pieces from each sample were plated out onto soil extract agar, to which an antibioticum was added to prevent bacterial growth.

Three weeks after treatment some of the fungi, which *in vitro* proved to be very sensitive to benomyl, were significantly less frequently isolated from roots of sprayed plants than from those of untreated ones viz. *Chaetomium spp.* ($\alpha < 0.001$), *Cylindrocarpon sp.* ($\alpha < 0.02$), and *Fusarium spp.* ($\alpha < 0.05$). This effect had almost disappeared nine weeks after treatment. At that time for frequently isolated fungi significant differences were only recorded for *Aureobasidium bolleyi* ($\alpha < 0.001$) and *Papulaspora sp.* ($\alpha < 0.05$). Both species were less common on roots of benomyl-treated plants than on those of control plants.

In greenhouse and field experiments it appeared that spraying of the above-ground plant parts did not result in an appreciable downward transport of fungitoxicant to the roots. Most probably the low concentration in the roots of the rye plants in field experiments (on a sandy soil) was caused by leakage of the fungicide along the haulms. As an additional result of this study the complete absence of fungicide in the kernels of plants, in which relatively high concentrations of fungitoxicant were found in other parts, deserves special mention.

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Effect of the fungicide benomyl on some metabolic processes and on numbers of bacteria and actinomycetes in the soil

Treatment of a sandy glass-house soil with benomyl resulted in increased numbers of bacteria plus actinomycetes; an accompanying shift in the bacterial flora cannot be excluded. However, addition of benomyl to agar media reduced the number of bacteria plus actinomycetes that could be isolated on these media, starting from soil-suspension dilutions of untreated soil. When starting from benomyl treated soil this reduction was smaller or non-existent.

The conversion of soil organic matter and of added cellulose and chitin was not seriously affected by benomyl concentrations of 50 and 200 ppm in the soil, judged by the CO_2-evolution from the soil.

Nitrogen mineralization and nitrification were hardly influenced by benomyl-concentrations in the soil of 10, 25 and 100 ppm. However, addition of benomyl at a level of 200 mg/l to liquid media with a mixed culture of *Nitrosomonas* and *Nitrobacter* caused a delayed oxidation of ammonium to nitrite and prevented the oxidation of nitrite to nitrate. With 20 mg/l benomyl in the medium only the oxidation of nitrite was delayed.

A more detailed paper will be published elsewhere.

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Antagonism between benomyl-resistant fungi on cyclamen sprayed with benomyl

In a lot of benomyl-treated cyclamen plants seriously diseased by a resistant strain of *Botrytis cinerea* some plants were relatively slightly affected. From these plants strains of *Penicillium brevicompactum* and *P. stoloniferum* were isolated which were even more resistant to the fungicide than the strain of *Botrytis*. In order to learn whether these *Penicillia* might have contributed in a "biological" control of *Botrytis* on the plants sprayed with the fungicide, the antagonistic activity of these strains towards the pathogen was studied.

In vitro antibiosis towards *Botrytis* could clearly be demonstrated on malt agar. The strain of *Penicillium* causing the largest inhibition of mycelial growth of *Botrytis* was chosen for an experiment "*in vivo*". Three lots of 30 densely foliated plants each were treated with 0.2% Benlate. They were sprayed with water (C), a spore suspension of *Botrytis* (B), and a spore