Science Societies

Low-density alfalfa improves semiarid grassland without soil water depletion

February 2, 2020



Researcher measuring soil volumetric water content using a portable PR2 capacitance probe between two alfalfa rows in Texas.

Semiarid grasslands produce high quality forage in spring and early summer to support beef cattle at low cost. In the late summer and fall, forage protein content and digestibility decrease, triggering costly supplement addition to forager diets. Interseeding alfalfa can improve the forage quality of native grasslands by adding a high-protein species but risks accelerating soil water depletion in water-limited environments.

In an article recently published in Agronomy Journal, researchers in the Texas High Plains evaluate changes in soil water depletion, evapotranspiration (ET), plant water status, and root biomass with alfalfa interseeded into native grasses at narrow (36 cm) or wide (71 cm) row spacing.

Compared with the non-interseeded control, narrow spacing caused more soil-water depletion and ET than wide spacing due to denser root mass. Grass water potentials were depressed in narrow rows relative to wide rows and the control, indicating that the denser presence of alfalfa intensified competition with the grass for water. The wide-row treatment had negligible effects on grass water stress.

Wide-row spacing achieved a favorable compromise between slightly enhanced water use and greatly improved stand productivity and quality. Results suggested that alfalfa at wide rows can improve native-grass pastures in rainfed, semiarid environments, potentially helping farmers reduce supplement costs and increase forage quality.

Dig Deeper

Dhakal, M., West, C.P., Deb, S.K., Villalobos, C., & Kharel, G. (2020). Row spacing of alfalfa interseeded into native grass pasture influences soil-plant-water relations. *Agronomy Journal*, *112*. **https://doi.org/10.1002/agj2.20012**

More science articles

Back to issue

Back to home

Text © . The authors. CC BY-NC-ND 4.0. Except where otherwise noted, images are subject to copyright. Any reuse without express permission from the copyright owner is prohibited.