CONTROL OF POWDERY MILDEW BY SPRAYING THE ELECTROLYZED WATER IN HYDROPONICALLY GROWN STRAWBERRY

Powdery mildew

http://en.wikipedia.org/wiki/Powdery_mildew

Powdery mildew is a fungal disease that affects a wide range of plants. Powdery mildew diseases are caused by many different species of fungi in the order Erysiphales. It is one of the easier diseases to spot, as its symptoms are quite distinctive. Infected plants display white powder-like spots on the leaves and stems. The lower leaves are the most affected, but the mildew can appear on any part of the plant that shows above the ground. As the disease progresses, the spots get larger and thicker as massive numbers of spores form, and the mildew spreads up and down the length of the plant.

Authors: S. Tsukagoshi, Y. Sunohara, Y. Noma, E. Takahashi, A. Schörner

Keywords: Fragaria x ananassa Duch., Sphaerotheca macularis, chemicals saving, acid water, alkaline water

Abstract: Effect of spraying electrolyzed acid water and alkaline water obtained by electrolysis of KCl solution on the incidence of powdery mildew (Sphaerotheca macularis) is investigated in strawberry (Fragaria x ananassa Duch. cv. Nyoho) grown in hydroponics.

Free effective chlorine concentration of the acid water at 0.5m from spraying nozzle ranged between 5.7 and 15.6 mg/l. pH and oxidation-reduction potential of the acid water ranged from 2.2 to 2.3 and from 1100 to 1140 mV, and those of the alkaline water ranged from 12.3 to 12.6 and from 30 to 280 mV, respectively.

The treatment plots were
1. No spraying (NSp)
2. Acid water spraying (Ac)
3. Alkaline water spraying 30 minutes after acid water spraying (Ac+Al)
4. Agricultural chemicals spraying (Chem).

Those electrolyzed waters were sprayed onto the leaves and petioles once every week, and chemicals were sprayed once every two or three weeks. The occurrence of powdery mildew on the petioles was observed on January 5 in NSp, and on January 12 in Chem. The number of diseased petioles increased in NSp as the experimental period proceeded, but decreased in Chem and no diseased petiole was observed on February 16. In Ac or Ac+Al plot, the numbers of diseased petioles were lower than that in NSp or Chem plot. Very few disease symptoms were observed in Ac or Ac+Al.

The results indicate that the acid water spraying and acid + alkaline water spraying can control the powdery mildew in strawberry and can reduce the use of chemical fungicide in protected cultivation.