

HOW TO HANDLE POWDERY MILDEW



Info on Powdery Mildew:

Powdery mildew is a fungal disease that affects a wide range of plants. Powdery mildew diseases are caused by many different species of fungi in the order Erysiphales. This is one of the easier diseases to spot, as the symptoms are quite distinctive. Infected plants display white powder-like spots on the leaves and stems. They look almost as if someone tipped a spray-paint can upside down and sprayed up in the air, letting the paint “dust” fall onto the leaves and stems. It might be identified incorrectly as dust that has accumulated on the leaves. The lower leaves are the most affected, but the mildew can appear on any part of the plant that shows above the ground. As the disease progresses, the spots get larger and thicker as massive numbers of spores form, and the mildew spreads up and down the length of the plant. In most cases this fungal growth can be partially removed by rubbing the leaves. This growth will eventually affect the fruit or flowers. Nutrients are removed from the plant by the fungus and this can result in a general decline in the growth and vigor of the plant. Severe powdery mildew infection will result in yellowed leaves, dried and brown leaves, and disfigured shoots and flowers.

Powdery mildew fungi produce airborne spores and infect plants when temperatures are moderate (60-80 degrees F). It prefers high humidity; above 50% to thrive. It can spread and colonize without water being directly on the leaves.

Powdery mildew is notoriously hard to kill, and is the second most common problem that we run into with gardeners. Infection definitely depends on the location the garden is in. Higher humidity locales will encounter problems with powdery mildew more frequently than gardens in dryer environments. Below we list a good set of solutions for this disease.

General Remedies and Environmental Control:

Temperature above 80 degrees F. will ward off Powdery Mildew. If using CO2 you can take your plants from their ideal 86 degrees F to upwards of 90-92 degrees F, at the plant level, which will deter the growth of this mold. Humidity below 45% (40% is about the lowest you will want to go to not avoid hurting your plants.) If none of the other remedies below can be procured, than sodium bicarbonate can be used. Simply mix 1 tsp. of Baking Soda, 1 quart purified water, and 1-2 drops of a soft detergent into a spray bottle and apply to any infected area. Continue re-applying every 2-3 days, or as needed.

GreenCure:

Developed by renowned plant pathologist, Dr. Ken Horst of Cornell University, GreenCure is a natural mildew killer. The Active Ingredient: Potassium Bicarbonate, a naturally occurring compound that is safer for the environment than other alternatives. In more than 200 university trials, GreenCure has been proven to be better than other fungicides. GreenCure uses several modes of action against mildew, the most obvious of which is that it causes spores and tubes to suffer immediate and rapid water loss, thereby effectively killing the fungus. Once destroyed, the residual spore material often sloughs off or washes away. We have found GreenCure to be the most powerful spray concentrate out there. It works extremely well. If your grow space is not large enough for a sulfur burner or you just do not want to deal with the hassle, then GreenCure is your solution. Spray every week until problem no longer exists. Then spray as preventive. Please note that GreenCure should not be used during the Flowering Stage. It will prematurely ripen the flowers. See below for proper application.

Application of GreenCure:

- Quart Sprayer - Apply 3/4 tsp (3 small scoops using the smaller of the two sides on the supplied measuring spoon) to one quart of purified (RO) water. Mix well and apply to all areas of the plant.
- Gallon Sprayer- Apply 1 Tbs (1 large scoop with included measuring spoon) to 1 Gallon of purified RO water. Mix well and apply to all areas of plant.
- For Severe infestations you can apply 2 times the normal dosage. (Ex. 2 Tbs / Gallon)

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Pm Wash:

PM Wash is a ready-to-use proprietary formula. It may be used throughout the grow and flower cycle up to and including the day of harvest. It is Ready to use out of the bottle and needs no further Dilution. Just Spray on plants to treat or prevent Powdery Mildew. Some growers REALLY love this stuff! Spray as often as necessary. If spraying with Lights make sure to Dim them or Raise them up.

