EVALUATION OF IRF-135 FOR FLORIDA CUT FLOWER PRODUCTION

Erin N. Rosskopf*[1], Nancy Kokalis-Burelle[1], Jason C. Hong[1], Taylor Ivy[2], and John Holzinger[3]
[1] USDA-ARS, US Horticultural Research Laboratory, Fort Pierce, FL; [2]ISAGRO, USA;[3]Holzinger Flowers, Inc.

A field trial was established in the fall of 2013 to compare the efficacy of the new biofumigant IRF-135 (Dominus®, Isagro, USA, 100% allylthiocyanate) applied at 40 gal/A to an 80:20 formulation of methyl bromide:chloropicrin applied at 400 lb/A in a flat fumigation production system for Florida cut flowers. Soil moisture on the day of application was measured gravimetrically and ranged from 10.4-13.4% across the four paired plots. Application was made using a standard 13' methyl bromide rig with shanks placed at 8" soil depth. All plots were covered with totally impermeable film. The test was arranged as four paired plots with snapdragon (*Antirrhinum majus*), lupin (*Lupinus hartwegii*), larkspur (*Consolida orientalis*), iris (*Iris ensata*), Queen Anne's laceflower (*Ammi majus*), and delphinium (*Delphinium grandiflorum*) planted across the pairs.

Nematode and weed populations were assessed prior to fumigation, two-to-five days following tarp removal and at the initiation of harvest. Ten soil cores were taken per plot using a 2.5-cm-diam soil probe. These were combined, and a subsample was used to extract nematodes using the Baermann funnel technique. Nematodes from the subsample were identified as either root-knot, other parasitic, or free-living nematodes and counted using an inverted microscope. In-field disease ratings were performed as needed beginning with seedling damping off and continuing through root condition ratings following the final harvest. Sub-plots were used to identify dominant weed species. Root galling was assessed using a root gall index based on a scale of 1 to 10, with one representing no galls and 10 representing severe (100%) galling. At the end of the season, nematodes were also extracted from plant root tissue, counted, and identified as described above. Plots were harvested by the grower as appropriate, depending on crop maturity and market for each species. Data was analyzed using paired t-tests.

Carolina geranium (*Geranium carolinianum* L.) was the dominant weed species remaining after treatment. Population densities were not significantly different between treatments, nor were they different for total plant parasitic nematodes or root-knot nematode (*Meloidogyne* spp.) specifically. Soil populations of non-parasitic nematodes were significantly greater ($p=0.036$) in the IRF-treated plots than in the methyl bromide:chloropicrin-treated plots, but there were no differences in nematode populations extracted from crop roots. Wilt in snapdragons was the most significant disease present in any crop; however incidence was <5% and was not significantly different between treatments. In

summary, while Carolina geranium control must be improved, the use of IRF-135 for cut flowers shows excellent potential.