Is dual-purpose winter canola cultivation possible in Northern Montana?

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Canola (Brassica napus) is cultivated as an important source of edible oil and bio-diesel. Nowadays, herbicide resistant cultivars exist, making its cultivation in weed prone areas very attractive. Planting area and production to has increased in the US according to USDA-ERS 2014 report. Despite the market availability for canola, its production cost is relatively high when compared to other oil crops. Producers in Montana prefer high value crops such as wheat and barley and are reluctant to convert their land for sole low oil yield canola. Besides, canola uses its extensive root system to draw water from deeper soil depths; therefore, its cultivation requires sufficient sub-soil moisture to sustain the crop during flowering and seed filling. Winter canola could fit into cropping systems in Montana because of its potential to benefit the environment and produce a marketable crop that could be compatible with existing grain production and distribution schemes. It could be successfully established in the fall, survive the winter, and regrow in the spring. During winter fallow period, winter canola could take up, hold nitrates in roots thus preventing leaching, and provide ground cover to reduce erosion. Winter canola could fit well into rotations, and could improve soil health because of the root system and canopy architecture. It is well known to enhance soil structure and reduce weed pressure by smothering and disrupting reproduction cycles of weeds.

Interest and research in winter canola production is growing in the Northern Great Plains of the United States. A USDA/NIFA funded research is currently being conducted across four states—Idaho, Montana, Oregon, and Washington with one of its objectives to investigate the possibility of cultivating winter canola as a dual-purpose crop; harvested or grazed as forage early in fall and harvested for oil in the following summer. The main question to be answered is can grazing or cutting canola in fall affect winter survival and thus final oil yield as a dual-purpose crop? This study is relevant in this region where there is significant dairy and beef cattle production, with a demand for locally grown animal feed. Inclusion of canola as dual-purpose crop will significantly contribute to feed supply for animal agriculture in the region. In 2015, experimental plots were established at the MSU-NARC, Havre, where winter canola received six-nitrogen fertilizer treatments and a control under supplemental irrigation. Preliminary results were published in Trader’s dispatch Vol XVIII No. 2, March 2017. In 2016, plots were established at the MSU-Western Triangle Agricultural Research Center, Conrad. Canola winter survivability and seed yields are shown in Figures 1 and 2.

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Figure 1. Winter canola survivability of non-grazed and grazed or cut plots in early spring 2017 at WTARC.

Figure 2. Seed yield response of winter canola to previous fall grazing. Means were statistically different at 5% probability level.

Results suggest that dual-purpose winter canola is possible in Montana and grazing significantly increased winter survivability in spring and seed yields at harvest. The seed yield value recorded for grazed winter canola is in line with the 2015 USDA reported average yield of 1160 lb ac-1 for the crop in Montana. Nonetheless, it is important to stress that productivity of winter canola depends on factors that may affect winter survivability such as seeding date, plant density, timing of grazing and severity of winter. Therefore, more research is needed to fully understand the productivity of winter canola, before counting this as feasible alternative for Montana farmers. Definite conclusions on winter canola production in the region are expected at the end of the inter-state research project.