Saturator and Zone:

Saturator and Zone provides a 2 part stopping action. The first is its ability to change the pH at the leaf level. It raise the pH and helps make the leaf zone inhospitable to the Powdery Mildew spores. The Second is the MonoChloramine itself which is a sterilizing agent which can also kill the Mildew.

Application of Saturator and Zone Blend

Quart Sprayer - Mix 2ml of zone, 15ml of Saturator into a Quart/Liter of Purified (Reverse Osmosis) Water.

Gallon Sprayer - Mix 8mL of Zone, 60mL of Saturator into a Gallon of Purified (Reverse Osmosis) Water.

Great White, Ag. Organics Foliar A+B, and Axiom with F.D.S:

This is an all around metabolism boosting, immune system building, pathogen-warding off tonic that will keep your plants standing strong and growing faster than you have seen before. We can't talk highly enough of this potent concoction. Your plants will be singing and soaring towards the sky.

Application Instructions:

- Apply this spray every 2 weeks.

Quart Sprayer - Mix 4tsp of Foliar A + B, 2g of Axiom, 1/8 tsp of Great White and F.D.S at 1/4 tsp in a quart spray bottle filled with purified (reverse osmosis) water.

Gallon Sprayer- Mix 16 tsp of Foliar A + B, 8g of Axiom, 1/4 tsp of Great White and F.D.S at 1 tsp in a one gallon spray bottle filled with purified (reverse osmosis) water.

Neem Oil (Einstein Oil)

Neem oil is also known to help prevent powdery mildew from "taking root" and thus colonizing a garden. Neem works best if sprayed consistently every 3 days. We suggest Einstein Oil because it is "cold pressed" and retains more of the active ingredients than other products. Mix with Coco-wet and apply at lowest dosage at first. Raise dosage up slightly every spray until max application rate is reached.

Application of Einstein Oil:

Apply this spray every 3 days. Build dosage up from lowest to highest than ride highest dosage out until 4th week of Bloom.

Quart Sprayer - Mix 1/2-2tsp of Einstein Oil and a few drops of Coco-Wet per Quart of "warmed up" purified (RO) water.

Gallon Sprayer- Mix 2-8tsp. of Einstein Oil and a 1/4 tsp of Coco-Wet per Gallon of "warmed up" purified (RO) water.

Actinovate:

Actinovate® SP is a high concentration of a patented beneficial bacterium on a 100% water soluble powder. Because of the special properties of the Actinovate® microbe, plants treated with Actinovate® SP will be vigorous, have increased vitality and have much better root growth. Actinovate® SP contains the microorganism *Streptomyces lydicus* strain WYEC 108. The Actinovate Bacterium coats the leaves and attacks the fungus at its binding site, works surprisingly well when applied properly. It can be used in the soil as a preventative to most pathogen strains of fungi. It is also very effective as a Foliar Treatment for Powdery Mildew.

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Application of Actinovate:

Gallon Sprayer - Add 1-2tsp. per Gallon. Apply with a wetting agent like CocoWet. Spray every 7 days. Do not oversaturate.

Eagle 20 - Commercial Grade Fungicide

Eagle 20EW specialty fungicide uses the chemical Myclobutanil, which although fairly toxic and systemic, is very good at killing Powdery Mildew. It is a systemic and stays within the plant for a 7-10 day period. While not something that GreenCoast recommends, it is the only other product that we have seen which can quickly and efficiently control Powdery Mildew. If it is to be used, Eagle 20 EW is best employed as a preventative, when it can be sprayed before first flowers form, which in turn will be out of the plant by harvest time.

Application of Eagle 20:

Gallon Sprayer - Add 1/3 to 2/3 tsp. per Gallon. Apply with a wetting agent like Coco Wet. Make sure to apply 1-2 times depending on problem.

Please note: You need a Pesticide License to purchase and / or use this product.

