



THE PULSE AGRONOMY NETWORK
PARTNERSHIP WITH INDUSTRY

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IN THIS ISSUE...

- Frost Damage To Peas
- Frost Damage To Cereals
- Frost Damage To Canola

Frost Damage On Peas

(written by Josie Van Lent – UFA - Vermillion)

As we all know, pea seedlings can tolerate moderate spring frosts (to -5°C). In the spring of 2002 we experienced a series of heavy spring frosts in the Vermillion area, resulting in moderate to severe damage to pea crops. Following is information on frost damage to peas from the literature, as well as comments on our experiences that spring:

- Heavy frost (-6 to -10°C) will result in damage to above ground tissue. The severity of damage will vary depending on seedling stage and degree and length of frost. Symptoms of damage include a slight white or yellow discoloration of leaves, to the typical wilting and browning of tissue. (See attached photos).
- With severe damage to seedlings, new tillers develop from dormant buds. Under normal conditions peas grow an initial stem or tiller, with subsequent tillering coming at a later growth stage. With frost damaged peas, you will often notice from one to three new tillers developing from the first node. The higher the number of new tillers, the less vigorous and weaker the plant becomes. The new tiller(s) develop rather quickly, within a week of the frost. (See attached photos).
- Although it is relatively easy to assess that damage has occurred and to what extent, the challenge is answering such questions as what kind of a yield loss can we expect, if any? And, should we consider reseeding to barley or greenfeed? There is very little to no information in the literature that correlates the degree of frost damage to yield loss.
- Follow up on the pea fields with frost damage (during the 2002 growing season) resulted in a few observations. The plants that regrew tillers were never as vigorous or strong as those that did not. They also had fewer pods. While it was difficult to determine yield loss due to the compounding drought that year, yield loss estimates varied from 5% to 20%.

- Based on our experiences and depending on the degree of damage, until yield loss can be more accurately quantified I would be hard pressed to recommend reseeding of peas. As always, it is important to consider reseeding cost and the value of the crop at harvest.
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Frost Damage to Cereals

Summary of information found on AFRD Ropin The Web.

Barley Production in Alberta: Crop Damage

[http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/crop1224](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/crop1224)

Cereals can withstand very low temperatures while they are still in this vegetative stage. Damage will depend on the intensity and duration of the freezing period, but a temperature of around -8 degrees Celsius is required to kill the leaves of seedlings. Even when the young leaves are damaged, recovery is usually complete because the growing point is protected from damage by being below the soil surface, at the crown level.

If the leaves are completely frozen off, reseeding is hardly ever necessary. Regrowth will occur quite quickly as the frozen plants have their established root system and growing point to rejuvenate from. The regrowth is much faster than it would be from reseeding and much less expensive. A delay in maturity will result but not nearly as much delay as that which would occur as a result of reseeding.

Frost Damage to Canola

The Canola Council of Canada has an excellent Canola Fact Sheet - Tips for Assessing Spring Frost Damage in Canola.

The PDF file includes good photos of frost damage.

http://www.canola-council.org/PDF/may5_Canola_AssessingSpring.pdf#zoom=100

We encourage you to share the PAN information with others. In return, we ask that you list the source as the Pulse Agronomy Network.

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