HERBICIDE ALTERNATIVES TO METHYL-BROMIDE IN HERBACEOUS PERENNIAL PRODUCTION

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Nursery production is an important part of Michigan's economy. A 2000 survey estimates that Michigan generates an estimated $291 million in annual sales and growers sale their products in 35 states and in Canada and Mexico. Michigan ranks fifth in nursery production nationally. The Methyl-Bromide phaseout is leaving growers without effective, season long control of weeds.

Field studies were established from 2004 to 2006, to evaluate how safe and effective certain herbicides/herbicide combinations are on five different herbaceous perennial species and certain weed species. Herbaceous perennials used were *Ajuga repens, Hemerocallis* spp., *Lupinus* spp., *Vinca minor,* and *Hosta spp.* Weeds evaluated include *Chenopodium album, Ambrosia artemissiifolia, Amaranthus* spp., *Digitaria sanguinalis,* and *Mollugo verticillata.*

In 2004, a field was established in southwest Michigan near Benton Harbor. The study consisted of 11 treatments including methyl-bromide and an untreated control. Visual ratings of injury and weed control were made for two months after herbicide treatments. Plant size measurements were made two months after treatments. In 2005, herbicide treatments were reapplied and ratings were made for four months after treatment, methyl-bromide was not reapplied.

In 2005, a new field was established adjacent to the 2004 field. The study consisted of 12 treatments including methyl-bromide and an untreated control. Ratings were made for four months after treatment. Treatments, including methyl-bromide, were reapplied in 2006, along with the addition of two treatments. One treatment used in 2005 was excluded in 2006 because of excessive plant injury.

A third field was established in 2006, near Lansing in central Michigan. The study consisted of 15 treatments including methyl-bromide, Telone C-35 tarped, and an untreated control. Ratings were made three months after treatment applications.

Methyl-bromide(98:2, 392 kg/ha) plots provide the best weed control, greater than 70% control of evaluated species, except *Vicia* spp., and the least amount of crop injury in 2004 and 2005. Complete data for 2006 is currently unavailable. The herbicide combination of oryzalin(3.36 kg ai/ha) and isoxaben(1.12 kg ai/ha) also

provide weed control of greater than 70% control of evaluated weed species, except *Digitaria sanguinalis*, while having less than 10% crop injury. The herbicide flumioxazin provided weed control of greater than 75%, but caused crop injury of up to 35%. In its first year, the treatment of the fumigant Telone C-35(327 L/ha) tarped, shows promise.