Native grasses identified for use in western US urban landscapes

January 14 2015

As natural resources dwindle across the globe, low-maintenance and low-input plant materials are gaining favor for use in urban landscapes. The popularity of ornamental grasses for use in landscapes, parks, median strips, parking lot borders, and for erosion control on slopes is increasing steadily. These ornamental plants are an integral part of ecological systems worldwide, offering aesthetic value and significant economic benefits. A team of scientists from the US Department of Agriculture - Agricultural Research Service and Utah State University evaluated a collection of native fine-leaved *Festuca* for the grasses' potential use in urban landscapes in the western US. The research revealed a variety of native grasses suitable for these purposes.

"Some fine-leaved *Festuca* grass species have been used because of their inherent tolerance to abiotic stresses, but native, ornamental types of *Festuca* grass are not common in landscapes in the (western US) region," explained Jack Staub, corresponding author of a study published in the *Journal of the American Society for Horticultural Science*. The researchers analyzed selections from a native *Festuca* based on their genetic variation, plant architecture, and culm color. The selections were evaluated for plant height, width, biomass, relative vigor, persistence, and regrowth after clipping. Ultimately, 19 plants from the collection were identified for their ornamental potential.

"In 1982, the US Natural Resources Conservation Services Bridger Plant Materials Center collected seed from a native fine-leaved *Festuca* population in a semiarid region near Busby, Montana, and designated it

FEID 9025897," explained Staub. "Because historical information about this population is limited, very little is known about the genetic or morphological characteristics of this plant material." Staub added that preliminary observations suggested that selections from the population might have potential for low-input urban horticultural applications in the western United States. Staub and scientists Matthew Robbins, Yingmei Ma, and Paul Johnson designed a replicated field trial to assess variations of this population and identify "potentially useful and/or novel" genotypes for use in urban landscapes. The population was also analyzed to determine its genetic ancestry and relatedness to the native species *Festuca idahoensis* and *Festuca ovina*. The results of the 2-year study culminated in the first report of the potential application of tall-statured, multicolored, native fine-leaved *Festuca* germplasm for ornamental grasses in the western United States.

Among other findings, plant height of the grasses studied was found to have a significant moderately positive correlation with width, biomass, vigor, and regrowth, but not necessarily persistence. "This suggests that, under the conditions examined, the most vigorous and tallest plants were not necessarily the most persistent," the scientists explained.

Analyses also indicated that, although some individuals of FEID 9025897 possessed partial fertility, most were sterile. Additionally, the selections were determined to have ancestry coefficients more similar to that of the *Festuca idahoensis* than to the *Festuca ovina* selections in the study. The authors said that some selections were taller in height, wider at the tussock base, and more vigorous than some of the commercial checks examined in the study. Similarly, some selections produced more regrowth and were more persistent than some checks. "These characteristics make some of these selections attractive for urban horticultural applications," they said.

"In conjunction with their potential release for Great Basin urban

applications, additional multi-location evaluations will be needed to characterize their performance, including a more formal evaluation of culm color, under diverse growing environments," the scientists said. "If these selections perform well in diverse, non-irrigated, semiarid environments and their propagation is deemed economical, then they should be considered for release as a novel native ornamental for low-input urban applications in the western United States."

More information: The complete study and abstract are available on the ASHS *J. Amer. Soc. Hort. Sci.* electronic journal web site: journal.ashspublications.org/c … t/139/6/706.abstract

Provided by American Society for Horticultural Science