

U.S. Department of Agriculture <b>Work Unit Description AD-416</b> U.S. Dept. of Agriculture, State Agricultural Experiment Stations and Other Institutions				Date (Month/Day/Year) 12/20/2011
1. Accession No.	Agency Identifiers		5. Work Unit/Project No.	6. Status
	2. NIFA	3. LA.B	LAB94129	A = New Project
7. Title <b>Sustainable Horticulture Production</b>				
8. Performing Organization 3780 - 2010 School of Plant, Environmental, and Soil Sciences Agricultural Experiment Sta, Louisiana State Univ			9. Cooperating Departments within State Performing Institution a. Hammond Research Station b. Experimental Statistics	
10. Multistate Project No.			11. Cooperating States	
12. Investigator Name(s) Last Name and Initials) 1. Kuehny, J.S.				Sent via BITNET/INTERNET @electronic mail systems Date <u>12-21-11</u>
13. Project Contact Last Name and Initials: Kuehny, J. S.			Phone: 225-763-3990 Fax: 225-763-3993	
E-Mail: jkuehny@agcenter.lsu.edu URL:				POSTED
14. Project Type Hatch	15. Contract/Grant/Agreement No.	16. Amount	17. FY	
18. Award Date (Month/Day/Year)	19. Start Date (Month/Day/Year) 10/01/2011	20. Termination Date (Month/Day/Year) 09/30/2016		
Goals/Objectives/Expected Outputs  Determine water conserving irrigation scheduling based on water requirements for container-grown greenhouse and nursery crops and its effect on plant growth, quality and landscape establishment. Evaluate installation and maintenance methods for establishing alternative grasses for lawns, landscapes and roadsides. Outputs include guidelines for reduction of irrigation for production of ornamental crops and a handbook to provide guidance for establishing and maintaining alternative grasses.				
Methods  The plant material will consist of seven warm-season grasses: Panicum virgatum, Sorghastrum nutans, Schizachyrium scoparium, Andropogon gerardii, Bouteloua curtipendula; and herbaceous perennials: Dianthus deltoides, Festuca glauca, Gaura lindheimeri, Kniphofia sp., Nepeta racemosa, Origanum laevigatum, Salvia sylvestris, Sedum acre, Asclepias, Baptisia, Echinacea, Liatris, and Penstemon. Water requirements will be determined between warm-season grasses and herbaceous perennials. Drought-cycles will be induced using water stress for the duration of the experiment. Soil moisture sensors will be used to substrate water content. All experiments will be conducted with 4 blocks and 3 experimental units with a four-level single factor. Measurements recorded: growth index, medium moisture content, shoot dry weight at finish, root dry weight at finish, leaf area at finish, average internode length at finish and plant quality at finish. The landscape study will be conducted in raised beds with rainout shelters. Six pretreated plants of each species with acceptable market quality will be transplanted into landscape beds. Two irrigation treatments: a) watering according to actual plant needs (low water stress) and b) plant wilting point recovery watering (high water stress). Percent of plant coverage will be recorded every other week. Plant response will be recorded by measuring growth index, end of season shoot weight, end of season leaf area, plant width, plant height and plant quality. The seeded meadow study will consist of: 1) Panicum virgatum, Rudbeckia hirta, Elymus canadensis and 2) Sorghastrum nutans, Schizachyrium scoparium, Andropogon gerardii, Bouteloua curtipendula, Rudbeckia hirta. The installation process: 1) mow plots and eradicate existing vegetation with glyphosate 2-3 weeks prior to seeding, 2) till plots, 3) seed plots with grass mixes and 4) apply treatments. A monthly aesthetic rating will be assigned to each plot. A weed rating will also be assigned on a scale. Percentage of vegetative cover per plot will be estimated. Plant species present in each plot will be recorded and monitored once every month. Each plot will be photographed on monthly sample dates. The success of establishment methods will be measured by collecting data via destructive harvesting at 6 and 12 months after treatments. Seeded plants and weeds will be identified to obtain dry weight. The plug planting meadow study design will include plots replicated three times. Preemergent herbicide trials will also be conducted. Planting area will be tilled 2-3 weeks in advance of planting and then				

sprayed with glyphosate. Grass and perennial plugs will be planted with application of combination preemergent broadleaf/grass herbicide isoxaben plus trifluralin. Data will be collected as outlined in the seeded study which will include aesthetic ratings, weed ratings, percent vegetative cover, dry weight, weed identification and installation costs.

23. Non-Technical Summary

Irrigation availability for ornamental plant production and landscaping have become increasingly important due to the increased demand on water sources by increasing population growth and urbanization. Thus, increasing the efficiency of irrigation and determining which plant species are more suitable for low input water and management needs has become important to the sustainability of the ornamental and landscape industry. This is significant not only to the ornamental industry, but to homeowners, businesses and governmental entities.

24. Keywords

ornamentals; sustainable production; sustainable landscapes; irrigation efficiency; water use

\*\*\*\* The Original signed document is on file at this institution. \*\*\*\*

Signature	Title	Date
Dept: Admin: <i>David L. Mousin</i>	Associate Director	12/21/11