



Dithane F-45[®] ACCEPTED FOR REGISTRATION

Rainshield[®] Doc.ID 594677

July 26, 2024

Classified for

New York State Department
of Environmental Conservation

Division of Solid & Hazardous Materials
Pesticide Product Registration

FUNGICIDE "RESTRICTED USE"
in New York State

under 6NYCRR Part 326

Active Ingredients

mancozeb†: A coordination product of zinc ion and manganese ethylene bisdithiocarbamate.....	37.0%
In which the ingredients are:	
Manganese ⁺⁺	7.4%
Zinc ⁺⁺	0.9%
Ethylene bisdithiocarbamate ion (C ₄ H ₆ N ₂ S ₄)	28.7%
Other Ingredients.....	63.0%
Total.....	100.0%

† Equivalent to 4 lb active ingredient per gallon

Keep Out of Reach of Children

Agricultural Use Requirements

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

Refer to inside of label booklet for additional precautionary information including Directions for Use.

SHAKE WELL BEFORE USE: Grasp container by handle and mix contents with a twisting motion followed by inverting. Repeat this action

5 to 10 times to ensure product is completely resuspended.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies at end of label booklet. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994.

Agricultural Chemical: **Do not** ship or store with food, feeds, drugs or clothing.

EPA Reg. No. 62719-396

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CD02-822-021

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Produced for
Corteva Agriscience LLC
9330 Zionsville Road
Indianapolis, IN 46268

NET CONTENTS 2.5 GAL

Personal Protective Equipment (PPE)

Mixers, loaders, applicators and other handlers must wear:

- long-sleeved shirt
- long pants
- chemical-resistant gloves made of any waterproof material (except pilots, groundboom applicators, airblast applicators and seed-treatment handlers who are bagging treated seed or sowing bags containing treated seed)
- shoes and socks

For Lettuce (leaf and head) and Peppers

Aerial application of Dithane F-45® Rainshield on lettuce (leaf and head) and peppers requires that occupational handlers performing mixing/loading operations observe the additional mitigation measures of wearing a particulate respirator with an N, R, or P filter, NIOSH approval prefix TC 84-A.

For Potato Seedpiece Treatment

When opening this bag or loading/pouring the treated seed/seed pieces, wear long-sleeved shirt, long pants, shoes, socks, chemical-resistant gloves, and a particular respirator with an N, R, or P filter, NIOSH approval prefix TC 84-A.

For Turf on Sod Farms

Mixers/loaders supplying chemigation applications to turf on sod farms must wear a particular respirator with an N, R, or P filter, NIOSH-approved prefix TC84-A.

See engineering controls for additional requirements.

User Safety Requirements

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard closing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. **Do not** reuse them.

Engineering Controls

Enclosed Cockpits: Pilots must use an enclosed cockpit that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d) (6)].

Mechanical Flagger Engineering Controls: Human flagging is prohibited. Flagger to support aerial application is limited to use of the Global Positioning System (GPS) or mechanical flaggers.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing/PPE 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

This pesticide is toxic to aquatic organisms. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. **Do not** apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. **Do not** contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate.

Directions for Use

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read all Directions for Use carefully before applying.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination,

Agricultural Use Requirements (Cont.)

notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 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, for example plants, soil or water, is:

- Coveralls
- Chemical-resistant gloves made of any waterproof material
- Shoes plus socks

Non-Agricultural Use Requirements

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

Seed treatments and professional applications to golf courses, industrial (office park), and municipal lawns are not within the scope of the Worker Protection Standard.

- Keep unprotected persons out of treated area until sprays have dried.

Storage and Disposal

Do not contaminate water, food or feed by storage or disposal.

Pesticide Storage: Keep from freezing. Store in a cool, well-ventilated area, but not below 32°F. **Do not** allow to become overheated in storage. This may bring on chemical changes that will impair the fungicidal effectiveness of this product. Keep container closed when not in use.

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on-site or at an approved waste disposal facility.

Container Handling: Nonrefillable container. **Do not** reuse or refill this container. Offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Triple rinse or pressure rinse container (or equivalent) promptly after emptying.

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Product Use Information

Dithane F-45 Rainshield® fungicide is a broad-spectrum protectant fungicide labeled for outdoor crops, for turf and ornamental uses or greenhouse grown ornamentals. Optimum disease control is achieved when the fungicide is applied in a regularly scheduled preventative spray program. The addition of an agricultural surfactant will improve fungicide performance by providing a more uniform spray deposit, increased foliar redistribution, and improved fungicide retention during periods of wet weather.

SHAKE WELL BEFORE USE: Grasp container by handle and mix contents with a twisting motion followed by inverting. Repeat this action 5 to 10 times to ensure product is completely resuspended.

Use Rate Determination

Carefully read, understand, and follow label use rates and restrictions. Under low disease conditions, minimum label rates per application can be used while maximum label rates and the minimum interval may be used for severe or threatening disease conditions.

Agricultural Applications

For proper application, determine the number of acres to be treated, the required label use rate and the volume to be applied per acre. Prepare only the amount of spray solution required to treat the measured acreage. Careful calibration of spray equipment is advised prior to use.

Turf and Ornamental Applications

For proper application to turf, determine the square footage to be treated, divide the footage by 1000, and multiply by the required fungicide use rate per 1000 sq ft, and then determine the amount of water required to provide adequate coverage. When treating ornamentals, determine the required fungicide use rate and the spray gallonage required to provide thorough coverage. Careful calibration of spray equipment is advised prior to use. Prepare only the amount of spray solution to treat the desired area.

If only a portion of the container's contents are to be used, thoroughly shake the container prior to measuring. When small quantities of spray solution are being prepared for use in hand or power sprayers, use the following conversion table (rates are based on dilute thorough coverage sprays):

Required Use Rate per Acre or per 100 Gallons¹	Fluid Ounces of Dithane F-45 Rainshield Required for:			
	10 gallons	5 gallons	2 gallons	1 gallon
0.8 qt (0.8 lb ai)	2.6	1.3	0.5	0.3
1.0 qt (1.0 lb ai)	3.2	1.6	0.7	0.3
1.2 qt (1.2 lb ai)	3.8	1.9	0.9	0.3
1.6 qt (1.6 lb ai)	5.1	2.6	1.0	0.5
2.0 qt (2.0 lb ai)	6.4	3.2	1.3	0.6
2.4 qt (2.4 lb ai)	7.7	3.8	1.5	0.8
3.2 qt (3.2 lb ai)	10.2	5.1	2.0	1.0
4.8 qt (4.8 lb ai)	15.4	7.7	3.1	1.6

- 1 cup = 8 fl oz or 237 milliliters
- 1 fluid ounce = 2 tablespoons or 30 milliliters
- 1 tablespoon = 3 teaspoons or 15 milliliters
- ¹Dilute thorough coverage sprays.

Mixing

Mixing Procedures for Agricultural Applications

Slowly place into spray tank as it is being filled or thoroughly premix in a nurse tank for concentrate or aircraft sprayers. Add other co-applied fungicides, insecticides, growth regulators, micronutrients, and spray adjuvants after Dithane F-45 Rainshield has been placed into suspension. When preparing spray solutions for use in a hand sprayer, premix as a slurry in a small container, and then add to sprayer containing 1/3 to 1/2 the desired final water volume.

Mixing Procedures for Turf and Ornamental Applications

Be sure the sprayer is clean and not contaminated with other materials prior to use. When using an agitated spray tank fill tank 1/2 to 3/4 full with clean water and start agitation. Be certain that the agitation system is working properly and creates a rolling rippling on the liquid surface. With the agitator running add the required amount of Dithane F-45 Rainshield to the tank. Continue filling tank with the remainder of the water. When using a hand sprayer, premix Dithane F-45 Rainshield as a slurry in a small container before adding to the spray tank. Slowly pour the appropriate amount of Dithane F-45 Rainshield into a small container containing an equal volume of water while mixing. Mix until the Dithane F-45 Rainshield is thoroughly wetted. Add additional water if necessary to make solution flowable. Add the contents of the slurry tank to a 1/2 filled sprayer, continue filling tank with remainder of water and mix well. Always add Dithane F-45 Rainshield into solution prior to adding any additional materials to the tank.

