Optimizing Pea Production in Manitoba Rotations: Yield and Quality

Ramona Mohr[1], Mohammad Khakbazan[1], Yong Min Kim[1], Maria Antonia Henriquez[2], and Monika Gorzelak[3]

[1]Agriculture and Agri-Food Canada (AAFC), Brandon Research and Development Centre, Brandon, MB; [2]AAFC-Morden Research and Development Centre, Morden, MB; [3]AAFC-Lethbridge Research and Development Centre, Lethbridge, AB

Corresponding author: ramona.mohr@agr.gc.ca

Crop rotations on Manitoba farms are evolving. Pea acreage has increased nearly 3-fold over the past decade. Over the same period, soybean has joined wheat and canola as one of the three primary crops grown in Manitoba, accounting for 1.4, 3.3 and 3.3 million acres, respectively, in 2024. Manitoba's unique crop mix sets it apart from much of the rest of western Canada, generating questions regarding optimal rotations for this region. To better understand the effects including pea (P) and/or soybean (S) in rotation with wheat (W) and canola (C), a crop rotation study was initiated on a Newdale clay loam north of Brandon in 2019. Five rotations (CWP, CWS, SCWP, SWCP, PCPW) were established with each phase of each rotation present in each year. The establishment phase of the rotation was assessed from 2020 through 2023, with all rotations completing their first full rotation cycle by fall 2023. Treatments had limited effects on crop yield and quality during these first years of the study which is not necessarily surprising as effects of rotation on the plant-soil system often accrue slowly over time. This rotation study is slated to continue until 2026 in order to better understand the longer-term effects of rotation on agronomic and economic factors.