

Evaluation of Whole-crop Barley Cultivars in Western Canada for *in vitro* Fiber Digestibility

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High quality forages are able to optimize milk production and thus support the profitability of dairy producer. Whole-crop barley silage has been widely used as a primary forage source in dairy farms in western Canada. However, its quality is highly variable and limited data exists for effects of cultivars on forage quality. The objective of this study was to evaluate *in vitro* fiber digestibility of selected whole-crop barley cultivars. Samples of eight barley cultivars (4 registered lines-‘AC Ranger’, ‘CDC Austenson’, ‘Gadsby’, ‘Vivar’; 4 additional lines-‘FB445’, ‘FB446’, ‘FB447’, ‘FB450’) were collected at 5 locations (Brandon, Hamiota, Lacombe, Roblin, and Saskatoon) in three replicates in 2013 and 2014. Cultivar had significant effect on the *in vitro* 30-h fiber digestibility (NDFD). Among the eight cultivars, NDFD ranged from 41.5% to 53.5%, and ‘Gadsby’ (53.5%) had the highest NDFd30, followed by ‘FB450’ (51.7%), ‘AC Ranger’ (50.7%), ‘FB446’ (50.5%), ‘CDC Austenson’ (49.4%) and ‘Vivar’ (49.4%), ‘FB445’ (46.1%), and ‘FB447’ (41.5%). The NDFD was not different between year 2013 and 2014 (49.1% for 2013 vs. 49.2% for 2014). Starch content of whole-crop barley averaged at 13.2%, and it was not affected by cultivars or years. As for neutral detergent fiber (NDF) content, significant difference was found among cultivars; ‘CDC Austenson’ and ‘Gadsby’ (52.8 and 53.8%, respectively) had lower NDF content than ‘FB447’ and ‘FB450’ (56.8 and 56.2%, respectively). In addition, biomass yield averaged at 14,090 and 11,680DM kg/ha for 2013 and 2014, respectively, but it was not affected by cultivars.

Implications: Findings from this study suggest that a significant variation exists in NDF and NDFD among barley cultivars grown under different environment, and ‘Gadsby’ had low NDF and highest NDFD among barley cultivars evaluated in the current study.