAL PROTECTIVE EQUIPMENT

Some materials that are chemically resistant to this product are listed below. If you want more options follow the instructions for Category A on an EPA chemical resistance category selection chart.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- ~~Waterproof gloves~~ Chemical resistant gloves made of any waterproof material
- Shoes plus socks

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.
 - 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

The active ingredient, Azoxystrobin, in this product can be persistent for several months or longer. Azoxystrobin has degradation products which have properties similar to chemicals which are known to leach through soil to ground water under certain conditions as a result of agricultural use. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow may result in ground water contamination.

This pesticide is toxic to freshwater and estuarine/marine fish and aquatic invertebrates. Do not apply directly to water except as specified on this label. For terrestrial uses, do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment washwater or rinsate.

Notify state and/or Federal authorities and Zeneca Inc. immediately if you observe any adverse environmental effects due to use of this product.

DIRECTIONS FOR USE

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

Use of ABOUND Flowable Fungicide is prohibited in Nassau and Suffolk counties in New York State. In the remainder of the state, read and follow all applicable directions, restrictions and precautions on the EPA-registered ABOUND Flowable product label.

FAILURE TO FOLLOW THE USE DIRECTIONS AND PRECAUTIONS ON THIS LABEL MAY RESULT IN PLANT INJURY OR POOR DISEASE CONTROL.

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 USES:

For all agricultural uses, ABOUND Flowable Fungicide use is prohibited in Nassau and Suffolk counties in New York State.

Commercial turf farm use (Not for use in California)

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), notification to workers, 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 4 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~~ Chemical resistant gloves made of any waterproof material
 - Shoes plus socks
-

NON-AGRICULTURAL USES: Golf Courses (Not for use in California)

For use to control diseases on turf on golf courses, lawns and landscape areas around residential, institutional, public, commercial and industrial buildings, parks, recreational areas and athletic fields.

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. The area being treated must be vacated by unprotected persons.

Do not treat areas while unprotected humans or domestic animals are present in the treatment areas. Because certain states may require more restrictive reentry intervals, consult your State Department of Agriculture for further information.

Do not allow entry into treatment area until area that was treated with ABOUND® Flowable is dry.

STORAGE AND DISPOSAL

PROHIBITIONS: Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited.

STORAGE: Store in original containers only. Keep container closed when not in use. Do not store near food or feed. In case of spill on floor or paved surfaces, mop and remove to chemical waste storage area until proper disposal can be made if product cannot be used according to the label.

PESTICIDE DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, 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 of the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL:

Plastic Containers: Triple rinse (or equivalent); then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or alternatives allowed by State and local authorities.

FOR BULK AND MINIBULK CONTAINERS:

CONTAINER DISPOSAL: Reseal container and offer for reconditioning, or triple rinse (or equivalent) and offer for recycling or reconditioning, or clean in accordance with manufacturer's instructions.

CONTAINER PRECAUTIONS: Before refilling, inspect thoroughly for damage, such as cracks, punctures, bulges, dents, abrasions and damaged or worn threads on closure devices.

REFILL ONLY WITH ABOUND® FLOWABLE. The contents of this container cannot be completely removed by cleaning. Refilling with materials other than ABOUND Flowable will result in contamination and may weaken container.
After filling and before transporting, check for leaks.
Do not refill or transport damaged or leaking container.

CONTAINER IS NOT SAFE FOR FOOD, FEED OR DRINKING WATER.

GENERAL INFORMATION

ABOUND Flowable Fungicide is a broad spectrum, preventative fungicide with systemic and curative properties recommended for the control of many important plant diseases. ABOUND Flowable may be applied as a foliar spray in alternating spray programs or in tank mixes with other registered, crop protection products. All applications should be made according to the use directions that follow.

GENERAL USE PRECAUTIONS

Do not graze or feed clippings from treated turf areas to animals. Crops in this label may be planted immediately after last treatment. Do not plant other crops within 45 days after last application.

ATTENTION

ABOUND Flowable is extremely phytotoxic to certain apple varieties.

AVOID SPRAY DRIFT. Extreme care must be used to prevent injury to apple trees (and apple fruit).

DO NOT spray ABOUND Flowable where spray drift may reach apple trees.

DO NOT spray when conditions favor drift beyond area intended for application. Conditions which may contribute to drift include thermal inversion, wind speed and direction, sprayer nozzle/pressure combinations, spray droplet size, etc. Contact your State extension agent for spray drift prevention guidelines in your area.

DO NOT use spray equipment which has been previously used to apply ABOUND Flowable to spray apple trees. Even trace amounts can cause unacceptable phytotoxicity.

AVOIDING SPRAY DRIFT IS THE RESPONSIBILITY OF THE APPLICATOR.

INTEGRATED PEST (DISEASE) MANAGEMENT

ABOUND Flowable should be integrated into an overall disease and pest management strategy whenever the use of a fungicide is required. Cultural practices known to reduce disease development should be followed. The SPECIFIC USE DIRECTIONS section in this label identifies specific IPM recommendations for each crop. Consult your local agricultural and turf authorities for additional IPM strategies established for your area. ABOUND Flowable may be used in State Agricultural Extension advisory (disease forecasting) programs which recommend application timing based on environmental factors favorable for disease development.

RESISTANCE MANAGEMENT

A disease management program that includes alternation or tankmixes between ABOUND Flowable and other labeled fungicides that have a different mode of action is essential to prevent pathogen populations from developing resistance to ABOUND Flowable. ABOUND Flowable should not be alternated or tankmixed with fungicides to which resistance has already developed.

Zeneca has adopted the FRAC guidelines for strobilurin fungicide usage to prevent development of resistance. These guidelines promote a maximum of three sequential strobilurin sprays before switching to alternative chemistry. FRAC guidelines also limit the strobilurin sprays per crop per season to 50 percent of the total sprays, if more than three sprays are required.

Since pathogens differ in their potential to develop resistance to fungicides, the SPECIFIC USE DIRECTIONS section in this label provides resistance management strategies specific for each crop and disease. Consult your local or state agricultural authorities for resistance management strategies that are complementary to those in this label. ABOUND Flowable is not cross resistant with other classes of fungicides which have different modes of action.

SPRAYING/MIXING

ABOUND Flowable may be applied with all types of spray equipment commonly used for making ground and aerial applications. Do not apply ABOUND Flowable through any type of ultra low volume (ULV) spray system. Proper adjustments and calibration of spraying equipment to give good canopy penetration and coverage is essential for good disease control. The higher rates in the rate range and/or shorter spray intervals may be required under conditions of heavy infection pressure, highly susceptible varieties, or when disease conducive environmental conditions exist.

For ground applications, apply ABOUND Flowable in sufficient water volume for adequate coverage and canopy penetration. For aerial applications to non-orchard crops, apply ABOUND Flowable in a minimum of five gallons of water per acre. For aerial applications in orchard crops, apply ABOUND Flowable in a minimum of ten gallons of water per acre. Where feasible ground application should be used because it provides better canopy penetration and coverage.

To prepare spray solution, partially fill the spray tank with clean water and begin agitation. Add the specified amount of ABOUND Flowable to the tank, allowing time for good dispersion, then add an adjuvant, if recommended. If tankmixes are required, product should be added to the spray tank in the following order: ABOUND Flowable, other WG or dry flowable formulations, wettable powders and flowable (aqueous suspensions) products. Finish filling the tank to the desired volume to obtain the proper spray concentration. Maintain agitation throughout the spraying operation. Do not allow spray mixture to stand overnight or for prolonged periods.

Make up only the amount of spray required for immediate use. Sprayers should be thoroughly cleaned immediately after application.

SPRAY DRIFT MANAGEMENT

ATTENTION

ABOUND Flowable is extremely phytotoxic to certain apple varieties.

AVOID SPRAY DRIFT. Extreme care must be used to prevent injury to apple trees (and apple fruit).

DO NOT spray ABOUND Flowable where spray drift may reach apple trees.

DO NOT spray when conditions favor drift beyond area intended for application. Conditions which may contribute to drift include thermal inversion, wind speed and direction, sprayer nozzle/pressure combinations, spray droplet size, etc. Contact your State extension agent for spray drift prevention guidelines in your area.

