Science Societies

Know your community: Semi-arid dryland cropping systems

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The combination of watersheds in the wheat–sorghum–fallow rotation (WSF) to provide runoff for intensively cropped level-bench terrace fields (foreground) and comparisons of paired stubble mulch or no-tillage of the WSF rotation (background) are examples of water capture and conservation research.

The Semi-Arid Dryland Cropping Systems Community is part of the Agronomic Production Systems Section of ASA and is home to about 600 members from 44 of the 50 U.S. states as well as Canada, Australia, China, and 24 other countries. Semi-arid dryland agriculture is practiced in areas receiving 250–500 mm (10–20 inches) annual precipitation. Since that is the exclusive source of water for crops, production or research is much more sporting, especially in warmer climates. Water provided by often erratic rainfall is the most critical factor for dryland agricultural production, and its efficient capture, conservation, and utilization dominates the topical focus of our community.

Fallow is commonly practiced in dryland cropping systems to conserve water; it lowers, but does not eliminate, production risk, which can differ depending on the phase timing. The innovative use of conservation or no-tillage residue management to prevent soil erosion and retain precipitation as soil water, when combined with more intensive cropping sequences, can also improve soil organic matter, soil quality, and long-term sustainability. Dryland nutrient management, especially nitrogen, often presents a challenge to balance crop water availability in semi-arid drylands with nutrient demand that can be reflected in use efficiencies. Our members also investigate cover crops, soil health, and soil degradation by erosion and evaluate production-intensifying practices like grazing dual-purpose cash and cover crops for

increased profitability.

Since 2010, our community has worked to bring together scientists and educators interested in discussing regional and global issues relevant to dryland cropping systems. For the 2020 Virtual Annual Meeting of ASA, CSSA, and SSSA, we plan to host a symposium on “Improving Water and Nitrogen Use Efficiencies in Dryland Farming Systems.” The speakers—Charles Rice, Jerry Hatfield, Steve Evett, Bill Raun, and Cesar Izaurralde—will provide an overview of water and nitrogen management in dryland cropping systems and offer pathways for improvement. A session on “Semi-Arid Dryland Forage Cropping Systems and Dual-Use Cover Crop/Forages” will feature reports on greater crop system productivity and related water management, which may interest those attending the Cover Crop Management Community's symposium on “Cover Crop Grazing.” Our community is also hosting a session on “Semi-Arid Long-Term Soil Change in Semi-Arid Drylands” with discussions toward improved understanding of long-term dryland management effects on soil properties that may also interest those considering measurement and assessment of soil health. The “General Semi-Arid Dryland Cropping Systems” sessions include both oral presentations and posters (including the graduate student competition).

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