Net Return Risk for Malting Barley Production in Western Canada as Influenced by Production Strategies


ABSTRACT

The objective of this study was to evaluate the impact of agronomic practices on net return (NR) risk for malting barley (*Hordeum vulgare* L.) production. This study used data from two field experiments conducted from 2005 to 2008 at eight rainfed locations in western Canada. The first part of this study included 30 production strategies of barley type, seeding rate, and N rate for four regions. The second part of this study included 10 production strategies of seeding rate and seeding rate for four regions. A stochastic simulation model was specified to compute the NR. Yield, protein, plumpness, and price were random in the model, drawn from multivariate distributions based on field data and historical price data. The malting cultivar CDC Copeland had higher NR than AC Metcalfe or feed barley. Seeding early at a rate of 200 to 300 seeds m⁻² had higher NR than late seeding or higher seeding rates. A fertilizer rate of 60 to 90 kg N ha⁻¹ had higher NR. A producer with high risk aversion preferred strategies that were less risky including: less N fertilizer, growing feed barley in regions that have high protein and smaller price premiums for malting, and seeding later.

There are two main types of barley produced in western Canada: feed barley that is grown for livestock and malting barley that is grown for the malting industry. In western Canada, producers grow malting barley with the expectation that a malting company will select their barley for malting, resulting in a price premium. The Canadian malting market is dominated by two-row cultivars. Barley not selected by a malting company goes into the feed market. Feed barley cultivars cannot be used for malting. Across the prairie provinces, about 51% of the barley grown is malting cultivars, but this varies from about 78% in Saskatchewan to 54% in Manitoba to 33% in Alberta (Canadian Grain Commission, 2010). While nearly 50% of all barley planted uses malting cultivars, only about 38% of malting barley produced was delivered as malting and the remaining 62% went into the feed market (data from the Canada Grains Council, Winnipeg, MB, Canada).

The main advantage of growing a malting barley cultivar is the price premium of about CAN$55 Mg⁻¹ (1985–2010) over feed barley (Alberta Agriculture and Rural Development, 1985–2010). The premium will vary depending on market factors in the feed and malting industries. The system of obtaining malting barley in Canada is different from the United States, where most malting barley is produced under contract with a malting company (Boland and Brester, 2006). The U.S. federal crop insurance program impacts malting barley returns as well (Wilson et al., 2009). The premium over feed barley in the United States was US$46 Mg⁻¹ (2006–2010) (National Agricultural Statistics Service, Quick Stats, www.nass.usda.gov/Quick_Stats/), similar to Canada during the same period. A disadvantage to growing malting instead of feed barley cultivars is that the yield for malting cultivars is 7 to 10% lower than for feed cultivars (Alberta Agriculture and Rural Development, 2011). Given the low percentage of barley selected for malting, many producers might have higher returns if they grew higher yielding feed cultivars.

The decision to grow barley and the type of barley to grow will be based on the expectation of returns and risk of returns. The production of barley in western Canada declined 0.9 million ha (21%) from 2001 to 2006 (Statistics Canada, 2006). The declining area is a concern to the malting industry because the supply of quality barley could decline. Some of the area decline was due to switching to more profitable crops such as canola (*Brassica napus* L.), and feed demand for barley declined with reduced livestock numbers. Malting barley is more likely to be grown in regions where historically the malting companies have selected their malting barley.

There are 15 criteria used by malting companies to select malting barley (Brewing and Malting Barley Research Institute, 2011b), and each malting company will place different importance on each category depending on customer requirements. As a minimum, the barley needs to be an acceptable cultivar and free of disease, deoxynivaleno (a toxic byproduct

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**Abbreviations:** A-PRA, arid prairie region; ARAC, absolute risk aversion coefficient; C, CDC Copeland; CE, certainty equivalent; C-PRK, central parkland region; D, early; E-PRK, eastern parkland region; F, feed; L, late; M, AC Metcalfe; NA–PR, northern Alberta–Peace River region; NR, net return; SERF, stochastic efficiency with respect to a function.