DO NOT use spray equipment which has been previously used to apply ABOUND Flowable to spray apple trees. Even trace amounts can cause unacceptable phytotoxicity.

AVOIDING SPRAY DRIFT IS THE RESPONSIBILITY OF THE APPLICATOR.

Do not apply when weather conditions favor drift from treated areas to non-target aquatic habitat.

Directions for Use Through Sprinkler Irrigation Systems

Spray Preparation: Chemical tank and injector system should be thoroughly cleaned. Flush system with clean water.

Application Instructions: Apply ABOUND Flowable at rates and timings as described in this label.

Use Precautions for Sprinkler Irrigation Applications:

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

Apply with center pivot or continuous-move equipment distributing $\frac{1}{2}$ acre-inch or less during treatment. In general, use the least amount of water required for proper distribution and coverage. If stationary systems (solid set, handlines or wheel lines other than continuous-move) are used, this product should be injected into no more than the last 20-30 minutes of the set. Do not apply when winds are greater than 10-15 mph to avoid drift or wind skips. Do not apply when wind speed favors drift beyond the area intended for treatment. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform treated water. Thorough coverage of foliage is required for good control. Good agitation should be maintained during the entire application period.

If you have questions about calibration you should contact State Extension Service specialist, equipment manufacturers or other experts.

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.

Allow sufficient time for pesticide to be flushed through all lines and all nozzles before turning off irrigation water. 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.

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.

Specific Instructions for Public Water Systems:

1. "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."
2. "Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, back-flow 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."
3. "The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump."
4. "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."
5. "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."
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."

TANK MIXES/COMPATIBILITY

ABOUND Flowable is compatible with many commonly used fungicides, liquid fertilizers, herbicides, insecticides and biological control products. If tank mixes are desired, observe all directions, precautions, and limitations on labeling of all products used. Consult compatibility charts or your local or state agricultural or turf authorities for compatibility information. Do not combine ABOUND Flowable in the spray tank with pesticides, surfactants or fertilizers, unless compatibility charts or your own prior use has shown that the combination is physically compatible, effective and non-injurious under your conditions of use. If physical compatibility is unknown, the following procedure should be followed: Pour the recommended proportions of the products into a suitable container of water, mix thoroughly and allow to stand at least twenty (20) minutes. If the combination remains mixed or can be re-mixed readily, the mixture is considered physically compatible.

SOILBORNE/SEEDLING DISEASE CONTROL

ABOUND can provide control of many soilborne diseases if applied early in the growing season. Specific applications for soilborne diseases include in-furrow applications and banded applications applied over the row, either shortly after plant emergence or during herbicide applications or cultivation. These applications will provide control of pre- or post-emergence damping off and diseases that infect plants at the soil-plant interface.

For banded applications, apply ABOUND prior to infection as a directed spray to the soil, using single or multiple nozzles, adjusted to provide thorough coverage of the lower stems and the soil surface surrounding the plants. Band width should be limited to 7 inches or less. Apply ABOUND at a rate of 0.4-0.8 fl oz product (0.1-0.2 oz ai)/1000 foot of row.

For in-furrow applications, apply ABOUND as an in-furrow spray in 5-15 gallons of water at planting. Mount the spray nozzle so the spray is directed into the furrow just before the seed are covered. Use the higher rate when the weather conditions are expected to be conducive for disease development, if the field has a history of Pythium problems, or if minimum/low till programs are in place.

IN-FURROW APPLICATION RATES

RATE PER 1000 ROW FEET		PRODUCT PER ACRE (fl oz)				
oz product	oz ai	30" rows	32" rows	36" rows	38" rows	40" rows
0.4	0.1	7.0	6.5	5.8	5.5	5.2
0.6	0.15	10.5	9.8	8.7	8.3	7.8

40" = 13,068 row ft, 38" = 13,754 row ft, 36" = 14,520 row ft, 32" = 16,315 row ft, and 30" = 17,424 row ft/Acre

DIRECTIONS FOR APPLICATION

Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Almonds	Alternaria leaf and fruit spot <i>(Alternaria alternata)</i> Anthracnose <i>(Colletotrichum acutatum)</i> Brown Rot Blossom Blight <i>(Monilinia laxa, M. fructicola)</i> Leaf Blight <i>(Seimatosporium lichenicola)</i> Leaf rust <i>(Tranzschelia discolor)</i> Scab <i>(Cladosporium carpophilum)</i> Shothole <i>(Wilsonomyces carpophilus)</i>	6.2-15.4 (0.10-0.25)	<p>Integrated Pest (Disease) Management: ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, removal of plant debris in which inoculum overwinters and proper timing and placement of irrigation.</p> <p>Resistance Management: For blossom blight do not apply more than two sequential sprays of ABOUND before alternating with a fungicide that has a different mode of action. For all other almond diseases do not apply more than four sequential sprays of ABOUND before alternation with a fungicide that has a different mode of action. Do not make more than six applications of ABOUND per acre per year.</p> <p>Application Directions: ABOUND applications should begin prior to disease development and continue throughout the season following the resistance management guidelines. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates to improve coverage.</p> <p>For blossom blight begin applications at early bloom and continue through petal fall. For anthracnose, scab and shothole begin applications prior to disease development and continue at 10-14 day intervals throughout the season.</p> <p>Do not apply more than 2.88 quarts product/acre/season (1.5 lb. ai/A). Do not apply within 28 days of harvest.</p>
Apricots	See Stone Fruit		

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 ABOUND Flowable
 ABOUND Tier V September 21, 2000
 EPA requested changes

Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Bananas Plantains	Black Sigatoka <i>(Mycosphaerella fijiensis)</i> Yellow Sigatoka <i>(Mycosphaerella musicola)</i>	5.5-8.3 (0.09-0.135)	<p><u>Integrated Pest (Disease) Management:</u> ABOUND should be integrated into an overall disease management strategy that includes canopy management through removal of suckers, proper plant spacing, selection of varieties with disease tolerance, removal of plant debris in which inoculum overwinters, and good surface water drainage.</p> <p><u>Resistance Management:</u> Do not apply more than two sequential sprays of ABOUND before alternating with a fungicide that has a different mode of action. Do not make more than eight applications of ABOUND per acre per year.</p> <p><u>Application Directions:</u> ABOUND applications should begin prior to or in the early stages of disease development and continue throughout the season every 12-14 days following the resistance management guidelines. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates to improve coverage.</p> <p>Do not apply more than 2.08 quarts product/acre/season (1.08 lb ai/A). May be applied the day of harvest.</p>
Post Harvest Applications	Crown Rot/Crown Mold <i>(Colletotrichum musae,</i> <i>Fusarium pallidoroseum,</i> <i>Acremonium spp., Ceratocystis</i> <i>paradoxa, Glomerella</i> <i>cingulata),</i> <i>Penicillium spp.</i>	300-400 ppm solution	Apply ABOUND as a single application spray of a 300-400 ppm solution to achieve good coverage, spray should be directed at the cut ends of the bananas. Alum (1% w/v) should be added to the spray solution. Application of the 300 ppm rate is appropriate for short distance transportation (e.g. within the USA), when a longer time in transport is expected (export) use the 400 ppm rate.

