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CONTROL MEASURES FOR BOTRYTIS DISEASES
OF TULIPS AND LILIES

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SPRAYS SUGGESTED FOR FIELD TRIAL

by

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Introduction

Watery dead areas on tulip leaves and ugly canker-like spots on stems, buds and flowers are evidences of the Botrytis disease of tulips. Likewise, ash-gray watery spots on lily foliage are evidences of the Botrytis disease of lilies. The fungi which cause these diseases are different species of Botrytis and each is confined to its respective host. The tulip species, Botrytis tulipae, attacks only tulip; the lily species, Botrytis elliptica, attacks only lily. These Botrytis organisms often blight their respective hosts with such rapidity that the disease produced by each are usually referred to as "fire". The lily trouble is also called Botrytis blight.

Botrytis diseases are influenced by climatic conditions. They can develop slowly under almost any condition which permits good growth of their host plants but they develop with great suddenness and vigor when warm, murky, wet or foggy weather prevails. This association between the severity of the disease and climatic conditions has caused some people to think these diseases are literally caused by weather conditions. The true relationship is that the Botrytis fungi are the germs responsible but weather conditions favorable to the growth of the fungi increase their effectiveness as disease-producing agents.

The Botrytis fungi that cause these fire diseases over-winter on refuse in the soil, especially on the old flower stems of the host plants. They also over-winter on bulbs. Above-ground parts of the host plants become infected in the early spring. Masses of spores are formed on them and these are likely to infect neighboring plants unless they are protected with some suitable spray or dust. This circular gives suggestions for control of these troubles by spray applications during the growing season of the host plants.

The Saanichton KS-Resin Spray

To prevent the spread of the Botrytis fungi it is necessary to cover the surface of the leaves with some protecting spray. We wish to recommend for trial the complex potash-sulfur-resin spray, called the Saanichton KS-Resin Spray, developed by Dr. William Newton in British Columbia. Small tests with this spray at the Oregon Experiment Station and larger tests by commercial growers have shown that it is extraordinarily effective against tulip fire and probably of exceptional value for lily fire or Botrytis blight. According to Dr. Newton, this spray material should be prepared as follows: "It is prepared by mixing together 4 lbs. sulphur, 5 lbs. potassium hydroxide, 3 lbs. resin and 1 pint fish oil. To this

mix is added one-half pint water, and it is stirred while a violent chemical reaction with the evolution of heat takes place. The mix cools to a coarse granular powder that dissolves well in water, the stock spray material."

The above mixture may be used at the rate of 8 to 10 lbs. per 100 gallons of water. In preparing the mixture the resin and sulphur should be powdered before attempting to make the mixture. The potash lye (not soda lye) should be flaked. We suggest that the sulphur, resin and fish oil be mixed together; that the 1/2 pint of water (slightly more may be used) be added to the potassium hydroxide. When this dissolves or mixes together, and while it is still hot, add it to the resin-sulphur and fish oil mixture and stir thoroughly until a violent reaction takes place. Another way, but applicable only to small quantities, is to mix all the ingredients together in the first place, then add the water and stir to prevent charring. It is suggested that trial mixtures of small amounts of the ingredients be tried before any large quantity is attempted. An iron kettle makes a convenient mixing bowl.

Sulphur-resin-potash spray mixtures are difficult to prepare with the facilities one usually has available at home. At our suggestion a commercial company in Portland has therefore prepared a mixture which will be sold as a liquid ready to be diluted to the right strength. This will yield a spray very similar to the home mixed formula outlined above. When using the prepared spray follow the directions given on the container, since the dilution is different than when using the home made mixture.

We suggest that the spray be applied at intervals of about two weeks, or in accordance with local climatic conditions prevailing during the growing season. For example, after a rainy period when danger from fire is evident generous applications of the spray should be made. Care should be taken to cover both upper and lower leaf surfaces.

Bordeaux Mixture Can be Used for Lilies but Not for Tulips

Careful applications of Bordeaux mixture have been found to be helpful in controlling the Botrytis blight of lilies. For northwest conditions liquid spray is better than any of the dust methods. The 4-4-50 formula is recommended. It is essential to apply the spray before infection takes place as it is a preventive, not a cure. Whenever possible apply before a rain. Two hours drying makes the protective coating waterproof. Cover the lower as well as the upper sides of the leaves and repeat applications often enough to keep the new growth covered.

Because of the specific action of the sulphur-resin sprays we suggest that northwest growers who are able to obtain or make such sprays give them a trial along with the Bordeaux method.

Special Notes for Tulips

It is suggested above that Bordeaux mixture may be used as a spray for lilies, but Bordeaux is not recommended for tulips since it gives very poor control of tulip-fire and in the experience of growers it is likely to burn tulip leaves. The sulphur-resin spray seems to be the only really worth-while spray yet developed for tulip-fire under field conditions.

The question is often asked by experienced growers "what should one do with the first plants in the field on which fire is found?" In the case of tulips these first plants usually come from infected bulbs and are very sick early in the season, yet surrounded by healthy plants. We suggest that no attempt be made

to rogue these plants since by so doing the fungus spores will be scattered and neighboring plants endangered. Instead of attempting to rogue such plants, we suggest that they be covered with an old tin can, a flower pot or other suitable cover so that they will be isolated and thereby rendered harmless.

In our trials with the resin spray on tulips we have found that the spraying of flower buds which are slightly diseased with fire will actually protect them to such an extent that they open and produce fairly good flowers notwithstanding the primary blemish.
