

Controlling Volunteer Canola in Winter Wheat

Purpose:

Planting winter wheat following a canola crop has many benefits from an agronomic and time management perspective. However, planting of winter wheat often stimulates the germination of canola seed present on the soil surface due to shattering or through dispersal out the back of the combine at harvest.

Canola has rapid germination and growth that can produce a significant amount of competition with the germinating wheat seedlings. The impact of this competition, from a yield perspective is unknown. Therefore, a grower has two options. One option is to hope that the yield impact from competition is marginal and wait until a killing frost has controlled the volunteer canola plants, or apply an herbicide in the fall that is efficacious on canola and not injurious to the young wheat seedlings. Currently, there is no information available to indicate which one is the better management decision.

Methods:

1. To understand at what density volunteer canola will cause yield losses that are economically greater than the cost of control (i.e. The Economic Threshold).
2. To identify economical, effective control options that offer excellent crop safety.

By attaining the above objectives, it is our hope that the Ontario Wheat producer will be able to make an informed weed management decision that will maximize gross return.

Results:

Objective # 1: Yield response to increasing volunteer canola densities was variable in both years (Tables 1 and 2). Therefore it is inconclusive as to the density of volunteer canola that will significantly reduce winter wheat yields.

Table 1. Winter Wheat yield at four densities of volunteer canola in Guelph, ON, 2004.

Treatment #	Density (plants/m ²)	Yield (bu/ac)
1	0	77.3
2	260	79.4
3	620	77.6
4	640	75.2
5	760	66.1

Table 2. Winter Wheat yield at five densities of volunteer canola in Elora, ON, 2005.

Treatment #	Density (plants/m ²)	Yield (bu/ac)
1	0	81.7
2	274	84.8
3	293	78.2
4	426	81.7
5	611	80.5
6	706	80.5

Summary:

In 2005, there was no statistically significant difference in yield between any of the treatments ($\alpha=0.05$). In 2004, the treatment consisting of volunteer canola at a density of 760 plants/m² was significantly lower than all other treatments ($\alpha=0.05$). Therefore based on only 2 years of data and being conservative, it would appear that unless volunteer canola densities are above 600 plants/m² that there is no net economic benefit to controlling volunteer canola in the fall. However, it is felt that another 2 years of trial data should be conducted to provide a more definitive answer.

Objective # 2:

General Observations: Although the majority of volunteer canola did not over-winter (Table 1), plants that did were large (6-10 leaf stage) when evaluations were made on April 28th, 2004 (See Figure 1).

Table 1. Survival of volunteer canola plants in the spring and expressed as a percentage of those plants that were present on April 28th, 2004 compared to those that were present in the same treatment location on October 16, 2003.

Treatment	Canola Density (pl/m ²) (October 16, 2003)	Canola Density (pl/m ²) (April 28, 2004)	% Survival
1	0	0	0
2	0	0	0
3	0	0	0
4	700	36	5.14
5	625	20	3.20
6	640	36	5.63
7	260	8	3.08
8	760	0	0
9	400	40	10
10	272	28	10.29
Avg.	366	17	4.6

Weed Efficacy:

Control of volunteer canola is easily achieved in winter wheat when applications were made in the fall. Over three years, volunteer canola ranged from the cotyledon to 4 leaf growth stage at the time of herbicide applications. A number of herbicides proved effective at controlling volunteer canola, two of which can legally be applied in the fall (Table 2).

Table 2. Three-year summary of volunteer canola visual control in winter wheat at 42 days after applications of Refine Extra and bromoxynil/MCPA (Buctril-M) in the fall.

Product (concentration)	Rate (per acre)	% Control
Refine Extra (75%)	4 g/ac	99
Refine Extra (75%)	8 g/ac	98
bromoxynil/MCPA (560 g/L)	0.4 L/ac	98

Figure 1. Over-wintered volunteer canola on April 28th, 2004 in Guelph, ON.



Figure 2. Visual control of volunteer canola 24 days after an application of Buctril-M applied at 0.4 L/ac compared to the untreated check.



Cowbrough, 2003 ©

Untreated check

Buctril M (0.4 L/ac)

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Location of Final Report

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