Compatibility

Dithane F-45 Rainshield is compatible with most commonly used agricultural fungicides, insecticides and growth regulators. When preparing tank mixes, consult spray compatibility charts or State Cooperative Extension Service Specialists prior to actual use.

It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Spray Adjuvants

The addition of an agriculturally registered surfactant to sprays of Dithane F-45 Rainshield will improve initial spray deposits, fungicide redistribution and weatherability.

Add Dithane F-45 Rainshield to the spray mixture prior to adding an adjuvant. Follow applicable use directions, precautions and limitations on the label of the adjuvant product.

MANDATORY SPRAY DRIFT

MANDATORY SPRAY DRIFT Aerial Applications:

- **DO NOT** release spray at a height greater than 10 ft above the vegetative canopy, unless a greater application height is necessary for pilot safety.
- Applicators are required to use fine or coarser droplet size (ASABE S572.1), except for when applying ultra-low volume applications.
- Applicators must use ½ swath displacement upwind at the downwind edge of the field.
- Nozzles must be oriented so the spray is directed toward the back of the aircraft.
- **DO NOT** apply when wind speeds exceed 15 miles per hour at the application site.
- If the windspeed is greater than 10 mph, the boom length must be 65% or less of the wingspan for fixed wing aircraft and 75% or less of the rotor diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed-wing aircraft and 90% or less of the rotor diameter for helicopters.
- **DO NOT** apply during temperature inversions.

Airblast Applications:

- All sprays must be directed into the canopy.
- Nozzles directed out of the orchard must be turned off when treating the outer row, or when making turns between rows.
- **DO NOT** apply when wind speeds exceed 15 miles per hour at the application site.
- **DO NOT** apply during temperature inversions.

Ground Applications:

- Apply with the nozzle height recommended by the manufacturer, but no more than 3 feet above the ground or crop canopy unless making a turf, pasture, or rangeland application, in which case applicators may apply with a nozzle height no more than 4 feet above the ground.
- For applications prior to the emergence of crops and target weeds, applicators are required to use a coarse or coarser droplet size (ASABE S572.1).
- For all other applications, applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- **DO NOT** apply when wind speeds exceed 10 miles per hour at the application site.
- **DO NOT** apply during temperature inversions.

Boom-less Ground Applications:

- Applicators are required to use a medium or coarser droplet size (ASABE S572.1) for all applications.
- **DO NOT** apply when wind speeds exceed 10 miles per hour at the application site.
- **DO NOT** apply during temperature inversions.
- Setting nozzles at the lowest effective height will help to reduce the potential for spray drift.

SPRAY DRIFT ADVISORIES

THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT. BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.

IMPORTANCE OF DROPLET SIZE

An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying large droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

Controlling Droplet Size – Ground Boom

- Volume – Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.
- Pressure – Use the lowest spray pressure specified for the nozzle to produce the target spray volume and droplet size.
- Spray Nozzle – Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

Controlling Droplet Size – Aircraft

- Adjust Nozzles – Follow nozzle manufacturer's specifications for setting up nozzles. To reduce fine droplets, orient nozzles parallel with the airflow in flight.

BOOM HEIGHT – Ground Boom
For ground equipment, keep the boom level with the crop and have minimal bounce.

RELEASE HEIGHT – Aircraft
Higher release heights increase the potential for spray drift.

SHIELDED SPRAYERS
Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

TEMPERATURE AND HUMIDITY
When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation.

TEMPERATURE INVERSIONS
Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing. Avoid applications during temperature inversions.

WIND
Drift potential increases with wind speed. **AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS.**

- Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

Boom-less Ground Applications:

- Setting nozzles at the lowest effective height will help to reduce the potential for spray drift.

Handheld Technology Applications:

- Take precautions to minimize spray drift.

Other State and Local Requirements

Applicators must follow all state and local pesticide drift requirements regarding application of mancozeb. Where states have more stringent regulations, they must be observed.

Equipment

All aerial and ground application equipment must be properly maintained and calibrated using appropriate carriers or surrogates.

Additional requirements for aerial applications:

1. The boom length must not exceed 75% of the wingspan or 90% of the rotor blade diameter.
2. Release spray at the lowest height consistent with efficacy and flight safety. **Do not** release spray at a height greater than 10 feet above the crop canopy unless a greater height is required for aircraft safety.
3. When applications are made with a crosswind, the swath must be displaced downwind. The applicator must compensate for this displacement at the up and downwind edge of the application area by adjusting the path of the aircraft upwind.

Additional requirements for ground boom application:

1. **Do not** apply with a nozzle height greater than 4 feet above the crop canopy.

Application

Thorough coverage foliar sprays result in optimum disease control. To achieve complete and uniform coverage use proper spray pressure, gallonage per acre, nozzles (e.g. hollow cone), disc (e.g. D-5 to D-7), nozzle spacing, and tractor speed. Consult spray nozzle and accessory catalogues for specific information on proper equipment calibration.

Hand Sprayers: Thoroughly spray plant foliage to point of runoff.

Aerial

A uniform initial spray deposit over the crop canopy results in optimum disease control. Precheck each aircraft for droplet size, uniformity of spray pattern, swath width, and spray volume. During aerial application, human flaggers are prohibited. **Do not** apply by air to sod farms or golf courses.

Nozzle Selection: Hollow cone brass nozzles with a D-series orifice disc and core (whirlplate) are advised. Nozzles must point straight down or slightly backward.

Swath Width: For most field and vegetable crops, swaths just beyond the wingspan of 36 to 40 feet for light aircraft and up to 45 feet for heavier aircraft are suggested. Optimum swath for helicopters is usually 5 to 10 feet beyond normal boom length.

Spray Volume: Aerial applications are to be made in a minimum of two (2) gallons of water per acre. On vegetable and field crops, 2 to 3 gallons of spray per acre are optimum; orchards and vineyards can be handled with spray volumes of 5 gallons per acre. Some tall or dense foliage crops, requiring greater penetration to the lower leaf surface will require higher spray volumes. **In California, do not use less than 5 gallons of spray volume per acre.**

Altitude: For most crops, position the spray boom 5 to 10 feet above the crop canopy.

Flagging: Mark swaths with permanent flags at the end of the field. Measure swaths accurately with a chain or other device except when rows can be accurately counted.

Chemigation Use Directions

Do not apply by chemigation application to golf courses.

Sprinkler Irrigation

Dithane F-45 Rainshield must be applied on a regular protectant fungicide schedule, **not an irrigation schedule.** If irrigation cycles are less frequent than specified Dithane F-45 Rainshield application intervals, ground or aerial applications must supplement chemigation applications to achieve adequate disease control.

- Apply Dithane F-45 Rainshield only through sprinkler irrigation systems including center-pivot, lateral move, end tow, side (wheel) roll, traveler, solid set, or hand move irrigations systems. **Do not** apply product through any other type of irrigation system.
- Lack of fungicidal effectiveness or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.
- If you have questions about calibration, contact State Extension Service specialist, equipment manufacturers or other experts.
- **Do not** connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water system 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 if needed.

Before applying Dithane F-45 Rainshield through sprinkler irrigation equipment, the chemigation system must meet the following specifications:

- Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
- Chemigation systems connected to public water systems must contain a functional reduced-pressure zone (RPZ), backflow preventer or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, discharge the water from the public water system 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.
- Systems not connected to a public water supply must contain a functional check valve, vacuum relief valve, and low-pressure drain appropriately located in the irrigation pipeline to prevent water source contamination from back flow.
- 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, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
- The irrigation line or water pump must include a functional pressure switch that 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, for example, a positive displacement injection pump (e.g. diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- **Do not** apply when wind speed favors drift beyond the area intended for treatment.

Center-Pivot, Lateral Move, End Tow, and Traveler Irrigation Equipment: (use only with electric or oil hydraulic drive systems, which provide a uniform water distribution)

- Determine size of area to be treated.
- Determine the time required to apply no more than 1/4 inch water (6,750 gallons water per acre) over the area to be treated when the system and injection equipment are operated at normal pressures specified by the equipment manufacturer. Run system at 80 to 95% of manufacturer's rated capacity.

