New York State Integrated Pest Management Program

1998 ANNUAL REPORT

Project Title: **Performance of Snap Bean Cultivars in Root Rot and Clean Soils**

Investigators: G. Abawi, J. Ludwig, and J. Bossard, Dept. of Plant Pathology, NYSAES, Cornell University, Geneva, NY 14456.

A total of 16 snap bean varieties were grown in sections of the root rot field at the Geneva Station with and without fumigation with Vorlex at 30 gallons/A (fall, 1997). Seeds of all the varieties were treated with Apron, Captan and Lorsban. Varieties were planted in two, 20 ft. long rows and replicated 5 times in both the natural and fumigated soils. All cultural practices employed were according to commercial production recommendations. The trials were planted on June 11 and harvested on August 10 - 12.

Results presented in Table 1 show that the snap bean varieties included in this test differed in yield and in the number of surviving plants at harvest. Stand count in fumigated and untreated soil ranged from 121 to 166 and 116 to 149/ 20 ft. row, respectively. The yield of all the varieties was much higher in the fumigated soil. Pod yield of these varieties in the fumigated and untreated soils ranged from 3.49 to 6.40 and 2.19 to 3.48 T/A, respectively. Envy, Espada, Flo, Blue Lake 47, Ambassador and Hystyle were the higher yielders in the fumigated soil, whereas Espada, Summit, Blue Lake 47, Envy, and True Blue were the high yielding varieties in the untreated root rot soil. However, the ratio of the pod yield of the varieties in the untreated soil as a percentage of their respective yield in the fumigated soil varied considerably and ranked the varieties differently. This ratio ranged from 45 to 79% and appears to separate the varieties into three groups (Figure 1). The higher limit of this ratio is represented by the cultivars Summit, True Blue and Saratoga, whereas the lower limit is represented by the varieties Ambassador, Envy, Flo, Hystyle, FM 549 and Tenderlake. The remaining seven cultivars represent the intermediate group.

The root rot severity ratings of the varieties were high in both the untreated and Vorlex-fumigated soils, ranging from 5.6 to 6.7 and 5.5 to 6.7, respectively on a scale of 1 (no disease symptoms) to 9 (most severe disease). The high root rot severity observed or roots of the varieties grown in the fumigated soil was a surprise and we think it was due to one or both of the following conditions. Our root rot field is heavily infested throughout the soil profile and the soil fumigation with Vorlex in the fall of 1997 was either not adequate or did not penetrate deep enough in the soil profile, thus the soil was re-contaminated in the spring of 1998 during the seedbed preparation before planting. Secondly, the trials in the root rot field were exposed to several heavy rains with 2 or more inches of accumulation, that were also accompanied by high winds. The latter resulted in water running between the fumigated and untreated sections because of the topography of this field, which undoubtedly contributed to the infestation observed. Nevertheless, it appears that the soil fumigation with Vorlex may have reduced the initial level of infestation to allow for a better early root growth and may have also increased nutrient availability.

The data obtained from this test demonstrated differences in the performance of the varieties and possible differences in their tolerance to root rot pathogens. Thus, we would like to repeat this test during this coming season. We will fumigate a section of the root rot field in the spring of 1999 with methyl bromide injected under a plastic cover. We will also analyze the fumigated and non-fumigated soils for micro- and macro-nutrients content as well as collecting the same set of data obtained in 1998.

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IPM House
630 W. North St.
New York State Agricultural Experiment Station
Geneva NY 14456
315-878-2353