

SIMILARITIES AND DIFFERENCES IN FLOWER AND VEGETABLE PRODUCTION IN FLORIDA

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Both floriculture and vegetable industries in Florida have been reliant on methyl bromide, but have been progressing toward use of alternatives. Both industries face similar pest and production problems, with the majority of crops grown on sandy soils with low fertility, coupled with erratic rainfall distribution. Since both industries face similar soilborne pest problems, pest management technologies are generally applicable to both vegetables and floriculture. Root-knot nematodes (*Meloidogyne* spp.) are the dominant nematode pests in Florida vegetable production, and can be damaging to a variety of flower crops, especially snapdragon (*Antirrhinum majus*) and celosia (*Celosia argentea*). Soilborne plant pathogens such as *Pythium*, *Fusarium*, and *Rhizoctonia* species can cause problems in a wide range of crops, and *Pythium* spp. can be especially troublesome to flower crops if flooding or excessive soil saturation occurs (Wang et al., 2007). Summer weeds such as grasses, nutsedges, and larger broadleaf weeds must be controlled prior to planting fall vegetable or flower crops. During the growing season, selective herbicides can be used to manage weeds in some vegetable crops, an option that is not available to flower growers. Winter weeds such as white clover (*Trifolium repens*) and Carolina geranium (*Geranium carolinianum*) that emerge during the flower crop can be especially difficult to manage (McSorley et al., 2006). Off-type varieties can also become weed problems. Effective methyl bromide alternatives for vegetable crops are generally applicable to floriculture as well. Among chemical alternatives, methyl iodide has shown good efficacy and performance that most closely approximates methyl bromide (Roskopf et al., 2006). Solarization has been the most effective and reliable nonchemical alternative, and has performed similarly to methyl bromide in some tests (McSorley et al., 2004). Activity against the full range of soil problems (weeds, nematodes, diseases) is critical for all alternatives; some nonchemical alternatives, such as host plant resistance or biological control, are effective only against one group of pests.

While pests and management methods may be similar for vegetable and flower growers, some of the production practices are very different, and directly impact the application of pest management methods. Both groups typically grow plants on raised beds to reduce impact from temporary flooding, although flower growers may grow on flat surfaces if drainage is not a concern. Florida growers of high value vegetable crops like tomato or pepper nearly always grow these crops on plastic

mulch (which initially acts as a fumigant tarp), with drip irrigation supplied to each plant. In flower production, the marketable unit is the cut stem. It is critical for stems to be tall and straight, with high quality flowers. Therefore flower growers can maximize production and make the most effective use of high-value land by producing very high plant densities. In snapdragon, for examples, 120 marketable stems per m² can be produced. With such plantings, retention of plastic mulch becomes impractical because so many planting holes would be needed. Overhead irrigation is used because the cost and effort of installing drip irrigation to each plant is prohibitive.

These cultural production differences between vegetable and flower growers impose some important limitations on pest management practices in floriculture. First, application of materials through a non-existent drip irrigation system is not an option. Second, because the flowers are grown on open ground and not on plastic mulch, it is desirable to protect the entire area, not just treated strips of raised beds. Yet most plastics, such as solarization films or metalized films, are most commonly available in ca. 6-ft (183 cm) strips, which are most suitable for strip application on raised beds. To treat more than these strips, particularly on flat surfaces, wider pieces of plastic are needed, whether for solarization or sealing in fumigants. Furthermore, it is important to be able to glue sheets of plastic together, so that larger areas can be covered and sealed. Third, most growers in Florida, including vegetable growers, face increasing pressure from urbanization. This appears to be more acute for flower growers, for whom some practices may be limited or discouraged by the close proximity of residential property. Flower growers are interested in alternatives like methyl iodide or solarization, but need the technologies to more easily adapt these methods to their production systems.

References

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