

Techniques for managing volunteer canola in rotations

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Key findings

- 1. Over a three year period, chaff collection reduced the number of canola seeds in the seedbank immediately after the canola. However, this impact was small relative to the variation experienced between seasons that resulted from differences in shattering during harvesting*
- 2. Fall disturbance and chaff collection did not have a major impact on canola emergence in the succeeding oat crop.*
- 3. Volunteer canola numbers in the seedbank of cropping rapidly decline under the environmental conditions encountered in the eastern Prairies of western Canada.*

Details

- 1. Over a three year period, chaff collection reduced the number of canola seeds in the seedbank immediately after the canola. However, this impact was small relative to the variation experienced between seasons resulting from differences in shattering.*

Seed loss occurs during windrowing, pickup and while the crop was being carried over the straw walkers, there was a major increase in canola populations in the seedbank. Thus chaff collection does not necessarily reduce canola seed return. As can be seen in Chart 1, the numbers of seeds in the seedbank varied more from year to year than from treatment to treatment.

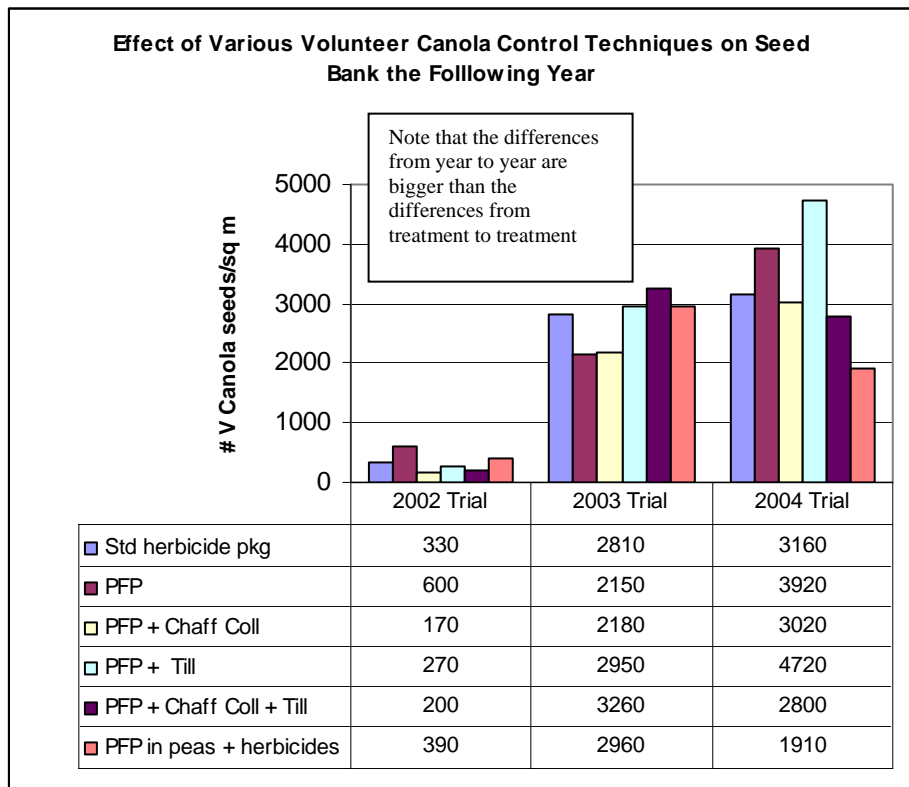


Chart 1 – Effects of herbicide regime, chaff collection and post harvest tillage on seedbank of volunteer canola the year after canola is grown (PFP=pesticide free production)

- 2. When an oat crop was grown the year after canola, the number of volunteer canola plants was unaffected by management the previous fall.*

When using two techniques in combination (chaff collection and surface disturbance), volunteer canola emergence in the subsequent oat crop was the same in treated versus untreated plots. There was no benefit to these techniques in terms of reducing populations of volunteer canola the following season.