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 ABOUND Flowable
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 EPA requested changes

Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Barley	Kernel Blight (<i>Alternaria</i> spp.)	6.2-12.3 (0.1-0.2)	<p><u>Integrated Pest (Disease) Management:</u> ABOUND should be integrated into an overall disease management strategy that includes proper selection of varieties with disease tolerance, proper timing and placement of irrigation, removal of plant debris in which inoculum overwinters, plant residue management, and crop rotation.</p> <p><u>Resistance Management:</u> Do not make more than two applications of ABOUND per acre per year.</p> <p><u>Application Directions:</u> ABOUND should be applied prior to or in the early stages of disease development from jointing (Feekes 6 or Zadok's 31) up to late head emergence (Feekes 10.5 or Zadok's 59). Applications may be made by ground, air or chemigation. A crop oil concentrate adjuvant may be added at 1.0% V/V to optimize efficacy.</p>
	Leaf Rust (<i>Puccinia hordei</i>)		
	Net blotch (<i>Pyrenophora teres</i>)	9.2-12.3 (0.15-0.2)	<p>Do not apply until after forage stage (Feekes 6 or Zadok's 31). Do not apply later than Feekes growth stage 10.5 (Zadok's growth stage 59). Do not harvest treated barley for forage. Do not apply within 14 days of harvest for hay. Do not apply within 45 days of harvest for grain and straw.</p>
	Barley Stripe (<i>Pyrenophora graminea</i>)		
	Powdery Mildew (<i>Erysiphe graminis</i> f. sp. <i>hordei</i>)	12.3 (0.2)	
	Stagonospora blotch (<i>Stagonospora nodorum</i>)		<p>Do not apply more than 0.77 quarts product/acre/season (0.4 lb ai/A).</p>
Beet, Sugar	See Root and Tuber Vegetables		

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Bulb Vegetables Garlic, Leek Onion, bulb; Onion, green; Welch onion Shallot	Foliar Diseases Purple blotch <i>(Alternaria porri)</i> Rust <i>(Puccinia allii)</i> White rot <i>(Sclerotium cepivorum)</i>	6.2-12.3 (0.1-0.20)	<p><u>Integrated Pest (Disease) Management:</u> ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, optimum plant populations, proper fertilization, plant residue management, crop rotation and proper timing and placement of irrigation.</p> <p><u>Resistance Management:</u> Do not apply more than three sequential applications of ABOUND before alternating with a fungicide that has a different mode of action. Do not make more than six applications of ABOUND per crop per acre per year.</p>
	Downy mildew <i>(Peronospora destructor)</i>	9.2-15.4 (0.15-0.25)	<p><u>Application Directions:</u> For downy mildew control, maintain a strict one-to-one alternation program do not make more than one application of ABOUND before alternating with fungicides that have a different mode of action. Make preventative applications on a 5-7 day schedule. For all other diseases, ABOUND applications should begin prior to disease development and continue throughout the season every 7-14 days following the resistance management guidelines. Applications may be made by ground, air or chemigation. If applications are made by air, the higher rates should be used for adequate control. An adjuvant may be added at recommended rates to improve coverage.</p>
	Soilborne Diseases Rhizoctonia damping-off <i>(Rhizoctonia solani)</i>		<p>For soilborne/seedling disease control, see directions under GENERAL INFORMATION section.</p> <p>Do not apply more than 2.88 quarts of product/crop/acre/season (1.5 lbs ai/A). May be applied the day of harvest</p>

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Canola	Blackleg <i>(Leptosphaeria maculans)</i> Alternaria Blackspot <i>(Alternaria spp)</i> Sclerotinia stem rot <i>(Sclerotinia sclerotiorum)</i>	6.2-15.4 (0.1-0.25)	<p><u>Integrated Pest (Disease) Management</u> ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, certified seed, seed treatment and crop rotation.</p> <p><u>Resistance Management</u> Do not make more than three applications of ABOUND per acre per year.</p> <p><u>Application Directions:</u> For blackleg, ABOUND applications should be made at the 2-4 leaf stage. For Alternaria or Sclerotinia, 15.4 oz product/A should be applied at 10-25% flowering (3-7 days following first flower). For control of Alternaria alone, 8.0 oz product/A may be applied at pod stage (approximately 95% petal fall).</p> <p>Do not make applications later than 95% petal fall (pod stage). Do not make more than three applications Do not apply more than more than 27 oz product per year or 0.45 lb ai/A per year.</p>
Cantaloupe	See Cucurbits		

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Celery	Early blight (<i>Cercospora apii</i>) Late blight (<i>Septoria apicola</i>) For additional diseases, see Leafy Vegetables Soilborne Diseases Rhizoctonia root rot (<i>Rhizoctonia solani</i>)	9.2-15.4 (0.15-0.25)	<p><u>Integrated Pest (Disease) Management:</u> ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, optimum plant populations, proper fertilization, plant residue management, crop rotation and proper timing and placement of irrigation.</p> <p><u>Resistance Management:</u> Do not apply more than three sequential applications of ABOUND before alternating with a fungicide that has a different mode of action. Do not make more than six applications of ABOUND per crop per acre per year.</p> <p><u>Application Directions:</u> ABOUND applications should begin prior to disease development and continue throughout the season every 7-14 days following the resistance management guidelines. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates to improve coverage.</p> <p>For soilborne/seedling disease control, see directions and rates under GENERAL INFORMATION section.</p> <p>Do not apply more than 2.88 quarts of product/crop/acre/season (1.5 lbs ai/A). May be applied the day of harvest</p>
Cherry	See Stone Fruit		

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Christmas Trees	Diplodia tip blight <i>(Diplodia pinea)</i> Lophodermium needlecast <i>(Lophodermium pinastri)</i> Swiss needlecast <i>(Phaeocryptopus gaumannii)</i>	6.2-15.4 (0.10-0.25)	<p><u>Integrated Pest (Disease) Management:</u> ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance and removal of plant debris in which inoculum may overwinter.</p> <p><u>Resistance Management:</u> Do not apply more than four sequential sprays of ABOUND before alternating with a fungicide that has a different mode of action. Do not make more than eight applications of ABOUND per acre per year.</p> <p><u>Application Directions:</u> ABOUND applications should begin prior to or in the early stages of disease development and continue throughout the season every 7-21 day intervals following the resistance management guidelines. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates to improve coverage.</p> <p>Do not apply more than 3.75 quarts product/acre/season (2.0 lb. ai/A).</p>
Cilantro	See Leafy Vegetables – coriander leaves		

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Citrus Fruit Calamondin. Citron. Citrus hybrids. Grapefruit, Kumquat, Lemon, Lime, Mandarin, Orange (sour and sweet); Pummelo, Satsuma mandarin.	Greasy spot <i>(Mycosphaerella citri)</i> Melanose <i>(Diaporthe citri)</i> Scab <i>(Elsinoe fawcettii)</i> Albinism <i>(Alternaria alternata pv citri)</i> Post bloom fruit drop (PFD) <i>(Colletotrichum acutatum)</i> Alternaria leaf and fruit spot <i>(Alternaria citri)</i>	12.4-15.4 (0.2-0.25)	<p><u>Integrated Pest (Disease) Management:</u> ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, removal of plant debris in which inoculum overwinters, and proper timing of irrigation.</p> <p><u>Resistance Management:</u> Do not apply more than three sequential sprays of ABOUND before alternation with a fungicide that has a different mode of action. Do not make more than six applications of ABOUND per acre per year.</p> <p><u>Application Directions:</u> ABOUND applications should begin prior to disease development and continue throughout the season on 7-21 day intervals following the resistance management guidelines. Under conditions that favor severe disease epidemics, the higher application rates should be used. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates to improve coverage.</p> <p>Do not apply more than 2.88 quarts product/acre/season (1.5 lb ai/A). May be applied the day of harvest</p>

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Corn (field, sweet, pop)	Rust (<i>Puccinia sorghi</i>)	6.2-9.2 (0.10-0.15)	<u>Integrated Pest (Disease) Management:</u> ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, optimum plant populations, proper fertilization, plant residue management, crop rotation, and water management practices.
	Anthracnose leaf blight (<i>Colletotrichum graminicola</i>) Gray leaf spot (<i>Cercospora sorghi</i>) Northern corn leaf blight (<i>Setosphaeria turcica</i>) Soilborne Diseases Rhizoctonia root and stalk rot (<i>Rhizoctonia solani</i>)	9.2-15.4 (0.15-0.25)	<u>Resistance Management:</u> Do not apply more than two sequential applications of ABOUND before alternating with a fungicide that has a different mode of action. Do not make more than eight applications of ABOUND per crop per acre per year. <u>Application Directions:</u> For gray leaf spot, apply ABOUND at the onset of disease. A second application may be required 14 days later if disease pressure persists. For all other diseases, ABOUND applications should begin prior to disease development and may continue throughout the season every 7-14 days following the resistance management guidelines. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates to improve coverage. For soilborne/seedling disease control, see directions and rates under GENERAL INFORMATION section. Do not apply more than 3.75 quarts of product/crop/acre/season (2.0 lbs ai/A). Do not apply within 7 days of harvest.

