

Dissecting Summer Dormancy in Mediterranean Tall Fescue

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Tall fescue (*Lolium arundinaceum* (Schreb.) Darbysh), a perennial temperate grass used mainly for grazing, is known for its resistance to environmental stresses. Increasing pasture persistence and yield are priorities of tall fescue breeding programs. Tall fescue can be divided into the “Continental” ecotype, which is summer active, and the summer dormant “Mediterranean” ecotype, which has better summer survival under dry and hot conditions (Norton et al., 2006). Previous studies (Laude, 1953; Oran, 1983; Lorenzetti, 1981; Norton, 2006) proposed different methods to determine summer dormancy in plants, but these methods do not enable the determination of the amount of dormancy expressed during summer among different tall fescue germplasm. Development of a standardized test to measure and dissect the summer dormancy trait in tall fescue is essential for maximizing the crop’s potential in target environments and to facilitate the introgression of the dormancy trait into higher yielding summer active germplasm.

For this study, we modified the methods described by Norton (2006), using “full irrigation”, “no irrigation” and “summer storm” treatments with a wide range of 24 populations including summer active and summer dormant ecotypes. Field trials were conducted in Davis, CA and Ardmore, OK in 2014 and 2015 and at the Desert Research and Extension Center (DREC) in 2016. In the Davis trials, the summer dormant ecotypes did not exhibit dormancy; following watering, plants grew as well as summer active ecotypes. In Ardmore, dormancy was induced in 2014, but not in 2015. The DREC trial showed no regrowth following the storm, suggesting that this environment, dry conditions coupled with very hot days and nights, is best suited for evaluating the amount of dormancy expressed among dormant tall fescue germplasm. In fall 2017, new experiments were established at the DREC and Kearney Agricultural Research and Extension (KARE) Center near Fresno, CA to continue with the objective of developing a standard test for dissecting levels of dormancy in tall fescue.