- Using only water, determine the injection pump output when operated at normal line pressure.
- Determine the amount of Dithane F-45 Rainshield required for the treatment area.
- Add the required amount of Dithane F-45 Rainshield and sufficient water to meet the injection time requirements of the solution tank.
- Maintain constant solution tank agitation during the injection period.
- Stop injection equipment after treatment is completed. Continue to operate the system until Dithane F-45 Rainshield solution has cleared the sprinkler head.

Solid-Set, Side (Wheel) Roll, and Hand Move Irrigation Equipment:

- Determine acreage covered by sprinkler.
- Fill injector solution tank with water and adjust flow rate to use contents over a 10 to 30 minute interval.
- Determine the amount of Dithane F-45 Rainshield required for the treatment area.
- Add the required amount of Dithane F-45 Rainshield into the same quantity of water used to calibrate the injection equipment.
- Maintain constant solution tank agitation during the injection period.
- Operate system at normal pressures specified by the manufacturer of the injection equipment and used for the time interval established during calibration.
- Inject Dithane F-45 Rainshield at the end of the irrigation cycle or as a separate application to maximize foliar fungicide retention.
- Stop injection equipment after treatment is completed. Continue to operate the system until Dithane F-45 Rainshield solution has cleared the last sprinkler head.

Disease Monitoring

Dithane F-45 Rainshield is a broad-spectrum, protectant fungicide. If Dithane F-45 Rainshield is not applied on a routine protectant spray schedule, scout crops on a weekly basis. Observe turf and ornamental plants frequently for disease sign or symptoms. Apply fungicide application at the required label use rate and spray schedule at the first sign of disease, report of disease in the area, or during environmental conditions favorable for disease development.

Resistance Management

For resistance management, Dithane F-45 Rainshield contains a Group M3 fungicide. Any fungal population may contain individuals naturally resistant to Dithane F-45 Rainshield and other Group M3 fungicides. A gradual or total loss of pest control may occur over time if these fungicides are used repeatedly in the same fields. Follow appropriate resistance-management strategies.

To delay fungicide resistance, take one or more of the following steps:

- Rotate the use of Dithane F-45 Rainshield or other Group M3 fungicides within a growing season sequence with different groups that control the same pathogens.
- Use tank mixtures with fungicide from a different group that are equally effective on

- the target pest when such use is permitted. Use at least the minimum application rate as labeled by the manufacturer.
- Adopt an integrated disease management program for fungicide use that includes scouting, uses historical information related to pesticide use, and crop rotation, and which considers host plant resistance, impact of environmental conditions on disease development, disease thresholds, as well as cultural, biological and other chemical control practices.
- Where possible, make use of predictive disease models to effectively time fungicide applications. Note that using predictive models alone is not sufficient to manage resistance.
- Monitor treated fungal populations for resistance development.
- Contact your local extension specialist or certified crop advisor for any additional pesticide resistance-management and/or IPM guidance for specific crops and pathogens.
- For information or to report suspected resistance contact your Corteva Agriscience representative. You can also contact your pesticide distributor or university extension specialist to report resistance.

Restrictions

Users must carefully read, understand, and follow all use restrictions prior to using Dithane F-45 Rainshield.

Foliar Applications

Where EBDC Products Used Allow the Same Maximum Pounding of Active Ingredient Per Acre Per Season: If more than one product containing an EBDC active ingredient (maneb, mancozeb, or metiram) is used on a crop during the same growing season and the EBDC products used allow the same maximum poundage of active ingredient per acre per season, then the total poundage of all such EBDC products used must not exceed any one of the specified individual EBDC product maximum seasonal poundage of active ingredient allowed per acre.

Where EBDC Products Used Allow Different Maximum Pounding of Active Ingredient Per Acre Per Season: If more than one product containing an EBDC active ingredient is used on a crop during the same growing season and the EBDC products used allow different maximum poundage of active ingredient per acre per season, then the total poundage of all such EBDC products used must not exceed the lowest specified individual EBDC product maximum seasonal poundage of active ingredient allowed per acre.

Seed Treatment

In addition to the maximum number of foliar applications permitted by the formula stated above, a single application for seed treatment may be made on crops, which have registered seed treatment uses.

Pome Fruits

Use either the Pre-Bloom/Bloom Use or Extended Application schedule. **Do not combine or integrate the two treatment schedules.** Use this product in an Integrated Pest Management Program (IPM).

Crop	Diseases Controlled	Dithane F-45 Rainshield Rate per Application (qt/acre)	Application Directions (Also Refer to Directions for Use)	Restrictions
apples crabapples pears quince	fabrea leaf spot rusts scab	4.8 (4.8 lb ai)	Pre-Bloom/Bloom Use: Begin applications at 1/4 to 1/2 inch green tip and continue on a 7- to 10-day schedule through bloom.	Do not apply more than 4.8 qt (4.8 lb ai) per acre per application. Do not apply after bloom. Do not apply more than 19.2 qt (19.2 lb ai) per acre per year. Do not graze livestock in treated areas. Minimum Retreatment Interval: 7 days. Maximum number of applications per year: 4.
		2.4 (2.4 lb ai)	Extended Application Schedule for Use in Tank Mixtures with systemic fungicides: For implementation of IPM programs, applications based on tree-row volume, or for use as a resistance management tool. Apply after petal fall.	Do not apply more than 2.4 qt (2.4 lb ai) per acre per application. Do not apply within 77 days of harvest. Do not apply more than 16.8 qt (16.8 lb ai) per acre per year.
	fire blight		The addition of Dithane F-45 Rainshield to copper fungicides will suppress the disease incidence in orchards where fire blight (<i>Erwinia amylovora</i>) has become resistant to streptomycin. Use the full label rate of copper and follow the application instructions on the copper fungicide label.	Do not graze livestock in treated areas. Maximum number of applications on pomes per year: 4.

Fruits

Crop	Diseases Controlled	Dithane F-45 Rainshield Rate per Application (qt/acre)	Application Directions (Also Refer to Directions for Use)	Restrictions
bananas	sigatoka	1.6 to 2.4 (1.6 to 2.4 lb ai)	Apply when leaves first appear and repeat every 14 to 21 days or as required. Use sufficient water to provide adequate coverage. The addition of a Latron surfactant to spray solutions will improve performance.	Applications can be made up to the day of harvest. Do not apply more than 2.4 qt (2.4 lb ai) per application. Do not apply more than 24 qt (24 lb ai) per acre per year. Minimum Retreatment Interval: 14 days. Maximum number of applications per year: 10.
cranberries	fruit rot	2.4 to 4.8 (2.4 to 4.8 lb ai)	Start applications at early bloom and repeat at 7- to 10-day intervals as required.	Do not apply within 30 days of harvest. Do not apply more than 4.8 qt (4.8 lb ai) per application. Do not apply more than 14.4 qt (14.4 lb ai) per acre per year. Minimum Retreatment Interval: 7 days. Maximum number of applications on cranberries per year: 3.
grapes	black rot bunch rot phomopsis downy mildew	1.2 to 2 (1.2 to 2 lb ai) West of the Rocky Mountains 1.2 to 3.2 (1.2 to 3.2 lb ai) East of the Rocky Mountains	Apply in sufficient water to provide thorough coverage starting when new shoots are 1/2 to 1 1/2 inches long. Repeat when shoots are 3 to 5 inches long, when shoots are 8 to 10 inches long, and then at 7- to 10-day intervals until fruit is set or 66 days before harvest. For late season control of black rot, deadarm and downy mildew, the use of other approved fungicides is suggested.	In California, do not apply after bloom. In other areas, do not apply within 66 days of harvest. Minimum Retreatment Interval: 7 days. West of the Rocky Mountains: Do not apply more than 2 qt (2 lb ai) per acre per application. Do not apply more than 6 qt (6 lb ai) per acre per year. Maximum number of applications per year: 3. East of the Rocky Mountains: Do not apply more than 3.2 qt (3.2 lb ai) per acre per application. Do not apply more than 19.2 qt (19.2 lb ai) per acre per year. Maximum number of applications per year: 6.
papayas	anthracnose phytophthora fruit rot	1.6 to 2 (1.6 to 2 lb ai)	Use 20 to 100 gallons water per acre. Start applications at flowering and continue at 14- to 21-day intervals. Direct spray to crown and blossom area. Use 6 to 8 ounces Latron B-1956 spreader-sticker per acre.	Applications may be made up to the day of harvest. Do not apply more than 2 qt (2 lb ai) per acre per application. Do not apply more than 28 qt (28 lb ai) per acre per year. Minimum Retreatment Interval: 14 days. Maximum number of applications per year: 14.
plantain	sigatoka	1.6 to 2.4 (1.6 to 2.4 lb ai)	Apply when leaves first appear and repeat every 14 to 21 days or as required. Use sufficient water to provide adequate coverage. The addition of a Latron surfactant to spray solutions will improve performance.	Applications can be made up to the day of harvest. Do not apply more than 2.4 qt (2.4 lb ai) per acre per application. Do not apply more than 24 qt (24 lb ai) per acre per year. Minimum Retreatment Interval: 14 days. Maximum number of applications per year: 10.