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Cotton	Southern blight <i>(Sclerotium rolfsii)</i> Rhizoctonia seedling blight <i>(Rhizoctonia solani)</i> Pythium seedling blight <i>(Pythium aphanidermatum)</i>	Banded 0.4-0.8 fl oz product per 1000 row feet (0.1-0.2 oz ai per 1000 row feet) In-Furrow 0.4-0.8 fl oz product per 1000 row feet (0.1-0.2 oz ai per 1000 row feet)	<p>Integrated Pest (Disease) Management: ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, optimum plant populations, proper fertilization, plant residue management, crop rotation and proper water management.</p> <p>Application Directions: For banded applications, apply ABOUND prior to infection as a directed spray to the soil, using single or multiple nozzles, adjusted to provide thorough coverage of the lower stems and the soil surface surrounding the plants. Band width should be limited to 7 inches or less. Apply ABOUND at a rate of 0.4-0.8 fl oz product (0.1-0.2 oz ai)/1000 foot of row.</p> <p>For in-furrow applications, apply ABOUND as an in-furrow spray in 5-15 gallons of water at planting. Mount the spray nozzle so the spray is directed into the furrow just before the seed are covered. Use the higher rate when the weather conditions are expected to be conducive for disease development, if the field has a history of Pythium problems, or if minimum/low till programs are in place.</p> <p>See GENERAL INFORMATION section for table illustrating total fluid ounces per acre with various row spacings.</p> <p>Make only one application per use season.</p>
Cucumbers	See Cucurbits		

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Cucurbits cantaloupe chayote chinese- waxgourd cucumber gourds melons Momordica spp (bitter melon, balsam apple) honeydew muskmelon watermelon pumpkin squash zucchini	Anthracnose (<i>Colletotrichum lagenarium</i>) Belly Rot (<i>Rhizoctonia solani</i>) Downy Mildew (<i>Pseudoperonospora cubensis</i>) Gummy Stem Blight (<i>Didymella bryoniae</i>) Leaf spots (<i>Alternaria</i> spp, <i>Cercospora</i> spp.) Myrothecium canker (<i>Myrothecium roridum</i>) Powdery Mildew (<i>Sphaerotheca fuliginea</i> , <i>Erysiphe cichoracearum</i>) Soilborne diseases Rhizoctonia root rot (<i>Rhizoctonia solani</i>)	6.2-15.4 (0.10-0.25)	<p>Integrated Pest (Disease) Management: ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, optimum plant populations, proper fertilization, plant residue management, crop rotation and proper timing and placement of irrigation.</p> <p>Resistance Management: Do not apply more than two sequential applications of ABOUND before alternating with a fungicide that has a different mode of action. Do not make more than six applications of ABOUND per crop per acre per year.</p> <p>Application Directions: For both downy and powdery mildew control, maintain a strict one-to-one alternation program do not make more than one application of HERITAGE before alternating with fungicides that have a different mode of action. Make preventative applications on a 5-7 day schedule. For belly rot control, the first application should be made at the 1-3 leaf crop stage with a second application just prior to vine tip over or 10-14 days later whichever occurs first. For all other diseases, ABOUND applications should begin prior to or in the early stages of disease development and continue throughout the season every 7-14 days following the resistance management guidelines. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates to improve coverage.</p> <p>ABOUND should not be tank mixed with COC, MSO or silicon adjuvants. ABOUND should not be tank mixed with Malathion, Kelthane®, Thiodan®, Phaser®, Lannate®, Lorsban®, M-PEDE® or Botran®.</p> <p>For soilborne/seedling disease control, see directions and rates under GENERAL INFORMATION section.</p> <p>Do not apply more than 2.88 quarts of product/crop/acre/season (1.5 lbs ai/A). Do not apply within 1 day of harvest.</p>
Gourds	See Cucurbits		

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Grapes Muscadines	Downy Mildew (<i>Plasmopara viticola</i>) Phomopsis Cane and Leaf Spot (<i>Phomopsis viticola</i>) Powdery Mildew (<i>Uncinula necator</i>) Black Rot (<i>Guignardia bidwellii</i>)	9.8-15.4 (0.16-0.25)	<p>Integrated Pest (Disease) Management: ABOUND should be integrated into an overall disease management strategy that includes canopy management through pruning and thinning, proper selection of varieties with disease tolerance, proper timing and placement of irrigation and removal of plant debris in which inoculum overwinters.</p> <p>Resistance Management: Do not apply more than two sequential sprays of ABOUND before alternating with a fungicide that has a different mode of action. Do not make more than six (6) applications of ABOUND per acre per year.</p> <p>Application Directions: ABOUND applications should begin prior to disease development and continue throughout the season every 10-14 days following the resistance management guidelines. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates.</p> <p>Do not apply more than 2.88 quarts product/acre/season (1.5 lb ai/A). Do not apply within 14 days of harvest.</p> <p style="text-align: center;">ATTENTION</p> <p>ABOUND is extremely phytotoxic to certain apple varieties.</p> <p>AVOID SPRAY DRIFT. Extreme care must be used to prevent injury to apple trees (and apple fruit).</p> <p>DO NOT spray ABOUND where spray drift may reach apple trees.</p> <p>DO NOT spray when conditions favor drift beyond area intended for application. Conditions which may contribute to drift include thermal inversion, wind speed and direction, sprayer nozzle/pressure combinations, spray droplet size, etc. Contact your State extension agent for spray drift prevention guidelines in your area.</p> <p>DO NOT use spray equipment which has been previously used to apply ABOUND to spray apple trees. Even trace amounts can cause unacceptable phytotoxicity.</p>

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Honeydew Melons	See Cucurbits		
Leafy Vegetables Amaranth, Arugula, Cardoon, Celery, Celtuce, Chervil, Chrysanthemum- edible; Coriander, leaves (Cilantro); Corn salad, Cress, Dandelion, Dock, Endive, Fennel, Lettuce, head and leaf; Orach, Parsley, Purslane, Radicchio, Rhubarb, Spinach, Swiss Chard	Foliar Diseases Alternaria leaf spot (<i>Alternaria sonchi</i> , <i>A. spp</i>) Downy mildew (<i>Bremia lactucae</i>) Powdery mildew (<i>Erysiphe cichoracearum</i>) Cercospora leaf spot (<i>Cercospora spp</i>) Anthracnose (<i>Microdochium panattonianum</i> , <i>C. dematium</i>) Septoria leaf spot (<i>Septoria petroselini</i>) White rust (<i>Albugo occidentalis</i>) Soilborne Diseases Webb blight, Bottom rot, Crater rot, Root rot (<i>Rhizoctonia solani</i>)	6.2-15.4 (0.1-0.25)	<p>Integrated Pest (Disease) Management: ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, optimum plant populations, proper fertilization, plant residue management, crop rotation and proper timing and placement of irrigation.</p> <p>Resistance Management: Do not apply more than three sequential applications of ABOUND (following application directions) before alternating with a fungicide that has a different mode of action. Do not make more than six applications of ABOUND per crop per acre per year.</p> <p>Application Directions: For both downy and powdery mildew control, maintain a strict one-to-one alternation program do not make more than one application of ABOUND before alternating with fungicides that have a different mode of action. Make preventative applications on a 5-7 day schedule. For all other diseases, ABOUND applications should begin prior to disease development and continue throughout the season every 7-14 days following the resistance management guidelines. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates to improve coverage.</p> <p>ATTENTION: Applications of ABOUND to spinach and lettuce foliage have contributed to foliar phytotoxicity under certain circumstances. Proceed with caution with regard to tankmixes and adjuvants when treating spinach and lettuce with ABOUND. ABOUND must not be tank mixed on leaf lettuce with AMBUSH WP, Pounce WP, Allette, Warrior T, or an other product that may increase the penetration of ABOUND into the leaf surface, such as, but not limited to silicone wetters.</p> <p>For soilborne/seedling disease control, see directions and rates under GENERAL INFORMATION section.</p> <p>Do not apply more than 2.88 quarts of product/crop/acre/season (1.5 lbs ai/A). May be applied the day of harvest.</p>
Lettuce	See Leafy Vegetables		
Melons	See Cucurbits		

