Tolerance of Botrytis cinerea and rose powdery mildew to benomyl

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An initially effective spray schedule of benomyl applied regularly to roses failed to control gray mold *[Botrytis cinerea]* in the third season and powdery mildew *[Sphaerotheca ?pannosa]* in the second season. In agar plate tests, conidia from benomyl-treated tomatoes proved to be tolerant to benomyl and also to several other fungicides.

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Efficaces au debut, des pulvérisations régulières de benomyl effectuees sur des rosiers n'ont pu combattre le blanc (*Sphaerotheca?pannosa*) durant la deuxieme saison de croissance, ni la moisissure grise *(Botrytis cinerea)* durant la troisième saison. Dans des essais sur plaque de gelose, les conidies prelevees sur des rosiers traités au benomyl et sur des tomates egalement traitees se sont revelees tolerantes à ce produit et egalement a plusieurs autres fongicides.

Botrytis cinerea

Tolerance of ***Botrytis cinerea*** Pers. ex Fr. to the fungicide benomyl was first recorded by Bollen and Scholten in the Netherlands (1) and has since been recorded in Britain (3,4) and the U.S.A. (5). This note records its occurrence in Canada.

At Kingsville, Ontario, it was noted in the late summer of 1974 that moribund rose flowers were unusually badly affected by gray mold despite regular sprays of Benlate (50% benomyl) through the preceding three seasons. Conidia of ***Botrytis cinerea*** from affected flowers were streaked onto potato dextrose agar containing 100, 500, and 1000 ppm benomyl, added as Benlate to the agar at 40°C immediately before pouring. The conidia germinated without delay and vigorous colonies developed within 2-3 days at room temperature at all benomyl concentrations. Sporulation occurred within 3 days and sclerotia formed within 4 days.

Conidia taken from colonies of the original isolate were put into small incisions in ripe tomato fruit; a vigorous and typical gray mold rot resulted in 3 days. Conidia taken from gray mold lesions on tomato stems and fruit in commercial glasshouses known to have received Benlate sprays also proved to be benomyl-tolerant when used as inocula on benomyl agar.

Conidia taken from the same benomyl agar plates were also used to inoculate PDA containing up to 1000 ppm a.i. benomyl, dichloran, chlorothalonil, copper (as COCS), anilazene, captan, Dikar (72% mancozeb + 4.4% dinocap), each incorporated at 40°C. In each case, with the exception of dichloran and Dikar, colonies, though sometimes delayed and restricted in diameter, developed and sporulated. Thus, benomyl-tolerant conidia also showed tolerance to a range of commercially-alternative fungicides.

Rose powdery mildew

This note also records the failure of a regular spray schedule of Benlate (50% benomyl) to control rose powdery mildew ***Sphaerotheca ?pannosa*** Wallr. Lev. At Kingsville, Ontario, a spray schedule of 0.5 - 0.75 lb benomyl/100 gal (0.5 - 0.75 g/liter) applied at intervals of approximately 10 days throughout the summer controlled ,powdery mildew until 1972. However in the summers of 1973 and 1974 it was uncontrolled. In common with some other powdery mildews (2), rose powdery mildew thus appears to have developed tolerance to benomyl.

Literature cited

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