Vegetables

Crop	Diseases Controlled	Dithane F-45 Rainshield Rate per Application (qt/acre)	Application Directions (Also Refer to Directions for Use)	Restrictions
asparagus	cercospora leaf spot rust	1.6 (1.6 lb ai)	Start applications when rust first appears and repeat at 10-day intervals.	Do not apply within 120 days of harvest in California and Arizona, or within 180 days in all other states. Apply only on asparagus ferns after spears have been harvested. Do not apply more than 1.6 qt (1.6 lb ai) per acre per application. Do not apply more than 6.4 qt (6.4 lb ai) per acre per year. Minimum Retreatment Interval: 10 days. Maximum number of applications per year: 4.

Vegetables (Cont.)

Crop	Diseases Controlled	Dithane F-45 Rainshield Rate per Application (qt/acre)	Application Directions (Also Refer to Directions for Use)	Restrictions
broccoli	alternaria leaf spot downy mildew	1.2 - 1.6 (1.2 – 1.6 lb ai)	In plant beds or direct-seeded fields, apply 7 to 10 days after planting or earlier if disease is present. If field applications, apply as soon as disease is present and reapply as needed on a 7- to 10-day spray schedule.	Do not apply within 7 days of harvest. Do not apply more than 1.6 qt (1.6 lb ai) per acre per application. Do not apply more than 9.6 qt (9.6 lb ai) per acre per year. Minimum Retreatment Interval: 7 days. Maximum number of applications per year: 6 at the highest use rate; 8 at the lowest use rate. Do not apply this product with a U-boom device.
corn (sweet corn for fresh use or processing; popcorn; and sweet corn for seed production, including hybrid seed)	common rust helminthosporium leaf blight	1.2 (1.2 lb ai)	Use sufficient water for thorough coverage. Start applications when disease first appears and repeat at 4- to 7-day intervals. The addition of a Latron surfactant to spray solutions will improve performance	Do not apply within 7 days of harvest. Minimum Retreatment Interval: 4 days. East of the Mississippi River, Arkansas and Louisiana: Do not apply more than 1.2 qt (1.2 lb ai) per acre per application. Do not apply more than 18 qt (18 lb ai per acre per year. Maximum number of applications per acre per year: 15. West of the Mississippi River (except Arkansas and Louisiana): Do not apply more than 6 qt (6 lb ai) per acre per year. Do not apply more than 1.2 qt (1.2 lb ai) per acre per application. Maximum number of applications per acre per year: 5. Do not feed treated forage to livestock.
cucumbers	anthracnose cercospora leaf spot downy mildew gummy stem blight microdochium blight† scab	1.6 to 2.4 (1.6 to 2.4 lb ai)	Start applications when plants are in the two-leaf stage and repeat at 7- to 10-day intervals. Use sufficient water and direct spray to provide thorough coverage of both upper and lower leaf surfaces.	Do not apply within 5 days of harvest. Do not apply more than 2.4 qt (2.4 lb ai) per acre per application. Do not apply more than 19.2 qt (19.2 lb ai) per acre per year. Minimum Retreatment Interval: 7 days. Maximum number of applications per year: 8 at the highest use rate, 12 at the lowest use rate. Pre-Harvest Interval: 5 days.
fennel	leaf blight leaf spot	1.6 (1.6 lb ai)	Start applications when disease first appears and repeat applications every 7 to 10 days.	Do not apply within 14 days of harvest. Do not apply more than 1.6 qt (1.6 lb ai) per acre per application. Do not apply more than 12.8 qt (12.8 lb ai) per acre per year. Minimum Retreatment Interval: 7 days. Maximum number of applications per year: 8.
gourds, edible	anthracnose downy mildew microdochium blight†	1.6 to 2.4 (1.6 to 2.4 lb ai)	Start applications when plants are in the two-leaf stage and repeat at 7- to 10-day intervals. Use sufficient water and direct spray to provide thorough coverage of both upper and lower leaf surfaces.	Do not apply within 5 days of harvest. Do not apply more than 2.4 qt (2.4 lb ai) per acre per application. Do not apply more than 19.2 qt (19.2 lb ai) per acre per year. Minimum Retreatment Interval: 7 days. Maximum number of applications per year: 8 at the highest rate; 12 at the lowest use rate.

Vegetables (Cont.)

Crop	Diseases Controlled	Dithane F-45 Rainshield Rate per Application (qt/acre)	Application Directions (Also Refer to Directions for Use)	Restrictions
Lettuce (leaf and head)	Downy mildew	1.2-1.6 (1.2-1.6 lb ai)	Begin applications when disease appears and reapply on a 7- to 10-day treatment schedule.	Minimum Retreatment Interval: 7 days. Do not apply this product with a U-boom device. In California: Do not apply within 14 days of harvest of head or leaf lettuce. Do not apply more than 1.6 qt (1.6 lb ai) per acre per application. Do not apply more than 6.4 qt (6.4 lb ai) per acre per crop. Maximum number of applications in California per crop: 4 at the highest use rate; 5 at the lowest use rate. Do not apply more than 19.2 qt (19.2 lb ai) per acre per year. In states other than California: Do not apply within 10 days of harvest of head lettuce or within 14 days of harvest of leaf lettuce. Do not apply more than 1.6 qt (1.6 lb ai) per acre per application. Do not apply more than 9.6 qt (9.6 lb ai) per acre per crop. Maximum number of applications per crop: 6 at the highest use rate; 8 at the lowest use rate. Do not apply more than 19.2 qt (19.2 lb ai) per acre per year. Aerial application on lettuce (leaf and head) requires that occupational handlers performing mixing/ loading operations observe the additional mitigation measures of wearing a particulate respirator with an N, R, or P filter, NIOSH approval prefix TC 84-A.
melons cantaloupes casaba crenshaw honeydew muskmelons	alternaria leaf spot anthracnose downy mildew gummy stem blight microdochium blight†	1.6 to 2.4 (1.6 to 2.4 lb ai)	Start applications when plants are in the two-leaf stage and repeat at 7- to 10-day intervals. Use sufficient water and direct spray to provide thorough coverage of both upper and lower leaf surfaces. Some cantaloupe varieties (i.e.: Harvest Queen, Gold Star, Super Star, Sweet and Early, and Satcoy) are sensitive to Dithane F-45 Rainshield. Consult State Cooperative Extension Service Specialist prior to use.	Do not apply within 5 days of harvest. Do not apply more than 2.4 qt (2.4 lb ai) per acre per application. Do not apply more than 19.2 qt (19.2 lb ai) per acre per year. Minimum Retreatment Interval: 7 days. Maximum number of applications per year: 8 at the highest use rate; 12 at the lowest use rate.
onions (dry bulb) garlic shallots	botrytis leaf blight downy mildew neck rot purple blotch rust	2.4 (2.4 lb ai)	Follow a protective spray schedule starting when diseases are first reported in the area and repeat at 7-day intervals throughout the season. The addition of a Latron surfactant to spray solutions will improve performance. Do not allow spray or drift to contact bulbs after lifting from soil.	Do not apply to exposed bulbs. Do not apply within 7 days of harvest. Do not apply more than 2.4 qt (2.4 lb ai) per acre per application. Do not apply more than 24 qt (24 lb ai) per acre per year. Minimum Retreatment Interval: 7 days. Maximum number of applications per year: 10.
onions (furrow drench)	damping-off seed rots seedling blights smut		Apply 2.4 qt per acre as a furrow drench at time of planting onion seeds. Use 75 to 125 gallons water per acre.	AT-PLANT FURROW DRENCH: Do not use more than 2.4 qt (2.4 lb ai) per acre (29,000 linear feet of furrow) with an 18 inch row spacing per application. Do not apply more than 24 qt (24 lb ai) per acre per year from furrow drench at-plant and foliar in-season applications.