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Muskmelons	See Cucurbits		
Nectarines	See Stone Fruit		
Onions	See Bulb Vegetables		
Peach	See Stone Fruit		
Peanuts	Early Leaf spot (<i>Cercospora arachidicola</i>) Late Leaf spot (<i>Cercosporidium personatum</i>) Pythium Pod Rot (<i>Pythium myriotylum</i>) Rust (<i>Puccinia arachidis</i>) Web blotch (<i>Phoma arachidicola</i>) Soilborne Diseases Rhizoctonia Peg and Pod Rot (<i>Rhizoctonia solani</i>) Stem Rot/White Mold (<i>Sclerotium rolfsii</i>)	6.2-24.6 (0.10-0.40)	<p>Integrated Pest (Disease) Management: ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, proper timing and placement of irrigation, crop rotation and crop residue management.</p> <p>Resistance Management: Do not make more than two applications of ABOUND per acre per year.</p> <p>Application Directions: ABOUND should be applied at approximately 60 and 90 days after planting as a foliar application. This application regime may be applied earlier in the season if environmental conditions favor disease development. These two applications of ABOUND will provide season-long protection against the soil borne diseases labeled and will also provide control of early and late leaf spot for a 10-14 day period after each spray. For control of Pythium, a rate of 24.6 oz is generally required. Additional applications of other labeled fungicides on a leaf spot application schedule will be required to provide season-long disease control of the leaf spot diseases. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates to improve coverage.</p> <p>For soilborne/seedling disease control, see directions and rates under GENERAL INFORMATION section.</p> <p>Do not apply more than 1.54 quarts product/acre/season (0.8 lbs ai/acre/season). Do not apply within 14 days of harvest.</p>

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Pecans	Anthracnose (<i>Glomerella cingulata</i>) Scab (<i>Cladosporium caryigenum</i>)	6.2-12.3 (0.10-0.20)	<p><u>Integrated Pest (Disease) Management:</u> ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with tolerance to disease and removal of plant debris in which inoculum overwinters.</p> <p><u>Resistance Management:</u> Do not apply more than four sequential sprays of ABOUND before alternation with a fungicide that has a different mode of action. Do not make more than six applications of ABOUND per acre per year.</p> <p><u>Application Directions:</u> ABOUND applications should begin prior to or in the early stages of disease development and continue throughout the season on 7-21 day intervals following the resistance management guidelines. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates to improve coverage.</p> <p>Do not apply more than 2.31 quarts product/acre/season (1.2 lb ai/A). Do not apply within 45 days of harvest.</p>
Pistachios	Alternaria Late Blight (<i>Alternaria alternata</i>) Botryosphaeria panicle and shoot blight (<i>Botryosphaeria dothidea</i>) Septoria leaf spot (<i>Septoria pistaciarum</i>)	6.2-15.4 (0.10-0.25)	<p><u>Integrated Pest (Disease) Management:</u> ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance and removal of plant debris in which inoculum overwinters.</p> <p><u>Resistance Management:</u> Do not apply more than four sequential sprays of ABOUND before alternation with a fungicide that has a different mode of action. Do not make more than six applications of ABOUND per acre per year.</p> <p><u>Application Directions:</u> ABOUND applications should begin prior to disease development and continue throughout the season on 7-21 day intervals following the resistance management guidelines. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates.</p> <p>Do not apply more than 2.88 quarts product/acre/season (1.5 lb ai/A). Do not apply within 28 days of harvest.</p>
Plums	See Stone Fruit		

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Potatoes	<p>Early Blight (<i>Alternaria solani</i>)</p> <p>Late Blight (<i>Phytophthora infestans</i>)</p> <p>Black dot (<i>Colletotrichum coccodes</i>)</p> <p>Powdery mildew (<i>Erysiphe cichoracearum</i>)</p> <p>Soilborne Diseases Black scurf (<i>Rhizoctonia solani</i>)</p> <p>Silver scurf (<i>Helminthosporium solani</i>)</p>	6.2-20.3 (0.1-0.33)	<p><u>Integrated Pest (Disease) Management:</u> ABOUND should be integrated into an overall disease management strategy that includes removal of plant debris, in which inoculum overwinters, selection of varieties with tolerance to disease, clean certified seed, seedpiece treatment, and disease forecasting.</p> <p><u>Resistance Management:</u> Apply ABOUND in a strict one-to-one alternation program Do not make more than one application of ABOUND before alternation with fungicides that have a different mode of action, such as BRAVO. Make applications on a 5-7 day schedule. Do not alternate or tank-mix with fungicides to which resistance has developed. Do not make more than six (6) applications per year.</p> <p><u>Application Directions:</u> For both early and late blight, maintain the strict one-to-one alternation program described above.</p> <p>Early blight - For a 7-day application schedule use ABOUND 6.2 oz product/A, if the interval is increased to 14 days use the 12.3 oz product/A rate.</p> <p>Late blight - Apply ABOUND at 6.2 oz product/A on a 7 day schedule. Initiate late blight applications in a preventative schedule prior to disease development according to local practices. If late blight symptoms develop or conditions favor disease increase the ABOUND rate to 12.3 to 15.4 oz product/A and use a 5-day schedule. For all other diseases, ABOUND applications should begin prior to disease development and continue throughout the season every 7-14 days following the resistance management guidelines. Applications may be made by ground, air or chemigation. Addition of a spreader/sticker may improve coverage. Do not make more than six applications of ABOUND per acre per year for all diseases.</p> <p>For soilborne/seedling disease control, see directions and rates under GENERAL INFORMATION section.</p> <p>Do not apply more than 3.75 quarts product/acre/season (2.0 LB ai/A). May be applied the day of harvest. Do not apply within 14 days of harvest.</p>
Prunes	See Stone Fruit		
Pumpkins	See Cucurbits		

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Rice	<p><u>Sheath/Stem Diseases</u> Aggregate Sheath Spot <i>(Rhizoctonia oryzae-sativae)</i> Black Sheath Rot <i>(Gaeumannomyces graminis var. graminis)</i> Sheath Blight <i>(Rhizoctonia solani)</i> Sheath Spot <i>(Rhizoctonia oryzae)</i> Stem Rot <i>(Sclerotium oryzae)</i></p> <p><u>Foliar Diseases</u> Brown Leaf spot <i>(Cochliobolus miyabeanus)</i> Leaf Smut <i>(Entyloma oryzae)</i> Narrow Brown Leaf spot <i>(Cercospora oryzae)</i></p> <p><u>Panicle Diseases</u> Kernel Smut <i>(Neovossia barclayana)</i> Panicle Blast <i>(Pyricularia grisea)</i></p>	6.2-18.5 (0.10 - 0.30)	<p><u>Integrated Pest (Disease) Management:</u> ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, optimum plant populations, proper fertilization, plant residue management, crop rotation, and sound water management practices.</p> <p><u>Resistance Management:</u> When ABOUND is being applied for panicle blast on continuous rice acreage (no rotation to other crops) no more than four sequential applications of ABOUND should be made over multiple years before alternating with a fungicide with a different mode of action. Do not make more than three applications of ABOUND per acre per year.</p> <p><u>Application Directions:</u> ABOUND should be applied prior to or in the early stages of disease development. Applications may be made by ground, air or chemigation. For aerial application, volumes should be 5-10 GPA. An adjuvant may be added at recommended rates to improve coverage.</p> <p>For stem/sheath diseases including sheath blight, stem rot, black sheath rot, aggregate sheath spot and sheath spot apply when disease is less than 4 inches above water line usually between panicle differentiation (PD) +5 days to PD+10 days or at initial sign of disease. Under heavy disease pressure and conditions favorable for disease development, a second application may be applied.</p> <p>For foliar and panicle diseases, apply ABOUND prior to or in the early stages of disease development. ABOUND must be applied as a preventative treatment for blast control and applied prior to favorable conditions for blast development. For panicle blast an application should be applied at mid-boot to boot-split but prior to full head emergence. A second application should be applied when panicles are approximately 60-90% emerged from the boot (7-14 days later).</p> <p>Do not treat rice fields used for aquaculture of fish and crustacea. Do not apply when weather conditions favor drift from treated areas to non-target aquatic habitat. Applicators should use care in making applications near non-target aquatic habitats. Do not apply more than 1.34 quarts of product/acre/season (0.7 lbs ai/A). Do not apply within 28 days of harvest. Do not allow release of irrigation or flood water for at least 14 days after the last application.</p>

