BENOMYL,
NEW BREAKTHROUGH IN SYSTEMETIC FUNGICIDES*

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There are many approaches that could be taken in discussing the breakthrough in systemic fungicides. However, I am going to present the subject in a manner that should be of interest to you as florists.

Actually the concept of systemic chemicals to control insects, diseases, and weeds is not new. For example, most of you here have used systemic insecticides such as systox and metasystox for many years. Also, systemic herbicides have been used for quite a while. These have not been used by florists but I am sure you have all heard of amino triazole. The breakthrough in systemic fungicides occurred about five years ago. So you can see it is a relatively new area.

There are several reasons why we want systemic fungicides. First, they offer a safe method of protecting emerging plants. The toxic compound

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is in the plant translocated there from the soil. There is minimal toxic effect to wildlife and man himself during the growing season.

Next, if the material is applied to the soil, the plant can be protected continuously throughout the growing season without repeated applications of the fungicide. This is because the material is continuously taken in and translocated to newly formed plant parts. Also, soil applied systemic fungicides are not subject to the same degree of loss from weathering as materials applied to the above ground parts. Other reasons include: no unsightly residues as with spray materials and finally, systemic fungicides may provide a way to control vascular wilt problems.

Now let's look at benomyl. It is a white crystalline material sold as a 50% WP in 2 pound containers. It is insoluble in water and is compatible with most standard spray materials. The LD_{50} is greater than 10,000 mg/kg.

Benomyl is highly toxic against many pathogenic fungi. Some of the ones that are of interest to you are: Botrytis, Rhizoctonia, Fusarium, Thielaviopsis, Verticillium and powdery mildew. The material has good residual protectant activity. In some instances the interval between applications can be 14-21 days. There is a high degree of plant safety. That is, it is nonphytotoxic to many crops.

Systemic disease control has been obtained from soil applications where the root system is confined within the treated zone. The material moves upward into the leaves. Unfortunately it has been shown that

it does not move into the flower parts. The plant parts must be able to carry on transpiration to accumulate benomyl.

Most of the people working for you want fringe benefits. Benomyl also provides this. It works as a mite ovicide. That is, mites are not killed but the eggs laid by mites feeding on benomyl treated foliage will not hatch.

Presently benomyl is only labeled for ornamentals and turf. It has shown excellent results on many woody ornamentals such as Mt. Laurel leaf spot, hawthorne leaf spot and Botrytis blight on dogwoods. It is also being used in the rooting of Rhododendron cuttings. Many diseases of fruit and vegetable crops have been controlled with benomyl, but to date have not been labeled for them.

As with most materials there are some disadvantages. The material is insoluble in water and cannot be applied through fertilizer proportioners. In some instances it has left a white residue on plant parts when used as a spray. The material apparently does not move into the flower parts. It will not control Pythium and Phytophthora and finally, it is a little expensive at the present time.

In conclusion, benomyl is not the complete answer to disease control. However, it is a material that should be incorporated into your total disease control program.