Demonstrating the Seed Terminator to Reduce Weed Seed Return to the Seedbank – Progress Update

Herbicide resistant weeds are becoming increasingly problematic for Saskatchewan producers. A new non-chemical strategy for weed control is the use of combine attachments that crush outgoing chaff to destroy weed seeds and prevent their return to the seedbank. This is known as harvest weed seed control (HWSC) technology. The Seed Terminator is a form of HWSC that uses a multi-stage hammer mill to destroy weed seeds during combining. In order to demonstrate the ability of the Seed Terminator to reduce weed seed return to the seedbank and provide an option for producers who are concerned about herbicide resistant weeds in their fields, a field trial was set up in the fall of 2018 east of Rosthern and Duck Lake on land owned by local producer Josh Lade. This was the second year of the trial.

Four 10 by 100 m strips were marked in the field. Treatments were alternating, with two strips being combined with the seed terminator and two strips without. The plots and treatments were kept the same in the 2019 and 2020 growing seasons. Herbicides were last used on the field in question in 2018. Pre-harvest fall weed counts were conducted in 2018, 2019 and 2020. Chaff was taken from harvest in 2019 and planted in large outdoor pots at the Conservation Learning Centre in 2020.

Seed Terminator plots showed a decrease in weed density between the fall of 2018 and the fall of 2020 (Figure 1). Weed counts were slightly higher in 2019, likely because no herbicides were applied after 2018. By the fall of 2020, with continued use of the Seed Terminator, weed levels were the lowest they had been since the beginning of the study, despite no herbicides being used on the land in 2 years.

Chaff collected from the Seed Terminator had observably fewer weeds when planted in large pots than chaff that did not pass through the Seed Terminator (Figure 2). Chaff from the Seed Terminator also produced a lower biomass of weeds than the no terminator chaff (Figure 3).

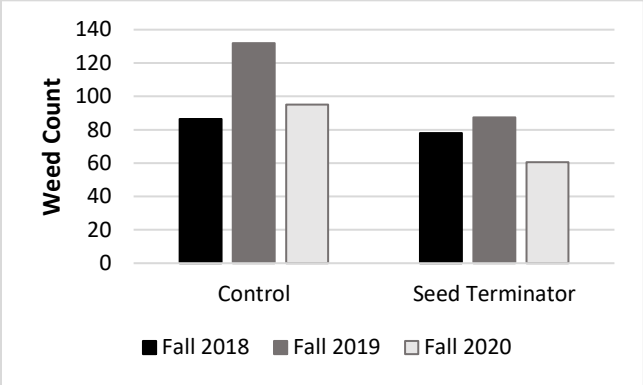

Figure 1. Mean weed counts in field plots in Seed Terminator trial in 2018, 2019 and 2020.

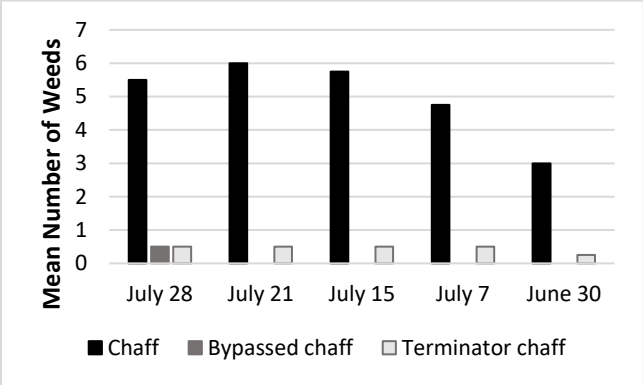

Figure 2. Mean weed counts in large pots grown at the CLC in 2020, using chaff collected after harvest in 2019.

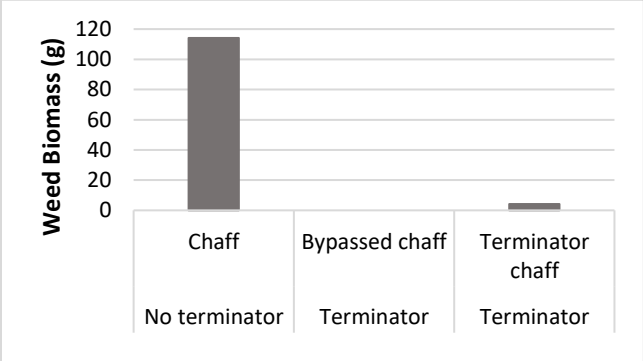

Figure 3. Weed biomass of chaff grown in large pots at the CLC in 2020, using chaff collected from harvest in 2019.

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