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159. Developing a knowledge center for water and nutrient management for the nursery and greenhouse. Lea-Cox, J., Ross, D., Bilderback, T., Yeager, T., and Harris, J. R. HortScience 42(4):898. 2007.

26 sibling families was constructed for the study of variation and inheritance of vegetative and reproductive traits in black raspberry. Sibling families of one to eight plants were planted at the Oregon State Univ. Lewis Brown Farm in Corvallis, and were arranged as a randomized complete-block design with four blocks. Phenological development and vegetative measurements were recorded for each plant in 2005 and 2006. In addition, 25 berry samples of ripe fruit were collected from each plant, and pooled within replications by family, to study variation in fruit chemistry properties including pH, titratable acids, soluble solids, anthocyanin profiles, and total anthocyanins. Although there were many striking similarities, strong trends in phenotype based on pedigree were observed for most traits indicating a strong genetic component. Estimates of heritability as well as General Combining Ability (GCA) and Specific Combining Ability (SCA) will be presented.

Specified source(s) of funding for the work presented in this abstract: Federal competitive

11:45 am–12:00 pm

Chlorine Dioxide to Control Postharvest Decay and Extend Shelf Life of Berries

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Fungal pathogens cause considerable loss and shorten the shelf-life of strawberries, raspberries and blueberries. Chlorine dioxide (ClO_2) gas is an effective sanitizer that can reduce bacterial, yeast, and fungal populations on produce. We studied whether ClO_2 can reduce postharvest decay and prolonging storage of blueberries, raspberries, and strawberries. A convenient system that generates gas by mixing two dry reactants (ICA TriNova, LLC Forest Park, GA) was used. Known weights of fresh berries and reactants were placed in 20-L plastic buckets equipped with small mixing fans. Fruit were removed after 12–14 hours and evaluated for rot incidence and ClO_2 injury (pigment loss). Levels of gas high enough to reduce decay in naturally infected berries generally caused unacceptable levels of damage. However, ClO_2 reduced rot in blueberries that were inoculated with spore suspensions of *Colletotrichum acutatum* (anthracnose) and then held at 18 °C for 24 hours before gas treatment, suggesting that ClO_2 may reduce infections resulting from postharvest exposure to inoculum.

Oral Session 27: Ornamentals/Landscape and Turf 2

Wednesday, July 18 **11:00–12:00 pm**

Room: Kirkland

Moderator: Garry V. McDonald; g-mcdonald@tamu.edu

11:00–11:15 am

Ozone Efficacy of *Phytophthora capsici* in Recirculated Irrigation Water

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An isolate of *Phytophthora capsici* Leonian was cultured to induce sporulation. Spore dilutions of 1×10^5 μL^{-1} were placed in aliquots of reverse osmosis water and bubbled with ozone gas to peak concentrations of 0, 0.5, 1.0, or 1.5 $mg \cdot L^{-1}$. Ozonated samples were plated and observed for colony forming units (CFU). Increasing ozone concentrations reduced the number of CFU with no CFU formation at 1.5 $mg \cdot L^{-1}$ O_3. Turbidity effects on ozone efficacy were tested using bentonite clay at 0, 0.5, 1.0, 1.5, and 2.0 nephelometric turbidity units (NTU) and ozone concentrations of 0, 0.5, 1.0, or 1.5 $mg \cdot L^{-1}$. Increasing bentonite did not effect efficacy of increasing ozone concentrations on reducing CFU to 0 at 1.5 $mg \cdot L^{-1}$ O_3. A bioassay testing *Phytophthora* virulence on *Capsicum annuum* L. seedlings confirmed pathogenicity during repeated culture. Reverse osmosis water containing a soluble complete fertilizer at 0, 50, and 300 $mg \cdot L^{-1}$ N was ozonated to concentrations of 0, 0.5, 1.0, and 1.5 $mg \cdot L^{-1}$ and used to irrigate *Chrysanthemum ×morifolium* Ramat. Increasing ozone concentrations did not interact with increasing fertilizer levels to affect final growth parameters. Additional fertilizer solutions were ozonated to peak ozone concentrations of 0, 0.5, 1.0, and 1.5 $mg \cdot L^{-1}$ and analyzed for nutrient content. Increasing ozone levels did not interact with fertilizers to affect nitrogen, phosphorus, or potassium. Increasing ozone interacted with the iron content at a high fertilizer concentration reducing the total iron content to 0 at 1.5 $mg \cdot L^{-1}$ O_3.

11:15–11:30 am

Developing a Knowledge Center for Water and Nutrient Management for the Nursery and Greenhouse Industry

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Research and extension specialists from six eastern states are developing a web-based Knowledge Center for water and nutrient management and conservation, for the nursery and greenhouse industries. We are taking an extensive approach to provide information on best management practices, integrating diverse disciplines such as engineering, technology, regulatory and environmental planning, together with the more traditional issues of cultural management. This Knowledge Center will provide on-line access to more than 25 learning modules covering topics on substrate, irrigation and surface water management and nutrient and pathogen management. Modules also include information on irrigation system audits, nutrient management planning, site layout and water control structures, to provide industry professionals and students with a comprehensive information and learning resource. As information developers, we are using this knowledge base to identify gaps in our research programs that will feed back directly into our extension programs for growers. One example of our current group research interest is in coupling sensing substrates and aerial environmental data for more precise irrigation scheduling, by using robust wireless network capabilities. Another example is integrating surface water management issues, to provide growers with better information on seasonal and spatial pathogen dynamics in containment ponds, which is a major concern for those operations that recycle irrigation water. Our presentation will illustrate how we are structuring and developing this project, with examples of the educational modules and tools that will become a part of the Knowledge Center.

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