Winter Wheat Spring Assessment

Spring assessment is a key component to successful winter wheat production. To properly assess the condition of winter wheat in spring, it is important to understand some of the factors that affect cold hardiness.

Cold Hardiness Factors

Plant Stage **–** "3 leaf and a tiller" plants with developed crowns are ideal. These plants have maximum reserves to resume growth next spring. For plants to reach this stage, factors such as optimal seeding date and depth are crucial.

Snow Cover **–** 10 cm of snow buffers soil from extremely low air temperatures – crucial in the Dec. 22 to Mar. 20 window. More snow is beneficial but the first 10 cm is most important. Light fluffy snow has better insulation value than hard packed snow.

Phosphate Fertility **–** This nutrient seems to improve winter hardiness indirectly by improving spring recovery in damaged plants.

Assessing Winterkill

Initial winterkill assessment can be accomplished by removing a few plants on a warm day. Place crowns in on a moist paper towel in a warm room that will be exposed to light for at least part of the day. Damaged crown tissue will quickly turn brown while healthy tissue will remain white and will begin to produce new roots within a few days. This type of assessment is most relevant if plants are taken from "worst case" areas. Areas where fertility may be poor, snow cover was lost in the crucial period and/or plants did not advance to the optimal stage by the end of fall. If plants survive in disadvantaged areas the rest of the field should be fine.

Assessing the crop condition over the whole field, especially early is difficult as brown leaf material in early spring may not be a sign of winterkill and new green leaves may not mean the crop has survived. New white root growth from the crown tissue indicates the plant has survived the winter. The best way to ensure a proper assessment of the crop is too scout as late as possible. Winter wheat plants need time to recover and regenerate new root mass then new leaves. This recovery is aided by cool, damp weather. Hot and dry weather in early spring can result in cracking and drying of the soil can be very detrimental to struggling plants. Assess the field after the bulk of seeding has been completed. This will allow winter wheat plants to recover while still leaving time to re-seed if necessary. This would generally mean assessing the crop between May 15th and May 25th.

Plant Populations

A winter wheat stand can be relatively thin and still produce an excellent crop. This capacity to compensate for low plant population comes from winter wheat's exceptional ability to tiller. Saskatchewan Crop Insurance's Establishment Benefit Density chart gives plant density where re-seeding will be allowed (*note the difference between spring wheat and winter wheat population requirements).

Estblishment Benefit Density Chart

Crop	Est. Benefit (plants/m2)	Customer Choice (plants/m2)	No Est. Benefit (plants/m2)
HRSW	Less than 70	70 - 110	110 +
Winter Wheat	Less than 45	45 - 63	63 +

* from Saskatchewan Crop Insurance, based on SAF reccomended plant densities.

Often the challenge when assessing spring establishment is that winterkill usually occurs in patches, making the above plant populations difficult to relate to. The decision to keep or re-seed a damaged crop often depends on the grower's confidence that adequate weed control can still be attainted in given some portions of the field are bare.

Re-Seeding?

If the decision is to re-seed, some agronomic factors must be considered. Broadleaf crops seeded on land that has been treated with 2,4-D in late fall or especially early spring can be very sensitive to residues (pulses, flax, canola). Re-seeding to another wheat should be avoided due to the risk of Wheat Streak Mosaic.

Timely Spring Management

Timely management in the spring increases the success of a winter wheat crop. A thin winter wheat stand (45-63 plants/m2) with timely weed control and optimal spring nitrogen applied early will almost always be worth saving. Experienced winter wheat growers throughout western Canada will often echo this advice.