
EXTENDER® ... 1998/99 Fall Sown Canola Grower Trials

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General Introduction

Using the seed as the carrier of products that are of value to agriculture, Grow Tec is committed to enhancing productivity on the farm. Grow Tec has been involved in the seed coating business since the mid-1980's.

Research by Grow Tec on polymer coating technology for FALL SEEDING has been carried out since the early 1990's. The goal was to come up with a way to make fall seeding a practical reality. Extensive R&D work has shown that with the Extender polymer seed coating, the seeding window is opened up to 21 days prior to permanent soil freeze-up.

Fall seeding is not a new concept. Agriculture and Agri-Food Canada and Alberta Agriculture have conducted extensive research on the agronomy of fall seeding for years. When successfully established, there are many benefits to fall seeding with the key points being the advancement of maturity and the avoidance of environmental stress. The challenge however of when to seed has been the greatest risk. The standing recommendation is to plant "unprotected" seed the day before winter arrives. How practical is this? How many acres can you seed the day before winter arrives?

MINIMIZING THE RISK

The barrier has been broken with the use of Extender® polymer coating technology for fall seeding. The goal was to come up with a system that would effectively open up the seeding window to allow for timely seeding, under more favorable field conditions. Extender® polymer coating does this by minimizing the risk of germination prior to freeze up and allows for early spring germination once conditions become favorable.

This novel approach can have a significant impact on canola production in the prairies and allows expansion into non-traditional canola growing areas. With two to three weeks extra growing season, growers can further minimize the risk of fall frost while improving quality and reduced green seed content. There is also significant value in the spreading of the workload... by planting canola in the fall, this effectively reduces the spring seeding work load. Flowering in June under typically cooler, moister conditions avoids a lot of environmental stress typically associated with flowering under the hotter, dryer conditions in early July. Harvesting in July or August spreads the harvest workload and makes more efficient use of better harvesting weather.

As for crop development, fall seeded canola typically produces larger seed with higher oil content. Yield is as good as and often better than spring seeded canola. Fall seeded

canola is consistently shorter than spring seeded canola which translates to less lodging and improved harvestability.

The effect of alternative seeding dates on the performance of specific varieties will continue to be an important issue as well. Previous small plot research on fall seeding canola has produced yields as high as 90 bushels per acre whereas yields as high as 70 bushels per acre of canola were reached on-farm during 1998/99 grower trials. As we move forward, we truly believe that fall seeding holds the potential to break many barriers associated with canola production today.

Following is the summary of the field scale grower trial conducted across the prairies this past season.

Grow Tec Inc

Results of the 1998/99 Extender[®] Grower Trials

I. Introduction

In the fall of 1998, 138 farmer co-operators seeded Extender[®] coated canola plots across the Western Canadian Prairies and into the Northern United States. The main objectives of this program were to determine the seeding window and performance of Extender[®] coated canola seed under a wide range of conditions.

II. Seeding

The plots consisted of 10 acres per seeding date with between 1 and 5 fall seeding dates per site. Most co-operators also seeded unprotected checks for each fall seeding date. The majority of the sites were sown to Roundup Ready[®] canola (SW Arrow or LG3295) however 20 sites were sown to non-herbicide tolerant canola (Impulse or Ebony). The sites were seeded beginning in early October through to freeze-up and the co-operators used a variety of seeding equipment with over 25 different opener configurations. All cooperators were asked to follow a seeding protocol based on research conducted by K.J. Kirkland and E.N. Johnson at the AAFC Scott Research Farm that consisted of:

- 1) Seeding into stubble; no seeding into tilled fallow
- 2) Drilling seed into soil; no broadcasting
- 3) Using the same seeding rate as for spring sown canola
- 4) Having a soil test done on the field and following a normal canola fertility program

Co-operators were responsible for fertility, weed control, insect & disease control. In addition, all cooperators maintained records of previous crops and all tillage operations prior to seeding. This data was used to determine crop residue levels remaining before seeding (**Figure 2a & 2b**).