Vegetables (Cont.)

Crop	Diseases Controlled	Dithane F-45 Rainshield Rate per Application (qt/acre)	Application Directions (Also Refer to Directions for Use)	Restrictions
Peppers	anthracnose early blight phomopsis blight or fruit rot	1.2 - 1.6 (1.2 – 1.6 lb ai) (west of the Mississippi River) 1.2 - 2.4 (1.2 – 2.4 lb ai) (east of the Mississippi River)	Begin application when disease appears and reapply on a 7- to 10-day spray schedule	Do not apply within 7 days of harvest. Minimum Retreatment Interval: 7 days. Do not apply this product with a U-boom device. West of the Mississippi River: Do not apply more than 1.6 qt (1.6 lb ai) per acre per application. Do not apply more than 9.6 qt (9.6 lb ai) per acre per year. Maximum number of applications: 6 at the highest rate, 8 at the lowest rate. East of the Mississippi River: Do not apply more than 14.4 qt (14.4 lb ai) per acre per year. Do not apply more than 2.4 qt (2.4 lb ai) per acre per application. Maximum number of applications: 6 at the highest rate, 12 at the lowest rate. Aerial application on peppers requires that occupational handlers performing mixing/ loading operations observe the additional mitigation measures of wearing a particulate respirator with an N, R, or P filter, NIOSH approval prefix TC 84-A.
potatoes	early blight late blight	0.4 to 1.6 (0.4 to 1.6 lb ai)	Begin applications when plants are 4 to 6 inches high by applying 0.4 to 0.8 qt/acre. As the vines increase in size, apply 1.2 to 1.6 qt/ acre at 5- to 10-day intervals or 0.6 to 0.8 qt/ acre at 3- to 5-day intervals. The addition of a Latron surfactant to spray solutions will improve performance. Use this product within an Integrated Pest Management Program. Vine-kill typically occurs 14 days before harvest.	Do not apply within 3 days of harvest in Connecticut, Delaware, Florida, Maine, Massachusetts, Michigan, New Hampshire, New York, Ohio, Pennsylvania, Rhode Island, Vermont and Wisconsin and at least 14 days elsewhere. Do not apply more than 1.6 qt (1.6 lb ai) per acre per application. Do not apply more than 11.2 qt (11.2 lb ai) per acre per year. Minimum Retreatment Interval: 5 days at 1.2 to 1.6 qt/acre; 3 days at 0.6 to 0.8 qt/acre. Maximum number of applications per year: 7 at the highest use rate; 15 at the lowest use rate.
squash, summer	anthracnose downy mildew microdochium blight†	1.6 to 2.4 (1.6 to 2.4 lb ai)	Start applications when plants are in the two-leaf stage and repeat at 7- to 10-day intervals. Use sufficient water and direct spray to provide thorough coverage of both upper and lower leaf surfaces.	Do not apply within 5 days of harvest. Do not apply more than 2.4 qt (2.4 lb ai) per acre per application. Do not apply more than 19.2 qt (19.2 lb ai) per acre per year. Minimum Retreatment Interval: 7 days. Maximum number of applications per year: 8 at the highest use rate; 12 at the lowest use rate.
tomatoes	anthracnose early blight gray leaf spot late blight leaf mold septoria leaf spot	1.2 to 1.6 (1.2 to 1.6 lb ai) West of the Mississippi River	Start applications when seedlings emerge or transplants are set and repeat at 7-to 10-day intervals throughout the season. The addition of a Latron surfactant to spray solutions will improve performance.	Do not apply within 5 days of harvest. Minimum Retreatment Interval: 7 days. West of the Mississippi River: Do not apply more than 1.6 qt (1.6 lb ai) per acre per application. Do not apply more than 6.4 qt (6.4 lb ai) per acre per year. Maximum number of applications per year: 4 at the highest use rate; 5 at the lowest use rate.
	bacterial speck and spot	1.2 to 2.4 (1.2 to 2.4 lb ai) East of the Mississippi River	Use a full rate of a fixed copper fungicide in tank mix combination with a half to full rate of Dithane F-45 Rainshield. Follow the application intervals required on the copper fungicide label.	East of the Mississippi River: Do not apply more than 2.4 qt (2.4 lb ai) per acre per application. Do not apply more than 16.8 qt (16.8 lb ai) per acre per year. Maximum number of applications per year: 7 at the highest use rate; 14 at the lowest use rate.

Vegetables (Cont.)

Crop	Diseases Controlled	Dithane F-45 Rainshield Rate per Application (qt/acre)	Application Directions (Also Refer to Directions for Use)	Restrictions
watermelons	alternaria leaf spot anthracnose cercospora leaf spot downy mildew gummy stem blight microdochium blight† scab	1.6 to 2.4 (1.6 to 2.4 lb ai)	Start applications when plants are in the two-leaf stage and repeat at 7- to 10-day intervals. Use sufficient water and direct spray to provide thorough coverage of both upper and lower leaf surfaces.	Do not apply within 5 days of harvest. Do not apply more than 2.4 qt (2.4 lb ai) per acre per application. Do not apply more than 19.2 qt (19.2 lb ai) per acre per year. Minimum Retreatment Interval: 7 days. Maximum number of applications per year: 8 at the highest rate; 12 at the lowest use rate.

† Not approved for use on this pest species in California.

Field Crops

Crop	Diseases Controlled	Dithane F-45 Rainshield Rate per Application (qt/acre)	Application Directions (Also Refer To Directions For Use)	Restrictions
barley	helminthosporium leaf spot leaf rust septoria glume blotch septoria leaf spot tan spot	1.6 (1.6 lb ai)	Start application at onset of disease or when plants are in the tillering to jointing stage and repeat at 7- to 10-day intervals. The addition of Latron CS-7 to spray solutions will improve performance.	Do not apply after Feekees Growth Stage 10.5 (typically 35-45 days), but no less than 26 days. Do not apply more than 1.6 qt (1.6 lb ai) per acre per application. Do not apply more than 4.8 qt (4.8 lb ai) per acre per year. Minimum Retreatment Interval: 7 days. Maximum number of applications per year: 3. Do not graze livestock in treated areas prior to harvest.
corn (field corn and field corn for hybrid seed production)	common corn rust helminthosporium leaf blight	1.2 (1.2 lb ai)	Start applications when disease symptoms first appear and, depending on severity of infection, continue on a 4- to 14-day schedule. The addition of Latron CS-7 will improve performance	Do not apply within 40 days of harvest. Do not apply more than 1.2 qt (1.2 lb ai) per acre per application. Do not apply more than 12 qt (12 lb ai) per acre per year. Minimum Retreatment Interval: 4 days. Maximum number of applications per year: 10.
oats	helminthosporium leaf spot leaf rust septoria glume blotch septoria leaf spot tan spot	1.6 (1.6 lb ai)	Start application at onset of disease or when plants are in the tillering to jointing stage and repeat at 7- to 10-day intervals. The addition of Latron CS-7 to spray solutions will improve performance.	Do not apply after Feekees Growth Stage 10.5 (typically 35-45 days), but no less than 26 days. Do not apply more than 1.6 qt (1.6 lb ai) per acre per application. Do not apply more than 4.8 qt (4.8 lb ai) per acre per year. Minimum Retreatment Interval: 7 days. Maximum number of applications per year: 3. Do not graze livestock in treated areas prior to harvest.
peanuts	cercospora leaf spot rust	0.8 to 1.6 (0.8 to 1.6 lb ai)	Start applications when disease first appears or is reported in area. Repeat sprays at 7- to 14-day intervals.	Do not apply within 14 days of harvest. Do not apply more than 1.6 qt (1.6 lb ai) per acre per application. Do not use more than 12.8 qt (12.8 lb ai) per acre per year. Do not feed treated vines to livestock. Minimum Retreatment Interval: 7 days. Maximum number of applications per year: 8.
rye	helminthosporium leaf spot leaf rust septoria glume blotch septoria leaf spot tan spot	1.6 (1.6 lb ai)	Start application at onset of disease or when plants are in the tillering to jointing stage and repeat at 7- to 10-day intervals. The addition of Latron CS-7 to spray solutions will improve performance.	Do not apply after Feekees Growth Stage 10.5 (typically 35-45 days), but no less than 26 days. Do not apply more than 1.6 qt (1.6 lb ai) per acre per application. Do not apply more than 4.8 qt (4.8 lb ai) per acre per year. Minimum Retreatment Interval: 7 days. Maximum number of applications per year: 3. Do not graze livestock in treated areas prior to harvest.

