



IMPROVING PASTURE AND RANGELAND MANAGEMENT

The ARS pasture and rangeland management research program enhances the utility, function, and performance of rangelands, pastures, forage, and turf agroecosystems while providing ecosystem services. To support rural prosperity, food security, and healthy agroecosystems, ARS research helps producers improve management decisions and ultimately achieve healthy and productive pastures and rangelands, as illustrated by the following FY 2020 research accomplishments.

Powerful tools and techniques for monitoring rangeland production systems improve management and lower production costs. ARS scientists in Las Cruces, New Mexico, led the expansion of the rangeland monitoring program and the publication of the Monitoring Manual for Grassland, Shrubland, and Savanna Ecosystems. These resources help the Bureau of Land Management and Natural Resources Conservation Service make decisions about wildlife habitat suitability, evaluate conservation practice effectiveness, and improve grazing management systems across the continent's rangelands.

Modeling wind erosion on western U.S. grazing lands. Rangeland wind erosion reduces soil productivity and causes highway fatalities, human health problems, and infrastructure damage across western U.S. grazing lands. ARS scientists in Las Cruces, New Mexico, adapted the Aeolian Erosion model to assess rangeland wind erosion across plot to regional scales. The model is based on data collected in real time at the 15 National Wind Erosion Research Network sites and makes it possible to model the effects of rangeland management practices on wind erosion to mitigate this problem in the future.

Grass-Cast Decision Support tool now available for U.S. Southwest and entire Great Plains. Ranchers must decide yearly whether the forage available on their land is sufficient to support their livestock without impairing the future productivity of the land. ARS scientists in Wyoming and Colorado and collaborators developed Grass-Cast (grasscast.unl.edu) to forecast forage production for rangelands across the entire Great Plains, New Mexico, and Arizona. Livestock producers have great interest in seeing Grass-Cast expanded to the U.S. Great Basin, California, and Canadian prairies.

Management practices that improve rangeland restoration after wildfire. On average, the Bureau of Land Management spends more than \$35 million per year on post-fire rehabilitation treatments to reduce annual grass invasion and re-establish native communities that are resilient to future wildfire. ARS scientists in Reno, Nevada, found that the number of wildfire events was reduced when drill seeding was used instead of aerial seeding. Additionally, these scientists and other ARS and university collaborators found that diverse assemblages of native grasses reduce invasion by exotic annual grass species.



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