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Roses	Black Spot <i>(Diplocarpa rosae)</i> Downy Mildew <i>(Peronospora sparsa)</i> Powdery Mildew <i>(Sphaerotheca pannosa)</i> Rust <i>(Phragmidium mucronatum,</i> <i>P. tuberculatum, and other</i> <i>Phragmidium spp)</i> Septoria Leaf Spot <i>(Septoria rosea)</i> Alternaria Leaf Spot <i>(Alternaria alternata)</i>	3.1-15.4 (0.05-0.25)	<p><u>Integrated Pest (Disease) Management:</u> ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, optimum plant populations, proper fertilization, winter and/or spring pruning, plant residue management and proper timing and placement of irrigation.</p> <p><u>Resistance Management:</u> Do not make more than four (4) sequential applications of ABOUND before alternating with a fungicide that has a different mode of action. Do not make more than eight applications per acre per year.</p> <p><u>Application Directions:</u> ABOUND applications should begin prior to or in the early stages of disease development and continue throughout the season on 7-21 day intervals following the resistance management guidelines. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates to improve coverage.</p> <p><u>Plant Safety:</u> ABOUND has been shown to be safe when applied to roses. However, all varieties of roses have not been evaluated for safety. Small scale variety safety testing must be conducted to insure plant safety prior to large scale application. In addition, do not tankmix ABOUND with other fungicides, insecticides, herbicides, fertilizer, etc. unless local experience indicates that the tankmix is safe to roses.</p> <p>Do not apply more than 3.75 quarts product/acre/season (2.0 lb. ai/A).</p>

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Soybeans	Aerial blight (<i>Rhizoctonia solani</i>) Frogeye leafspot (<i>Cercospora soja</i>)	9.2-15.4 (0.15-0.25)	<p>Integrated Pest (Disease) Management: ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, optimum plant populations, proper fertilization, plant residue management, crop rotation and proper timing and placement of irrigation.</p> <p>Resistance Management: No more than two applications of ABOUND should be made per growing season. Do not alternate or tank mix with fungicides to which resistance has developed in the pathogen population.</p> <p>Application Directions: ABOUND applications should begin prior to disease development. Use the high rates under conditions favorable for severe disease pressure, dense plant canopies, or when susceptible varieties are planted. Contact Extension personnel for local economic thresholds and timings for specific diseases in your area. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates to improve coverage.</p>
	Anthracnose (<i>Colletotrichum truncatum</i>) Alternaria leaf spot (<i>Alternaria spp</i>) Brown spot (<i>Septoria glycines</i>) Cercospora blight and leaf spot (<i>Cercospora kikuchii</i>) Pod and Stem blight (<i>Diaporthe phaseolorum</i>) Soilborne Diseases Southern blight (<i>Sclerotium rolfsii</i>)	12.3-15.4 (0.2-0.25)	
Spinach	See leafy Vegetables		<p>For soilborne/seedling disease control, see directions and rates under GENERAL INFORMATION section.</p> <p>Do not apply more than 2.88 quarts of product/crop/acre/season (1.5 lbs ai/A). Do not make more than one application at 15.4 oz product/acre or 0.25 lbs ai/A to soybean forage and hay. Do not apply within 14 days of harvest of soybeans (bean). May be applied the day of harvest to soybean forage and hay.</p>

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Tomatoes	Anthracnose <i>(Colletotrichum coccodes)</i> Black Mold <i>(Alternaria alternata)</i> Buckeye Rot <i>(Phytophthora spp.)</i> Early Blight <i>(Alternaria solani)</i> Powdery Mildew <i>(Oidiopsis sicula)</i> Septoria Leaf spot <i>(Septoria lycopersici)</i> Target spot <i>(Corynespora cassiicola)</i>	1.5-6.2 (0.025-0.10)	<p>Integrated Pest (Disease) Management: ABOUND should be integrated into an overall disease management strategy that includes proper selection of varieties with disease tolerance, removal of plant debris in which inoculum overwinters, plant residue management, crop rotation and proper timing and placement of irrigation.</p> <p>Resistance Management: When ABOUND is being applied for the control of early blight, Septoria leaf spot and/or anthracnose, no more than four sequential applications of ABOUND should be made before alternating with a fungicide with a different mode of action. When ABOUND is being applied for the control of late blight, no more than two sequential applications of ABOUND should be made before alternation with a fungicide with a different mode of action. If late blight should occur during an early blight spray program, switch immediately to the late blight spray program beginning with a fungicide that has a different mode of action. Do not make more than six applications per acre per year.</p> <p>Application Directions: ABOUND applications should begin prior to or in the early stages of disease development and continue throughout the season following the resistance management guidelines. For late blight ABOUND should be applied at 5-7 day intervals, maintain a strict one-to-one alternation program do not make more than one application of HERITAGE before alternating with fungicides that have a different mode of action. For all other tomato diseases ABOUND should be applied on 7-21 day intervals. Applications may be made by ground, air or chemigation.</p> <p>ABOUND should not be applied until 21 days after transplanting or 35 days after seeding. ABOUND should not be applied within +/-6 days of a postemergence broadcast application of Sencor.</p> <p>Do not apply with an adjuvant due to the potential for phytotoxicity.</p> <p>Do not apply more than 1.15 quarts product/acre/season (0.6 lb ai/A)</p> <p>May be applied the day of harvest.</p>
	Late Blight <i>(Phytophthora infestans)</i>	3.1-6.2 (0.05 - 0.10)	

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Tree Nuts Almonds(see specific use instructions) Beechnut Brazil nut Butternut Cashew Chestnut Chinquapin Filbert Hickory Macadamia Pecan Walnut Pistachios (see specific use instructions)	Alternaria leaf and fruit spot (<i>Alternaria alternata</i>) Anthracnose (<i>Colletotrichum acutatum</i> , <i>Glomerella cingulata</i>) Late blight (<i>Alternaria alternata</i>) Scab (<i>Cladosporium carpophilum</i>) Septoria leaf spot (<i>Septoria pistaciarum</i>) Shothole (<i>Wilsonomyces carpophilus</i>)	6.2-12.3 (0.10-0.20)	<p><u>Integrated Pest (Disease) Management:</u> ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, removal of plant debris in which inoculum overwinters and proper timing and placement of irrigation.</p> <p><u>Resistance Management:</u> For blossom blight do not apply more than two sequential sprays of ABOUND before alternating with a fungicide that has a different mode of action. For all other diseases do not apply more than four sequential sprays of ABOUND before alternation with a fungicide that has a different mode of action. Do not make more than six applications of ABOUND per acre per year.</p> <p><u>Application Directions:</u> ABOUND applications should begin prior to or in the early stages of disease development and continue throughout the season following the resistance management guidelines. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates to improve coverage.</p>
	Blossom Blight (<i>Monilinia laxa</i> , <i>M. fructicola</i>)	12.3 (0.20)	<p>For blossom blight begin applications at early bloom and continue through petal fall. For all other diseases begin applications prior to or in the early stages of disease development and continue at 7-21 day intervals throughout the season.</p> <p>Do not apply more than 2.31 quarts product/acre/season (1.2 LB ai/A). Do not apply within 45 days of harvest.</p>

