Vegetation Surveys of Winter Cover Crop Fields

Connor Hawey

Winter 2021-2022

Photo 1: Ungrazed and grazed Winter Cover Crop fields in Delta

Program background

Agricultural fields in the Fraser River delta provide important foraging and overwintering habitat for waterfowl. For the past five years, DF&WT has been conducting waterfowl surveys throughout Delta and south Richmond to assess waterfowl use of these fields. Surveys have been conducted in cooperation with Canadian Wildlife Service and Ducks Unlimited Canada, and they provide a useful overview of the abundance and diversity of waterfowl species on different types of cropland. However, visual surveys are limited to birds present on the field at the time of observation. Accounts from local farmers indicate that a significant amount of grazing occurs overnight, and this activity goes undetected in the waterfowl survey. Therefore, an additional method of measuring waterfowl use was necessary. The purpose of this vegetation study was to quantify the amount of grazing occurring on cover crop fields and to assess the value of different types of cover crops.

Survey methods

Winter cover cropped fields throughout Delta and south Richmond were surveyed three times over the winter season to measure vegetation height and cover. Initial measurements were taken at three points in each field between in October 2021. A second round of measurements were taken in January 2022 within the same fields as the first round of sampling and final measurements took place in March 2022. At each sample point, height was measured to the nearest centimetre and cover was determined by estimating the percentage of vegetation cover within a 1 m by 1 m square (Figure 1). Additionally, the percentage of the total field with visible grazing was estimated. The level of intensity of grazing was recorded as a number between zero and four, with zero being no grazing and four being completely grazed (Figure 2).

Figure 1: Example of 5% vegetation cover in a 1 m by 1 m square using the Ministry of Forests, Lands, and Natural Resource Operation`s comparison chart for estimating cover percent.

Figure 2. Photos showing levels of intensity of grazing from lowest on the left to highest on the right.

Results | WCC grazing through the season

A total of 117 cover crop fields were surveyed over 16 field days. The first round of surveys in October found that 6 fields had been grazed completely to the roots (5% of fields). In January, this was increased to 18 fields (15%) and 26 fields (22%) by the end of the season. The October surveys also found that 81 fields (69%) had not experienced any grazing, which was reduced to 57 fields (49%) by January and down to 50 fields (43%) by March.

Cover crop fields experienced lower levels of grazing compared with the survey taken last year, where 60% of fields were grazed completely (22% this year) and only 16% of fields were ungrazed (43% this year). The total number of waterfowl observed during the waterfowl survey last year was much higher (56,169) than this year (28,815), particularly Snow Geese (19,151 vs. 6,650). Another possible reason for decreased cover crop grazing this year were the extended periods of cold weather from December 2021-Febuary 2022, which did damage to cover crops and may have made them less likely to be suitable for waterfowl foraging. However, cover crop fields were still steadily foraged throughout the season overall, with 84.3% of cover crop remaining in October to 66.5% in January and 60.3% in March (*Figure 3)*. Winter cover crop fields were planted with either cereals or a novel crop mixture.

