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**11. Desert parsley (*Lomatium* spp.) seed production challenges. (ABSTRACT)**. Shock, C., Feibert, E. B. C., Saunders, L. D., and Shaw, N. L. HortScience 44(4):1027. 2009.

8:30–8:45 am

## Enhancing Medicinal Plant Growth in Southwest Mississippi

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Two field experiments were used to determine the effect of three cropping systems (Conventional, Transitional, and Organic), and three row preparation methods (Heap, Bed, and Flat) on purple coneflower (*Echinacea purpurea*) survival, growth potential and quality. The studies were conducted on a Memphis silt loam soil in southwest Mississippi during the 2005 and 2006 planting seasons. A split plot arrangement in a randomized complete block (RCB) experiment design was used, with the cropping systems as the main plots, and row preparation methods replicated four times as the sub-plots. Transplanting at a within-row spacing of 0.61m, on 6.1m long and 1.2m wide were similar for all cropping systems. However, other field preparation activities, fertilization and pest management varied with the cropping system. Findings indicate that the cropping system (Transitional) and row preparation method (bed row) with lowest plant survival rate and canopy height had the highest quality (root volatile oil content) for both study periods. The interaction between cropping systems and row preparation methods were significant except for root length (2005) and root volatile oil (2006). The transitional cropping system and bed row preparation method should be considered when both the root and shoot biomass are desired.

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8:45–9:00 am

## Desert Parsley (*Lomatium* spp.) Seed Production Challenges

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About 80 species of desert parsleys (*Lomatium* spp.) are native to the western United States. They are important parts of the natural plant diversity and include edible and medicinal species. Mechanized cultivation and seed production technology is virtually unknown for these species. Fernleaf biscuitroot or fernleaf desert parsley (*Lomatium dissectum*) has been a specie of concern, since it has been dug for medicinal use without replacement. Commercial seed production is necessary to provide the quantity of seed needed for rangeland restoration efforts and any sustainable commercial root production activities. Over the last four years, we have sought means to mechanically produce Lomatium and its seed at the Malheur Experiment Station in eastern Oregon. Seed of Nineleaf desert parsley (*L. triternatum*), Gray's desert parsley (*L. grayi*), and fernleaf desert parsley (*Lomatium dissectum*) were drilled in rows 30 inches apart. The seed production response of desert parsley to irrigation was tested in 2006, 2007, and 2008. Irrigation treatments were applied to plots four rows wide and 30 feet long arranged in a randomized complete block design with four replicates. Irrigation was applied using drip tape installed at 12 inch depth between two rows of plants spaced 30 inches apart. The drip tapes were installed on alternating inter-row spaces (5 feet apart). Desert parsley was submitted to three irrigation rates: 0, 1, and 2 inches of water applied starting at the beginning of flowering four times for a total of 0, 4, and 8 inches/year. Seed was harvested by hand. Mechanical combine harvest would have been possible if substantial development investment had been possible to reduce the ventilation and still separate seed from chaff. In 2007, seed yield for Gray's and nineleaf desert parsleys were low and increased with increasing water applied up to the highest amount evaluated, 8 inches. In 2008, seed yields showed a quadratic response to irrigation rate. Seed yields of nineleaf desert parsley were maximized by 8.4 inches of water applied. Seed yields of Gray's desert parsley were maximized by 6.9 inches of water applied in 2008. While both of these species produced over 1000 lb/acre of seed in the fourth year, fernleaf desert parsley failed to prosper and produce seed, because the selection planted was highly susceptible to infection by *Alternaria arborescens*.

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9:00–9:15 am

## Peppermint Productivity and Composition In Mississippi as a Function of Cutting Date and N Rates

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The goal of this project was to evaluate the potential of peppermint (*Mentha piperita* L. cv. Black Mitcham) as a high-value essential oil crop for Mississippi. The objective was to assess the effect of N rates (0, 80, 160 kg/ha) and cut on peppermint productivity and composition harvested in bud formation. The biomass and oil yields from the first cut (July 13) were significantly higher than the second cut (October, 2). Essential oil concentration was not significantly influenced by cutting dates but the oil yield decreased with the second cut. Peppermint oil composition was altered with cutting dates: (-)-menthone concentration and its yield were higher at first cut, whereas the concentration of (+)-menthofuran and its yield were higher at second cut. N rate at 160 kg/ha significantly increased peppermint dry biomass weight and oil yield at cut 2. Our results indicated that peppermint productivity and its essential oil composition in Mississippi could be altered by cutting dates and N application rates.