Field Crops (Cont.)

Crop	Diseases Controlled	Dithane F-45 Rainshield Rate per Application (qt/acre)	Application Directions (Also Refer To Directions For Use)	Restrictions
sugar beets	cercospora leaf spot	1.2 to 1.6 (1.2 to 1.6 lb ai)	Start applications when disease first threatens and repeat every 7 to 10 days as needed. The addition of a Latron surfactant to spray solutions will improve performance.	Do not apply within 14 days of harvest. Do not apply more than 1.6 qt (1.6 lb ai) per acre per application. Do not apply more than 11.2 qt (11.2 lb ai) per acre per year. Minimum Retreatment Interval: 7 days. Maximum number of applications per year: 7. Do not feed treated tops to livestock.
walnuts	walnut blight (<i>Xanthomas campestris</i> pv <i>Juglandis</i>)	1.8 (1.8 lb ai)	Begin applications at early pre-bloom prior to or when catkins are partially expanded. Make additional applications during bloom and early nutlet stage or as needed if frequent rainfall occurs. Apply in a minimum of 100 gallons of water per acre by ground and in a minimum of 10 gallons of water per acre by air. In California, this product must be tank mixed with a fixed copper product registered for use on walnuts.	Do not apply within 75 days of harvest. Do not apply more than 1.8 qt (1.8 lb ai) per acre per application. Do not apply more than 18 qt (18 lb ai) per acre per year. Minimum Retreatment Interval: 10 days. Maximum number of applications per year: 10. Do not feed the crop or crop by-products to livestock. Do not graze livestock in treated orchards. Chemigation: Do not apply this product through any type of irrigation system.
wheat	helminthosporium leaf spot leaf rust septoria glume blotch septoria leaf spot tan spot	1.6 (1.6 lb ai)	Start application at onset of disease or when plants are in the tillering to jointing stage and repeat at 7- to 10-day intervals. The addition of Latron CS-7 to spray solutions will improve performance.	Do not apply after Feekes Growth Stage 10.5 (typically 35-45 days) but no less than 26 days. Do not apply more than 1.6 qt (1.6 lb ai) per acre per application. Do not apply more than 4.8 qt (4.8 lb ai) per acre per year. Minimum Retreatment Interval: 7 days. Maximum number of applications per year: 3. Do not graze livestock in treated areas prior to harvest.
triticale	helminthosporium leaf spot leaf rust septoria glume blotch septoria leaf spot tan spot	1.6 (1.6 lb ai)	Start application at onset of disease or when plants are in the tillering to jointing stage and repeat at 7- to 10-day intervals. The addition of Latron CS-7 to spray solutions will improve performance.	Do not apply after Feekes Growth Stage 10.5 (typically 35-45 days), but no less than 26 days. Do not apply more than 1.6 qt (1.6 lb ai) per acre per application. Do not apply more than 4.8 qt (4.8 lb ai) per acre per year. Minimum Retreatment Interval: 7 days. Maximum number of applications per year: 3. Do not graze livestock in treated areas prior to harvest.

Seed and Potato Seedpiece Treatment

Clean and cure seeds prior to treatment. Dithane F-45 Rainshield must be applied to dry seed with conventional slurry or mist seed treating equipment. For best results, the seed must be completely and uniformly covered with fungicide. For seed treatment, dye must be added to Dithane F-45 Rainshield that will impart an unnatural color to the seed.

Seed Bag Label Requirements
<p>The Federal Seed Act requires that containers containing treated seeds shall be labeled with the following statements:</p> <ul style="list-style-type: none">• This seed has been treated with Dithane F-45 Rainshield, a fungicide containing mancozeb.• Do not use treated seed for feed, food or oil purposes. <p>The U.S. Environmental Protection Agency requires the following statements on containers containing seed treated with mancozeb:</p> <ul style="list-style-type: none">• Store treated seed away from food and feedstuffs.• Do not allow children, pets or livestock to have access to treated seeds.• Wear long pants, long-sleeved shirt and protective gloves when handling treated seed.• Treated seeds exposed on soil surface may be hazardous to wildlife. Cover or collect treated seeds spilled during loading and planting.• Dispose of all excess treated seed by burying seed away from bodies of water.• Do not contaminate bodies of water when disposing of planting equipment wash water.• Dispose of seed packaging or containers in accordance with local requirements.• Excess treated seed may be used for ethanol production if (1) by-products are not used for livestock feed and (2) no measurable residues of pesticide remain in ethanol by-products that are used in agronomic practice.

Seed Bag Label Requirements (Cont.)

USE RESTRICTIONS: When using formulations that **do not** contain dye, to comply with 40 CFR 153.155, all seed treated with an economic poison must be colored with an EPA approved dye, for example, one of the dyes listed in 40 CFR Sections 180.910 and 180.920 to distinguish and prevent subsequent inadvertent use as a food for man or feed for animals.

When opening this bag or loading/pouring the treated seed/seed-pieces, wear long-sleeved shirt, long pants, shoes, socks, chemical-resistant gloves, and a particular respirator with an N, R, or P filter, NIOSH approval prefix TC 84-A.

After the seeds/seed pieces have been planted, **do not** enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours. Exception: Once the seeds/seed pieces are planted in soil or other planting media, the Worker Protection Standard allows workers to enter the treated area without restriction if there will be no worker contact with the soil/media subsurface.

Crop	Diseases Controlled	Dithane F-45 Rainshield Rate per Application (fl oz/bu) (fl oz/100 lb)		Application Directions
barley	covered smut damping-off false loose-smut seed rots seedling blights	2 to 3.2 (0.06 to 0.1 lb ai)	4.3 to 6.7 (0.13 to 0.21 lb ai)	
corn (field)	damping-off seed rots seedling blights	2.4 to 4.8 (0.075 to 0.15 lb ai)	4.3 to 8.6 (0.13 to 0.27 lb ai)	
cotton (acid delinted)	damping-off seedling blights	-	4.8 (0.15 lb ai)	
(reginned)	damping-off seedling blights	-	9.6 (0.3 lb ai)	
flax	damping-off seed rots seedling blights	3.2 to 6.4 (0.1 to 0.2 lb ai)	5.7 to 11.3 (0.18 to 0.35 lb ai)	
oats	damping-off seed rots seedling blights smuts	2 to 3.2 (0.06 to 0.1 lb ai)	6.4 to 10 (0.2 to 0.3 lb ai)	
peanuts (shelled)	damping-off seed rots seedling blights	3.2 to 6.4 (0.1 to 0.2 lb ai)	12.8 to 25.6 (0.4 to 0.8 lb ai)	
potato seedpiece treatment	fusarium decay late blight seedborne common scab rhizoctonia shoot blight silver scurf	-	1.6 to 2.5 (0.05 to 0.08 lb ai)	Do not use treated seed potatoes for food or feed purposes.
Rice	damping-off seed rots seedling blights	-	3.2 to 6.4 (0.1 to 0.2 lb ai)	Apply before, during or after soaking in water.
Rye	bunt damping-off seed rots seedling blights	2 to 3.2 (0.06 to 0.1 lb ai)	3.6 to 5.7 (0.1 to 0.18 lb ai)	
safflower	seedborne rust (<i>Puccinia carthami</i>)	-	3.2 (0.1 lb ai)	
sorghum	covered kernel smut damping-off seed rots seedling blights	2.4 to 4.0 (0.075 to 0.125 lb ai)	4.3 to 7.2 (0.13 to 0.22 lb ai)	
tomatoes	damping-off seed rots seedling blights	-	12.8 (0.4 lb ai)	
wheat	bunt damping-off seed rots seedling blights	2 to 3.2 (0.06 to 0.1 lb ai)	3.5 to 5.2 (0.11 to 0.16 lb ai)	