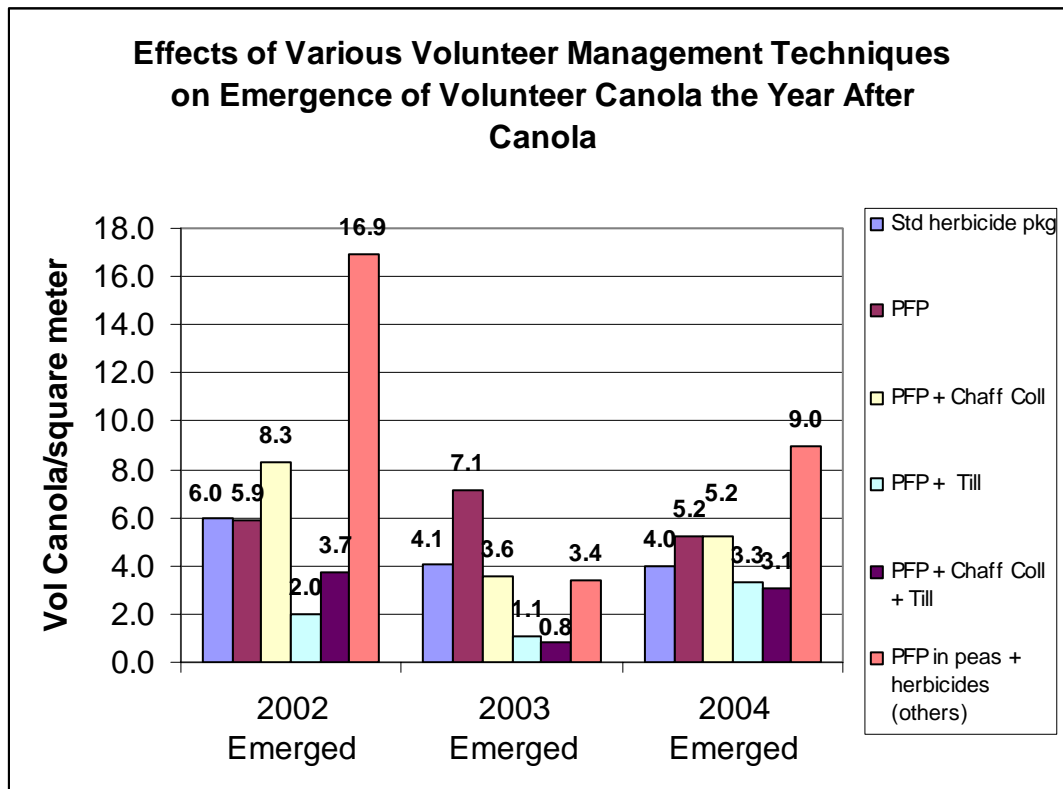


Chart 2 – Effects of herbicide regime, chaff collection and post harvest tillage on emergence of volunteer canola the year after canola is grown (PFP=pesticide free production)

3. Volunteer canola numbers in the seedbank of cropping rapidly decline under the environmental conditions encountered in the eastern Prairies of western Canada.

Average number of volunteer canola plants per square meter was 2.1 to 9.8 volunteer canola plants per square meter (see following table). Volunteer canola in the seed bank ranged from 1753 to 2647 seeds per square meter through the trial. Over the years tested, none of the fall management systems consistently reduced volunteer canola numbers in a “zero tillage” management system.

For a copy of the complete report, contact Nicole Guay at quay@canola-council.org or at 204-982-2100.

Table 1 Average total density per square meter (+/- SE) of volunteer canola in Canola stubble 2002-2004 (BRC).

Rotation	2002 Emerged	2002 Seeds	2003 Emerged	2003 Seeds	2004 Emerged	2004 Seeds	Mean Field 2002-2004	Mean SB 2002-2004
Standard herbicide package through the rotation	6.0	330	4.1	2810	4.0	3160	4.7 ± 0.8	2100 ± 521.8
Pesticide free production	5.9	600	7.1	2150	5.2	3920	6.1 ± 1.1	2223 ± 525.3
Pesticide free production + Chaff Cart	8.3	170	3.6	2180	5.2	3020	5.7 ± 1.3	1790 ± 415.6
Pesticide free production + post harvest tillage	2.0	270	1.1	2950	3.3	4720	2.1 ± 0.5	2647 ± 576.8
Pesticide free production + Chaff Cart + post harvest tillage	3.7	200	0.8	3260	3.1	2800	2.5 ± 0.7	2087 ± 436.1
PFP in peas + herbicides used in other crops	16.9	390	3.4	2960	9.0	1910	9.8 ± 3.0	1753 ± 493.2
Mean	7.1 ± 1.7	327 ± 67.8	3.4 ± 0.6	2718 ± 225	5.0 ± 0.6	3255 ± 316		
Statistical significance								
NonPFP vs StdPFP	ns	ns	< 0.0756	ns	ns	ns	ns	ns
StdPFP vs Std+CC	ns	< 0.0707	< 0.0417	ns	ns	ns	ns	ns
StdPFP vs Std+dist	ns	ns	< 0.0017	ns	ns	ns	ns	ns
StdPFP vs Std+cc+dist	ns	< 0.0904	< 0.0011	ns	ns	ns	ns	ns
StdPFP vs Intensive mgt.	< 0.0588	ns	< 0.0326	ns	< 0.0464	< 0.0440	ns	ns

CC=Chaff Cart all years. Disturbance= heavy harrows in the fall in the canola crop. Intensive= intensive management of weeds after the PFP crop in the pea crop