

## AGR1812: Prairie Weed Surveys

Weed surveys of annual crops have been regularly conducted in the Prairie provinces since the 1970s. The most recent series of Prairie provincial weed surveys began with Saskatchewan in 2014/15, followed by Manitoba in 2016 and Alberta in 2017. As the surveys have been conducted using a similar methodology, it is possible to determine changes in weed populations through time and identify potential new and emerging weed problems. Weeds identified as increasing in abundance can be targeted for attention by various agencies involved in weed science. The trends identified by the weed surveys are important to the research, industry, and extension communities for developing weed management recommendations for producers that are essential components of sustainable farming systems. This project has two objectives:

- 1) conduct a new series of general weed surveys in the Prairie provinces, and
- 2) to summarize and increase accessibility to existing weed information.

The new series of general surveys in annual crops started in Saskatchewan in 2019. In 2019, 1,144 fields were surveyed. The survey sites were allocated based on seeded acreage of crops of interest with ecodistricts (areas of similar soil, landscape, climate, and vegetation). Quarter sections were randomly selected and owners were contacted for permission to complete the survey. In July or August, all weeds found in 20 quarter metre square quadrats placed in set pattern in each field were identified and counted. Weeds present at this time are expected to produce seed and contribute to next year's seed bank. The Saskatchewan weed survey was planned to be completed in 2020, but was delayed for a year due to the COVID-19 pandemic.

Weeds that increased in the previous surveys (including canola/rapeseed, false cleavers, spiny annual sow-thistle, dandelion, wheat, barnyard grass species, kochia, foxtail barley, round-leaved mallow, and broad-leaved plantain) are of particular interest. Tracking trends in weed populations over multiple surveys helps to elucidate the cause of changes. Weather may cause temporary increases in weed species abundance. However, weeds that consistently increase between surveys are cause for greater concern. These species may be increasing in range and/or abundance due to changes in farming practices (e.g. reduced tillage, crop rotations) and/or the evolution and spread of herbicide resistance.

In herbicide resistance (HR) surveys conducted between 2014 and 2017, 69% of wild oat had an HR biotype: 62% group 1-HR, 34% group 2-HR, and 27% group 1+2-HR (vs. 44, 12, and 8%, respectively, in the previous surveys from 2007 to 2009). The survey also documented the rise of group 2 resistance in green foxtail (11% of sampled fields) and yellow foxtail (17% of Manitoba fields), not detected in the previous survey round. Group 2-HR populations were confirmed for ten broadleaf weeds, with cleavers, chickweed, and stinkweed being most abundant. These surveys highlight the increasing urgency to preserve herbicide susceptibility in our weed species.

A website is currently being developed to increase accessibility to weed survey data. The website will include data from each of the Prairie Weed Surveys starting in the 1970s.