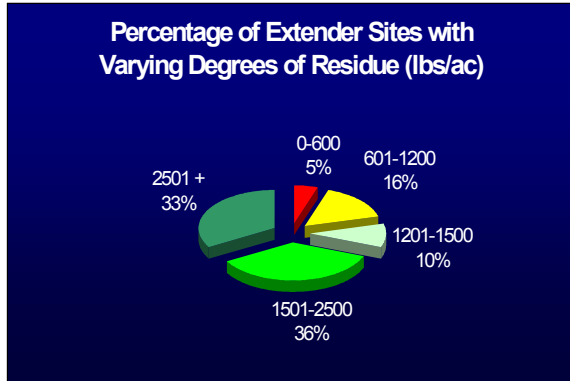


Figure 2a.

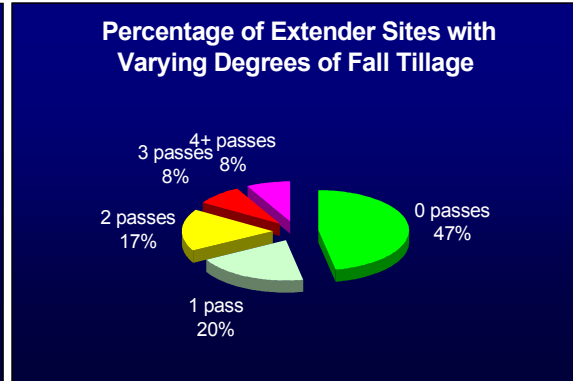


Figure 2b.

III. Results

Emergence

Emergence counts were conducted on the sites in the spring of 1999. Of the 138 sites seeded in the fall of 1998, 120 sites were established in the spring. 27% of those who did not follow the protocol failed and 90% of those who did follow the protocol successfully established a site.

Among those who **did follow the protocol** reasons for poor stand establishment were:

- 1) Seeding Problems (eg. improper seed calibration and depth control)
- 2) Environmental reasons before site establishment (eg. soil crusting, dry winter)
- 3) Environmental reasons after site establishment (eg. too wet to spray, drought)

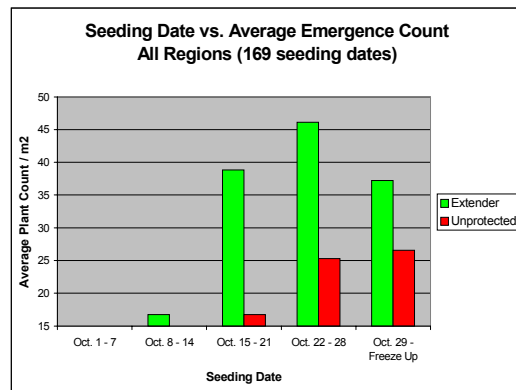
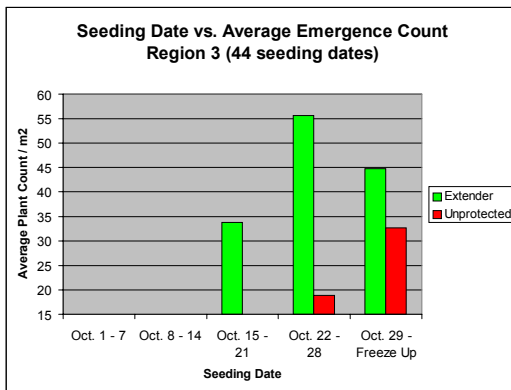
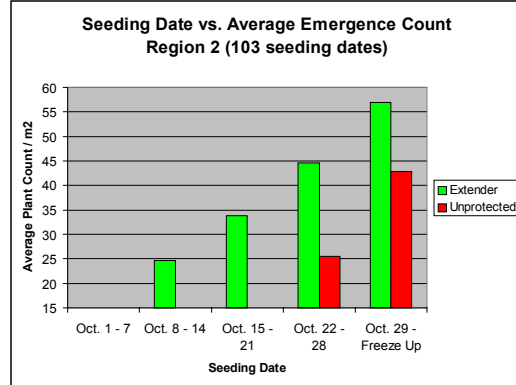
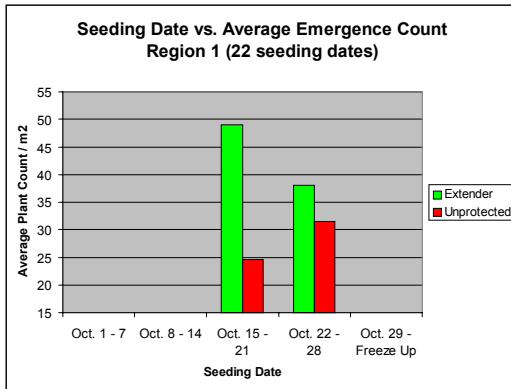
Among those who **did not follow the protocol** reasons for poor stand establishment were:

