

Organic Disease Control Information Sheet

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National Organic Program Finale Rule 205.2:

Organic Farming is an agricultural production system that (functions) ...by integrating cultural, biological, and mechanical processes that foster the cycling of resources, promote ecological balance and foster biodiversity.

USDA Organic says:

- Preventive and cultural control practices must be *first* choice for pest control
- All pesticide active ingredients must be natural or on the national list
- All inert ingredients must be of minimal concern to public health and the environment.
- Organic food and products must contain no genetically engineered organisms

Preventative and Cultural Disease Control Practices

Purchase Healthy Plants – Do not accidentally bring plant pathogens into the garden on infected transplants or seed. Inspect all transplants prior to purchase for disease symptoms like leaf spots, discolored areas on stems, leaves or roots. Above ground plant parts should be firm and green. Roots should be firm and light tan to white. Many root hairs should be present. Reject any plants with symptoms of disease. Purchase seed and transplants from a reputable source.

Disease Resistant Plants – Some plants are bred to be resistant to a specific disease. Whenever possible, select varieties that have resistance to common diseases like powdery mildew on pumpkin or verticillium wilt on tomato. Look for varieties that advertise resistance to specific disease problems rather than those that make general statements like ‘good disease resistance’. General statements may indicate a hardier plant, but these varieties may not have genetic resistance to any specific disease problems.

Scouting and Diagnosis – Examine plants regularly throughout the growing season to find pest problems while they are still minor. Identify the pest causing the problem before taking action. Visit www.extension.umn.edu/gardeninfo/diagnostics for help in identifying unknown pest problems. Knowing the identity of the pest will allow you to choose management practices effective against that particular pest.

Sanitation – If a plant disease problem is identified on a few leaves, stems or fruit, these plant parts should be promptly removed from the garden. Fungal and bacterial plant pathogens reproduce on infected plant parts. Removing infected plant tissue will reduce the growth and spread of the pathogen within the garden. Remember, never remove more than 1/3rd of a plants leaves. In some cases it is worthwhile to completely remove one severely infected plant to prevent spread of the disease to its healthy neighbors. Infected plant tissue can also be removed from the garden at the end of the growing season to reduce the pathogens ability to survive from one season to the next.

Infected plant parts can be composted if the compost pile heats up to 160F. Otherwise infected plant parts can be buried, burned or disposed of in the trash. Follow local city or county regulations regarding disposal of plant material. Many cities offer municipal composting sites for yard materials.

Manage Moisture – Most fungal and bacterial plant pathogens thrive in moist environments. Moisture on the surface of leaves and stems allows these pathogens to infect, grow, reproduce and spread. Roots growing in heavy wet soils are prone to root rot. Create an environment that favors plant growth, not disease development through proper water management.

- Use drip irrigation or a soaker hose to water plants. This puts water in the soil, where roots can take it up, not on the leaves, where fungi and bacteria thrive.
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- If using sprinkler irrigation, water early in the morning so leaves dry quickly in the sun. Avoid watering as the sun goes down. Wet leaves will remain wet for many hours in the night, providing excellent growing conditions for fungal and bacterial plant pathogens.
- Water deeply and infrequently. This will encourage growth of deep plant roots and will allow soil to dry slightly between watering. Continuously wet soil favors the growth of some root rotting pathogens and can suffocate roots. Amend heavy soils with sand or organic matter to improve soil drainage.
- Mulch the soil with an organic mulch like wood chips or straw. This will keep moisture in the soil and reduce humidity in the plant canopy.
- Space plants to allow good air movement through the garden. This will help leaves dry out quickly after rain and irrigation.

Tolerate a Nonthreatening Disease

Remember not all plant diseases are deadly. In fact many common diseases in the yard and garden affect the aesthetics of the plant more than the health of the plant. Learn more about the plant disease you have encountered at www.extension.umn.edu/gardeninfo before deciding what level of disease control is necessary. Some diseases like oak wilt or Dutch elm disease require action. Others, like powdery mildew on lilac can be tolerated as they will cause no significant damage to the plant.

Often cultural control strategies will reduce disease problems to an acceptable level if not eliminate them altogether. If the leaf spot disease on tomato plants have been reduced in severity so that the disease no longer affects the number of tomatoes produced, than this is successful disease management.

Organic Fungicides and Biological Control Organisms

The fungicide active ingredients listed below are considered natural and are accepted in organic disease control. On the fungicide bottle, the active ingredient is listed below the pesticides commercial name and is typically in smaller print. Remember inert ingredients must also comply with the National Organic Rule so it is possible for a fungicide to have an active ingredient listed below and not be organic.

Look for these two symbols when shopping for organic pest control products. Products with this label have met USDA standards for use in organic agriculture.



For Organic Production

Organic pesticides are still pesticides and must be treated as such! Always completely read the label before using the product. Follow all rules and regulations listed on the pesticide label.

Sulfur – This compound is a fungicide that prevents plant diseases caused by fungi like powdery mildew. Sulfur has been known to burn tissue from young and sensitive plants. Test a few leaves before spraying the entire plant if unsure how a specific plant will respond.

Copper – This compound prevents many fungal and bacterial diseases of plants.

Neem oil – This plant oil product is sold as a complete oil or extracted for certain products like Azadirachtin. Neem oil has well documented insect control activity, but has mixed results for disease control. A product with the complete unextracted neem oil should be used for disease control.

Potassium Bicarbonate – This compound is a fungicide that needs to have good contact with the fungi to work. It works well against exposed fungi like powdery mildew, but will not be effective against fungi in the roots or vascular system of a plant like root rotting fungi or Verticillium wilt.

Trichoderma harzianum – This fungus is a biological control organism that directly parasitizes fungi that cause plant diseases. Sold as a powder, this product works best against root rotting diseases and other pathogens that live in the soil.

Bacillus subtilis – This bacterium is biological control organism that produces an antibiotic compound that prevents many fungi and bacteria that cause disease in plants. It is sold as a spray and is applied to prevent fungal and bacterial plant diseases.

****Pesticide safety information from Exttoxnet at <http://exttoxnet.orst.edu/>****