CUT FLOWERS GROWN UNDER PLASTIC FACTSHEET

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Fresh cut flowers in vase or bouquet add cheer and joyfulness to the consumer and can be a profitable enterprise for growers. A trial was conducted during the summers of 2018-2019 at two locations in Wisconsin: West Madison ARS (WMARS) in southern, WI and Rhinelander (RARS) in northern WI. This trial included two species of cut flowers: Sunflower and Zinnias. Two aspects of research were addressed: 1) Evaluation of incidence of powdery mildew on sunflowers and bacterial leaf spot disease on zinnias grown under a hoophouse vs. field environments; and 2) Evaluation of the potential effectiveness of plant chemical (fungicidal) treatments on sunflowers and zinnias foliage diseases.

Hoophouses are simple hooped structures with plastic on the top and sides to extend the growing season and to protect plants from harsh weather. They can, however, overheat when temperatures exceed 85°F so precautions are necessary to reduce the excess heat by opening the sides and ends to increase air flow, and to keep plants well watered. More overhead and management are linked to these structures so we wanted to document if the return on investment is achieved by having healthier and more productive, abundant marketable products than without a hoophouse. Methyl jasmonate was chosen as a comparison to previously tested chemical 'Regalia', an organically approved product which we had tested on cut flowers in the past. In addition to plant disease assessment, plant heights, total marketable blooms, and vase life were compared across environments and chemical treatments.

The zinnia variety for both years and both locations was 'Oklahoma Mix'. The sunflower variety in 2018 at both locations was 'Music Box Mix' and was changed in 2019 to 'Soraya', all continuous blooming varieties. To calculate return on hoophouse investment, we used $5/bouquet of 8 blooms per zinnia bouquet and 3 blooms per sunflower bouquet.

Overall, the field-grown flowers, especially zinnias were more diseased and battered from the weather events vs. the hoophouse plants. For example, in 2018, by September, field zinnia plants had only about ¼ of their original healthy foliage left to support blooms vs. ¾ of healthy plant foliage remaining on the hoophouse plants. Many field plants were lodged by late season with broken branches, and along with more damaged foliage they had poorer bloom quality. As a result, more marketable blooms were produced under the hoophouse in most cases. On average (across 2 species and 4 site-yrs) the hoophouse system netted $10.81/plant than the field environment in extra bloom income. There was no impact on disease reduction by applying either Regalia or methyl jasmonate in either field or hoophouse environment.

Vase life for both species was higher for the hoophouse environment in both August and September test periods lasting a week to 10 days longer than field grown flowers. The blooms were brighter and less weathered under the hoophouse conditions. No differences in vase life were detected among the chemical treatments in either environment.

Hoophouse plants had improved floral quality and longer vase life than field grown plants by being protected under the plastic. Hoophouses also extended the season by up to a month (2 weeks in Spring and 2 weeks in the Fall after a killing frost). Variety choice is important when growing cut flowers as some are single bloom while others are continuous blooming and size of blooms and pollen shed differ by variety. Given a longer season of producing cleaner flowers, the hoophouse was more profitable than the field grown system. However, hoophouses do add to the management during the season that need to be considered.