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CONTROL OF THE BLACK MOLD DISEASE
OF MANETTI ROSE ROOTSTOCK

by

J. A. Milbrath, Associate Plant Pathologist
F. P. McWhorter, Plant Pathologist

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Nature of the Disease

The black mold disease of Manetti results from a parasitic fungus that grows on any cut or injured portion of the plant. When the mold becomes well established it prevents the callusing of cut surfaces. Under favorable conditions it develops rapidly and completely covers any injured tissue in 10 to 14 days. The growth first appears white and granular, but soon becomes sooty black. Unless one is thoroughly familiar with the disease, a microscopic examination may be necessary for positive identification, as non-parasitic molds sometimes develop on the injured surface of Manetti. The black mold fungus, Chalaropsis thielavioides Peyr. is readily recognized microscopically by its two distinct types of spores.

Losses Caused by the Disease

Losses from the disease result from (1) cuttings becoming infected at the cut ends, or on the areas injured by disbudding. Normal callus formation is prevented or restricted and no roots develop, or the roots which do develop may be weak and on one side of the cutting. (2) The cuttings may be only lightly infected and root development may be normal. When such plants are budded in the field some of the fungus spores may be introduced under the bud shield, prevent union, and cause the bud to die. (3) Rooted Manetti cuttings intended for grafting in greenhouse benches may become infected in the storage house. When such infected plants are grafted the black mold spores infect the cut area between the scion and stock, and normal union of stock and scion is impossible.

How the Disease is Perpetuated

Many fungus spores are produced soon after the black mold starts to develop on injured tissue. These spores are carried around in the air and settle with dust on all parts of the storage house and equipment. Manetti cuttings prepared in such a house soon become thoroughly inoculated with black mold spores. If these infected cuttings are planted, many of them will grow into normal plants. The black mold spores remain on the surface of these cuttings or may be buried under layers of callus tissue. When these apparently normal plants are dug and brought back into the storage house the spores again infect any injured tissue and soon produce more spores which recontaminate the storage house.

How to Prevent Black Mold Infection

Black mold is very infectious. One spore in the right place can cause serious damage, because the mold develops very rapidly and soon produces many spores. This enables the disease to spread very rapidly. The following points should be remembered by every nurseryman who plans to grow any Manetti rootstock.

1. Every precaution should be taken to prevent the introduction of black mold into your nursery or storage house. Rose plants on Manetti roots or Manetti cuttings should not be handled from other nurseries unless absolutely necessary, and then only if the stock is known to be free from black mold.
2. Since the infection that occurs when the cuttings are made plays such an important role in perpetuating the disease, every precaution should be taken to prevent infection of the cuttings at this time.
3. Clean Manetti should not be taken into storage houses where infected plants have been handled or where black mold spores might be present. Likewise, equipment which might have become infected should not be used in handling or hauling clean Manetti.
4. Cuttings should not be made in storage houses where rooted Manetti or roses on Manetti rootstock are stored. If any black mold is present it will develop on the broken roots and tops of these plants, and spores will be produced which will contaminate the cuttings.
5. Black mold may live and develop in the soil for a number of years; therefore, clean cuttings should not be planted on ground previously used for Manetti rootstock.
6. Infected cuttings or one-year-old Manetti plants cannot be successfully treated with chemical fungicides to eradicate the black mold. Twenty-eight of the most promising fungicides available for this purpose were tested in many different concentrations and different time intervals. None of these destroyed all of the mold without serious injury to the cuttings.
7. If for any reason it is necessary to plant infected cuttings, or if black mold is suspected on any cuttings before planting, it would be advisable to soak these cuttings in 1 pound of 2% Ceresan $\frac{1}{2}$ to 100 gallons of water for one hour. This treatment is not ideal, but it proved best among the many tested. The treatment, at the strength advised, does not kill all the fungus spores, but it does delay their germination long enough for the cuttings to root. Unfortunately, the chemical also delays the rate of callus formation and rooting. DO NOT USE THIS SOLUTION STRONGER THAN RECOMMENDED OR FOR LONGER PERIODS SINCE SERIOUS INJURY MAY RESULT. It should be remembered that it is better to prevent the introduction of this disease than to try to control it by chemical means.

$\frac{1}{2}$ The chemical 2% Ceresan is often called Old Ceresan and is marketed for treating daffodils and other bulbs. It should not be confused with New Improved Ceresan which is a different chemical and is more injurious to the cuttings. All Ceresans are mercurials and are highly poisonous. Directions given by manufacturer to prevent injury to persons handling these compounds should be closely followed.

8. If storage house or room is known to be infected, and it is the only place available for making cuttings, it should be disinfected before using. One of the best and cheapest materials for disinfecting storage houses, rooms, boxes, saws, benches, and other equipment is 1 pound of copper sulphate crystals for each 5 gallons of water. All dust and other debris should be washed from the walls and the floors cleaned of this material before spraying. All parts of the room or equipment should be thoroughly wet with the copper sulphate solution.