Combining a post-emergent herbicide application with a subsequent pre-harvest glyphosate application resulted in the best dandelion control. Growers should consult with their oat buyer to ensure that they will accept oats treated with pre-harvest glyphosate.

The objective of this study was to determine if cultural practices could be combined with post-emergent or pre-harvest herbicide applications to better manage perennial weeds in oat crops. This experiment was conducted on a field 6 km east of Saskatoon in 2016 and another 5 km north east of the Kernen Research Farm in 2017. These sites had an inconsistent infestation of Canada thistle, dandelion, perennial sow-thistle, and field horsetail.

The cultural practice included two seeding rates of 25 and 45 seeds/ft² (250 and 450 seeds/m²). The experimental area received a pre-seed glyphosate treatment of 675 g ai/ha (i.e. Roundup Weathermax at 0.5 L/ac) prior to seeding. AC Morgan was seeded on wheat stubble on May 17 in 2016 and on May 18 in 2017.
Herbicide treatments included an untreated control, post-emergence herbicide treatments of bromoxynil-MCPA at 280 + 280 g ai/ha (i.e. Buctril M at label rate), and florasulam + clopyralid + MCPA at 5 + 75 + 415 g ai/ha (i.e. MPower Battlefront CM at label rate), and a pre-harvest glyphosate application at 900 g ai/ha (i.e. Roundup Weather Max at 0.67 L/ac). Post-emergence herbicides were applied at the 3-4 leaf stage of oat (June 22, 2016; June 20, 2017). Pre-harvest applications were applied on September 15 in 2016 and August 22 in 2017.

Mean plant density was 11.2 plants/ft$^2$ for the 25 seeds/ft$^2$ rate and 17.1 plants/ft$^2$ for the 45 seeds/ft$^2$ seeding rate, translating to respective emergence percentages of 45 and 38%. The sites chosen for these studies are very weedy. As a result, soil moisture levels were generally lower than normal due to high water use by early emerging weeds.

Overall, none of the treatment factors affected oat yield.

The post-emergence herbicide had a significant effect on dockage percentage with a similar trend for weed seed yield. Dockage percentages were 1.01% for the untreated check, 0.79% for bromoxynil + MCPA, and 0.52% for florasulam + clopyralid + MCPA. Weed seed yield was 32.4 lbs./ac (36.4 kg/ha) for the untreated check, 26.3 lbs./ac (29.5 kg/ha) for bromoxynil + MCPA, and 19 lbs./ac (21.4 kg/ha) for the florasulam + clopyralid + MCPA treatment.

Dandelion was the predominant perennial weed at the 2016 site. Dandelion counts taken in the spring of 2017 indicted that the only factor applied in 2016 that had an effect on dandelion density was pre-harvest glyphosate, which was significantly better than the other treatments.
The interaction between POST-emergence herbicides and PRE-harvest Glyphosate at Kernen 2018.

Abbreviations: BctM = Bromoxynil + MCPA. Flor+CtM = Florasulam + clopyralid.

Source: Willenborg et al. 2019

Dandelion counts taken in the spring of 2018 at the Kernen location found that both pre-harvest glyphosate and post-emergence herbicides reduced dandelion density. Treatments that had no post-emergence herbicide or pre-harvest glyphosate on average had 3 dandelion seedlings and 5 mature dandelion plants per/m². By combining a POST emergence herbicide with PRE harvest glyphosate, dandelion populations were reduced to <1 plant/m² on average. While there was a significant interaction between these two factors, it is plausible that pre-harvest glyphosate may have a greater impact on subsequent dandelion populations than in-season post-emergent herbicides or increasing seeding rates.

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