Economic and Agronomic Performance of Emerging Cropping Systems for Western Canada

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The development of better-adapted cultivars of soybean and corn, together with a warming climate, may support the expansion of these crops in western Canada. Information is lacking for this region as to how best to integrate these crops into existing crop rotations to achieve economically, agronomically, and environmentally sound cropping systems. In 2018, field experiments were initiated at Brandon, Indian Head, Saskatoon and Lethbridge to assess seven crop rotations: wheat-canola; soybean-corn; soybean-wheat-canola; corn-wheat-canola; corn-soybean-wheat; corn-soybean-canola; corn-soybean-wheat-canola. Treatments were arranged in a randomized complete block design with each phase of each rotation present in each year. The effects of crop rotation on factors including yield and quality, disease, weed pressure, soil health, nutrient cycling, mycorrhizal colonization, profitability and economic risk, and weather-related risks and opportunities are being assessed. The end of the 2022 growing season marked the first time since the study was established that all rotations had completed a full rotation cycle. Preliminary results from the initial years of the study have shown occasional effects of preceding crop on yield and seed quality; however, effects have generally been inconsistent across sites and years. These limited effects are not necessarily surprising in that changes in the plant-soil system related to rotation often tend to occur slowly over time as rotations mature. The aim going forward will be to try to continue these experiments for at least another five years in order to determine the longer-term performance of these rotations.