Miscellaneous Crops

Crop	Diseases Controlled	Dithane F-45 Rainshield Rate per Application	Application Directions (Also Refer to Directions for Use)
asparagus crowns	crown rot	0.8 qt (0.8 lb ai) per 100 gal	Place loosely packed crowns into a burlap bag and soak, with gentle agitation, in the fungicide solution for 5 minutes. Remove bag, drain well, and plant crowns as soon as possible. A tank large enough to hold a single burlap bag will treat 2 bags of crowns. Prepare clean dipping suspension in a clean tank.. Pre-wash dirty crowns to remove excess soil.
Caprifig	assorted molds endosepsis (fusarium)	0.8 qt (0.8 lb ai) per 25 gal	Prepare mamme figs by making a shallow cut through the eye and then hand dividing to avoid wasp injury. Submerge mamme figs in the fungicide suspension for a minimum of 15 minutes. Stir the fungicide suspension frequently to prevent settling out. Use fresh dipping solution after treating 4 or 5 batches of figs. After treatment, drain figs prior to placement in trees.
Conifer (Christmas trees)	lophodermium needle cast pine gall rust scirrhia brown spot	1.6 qt to 3.2 qt (1.6 to 3.2 lb ai) per acre	Begin application in spring or early summer before infection occurs. Repeat after heavy rains and at 14 day intervals as long as needed. The pre-harvest interval (PHI) is 14 days
conifer (Douglas fir)	Swiss needle cast		

Turf

For golf courses, sod farms, industrial or municipal turf areas.

Restrictions:

- Do not apply by air to sod farms or golf courses.
- Do not apply by chemigation application to golf courses.
- Do not apply to residential turf or athletic fields.

Sod Farm Turf Restrictions:

- Mixers/loaders supporting chemigation applications to turf on sod farms must wear a particulate respirator with an N, R, or P filter, NIOSH approval prefix TC 84-A.
- Harvesting of treated turf is prohibited until 5 days following application.
- Limit to a maximum of 4 applications per year and a maximum rate of 4.35 gallons of product per acre (17.4 lb ai/A) per application.
- Minimum Retreatment Interval: 10 days.

Golf Course Restrictions:

- For cool season grasses; greens, tees and aprons – limit to a maximum of 5 applications per year at a maximum application rate of 4.35 gallons of product per acre (17.4 lb ai/A) per application.
- For cool season grasses; fairways – limit to a maximum of 4 applications per year at a maximum application rate of 4.35 gallons of product per acre (17.4 lb ai/A) per application.
- For warm season grasses; greens, tees and aprons – limit to a maximum of 4 applications per year at a maximum application rate of 4.35 gallons of product per acre (17.4 lb ai/A) per application.

- For warm season grasses; fairways – limit to a maximum of 3 applications per year at a maximum application rate of 4.35 gallons of product per acre (17.4 lb ai/A) per application.
- Minimum Retreatment Interval: 10 days.

All Other Turf Restrictions:

- Limit to a maximum of 4 applications per year and a maximum application rate of 4.35 gallons of product per acre (17.4 lb ai/A) per application
- Minimum Retreatment Interval: 10 days.

Start application when grass greens-up in spring or when disease first appears and repeat at 7- to 14-day intervals or until disease threat is past. When conditions are especially favorable for disease development, apply maximum fungicide use rate on a spray schedule with at least 10 days between treatments. Apply in sufficient water to provide adequate coverage.

Turf Tolerance: Maintain treated turfgrass in a vigorous growing condition. Turfgrass under stress will not respond to fungicide treatments as well as well-maintained turfgrass. Turfgrass tolerance to this product has been found to be acceptable, however, this product and tank mixtures with other products have not been tested on all varieties of every turfgrass species or under all possible growing conditions. If user is unfamiliar with the performance of Dithane F-45 Rainshield or tank mixtures, under user growing conditions, treat a limited area of turfgrass prior to initiating large-scale applications.

Crop	Diseases Controlled	Dithane F-45 Rainshield Rate per Application (fl oz/1000 sq ft)	Disease Specific Instructions (Also Refer to Directions for Use Restrictions)	Restrictions
assorted grasses	helminthosporium melting-out rust (leaf, stem, stripe)	6.4 (0.2 lb ai)		Do not graze treated areas. Do not use on grasses intended for grazing, including range or pasture grasses. Do not feed clippings to livestock. Do not use on grasses grown for seed.
	copper spot fusarium blight red thread slime mold	6.4 to 12.8 (0.2 to 0.4 lb ai)		
	algae	9.6 (0.3 lb ai)		
	dollar spot	9.6 to 12.8 (0.3 to 0.4 lb ai)		
	rhizoctonia brown patch	6.4 (0.2 lb ai)		
	pythium blight	12.8 (0.4 lb ai)	Apply on a spray schedule with at least 10 days between treatments.	
	fusarium snow mold	9.6 to 12.8 (0.3 to 0.4 lb ai)		
	gray leaf spot	12.8 (0.4 lb ai)	Apply on a 14-day spray schedule when conditions are favorable for disease development.	

Ornamentals

Restrictions:

- Cut flowers and greenhouse grown ornamentals: Limit to 20 applications per year.
- **Do not** use for food or feed purposes.
- Not for use in residential greenhouses.
- Intended for use only by professional applicators.
- **Do not** apply more than 1.2 qt Dithane F-45 Rainshield per 100 gal dilute spray (1.2 lb ai) per acre.
- **Do not** apply more than 24 qt (24 lb ai) per acre per year.
- **Minimum Retreatment Interval:** 7 days unless otherwise stated in the Crop Specific Instructions

Neither the manufacturer nor the seller has determined the effects of using Dithane F-45 Rainshield on ornamentals not specified on this label. Prior to any large-scale applications on such plants, determine the effects of Dithane F-45 Rainshield by testing a small section of the type of plants treated. The Conditions of Sale and Warranty apply to all uses.

For outdoor or greenhouse use, apply the equivalent of 1.2 qt Dithane F-45 Rainshield per 100 gal dilute spray (1.2 quarts (1.2 lb ai/acre) of Dithane F-45 Rainshield per acre). The addition of Latron B-1956 to spray solutions will improve performance.

Begin spraying when plants are well leaved out or at first sign of disease, in a full coverage spray at 7- to 10-day intervals throughout season.

