



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" or 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 to 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. See below.

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)

Preventative Care:

Plant Disease Prevention: **GreenCure** can be used as a good preventative control of powdery mildews by applying 1 table-spoon per gallon of water every 1 to 2 weeks when environmental conditions are ideal for the disease. Preventing an infestation by using **GreenCure** will help you maintain healthy, vibrant plants.

: 3560 STATE STREET
: SANTA BARBARA, CA 93105
: PHONE: 805.898.9922
: FAX: 805.898.0047

: 2405 MIRA MAR AVE.
: LONG BEACH, CA 90815
: PHONE: 562.627.5636
: FAX: 562.627.1618

: 496 W. MEATS ST.
: ORANGE, CA 92865
: PHONE: 714.974.4769
: FAX: 714.921.4769

: 11510 WHITTIER BLVD.
: WHITTIER, CA 90601
: PHONE: 562.699.4201
: FAX: 562.699.7598

: © 2009 GCH, INC.
: www.gchydro.com
: info@gchydro.com
: TOLL FREE: 877.MY.HYDRO
: 69 49376



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 plant growth. If you want the "final solution" to an infestation, than 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.

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 (Yellow) 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.

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 insure that all steps listed above were followed accurately. Use wisely at your own risk.

: 3560 STATE STREET
: SANTA BARBARA, CA 93105
: PHONE: 805.898.9922
: FAX: 805.898.0047

: 2405 MIRA MAR AVE.
: LONG BEACH, CA 90815
: PHONE: 562.627.5636
: FAX: 562.627.1618

: 496 W. MEATS ST.
: ORANGE, CA 92865
: PHONE: 714.974.4769
: FAX: 714.921.4769

: 11510 WHITTIER BLVD.
: WHITTIER, CA 90601
: PHONE: 562.699.4201
: FAX: 562.699.7598

: © 2009 GCH, INC.
: www.gchydro.com
: info@gchydro.com
: TOLL FREE: 877.MY.HYDRO
: 69 49376



Mildew Cure:

Mildew Cure works almost as well as **GreenCure**. It is a strong second best if **GreenCure** is unavailable. **Mildew Cure** does not work as long as **GreenCure** at keeping the spores from re-forming and re-attacking the plants. **Mildew Cure** must be mixed with a wetting agent such as **coco-wet**. It uses Sodium Bi-Carbonate as its main mode of action as well as essential oils.

Application of Mildew Cure:

Quart Sprayer - Mix 1.5 tsp / Quart of **Mildew Cure** add wetting agent and mix. Apply to entire plant(s) with sprayer.
Gallon Sprayer - Mix 1 oz / Gallon of **Mildew Cure** add wetting agent and mix. Apply to entire plant(s) with sprayer.

For severe infestations, up to 3x normal dosage can be applied. (Ex. 3 oz / Gallon) Make sure to first apply weaker application rate to plants first. Then begin to step up the dosage. Call with any questions or concerns.

Penetrator and Zone:

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

Application of Penetrator and Zone Blend

Quart Sprayer - Mix 2ml of zone, 15ml of penetrator into a Quart/Liter of Purified (Reverse Osmosis) Water.
Gallon Sprayer - Mix 8mL of Zone, 60mL of Penetrator into a Gallon of Purified (Reverse Osmosis) Water.

Piranha, Ag. Organics Foliar A+B, and Messenger with Wet Betty:

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**, 1/4 tsp of **Messenger**, 1/2 tsp of **Piranha** and **Wet Betty** at 1/4 tsp in a quart spray bottle filled with purified (reverse osmosis) water.

Gallon Sprayer- Mix 16 tsp of **Foliar A + B**, 1 tsp of **Messenger**, 2 tsp of **Piranha** and **Wet Betty** at 1 tsp in a one gallon spray bottle filled with purified (reverse osmosis) water.

Neem 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 Instructions:

Apply this spray every 3 days. Build dosage up from lowest to highest then 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.

Zero Tolerance - Either Original or Herbal Fungicide

This herbal Fungicide is made from the highest quality oils of clove, rosemary, thyme, and wintergreen. Mix with **Coco-wet** and apply at lowest dosage at first. Raise dosage up slightly every spray until max application rate is reached. It's made from pure food grade ingredients and is plant, people and pet friendly. Zero Tolerance is bio-degradable and environmentally safe so you can use it without worry. It eliminates Powdery Mildew, Gray & White Mold, Black Spot, and most molds and fungi. This stuff is new - yet very powerful.

Application Instructions:

Quart Sprayer - Dilute Zero Tolerance in 1/2 - 1/3 from the bottle (RTU bottle). Dilute 1/2-1/3 with Purified Water.

Spray 1 time at diluted strength. Then Spray with 3/4 strength Zero Tolerance 1/4 part water. Once plants are used to Zero Tolerance they can be sprayed at full strength.

: 3560 STATE STREET
: SANTA BARBARA, CA 93105
: PHONE: 805.898.9922
: FAX: 805.898.0047

: 2405 MIRA MAR AVE.
: LONG BEACH, CA 90815
: PHONE: 562.627.5636
: FAX: 562.627.1618

: 496 W. MEATS ST.
: ORANGE, CA 92865
: PHONE: 714.974.4769
: FAX: 714.921.4769

: 11510 WHITTIER BLVD.
: WHITTIER, CA 90601
: PHONE: 562.699.4201
: FAX: 562.699.7598

: © 2009 GCH, INC.
: www.gchydro.com
: info@gchydro.com
: TOLL FREE: 877.MY.HYDRO
: 69 49376