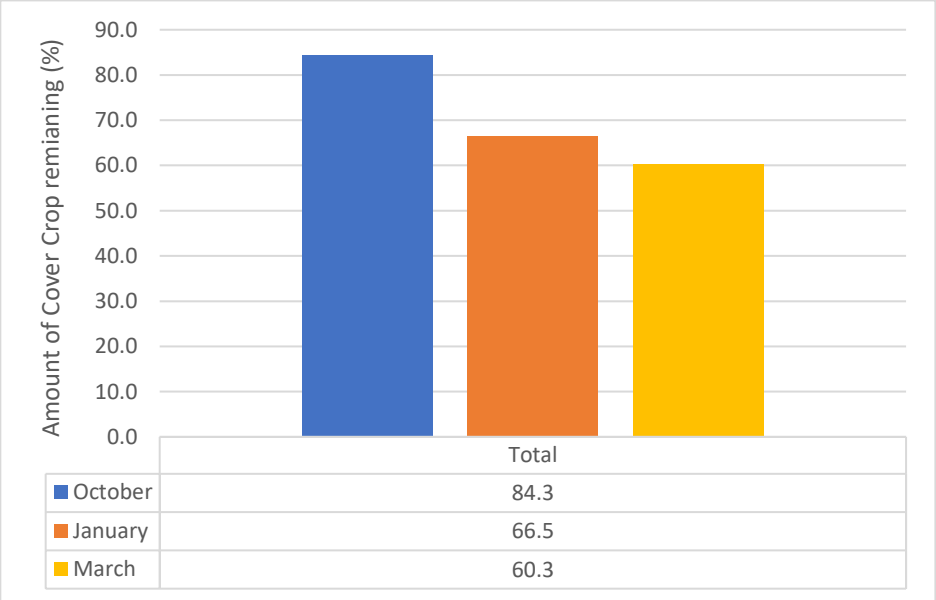
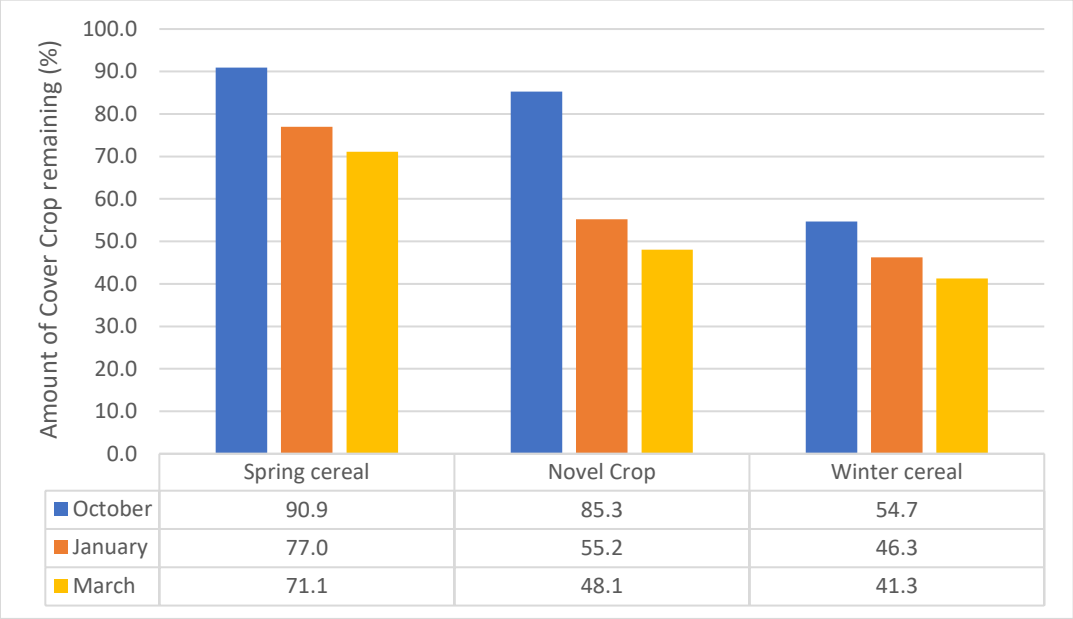


Figure 3: Amount of cover crop remaining on WCC fields from October 2021 to March 2022

Results | Grazing by cover crop type

Each type of cover crop experienced fairly extensive grazing by the end of winter (*Figure 4*). Spring cereals include barley (n = 49), oats (n = 27) or a mix of barley; oats; or wheat (n = 3). Winter cereals include fall rye (n = 11) and mix of winter wheat, triticale, and annual rye (n = 5). Novel crop mixtures were barley and radish (n = 12), brown mustard (n = 5), and pollinator mix (n =16). Spring cereals experienced the least amount of grazing compared with novel crop or winter cereals. This is likely due to the lower cold hardiness of spring cereals, which were highly damaged by a series of cold snaps in Delta between December 2021 and February 2022.



	Spring cereal	Novel Crop	Winter cereal
October	90.9	85.3	54.7
January	77.0	55.2	46.3
March	71.1	48.1	41.3

Figure 4: Amount of cover crop remaining on WCC fields from October 2021 to March 2022 by crop type

Season summary

Winter cover crop fields continue to provide a crucial role for farmers and wildlife in the Delta region. This year, we found that although there was less grazing than previous years, cover crop fields were still a valuable resource for migratory waterfowl. Over the course of the season, fields were steadily grazed with winter cereal fields experiencing higher rates of grazing compared to novel crop or spring cereal fields.