Refining Soybean Seeding Window Recommendations

The window to seed soybeans in Manitoba is flexible throughout the month of May. Soybean yields did not differ among May 1–24 seeding dates, but yields were reduced by 15%, on average, when seeding was delayed until May 31 to June 4. These results indicate that the soybean seeding window is flexible during the first three weeks of May in Manitoba.

At four of 11 site-years, yield was maximized by seeding very early (April 28–May 6), but yield was significantly reduced by this very early seeding at one site-year. At five of 11 site-years, yield was maximized during the early seeding window (May 8–14).

These results highlight the risks related to seeding soybeans too early in Manitoba. Cold soil temperatures within the first 48 hours of seeding can result in chilling injury, reduced or delayed emergence and increased susceptibility to soil-borne pathogens. There is also the risk of exposure to spring frost, which can kill or injure emerged seedlings. The coldest soil temperatures occurred during the very early seeding window at Melita in 2019 (0°C), at Melita in 2017 (1.1°C) and at Arborg in 2018 (5.8°C). At those site-years, yield was reduced by 13–19% during the very early seeding window (April 28–May 6). Late killing spring frosts occurred on May 19, 2017 and June 2, 2019, that may have negatively impacted emerged seedlings and yield from the very early seeding window.

In these experiments, soybean seed protein averaged 31.9%, 13% moisture basis (range: 26.5–35.1%). The effect of seeding window on seed protein was significant overall, but this depended on the environment. At eight out of 11 site-years, protein was the same among seeding dates. Late seeding produced greater protein than during the very early or early seeding windows at two out of 11 site-years. We need to gain a greater understanding of how genetic, management and environmental factors interact and affect soybean protein and other quality factors in Manitoba before altering our farming practices to manage protein.

Based on the results of this study, seeding soybeans during the second week of May generally maximized soybean yield in Manitoba while reducing the risks associated with cold soil and late spring frost. However, the optimal time to seed soybeans can vary by region and from year to year. Each planting season, avoid seeding into soil temperatures below 8°C, ensure there is no cold rain or snow in the forecast for the first 24–48 hours after planting and aim to seed within two weeks of the last expected spring frost to establish a strong plant stand, maximize yield and minimize risk.

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Figure 1. Soybean yield by seeding window among Arborg, Carman, Dauphin and Melita environments from 2017–2019.

Means followed by the same letter are not statistically different at p < 0.05.