The following six papers were presented at the symposium entitled “Continuous Dryland Cropping in the Great Plains: What Are the Limits?” held during the 2003 ASA–CSSA–SSSA annual meetings in Denver, CO. The symposium was organized by Division S-6 and cosponsored by Divisions A-8 and C-3.

The Great Plains is a vast interior region of North America with a temperate, semiarid climate that is subject to wide fluctuations in precipitation, temperature, and wind speed. The most common cropping system in the region is wheat (Triticum aestivum L.)–fallow where one crop is harvested every 2 yr. Summer fallow, the practice of controlling all plant growth during the non-crop season, is commonly used in this region to stabilize wheat production. It has been shown, however, that summer fallow results in soil degradation, limits farm productivity and profitability, and stores soil water inefficiently.

The consensus of a 1994 ASA–CSSA–SSSA symposium on cropping systems in the Great Plains was that more intensive cropping systems were not only feasible, but that adoption was essential for the long-term sustainability of agriculture in the region (Peterson, 1996). Peterson et al. (1996) made the case that intensified cropping systems improved precipitation use efficiency in dryland systems and that maximum system efficiency depended on selection of the most efficient plants for a given region. Integrated production systems that include both crop and livestock components were discussed by Krall and Schuman (1996). System benefits included the potential to improve soil quality and pest control as well as added economic diversity; however, tradition, lack of experience, and economic concerns and options, the potential need for soil fertility recommendations (currently based on work conducted in systems involving summer fallow), effects on soil structure were identified as constraints to adoption of farming without summer fallow. Westfall et al. (1996) emphasized the importance of N management in integrated systems. Westfall et al. (1996) focused on systems where the yield loss resulting from under fertilization is greater than in winter wheat–fallow systems. Integrated pest management concepts, as they relate to dryland cropping systems, were presented by Holtzer et al. (1996). Lyon et al. (1996) discussed the role of herbicides in dryland weed control and the need to maintain their usefulness through the implementation of integrated weed control concepts. Integrated systems with less tillage were found to have greater production costs than winter wheat systems, but they also had increased net return and reduced financial risk (Dhuyvetter et al., 1996).

Since the 1994 symposium, many growers in the Great Plains have adopted cropping systems that include frequent summer fallow, but summer fallow is an integral part of most dryland cropping systems in the region. Increasing numbers of growers are asking the question: How intensive can cropping be in the Great Plains? Can the use of summer fallow be eliminated? What are the limits to continuous cropping in the Great Plains?

This symposium was designed to follow the steps of the 1994 symposium and to challenge participants to determine the practical limits to cropping in the Great Plains. The symposium presented key issues that must be addressed if we are to change the practice of summer fallow. These include the efficient use of water, crop sequencing, pest concerns and options, the potential need for soil fertility recommendations (currently based on work conducted in systems involving summer fallow), effects on soil structure and productivity. 

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