EVALUATION OF AJMC-330 FOR PRODUCTION OF ORNAMENTAL COCKSCOMB (*Celosia argentea*)

Erin N. Rosskopf and Gregory T. Church
USDA, ARS
U.S. Horticultural Research Laboratory
Fort Pierce, FL

John Holzinger
Holzinger Flowers, INC.
Palm City, FL

AJMC-330 is an experimental compound currently under investigation as an alternative to methyl bromide. Laboratory, greenhouse and limited field trials have been conducted in which the material has shown a high level of efficacy against root knot nematode (*Meloidogyne incognita*), plant pathogens, including *Pythium* and *Fusarium* spp., and multiple weed species (Basinger et al., 2003; Rosskopf & Basinger, 2003). Previous field trials with this material, conducted in tomato and strawberry, established rates necessary to control numerous target pests (Ajwa, personal communication, Rosskopf, unpublished).

Three field trials were conducted to evaluate this material for the production of ornamental cockscomb (*Celosia argentea*) in Martin County, Florida. The first two trials (spring and fall 2004) included AJMC-330 (560 kg/ha shanked), methyl bromide (98:2, 448 kg/ha) and an untreated check. Each plot was 3.4 m wide by 12.2 m long. Treatments were replicated 4 times and plots were arranged in a randomized complete block design. The third trial, conducted at the same location (spring 2005), included an untreated check, AJMC-330:chloropicrin (each at 224 kg/ha, drip applied) and methyl bromide (98:2, 448 kg/ha) with each fumigant applied either under high density polyethylene mulch or virtually impermeable film (Klerk's Plastics). Plots in this trial were 1.8 m wide by 12.2 m long. Each treatment was replicated five times and plots were arranged in a completely randomized block design. Data on weed density, disease incidence and severity, gall ratings, nematode counts, pathogen populations and plant growth parameters were collected from two randomly selected meter long sections of row within each replication.

In the first two trials, the results with AJMC-330 differed by season. In the spring 2004 trial, root galling in the AJMC-330 treated plots was not significantly different from the untreated check, while plants from the methyl bromide-treated plots had significantly less galling. There were no significant differences in the marketable yields among any treatments in this trial. Differences in weed densities during the spring trial were seen only immediately after the plastic was pulled and the crop was seeded. In the fall 2004 trial, galling on plants collected from the AJMC-330 and methyl bromide-treated plots was statistically similar and was significantly reduced compared to the untreated control. Yields from the AJMC-330 plots in the fall trial were significantly higher than the

untreated check and were statically equivalent to methyl bromide. In the fall trial, the untreated check had significantly more weeds than all other treatments by the end of the season.

In the third trial, root-knot nematode juvenile counts in the soil and root galling on plants were both less severe in samples harvested from the AJMC-330:chloropicrin and methyl bromide treated plots when compared to plant harvested from the untreated plots. The reduced rate of methyl bromide and the AJMC-330:chloropicrin under VIF had significantly less galling than all other treatments. Total weed density was significantly reduced by all fumigant treatments. Yields obtained from all fumigant treatments were higher than the untreated check and were statistically similar to one another.

References

Basinger, W., Rosskopf, E., and Ajwa, H. 2003. Methods of reducing pests by use of halogen substituted ethanol. USDA Patent Application #60/395,230.

Rosskopf, E. and Basinger, W. 2003. Screening of reduced risk compounds for herbicidal and fungicidal properties. Proc. Annual Int. Res. Conference on Methyl Bromide Alternatives and Emissions Reductions. MBAO, p. 132–1-132-2.