Controlling powdery mildew caused by Sphaerotheca fuliginea in cucumber by foliar applied potassium nitrate

The study was performed to evaluate the efficacy of foliar sprays in controlling powdery mildew (*Sphaerotheca fuliginea*) in greenhouse-grown cucumber (*Cucumis sativus* L. cv. Delilla) plants. The cucumber plants were grown in a greenhouse in plastic pots containing a mixture of peat, vermiculite and soil (1:1:1, v/v). Twice per week, plants were watered to saturation with a 0,1% 20-20-20 (N-P-K) fertilizer solution. Sprays of KNO_3 (20 mM), KH_2PO_4 + KOH (20 mM) and the fungicide Pyrifenox (Dorado, 0,01% 480 EC, Ciba Geigy, Switzerland) were applied to the upper leaf surface of greenhouse-grown cucumber plants at the five-leaf stage 4 days before inoculation with a conidial suspension of *S. fuliginea*. These foliar sprays reduced powdery mildew colonies (87%) by 9 days after the inoculation (Figure 1).

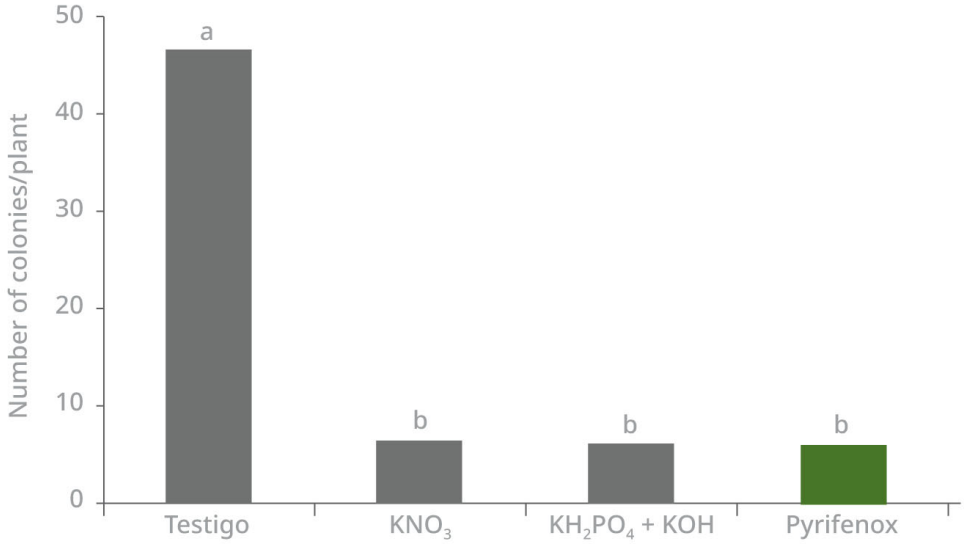

Figure 1. Effect of pre-inoculation foliar treatments on control of powdery mildew on cucumber plants. The number of powdery mildew colonies was counted 9 days after inoculation.

In another experiment plants, naturally infected, were transplanted to 10 liter containers. Foliar sprays with 25 mM solutions of KNO_3, K_2HPO_4, KH_2PO_4 + KOH and the fungicide Pyrifenox were applied at 7 and 14 day intervals, starting seven days after transplanting. Treatments were repeated at 7 and 14 day intervals to give a total of eight and four foliar sprays, respectively. Overall, regardless of 7 or 14 days intervals between applications, KNO_3, K_2HPO_4, KH_2PO_4 + KOH and Pyrifenox significantly inhibited disease development for all treatments compared to the control (sprayed with water).

The present study clearly demonstrated that simple compounds such as KNO_3, K_2HPO_4 and KH_2PO_4 + KOH can control powdery mildew on leaves of greenhouse-grown cucumbers as effectively as the systemic fungicide Pyrifenox.