I heard there was a big disease outbreak in blackberries this past winter. What was it, and what can blackberry growers do about it if it happens again?

The steady moisture and rains of this winter and spring season of 2004- 2005 fomented a serious outbreak of downy mildew in several blackberry varieties cultivated in Santa Cruz and Monterey Counties. The most recent outbreak of this disease was in 1998.

Downy mildew is caused by the fungal pathogen *Peronospora sparsa*. This pathogen infests all sorts of blackberry varieties, including Ollalieberry, Boysenberry and proprietary varieties, along with blackberry-red raspberry hybrids.

The disease first appears as a yellow discoloration on the upper leaf surface, followed by a red to purple discoloration which is oftentimes framed and limited in growth by leaf veins, giving the lesions an angular appearance. These blotches will appear as light pink or tan areas on the leaf underside, often accompanied by whitish spore masses. As favorable conditions persist and the disease advances, these lesions expand to cover the whole leaf, and eventually the whole leaf turns brown. Severely infested leaves may fall off the plant.

Infested flowers often result in fruit which is crumbly and not sound, while green stage fruit infested with downy mildew will shrivel and dry out. Fruit infested at the mature stage takes on a dull pallor, followed by similar shriveling and drying out. Downy mildew affected fruit will sometimes split into two parts.

The downy mildew pathogen is understood to overwinter as fungal mycelium in the plant roots, crowns and canes. As new shoots emerge in the spring, the pathogen follows the growing point, infesting stems and new leaves. These infested leaves are then the primary sites for further infestation of the plant.

Downy mildew is a pathogen which depends very much on favorable weather to grow and spread. The ideal conditions for downy mildew in blackberries are extended periods of moisture and temperatures in the range of 65 to 72 degrees F. Interruptions of these conditions are not at all conducive to the disease.

Practices which limit the duration of periods of moisture around susceptible blackberries may reduce risk of disease. Removal of weeds and excess suckers around the base of fruiting canes allows more air circulation and may limit disease establishment and spread.

The fungicide often recommended for use in controlling downy mildew is Aliette (fosetyl aluminum) used as a foliar application. Growers planning on using Aliette should bear in mind the restriction of not being able to harvest fruit for 60 days after application of this material.
Although not fungicides, phosphorous acid fertilizers are successful in limiting downy mildew in blackberries. Growers should be certain that they are purchasing products containing phosphorous acid, as opposed to phosphoric acid which does not exhibit the

same capability of limiting downy mildew. Additionally, all products sold as nutrient solutions must state the phosphorous content in terms of phosphoric acid equivalents, even if they only contain phosphorous acid. Products such as Phosgard, Nutriphyte and Fosphite all contain phosphorous acid.

There is a fungicide and several other products mentioned for control of downy mildew in blackberries in this article. Before using any of these products, check with your local Agricultural Commissioner's Office and consult product labels for current status of product registration, restrictions, and use information.

Those growers who have further questions concerning this disease or others affecting caneberries and strawberries are urged to contact Mark Bolda at the UC Cooperative Extension office in Watsonville.