

Assessing Winter Wheat Survival



Early Spring Assessments

When the temperatures start to warm up and snow is almost off the fields, it is time to think about how well winter cereal crops survived the winter. Winter wheat will break dormancy once temperatures are consistently above 0°C, but early in the spring and without a string of warm days and nights winter cereals would still be expected to be dormant. When it is too early to walk fields to assess winter survival, there are other methods that can be used to see how well winter cereals have fared the winter.

Sod extraction method

- Extract plants in several areas of a field with a shovel, keeping some soil attached
- Bring plants inside and keep the soil moist for several days
- In 5-7 days assess the crowns for new root growth
- If there is no new root growth the plant has not survived

The bag test

- Carefully dig up seedlings from the field
- Rinse soil off seedlings, clip roots below the crown and stems one inch above the crown
- Place the crown in a plastic bag puffed out with air and seal the bag
- Keep the bag at room temperature and repeat rinsing and adding air every two days
- If there is no new growth after six days, consider the plant dead



New root growth on winter wheat indicated with red arrows. Photo on the right shows winter wheat crowns after conducting the bag test.

Wait for the Crop to Break Dormancy

Another option to assess winter survival is to wait for the crop to break dormancy and develop new roots. Timing depends on spring temperatures, and this could take until mid-May in some years. To assess survival, plants will need to be dug up. Brown leaves do not necessarily indicate winter injury, and green overwintering leaves are not a sure sign that the crop has survived. To assess crop survival once dormancy has been broken dig up some plants, rinse the roots with water and examine the crown for the development of new white roots. If new roots are developing, and the crown appears white and healthy the plant is likely in good condition.

Assess Plant Stand

Regardless of how early winter cereal survival looks, plant stands should be assessed once dormancy has broken and regrowth has started. An optimum plant stand for winter wheat is 20 to 25 plants/ft², but research has shown that plant stands as low as 5 to 8 plants/ft² can yield 80% of a normal stand. Reseeding decisions should be based on spring plant stand, uniformity of the stand, and potential to control weeds in the reduced stand.

For More Information

Concerned about a poor stand of winter wheat?
<https://www.gov.mb.ca/agriculture/crops/crop-management/concerned-about-winter-wheat-stand.html>

Fertilizing winter wheat

<https://www.gov.mb.ca/agriculture/crops/crop-management/fertilizing-winter-wheat.html#:~:text=Applying%20N%20in%20the%20spring,from%20stem%20elongation%20to%20maturity.>

Spring germinating winter wheat

<https://www.gov.mb.ca/agriculture/crops/crop-management/spring-germinating-winter-wheat.html>

References

Black, A.L., and A. Baur. 1990. Stubble height effect on winter wheat in the northern Great Plains: II. Plant population and yield relations. *Agron. J.* 82:200-205.

Lafond, G.P., and Y. Gan. 1999. Row spacing and seeding rate studies for no-till winter wheat for the Northern Great Plains. *J. Prod. Agric.*, Vol. 12, no. 4.

Contact Us

This factsheet was developed by the Manitoba Agriculture Cereal Specialist.

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