- 1) Seeding into tilled fallow (lack of residue and/or moisture, soil crusting)
- 2) Excessive tillage (lack of residue and/or moisture, soil crusting)
- 3) Broadcast seeded (absence of seed/soil contact and improper depth control)

A successfully established site had a plant population of at least 20 plants/m² in at least one of the Extender[®] fall seeding dates. A uniform stand of 20 plants/m² is thin but adequate. With proper weed control, no yield reduction is generally observed.

As would be expected, the emergence counts of the Extender[®] and unprotected treatments tend to be more similar when the seeding date is close to freeze-up. The emergence counts of unprotected seed however, rapidly decrease on seeding dates earlier

than a few days prior to freeze-up. Note that optimum seeding dates for Extender coated canola vary by region.

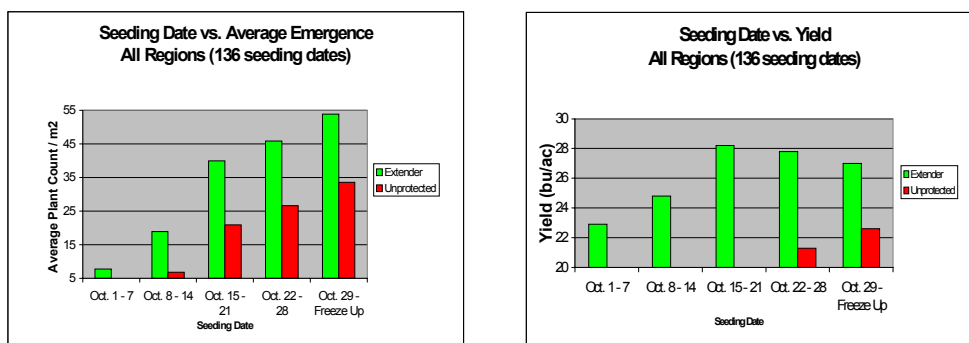


Harvest

Of the 120 established sites, yield data was taken from 89.

The harvest data (136 seeding dates from all regions) as shown in the graphs below, demonstrates that Extender[®] coated canola seeded after Oct. 15 averaged 28 bu/ac and the unprotected checks averaged 21 bu/ac. However, over all seeding dates Extender[®] coated canola averaged 26 bu/ac and the unprotected checks averaged 14 bu/ac. The differences become less pronounced when the seeding date approaches freeze-up. Note that this data does not reflect the maturity advantage or quality advantages of fall sown canola.

Comparison of Emergence vs. Yield for 136 Seeding Dates on 89 Sites



*Average canola yield across AB, SK and MB in 1999 was 27 bu/ac

** Note: In most cases emergence of unprotected seed was non-uniform and patchy resulting in thin/uneven plant stands. This generally resulted in lower yields than a plant stand of Extender coated canola of a similar density.

IV. Summary

The results of the Extender[®] grower trials positively indicated the benefits of Extender[®] coated canola for fall seeding. Extender[®] was effective in minimizing the risks of fall seeding under a wide range of environmental conditions and geographical locations. In addition, no problems were encountered using Extender[®] coated canola seed in field-scale equipment. The following key points, as outlined to the growers participating in the program, are essential to ensure a successfully established crop of fall seeded canola.

Recommendations When Fall Seeding With Extender[®] Coated Canola

- 1) Seed 1/2 to 1 inch deep. Do not broadcast seed.
- 2) Do not seed into tilled fallow.
- 3) Seed within the seeding window of 3 weeks before freeze-up.
- 4) Ensure good weed control.

For further information on Extender[®] Coated Canola, please contact Grow Tec Inc. at: **1-888-GrowTec (1-888-476-9832) or (780) 955-8886**

Acknowledgements:

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