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Vegetable, leaves of root and tuber, group Beet, garden and sugar; Burdock, Carrot, Cassava, bitter and sweet; Celeriac (celery root); Chervil, turnip- rooted; Chicory, Dasheen (taro); Parsnip, Radish, Radish, oriental (daikon); Rutabaga Salsify, black; Sweet potato, Tanier, Turnip, Yam, true	Foliar Diseases Alternaria leaf spot <i>(Alternaria spp, A. Alternata)</i> Ascochyta leaf spot <i>(Ascochyta cynarae)</i> Powdery mildew <i>(Erysiphe polygoni, Leveillula taurica)</i> Rust <i>(Uromyces betae, Puccinia helianthi)</i> Cercospora leaf spot <i>(Cercospora betae, C. pastinaceae)</i> White rust <i>(Albugo tragopogonis)</i> Soilborne Diseases Aphanomyces root rot <i>(Aphanomyces cochlioides)</i> Circular spot, Southern blight <i>(Sclerotium rolfsii)</i> Rhizoctonia stem canker, Crown rot <i>(Rhizoctonia solani)</i> Pythium root rot <i>(Pythium aphanadermatum)</i>	6.2-20.3 (0.1-0.33)	<p>Integrated Pest (Disease) Management: ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, optimum plant populations, proper fertilization, plant residue management, crop rotation and proper timing and placement of irrigation.</p> <p>Resistance Management: Do not apply more than two sequential applications of ABOUND before alternating with a fungicide that has a different mode of action. Do not make more than six applications of ABOUND per crop per acre per year.</p> <p>Application Directions: For powdery mildew control, maintain a strict one-to-one alternation program do not make more than one application of ABOUND before alternation with fungicides that have a different mode of action. Make preventative applications on a 5-7 day schedule. For all other diseases, ABOUND applications should begin prior to or in the early stages of disease development and continue throughout the season every 7-14 days following the resistance management guidelines. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates to improve coverage.</p> <p>For soilborne/seedling disease control, see directions and rates under GENERAL INFORMATION section.</p> <p>Do not apply more than 3.75 quarts of product/crop/acre/season (2.0 lbs ai/A). May be applied the day of harvest.</p>

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Vegetables, root, subgroup	Foliar Diseases Alternaria leaf spot <i>(Alternaria spp. A. Alternata)</i> Ascochyta leaf spot <i>(Ascochyta cynarae)</i> Powdery mildew <i>(Erysiphe polygoni, Leveillula taurica)</i> Rust <i>(Uromyces betae, Puccinia helianthi)</i> Cercospora leaf spot <i>(Cercospora betae, C. pastinaceae)</i> White rust <i>(Albugo tragopogonis)</i> Soilborne Diseases Aphanomyces root rot <i>(Aphanomyces cochlioides)</i> Circular spot, Southern blight <i>(Sclerotium rolfsii)</i> Rhizoctonia stem canker, Crown rot <i>(Rhizoctonia solani)</i> Pythium root rot <i>(Pythium aphanidermatum)</i>	6.2-20.3 (0.1-0.33)	<p>Integrated Pest (Disease) Management: ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, optimum plant populations, proper fertilization, plant residue management, crop rotation and proper timing and placement of irrigation.</p> <p>Resistance Management: Do not apply more than two sequential applications of ABOUND before alternating with a fungicide that has a different mode of action. Do not make more than six applications of ABOUND per crop per acre per year.</p> <p>Application Directions: For powdery mildew control, maintain a strict one-to-one alternation program do not make more than one application of ABOUND before alternation with fungicides that have a different mode of action. Make preventative applications on a 5-7 day schedule. For all other diseases, ABOUND applications should begin prior to or in the early stages of disease development and continue throughout the season every 7-14 days following the resistance management guidelines. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates to improve coverage.</p> <p>For soilborne/seedling disease control, see directions and rates under GENERAL INFORMATION section.</p> <p>Do not apply more than 3.75 quarts of product/crop/acre/season (2.0 lbs ai/A). May be applied the day of harvest.</p>

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Vegetables, tuberous and corm, subgroup Arracacha, Arrowroot, Artichoke, Chinese and Jerusalem, Burdock, Canna, Cassava, edible, bitter and sweet; Chayote (root), Chufa, Dasheen (Taro), Ginger, Leren, Potato, Sweet Potato, Tanier, Tumeric, Yam, bean; Yam, true	Foliar Diseases Alternaria leaf spot <i>(Alternaria spp, A. Alternata)</i> Ascochyta leaf spot <i>(Ascochyta cynaræ)</i> Powdery mildew <i>(Erysiphe polygoni, Leveillula taurica)</i> Rust <i>(Uromyces betae, Puccinia helianthi)</i> Cercospora leaf spot <i>(Cercospora betae, C. pastinaceae)</i> White rust <i>(Albugo tragopogonis)</i> Soilborne Diseases Aphanomyces root rot <i>(Aphanomyces cochlioides)</i> Circular spot, Southern blight <i>(Sclerotium rolfsii)</i> Rhizoctonia stem canker, Crown rot <i>(Rhizoctonia solani)</i> Pythium root rot <i>(Pythium aphanadermatum)</i>	6.2-20.3 (0.1-0.33)	<p>Integrated Pest (Disease) Management: ABOUND should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, optimum plant populations, proper fertilization, plant residue management, crop rotation and proper timing and placement of irrigation.</p> <p>Resistance Management: Do not apply more than two sequential applications of ABOUND before alternating with a fungicide that has a different mode of action. Do not make more than six applications of ABOUND per crop per acre per year.</p> <p>Application Directions: For powdery mildew control, maintain a strict one-to-one alternation program do not make more than one application of ABOUND before alternation with fungicides that have a different mode of action. Make preventative applications on a 5-7 day schedule. For all other diseases, ABOUND applications should begin prior to or in the early stages of disease development and continue throughout the season every 7-14 days following the resistance management guidelines. Applications may be made by ground, air or chemigation. An adjuvant may be added at recommended rates to improve coverage.</p> <p>For soilborne/seedling disease control, see directions and rates under GENERAL INFORMATION section.</p> <p>Do not apply more than 3.75 quarts of product/crop/acre/season (2.0 lbs ai/A). Do not apply within 14 days of harvest.</p>
Watermelon	See Cucurbits		

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Crop	Target Diseases	Use Rate fl oz product/A (lb ai/A)	Remarks
Wheat	Leaf Rust <i>(Puccinia recondita f.sp. tritici)</i> Powdery Mildew <i>(Erysiphe graminis)</i> Stripe Rust <i>(Puccinia striiformis)</i> Stem Rust <i>(Puccinia graminis)</i> Septoria Leaf and Glume Blotch <i>(Septoria tritici, Septoria nodorum)</i> Tan Spot <i>(Pyrenophora tritici-repentis)</i>	4.0-12.3 (0.07-0.20)	<p><u>Integrated Pest (Disease) Management:</u> ABOUND should be integrated into an overall disease management strategy that includes proper selection of varieties with disease tolerance, proper timing and placement of irrigation, removal of plant debris in which inoculum overwinters, plant residue management, and crop rotation.</p> <p><u>Resistance Management:</u> Do not make more than two applications of ABOUND per acre per year.</p> <p><u>Application Directions:</u> ABOUND should be applied prior to or in the early stages of disease development from jointing (Feekes 6 or Zadok's 31) up to late head emergence (Feekes 10.5 or Zadok's 59).. Applications may be made by ground, air or chemigation. A crop oil concentrate adjuvant may be added at 1.0% V/V to optimize efficacy.</p> <p>Do not apply until after forage stage (Feekes 6 or Zadok's 31). Do not apply later than Feekes growth stage 10.5 (Zadok's growth stage 59). Do not harvest treated wheat for forage. Do not apply more than 0.77 quarts product/acre/season (0.4 lb ai/A). Do not apply within 14 days of harvest for hay. Do not apply within 45 days of harvest for grain and straw.</p>
Zucchini	See Cucurbits		

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ABOUND Flowable Fungicide Rate Conversion Chart

Fluid Ounces Product/A	Lb ai/A	Treated Acres/Gal Product
2	0.03	64.0
3	0.05	42.7
4	0.07	32.0
5	0.08	25.6
6	0.10	21.3
7	0.11	18.3
8	0.13	16.0
9	0.15	14.2
10	0.16	12.8
11	0.18	11.6
12	0.20	10.7
13	0.21	9.8
14	0.23	9.1
15	0.24	8.5
16	0.26	8.0
17	0.28	7.5
18	0.29	7.1
19	0.31	6.7
20	0.33	6.4
21	0.34	6.1
22	0.36	5.8
23	0.37	5.6
24	0.39	5.3

Amount of ABOUND Flowable Fungicide to Mix 100 Gallons for Post-Harvest Applications

ABOUND Flowable Use Rate	100.0 gals Spray Solution
300 ppm	1 pint
400 ppm	1.3 pints

TURF:

Golf Course turf (Not for use in California)

Commercial Turf farms (Not for use in California) ABOUND Flowable Fungicide is recommended for control of anthracnose, brown patch, cool weather brown patch (yellow patch), Fusarium patch, gray leaf spot, gray snow mold (Typhula blight), leafspot, melting out, necrotic ring spot, pink patch, pink snow mold, Pythium blight, Pythium root rot, red thread, Rhizoctonia large patch, southern blight, spring dead spot, summer patch, take-all patch, and Zoysia patch on golf courses, lawns and landscape areas around residential, institutional, public, commercial and industrial buildings, parks, recreational areas and athletic fields.