Crop	Diseases Controlled	Crop Specific Instructions
African violet	botrytis blight	
almond (ornamental)	leaf spot	
alyssum	leaf spot	
anthurium	anthracnose, spadix rot	
apple (ornamental)	fabraea leaf spot rust scab	
arborvitae	cercospora blight	
areca palm	leaf spot	
ageratum	botrytis blight rust	
ash, mountain	entomosporium leaf spot guignardia leaf blotch	
ash, white	anthracnose cylindrosporium leaf spot	
aster	leaf spot	
aster, perennial	puccinia rusts	
aucuba, japonica	alternaria leaf spot anthracnose	
azalea	cylindrocladium rot petal blight phytophthora twig and bud blight	Apply in a full coverage spray, 2 to 3 times a week, while flowers are opening. Direct spray into flowers and thoroughly spray ground under bushes.
begonia	botrytis blight	
boxwood	leaf spot	
buffaloberry	cylindrosporium leaf spot	
camellias	petal blight	Apply in a full coverage spray, 2 to 3 times a week, while flowers are opening. Direct spray into flowers and thoroughly spray ground under bushes.
camration	rust septoria leaf spot	
cedar, red (juniper)	cercospora blight phomopsis blight	
chrysanthemum	ascochyta blight botrytis petal spot rust	Apply twice weekly during blooming period.
cockscomb (celosia)	alternaria leaf spot	
conifers (Christmas trees)	lophodermium needle cast pine gall rust scirrhia brown spot	Begin application in spring or early summer before infection occurs. Repeat after heavy rains and at two-week intervals as long as needed. The preharvest interval (PHI) is 14 days.
cordylina	cercospora leaf spot	
crabapple (ornamental)	cedar-apple rust scab sphaeropsis leaf spot	
cypress, Arizona (<i>Cupressus</i> spp.)	cercospora blight monochaetia canker	

Crop (Cont.)	Diseases Controlled	Crop Specific Instructions
dahlia	botrytis blight	
delphinium	botrytis blight	
dieffenbachia	leptosphaeria brown spot	
dogwood, flowering	anthracnose elsinoe leaf spot septoria leaf spot	Apply when buds begin to open, when bracts have fallen, 4 weeks later and again in late summer after flower buds for next season have formed.
dracaena	fusarium leaf spot	
elm	black leaf spot	
euonymus	anthracnose	
fatsia	anthracnose	
fern	rhizoctonia blight	
figus	cercospora leaf spot	
fig	cylindrocladium leaf spot	
firethorn (pyracantha)	fusicladium scab	
fir, Douglas	Swiss needle cast	The preharvest interval is 14 days.
fir, fraser	Swiss needle cast	The preharvest interval is 14 days.
fuchsia	botrytis blight rust	
geranium	rust	
gladiolus	botrytis blossom blight curvularia leaf spot	Make regular weekly applications starting before diseases appear and increase to 2 or 3 applications per week during periods of heavy disease and during rainy weather. On flower spikes, reduce spray concentration to 0.6 qt per 100 gallons.
gloxinia	botrytis blight	
gypsophila	botrytis blight	
hawthorn	cedar-apple rust fabraea leaf spot frogeye leaf spot hawthorn rust scab	
hickory	gnomonina leaf spot	
holly	purple spot	
hollyhock	anthracnose cercospora leaf spot puccinia rust	
honeysuckle	herpobasidium blight	
horsechestnut, buckeye	alternaria leaf spot guignardia leaf blotch	
hydrangea	botrytis blight cercospora leaf spot	
impatiens	botrytis blight	
iris	didymellina leaf spot mycosphaerella leaf spot mystrosporium ink spot	(formerly didymellina)
juniper	phomopsis blight	
larkspur	rust	
laurel, mountain	cercospora leaf spot petal blight	Apply in a full coverage spray, 2 to 3 times a week, while flowers are opening. Direct spray into flowers and thoroughly spray ground under bushes.
ligustrum	cercospora leaf spot	
lily	botrytis blight	
magnolia	gloeosporium leaf spot	
maple	alternaria leaf spot phyllosticta leaf spot	
marigold	botrytis blossom blight	Do not use on French dwarf double or signet type marigold seedlings.

Crop (Cont.)	Diseases Controlled	Crop Specific Instructions
narcissus	botrytis blight (fire) smoulder	
oak	actinopelte leaf spot taphrina leaf blister	
orchid (dendrobium)	botrytis blossom blight	
oxalis	rust	
pansy	anthracnose	
pears (ornamental)	fabraea leaf spot rust scab	
peony	botrytis blossom blight phytophthora blight	Apply in early spring and early fall, drenching soil around plants as well as the foliage. Promptly destroy all infected plant parts.
peperomia	cercospora leaf spot	
petunia	botrytis blight	
philodendron	dactylaria leaf spot phytophthora leaf spot	
phlox	leaf spot	
photinia	entomosporium leaf spot	
pine, Australia	cyclaneusma needle cast	
pine, Scotch	cyclaneusma needle cast gall rust	
pittosporum	alternaria leaf spot	
pleomele	fusarium leaf spot	
poinsettia	sphaceloma scab	
poplar	rust	
primrose	botrytis blight	
protea	botrytis blight	
quince (ornamental)	fabraea leaf spot rust scab	
rhododendron	cercospora leaf spot discosia leaf spot petal blight	Apply in a full coverage spray, 2 to 3 times a week, while flowers are opening. Direct spray into flowers and thoroughly spray ground under bushes.
rose	black spot cercospora leaf spot rust	
rosemary	rhizoctonia aerial blight	
schefflera	alternaria blight	
Scotts pine	needle cast	
skunkbush, sumac	cylindrosporium leaf spot	
snapdragon	rust	
spathiphyllum	myrothecium leaf spot	
statice	cercospora frog-eye	
strawflower	rust	
syngonium	cephalosporium leaf spot	
thorn apple	rust	
tulip	botrytis blight (fire)	
venus, flytrap	anthracnose	
viburnum	downy mildew ramularia leaf spot	
walnut	anthracnose	
zinnia	alternaria leaf blight	

ATTENTION: This product contains mancozeb and ETU, chemicals known to the State of California to cause cancer. ETU is also known to the State of California to cause birth defects or other reproductive harm.

Terms and Conditions of Use

If terms of the following Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies are not acceptable, return unopened package at once to the seller for a full refund of purchase price paid. To the extent consistent with applicable law, use by the buyer or any other user constitutes acceptance of the terms under Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies.

Warranty Disclaimer

Corteva Agriscience warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions for use, subject to the inherent risks set forth below. To the extent consistent with applicable law, Corteva Agrisciences MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Inherent Risks of Use

It is impossible to eliminate all risks associated with use of this product. Crop injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application or other factors, all of which are beyond the

control of Corteva Agriscience or the seller. To the extent consistent with applicable law, Corteva Agriscience will not be responsible for losses or damages resulting from the use of this product in any manner not specifically directed by Corteva Agriscience. To the extent consistent with applicable law, all such risks associated with non-directed use shall be assumed by buyer and/or user.

Limitation of Remedies

To the extent consistent with applicable law, the exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, tort, strict liability, or other legal theories), shall be limited to, at Corteva Agriscience's election, one of the following:

- 1. Refund of purchase price paid by buyer or user for product bought, or
- 2. Replacement of amount of product used.

To the extent consistent with applicable law, Corteva Agriscience shall not be liable for losses or damages resulting from handling or use of this product unless Corteva Agriscience is promptly notified of such loss or damage in writing. To the extent consistent with applicable law, in no case shall Corteva Agriscience be liable for consequential, incidental, or special damages or losses.

The terms of the Warranty Disclaimer, Inherent Risks of Use and this Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Corteva Agriscience or the seller is authorized to vary or exceed the terms of the Warranty Disclaimer or Limitation of Remedies in any manner.

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EPA accepted 02/29/2024

NOTES

GROUP

M3

FUNGICIDE



Dithane F-45[®]

Rainshield[®]

FUNGICIDE

Active Ingredients

mancozeb†: A coordination product of zinc ion and manganese ethylene bisdithiocarbamate.....	37.0%
In which the ingredients are:	
Manganese ⁺⁺	7.4%
Zinc ⁺⁺	0.9%
Ethylene bisdithiocarbamate ion (C ₄ H ₆ N ₂ S ₄)	28.7%
Other Ingredients.....	63.0%
Total	100.0%

† Equivalent to 4 lb active ingredient per gallon

Keep Out of Reach of Children

Agricultural Use Requirements

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

Refer to inside of label booklet for additional precautionary information including Directions for Use.

SHAKE WELL BEFORE USE: Grasp container by handle and mix contents with a twisting motion followed by inverting. Repeat this action 5 to 10 times to ensure product is completely resuspended.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies at end of label booklet. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994.

Agricultural Chemical: **Do not** ship or store with food, feeds, drugs or clothing.

EPA Reg. No. 62719-396 EPA Est. 62719-COL-001
CD02-822-021

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Corteva Agriscience LLC
9330 Zionsville Road
Indianapolis, IN 46268

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