

# ROUNDUP READY® CANOLA CONTROL IN ROUNDUP READY® SUGAR BEET

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## ABSTRACT

Commercial canola and seed canola are grown extensively in southern Alberta. With the adoption of a Roundup Ready® sugar beet production system in Alberta, volunteer Roundup Ready® canola (VRRC) is becoming a significant broadleaf weed concern in sugar beet fields. In a density trial conducted on a commercial sugar beet field, a natural infestation of 151 canola plants per 100 meters of sugar beet row resulted in a significant sugar beet yield reduction of 11 tonnes/ha. This canola infestation did not have a significant effect on percent sucrose or molasses loss of sugar beet roots. Control options of VRRC are limited to stale seedbed treatments, in-crop treatment with conventional sugar beet herbicides or roguing canola plants from the sugar beet crop.

Stale seedbed treatments with CleanStart (carfentrazone), Heat (saflufenacil) and Gramoxone (paraquat) have been studied mainly to determine their safety on emerging sugar beets. Five trials with CleanStart between 2010 and 2012 showed this product did not significantly reduce sugar beet stand when applied at up to three times the label rate of 8.9 g ai/ha, immediately before sugar beet emergence. Soil textures for these trials ranged from sandy loam to loam with organic matter contents between 1.7 and 2.6%. Two trials with Heat in 2012, showed highly significant sugar beet stand reduction as a result of applying this product prior to sugar beet emergence. Heat applications reduced stand by as much as 39% in one trial and 100% in a second trial with rates ranging from a low of 18 g ai/ha (low label) to a high of 147 g ai/ha (3x high label). It was determined that Heat is not suitable as a stale seedbed treatment.

Trial work between 2009 and 2012 has shown that in-crop treatments that included UpBeet (triflurosulfuron methyl) herbicide gave the most encouraging results for controlling VRRC. UpBeet rates ranged from 4.32 to 34.6 g ai/ha in trials and treatments with higher rates of UpBeet generally gave the most consistent levels of VRRC control.

In one 2010 trial, two applications of UpBeet at 8.65 + 8.65 g ai/ha resulted in 92% canola control. UpBeet rates of 17.3 + 17.3 g ai/ha gave 96% control in the same trial, while rates of 34.6 + 14.8 g ai/ha gave 99% control. In 2010, a conventional canola variety was used for the trial work that was conducted.

A glyphosate resistant variety of canola was planted for all trials in 2011 and 2012. In 2011, UpBeet was shown to mix well with Roundup WeatherMax and the addition of 1% v/v Merge oil adjuvant with UpBeet and UpBeet Roundup WeatherMax mixtures resulted in significantly improved canola control. In one trial, canola control averaged 83% when an adjuvant was included with Roundup WeatherMax and UpBeet, compared to 67% when the adjuvant was not included. In a second trial, canola control averaged 80% with adjuvant, Roundup WeatherMax and UpBeet compared to 69% when the adjuvant was not included in the mix.

In one 2011 trial, VRRC plants were hand harvested from one replication to assess seed viability. All treatments had some canola plants that survived UpBeet application and produced viable canola seed. The treatment with the best canola control (Two applications of 17.3 g ai/ha

UpBeet + 894 g ai/ha Roundup WeatherMax + 1% Merge) had 10% viable canola seed, while the treatment with the poorest canola control (Two applications of 4.32 g ai/ha UpBeet + 894 g ai/ha Roundup WeatherMax) had 91% viable canola seed.

Two trials in 2012 showed the only treatments that gave commercially acceptable VRRC control ( $\geq 80\%$ ) included 3 applications of UpBeet. Treatments that had only 2 applications of UpBeet did not result in commercially acceptable final control values. Commercially acceptable canola control of 80 and 86% was obtained with three 17.3 g ai/ha UpBeet applications. Three UpBeet applications of 8.65 g ai/ha gave lower control values of 74% in both tests, while three 4.32 g ai/ha applications resulted in canola control values of 61 and 65%. The addition of 140 g ai/ha Nortron to UpBeet treatments did not result in significantly better canola control, although control ratings tended to be slightly higher. Sub-lethal applications of UpBeet appeared to suppress canola development for a period of approximately 2 weeks.