Sulfur Burners/Vaporizer:

Sulfur Vaporizers (Burners) are the best overall remedy to the powdery mildew problem. It is what commercial greenhouses use for a very good reason - it works. Sulfur changes the pH on the leaf surface, making it inhospitable for fungus growth. If you want the "final solution" to an infestation, then use a burner. They smell something awful (Sulfur is not safe to inhale. Do NOT enter the sulfur cloud) and create a huge amount of smoke when being burned. Use a Digital Timer in conjunction with our Sulfur Burner and your exhaust/inline fan(s); this will manage the Sulfur application and prevent exhaust fans from turning on while the Sulfur is being applied. Hooking the burner up to a timer is critical. We also recommend having the exhaust fan hooked up to another timer (turning on after the Sulfur burner has been turned off) to vent the room. For the safety of your plants, this should only be used during veg or in the first couple weeks of flower.

Application Instructions:

For best results make sure to follow these instructions closely:

For preventative use turn on the unit for 4-5 hours 2 times per week.

For active infestation turn on the unit 4-5 hours 4 times per week. Can use up to 6-8 hours a night for severe infestations.

Also the cup needs to be adjusted properly over the heat plate (lower the cup down all the way, so that it rests on the heating element), and the right amount of sulfur needs to be added (the cup must be cleaned, and filled half-way up with approx. 100g. of sulfur) or a flame can result from the canister within. Make sure to turn OFF exhaust fans and lights during operation. Make sure plants are dry. Usually, burners are lit during the plants "night" (dark) cycle only.

Our Electric Vaporizer / Burner *(We cannot say this applies to other burners sold in other stores - only ours):*

Filling - Thoroughly clean any debris from the cup. Fill the cup half full (approx. 100g. of sulfur). Do not overfill as this could cause the unit to boil over. Boiling over is very dangerous - if this occurs, keep the cup only half full.

Cup Placement within unit - lower the cup down all the way so that it rests on the heating element.

Coverage Area - 1,000 Sq. Ft.

Placement of Unit - The burner should be hung (by its handle) 2-3 feet above plants (make sure it is hung vertically / not sideways or any other way). Make sure this is ample air flow going around the unit.

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Safety Precautions:

Adjust plate properly within (all the way down) so it is resting on the heating element.

Wear protective clothing (This should include a "sulfur rated" mask, gloves, eye protection, long sleeves, pants and shoes.)

Perform all vaporization of sulfur at night.

Do NOT enter or inhale the sulfur cloud.

Make sure leaves are dry before vaporization begins.

Do NOT attempt to "fix" or repair burner if there is a problem. Please bring back to the shop.

Do NOT touch unit while it is ON.

Wash all produce before consumption.

* For storage - keep sulfur in original package in a cool dark place. Make sure to keep away from children. Sulfur tends to take in moisture, so the packaging must be closed tightly and securely after each use, if you want it to last.

Please Note:

Our Sulfur is 99% pure and is made to be used for Sulfur burners. Because of our sulfur is so pure, it will smell less than others on the market. Sulfur is environmentally friendly and relatively non-toxic. It is used on many different types of fruits and flowers for disease control.

Warning

DO NOT use a sulfur burner on or near plants that have been foliar sprayed with any type of oil-based additives, pesticides or other products within the last 30 days or the plants can catch on fire.

Disclaimer

The Sulfur Burner / Vaporizer has been tested and approved with the above directions and application instructions. Neither GreenCoast Hydroponics nor the manufacturer will take any responsibility for ill use of this Burner / Vaporizer or any damage that might be incurred as to a direct use of this Burner / Vaporizer unit. It is impossible for us to be there watching to ensure that all steps listed above were followed accurately. Use wisely at your own risk.

ATTENTION! This handout provides general information and is not to be taken as advice or a recommendation. Before using any product described in this handout, you should verify the information to determine the product's efficacy and safety, and to learn of any laws or regulations applicable to the product. The handout uses descriptions, such as "pesticide", in an informal, familiar way, and these descriptions are not intended to convey whether products are subject to particular laws or regulations.