Integrated Pest (Disease) Management: Sound turf management resulting in healthy, vigorous turf is the foundation of a good IPM program. Cultural practices such as proper choice of turf variety, nutrient management, proper cutting height, thatch management, and proper watering, drainage, and moisture stress management should be integrated with the use of fungicides to increase turf vigor and reduce the susceptibility to disease. Immunoassay detection kits and extension service diagnostic services can assist in the early and accurate identification of causal organisms and corresponding selection of the proper fungicide when required.

Resistance Management: Some turf disease pathogens are known to have developed resistance to products used repeatedly for their control. ABOUND Flowable should be applied in a tank mix or alternation program with other registered fungicides that have a different mode of action and to which pathogen resistance has not developed. Do not apply more than two sequential ABOUND Flowable applications for *Pythium* spp. control. For all other diseases when *Pythium* spp. is not present, do not apply more than three sequential applications of ABOUND.

Application Directions: ABOUND should be applied prior to ~~or in the early stages of~~ disease development. Mix ABOUND Flowable with the required amount of water and apply as a dilute spray application in 2-4 gallons of water per 1000 square feet (87-174 gallons per acre). Repeat applications at specified intervals for as long as required. For spot treatments, use 0.4 fl oz ABOUND per 1 to 2 gallons of water. Do not apply more than 9.6 quarts product/acre/year (7.1 fl oz product/1000 square feet/year). Applications may be made by ground only.

Rate Ranges: Use the shortest specified application interval and/or use the higher specified rate when prolonged favorable disease conditions exist.

Dollar Spot: ABOUND Flowable Fungicide does not control dollar spot. ABOUND Flowable Fungicide is compatible in tank mixes with many other fungicides that control dollar spot. Always tank mix ABOUND Flowable Fungicide with another fungicide that controls dollar spot when this disease is present. Follow directions under TANKMIXES/COMPATIBILITY above.

DIRECTIONS FOR APPLICATION FOR TURF DISEASES

Target Diseases	Use Rate (fl oz product per 1000 sq ft)	Application Interval (days)	Remarks*
Anthraxnose (<i>Colletotrichum graminicola</i>)	0.38-0.77	14-28	Apply when conditions are favorable for disease development.
Brown Patch (<i>Rhizoctonia solani</i>)	0.38-0.77	14-28	Apply when conditions are favorable for disease development.
Cool Weather Brown Patch Yellow Patch (<i>Rhizoctonia cerealis</i>)	0.38-0.77	28	Make one or two applications in fall or when conditions are favorable for disease development.
Fusarium Patch (<i>Microdochium nivale</i>)	0.38-0.77	14-28	Apply when conditions are favorable for disease development.
Gray Leaf Spot (<i>Pyricularia grisea</i>)	0.38-0.77	14-28	Begin applications before disease is present and continue applications while conditions are favorable for disease development.
Gray Snow Mold Typhula blight (<i>Typhula incarnata</i> , T. . <i>ishikariensis</i>)	1.35 0.77	single application 14	Make a single application of 1.35 oz or two applications of 0.77 spaced 14 days apart in late fall just before snow cover. Tankmixing with another snow mold fungicide may enhance control under severe disease pressure.
Leafspot (<i>Bipolaris sorokiniana</i>)	0.38-0.77	14-21	Apply when conditions are favorable for disease development.
Melting Out (<i>Drechslera poae</i>)	0.38-0.77	14-21	Apply when conditions are favorable for disease development.
Necrotic Ring Spot (<i>Leptosphaeria korrae</i>)	0.38-0.77	14-28	Apply when conditions are favorable for disease development.
Pink Patch (<i>Limonomyces roseipellis</i>)	0.38-0.77	14-28	Apply when conditions are favorable for disease development.
Pink Snow Mold (<i>Microdochium nivale</i>)	1.35 0.77	single application 14	Make a single application of 1.35 oz or two applications of 0.77 spaced 14 days apart in late fall just before snow cover. Tankmixing with another snow mold fungicide may enhance control under severe disease pressure.

Target Diseases	Use Rate (fl oz product per 1000 sq ft)	Application Interval (days)	Remarks*
Pythium Blight Pythium Root Rot (<i>Pythium aphanidermatum</i> , <i>Pythium</i> spp.)	0.38-0.77	10-14	Begin applications before disease is present. During periods of prolonged favorable conditions, treat on the 10 day application interval. For use on newly seeded as well as established turf.
Red Thread (<i>Laetisaria fuciformis</i>)	0.38-0.77	14-28	Apply when conditions are favorable for disease development.
Rhizoctonia Large Patch (<i>Rhizoctonia solani</i>)	0.38-0.77	28	Make one or two applications in fall or when conditions are favorable for disease development.
Southern Blight (<i>Sclerotium rolfsii</i>)	0.38-0.77	14-28	Apply when conditions are favorable for disease development.
Spring Dead Spot (<i>Leptosphaeria korrae</i>) or (<i>Gaeumannomyces graminis</i> var. <i>graminis</i>) or (<i>Ophiosphaerella herpotricha</i>)	0.38-0.77	28	Make one or two applications in fall or when conditions are favorable for disease development.
Summer Patch (<i>Magnaporthe poae</i>)	0.38-0.77	14-28	Apply when conditions are favorable for disease development.
Take-all patch (<i>Gaeumannomyces graminis</i> var. <i>avenae</i>)	0.38-0.77	28	Make two applications, 28 days apart in the spring and two applications 28 days apart in the fall.
Zoysia Patch (<i>Rhizoctonia solani</i> and/or <i>Gaeumannomyces</i> <i>incrustana</i>)	0.38-0.77	28	Make one or two applications in late fall before snow cover or when conditions are favorable for disease development. Do not apply on top of snow.

Do not apply more than two sequential applications of ABOUND for control of *Pythium* spp. For all other diseases, do not apply more than four sequential applications of ABOUND.

ABOUND Flowable Fungicide Rate Conversion Chart for Turf

Fluid Ounces Product Per 1000 Sq. Ft.	Ounces A.I. Per 1000 Sq. Ft	Fluid Ounces Product Per Acre	Pints of Product Per Acre
0.4	0.104	17.4	1.1
0.5	0.130	21.8	1.4
0.6	0.156	26.1	1.6
0.7	0.182	30.5	1.9
0.77	0.200	33.5	2.1
1.35	0.35	58.8	3.7

Amount of ABOUND Flowable Fungicide to Mix 100 Gallons for Turf Applications

ABOUND Flowable Use Rate	Spray Volume (gallons/1000 square feet)		
	2.0 gals	3.0 gals	4.0 gals
0.4 oz	20 oz	13 oz	10 oz
0.5 oz	25 oz	17 oz	13 oz
0.6 oz	30 oz	20 oz	15 oz
0.7 oz	35 oz	23 oz	18 oz
0.77 oz	38.5 oz	25.7 oz	19.3 oz
1.35 oz	67.5 oz	45 oz	33.75 oz

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