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# AGRONOMICS



DID YOU KNOW  
THAT GROWING  
**WINTER WHEAT**  
CONTRIBUTES TO  
SOIL AND WATER  
CONSERVATION  
MEASURES, BY  
PROTECTING SOIL  
FROM EROSION AND  
IMPROVING THE  
EFFICIENCY OF  
WATER USE?

**Agromomics** of winter wheat covers many topics, but the most critical start to growing winter wheat involves seeding dates, rates, depths and stubble choices.

There are three main recommendations to seeding winter cereals:

1. Seed early
2. Seed shallow
3. Seed into standing stubble

These basic guidelines set the stage for a successful winter wheat crop.

## Seeding Dates

In Northern Alberta, ideal seeding dates are earlier than the rest of the province due to the colder fall temperatures. Producers should aim to seed around the 15th to 20th of August. In Central Alberta, the ideal seeding date is between the 25th of August and the 5th of September. Producers should seed no later than the 15th of September. In Southern Alberta, the ideal seeding date is within the first two weeks of September; however, seeding can be postponed until later in September due to the warmer and milder winter conditions.

A common question is: should a producer wait for moisture when conditions are dry or seed early into dry soil? Research has demonstrated that it is more advantageous to seed early and shallow into warm dry soil, than it is to wait. Winter wheat needs very little moisture to germinate and emerge, and yield potential is much greater with an earlier seeding date. Postponement of seeding until after the middle of September can result in a 5 - 10% yield penalty for each week delayed. Research trials near Lethbridge found that winter wheat yields dropped by an average of 18% when the crop was planted in early October.

## Seeding Rates

Seeding rates can vary slightly throughout the province but most producers seed in the 1.5-2.5 bushels per acre range. More importantly, plant populations should be targeted at 30 plants per square foot at seeding to achieve a spring stand in the 18-23 plants per square foot range. Because the average number of seeds per pound varies, using the 1000 kernel weight method is the most effective way to ensure adequate seeding rates and target plant populations. There will always be some mortality with winter cereals because of the harsh conditions the plants endure over winter. Always take into account germination rates, particularly when dealing with saved seed.

Seeding rate (lb/ac) = desired plant population/ft<sup>2</sup> x 1,000 kernel wt. (g) ÷ seeding survival rate (0.90) ÷ 10



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*Growers interested in trying winter wheat should keep the following in mind as the winter wheat seeding window approaches:*

Plan in advance for seeding operations. Have seed, fertilizer and equipment ready ahead of time.

Seed early.

Seed shallow (one inch or less), with a low disturbance seeder.

Seed into adequate stubble for snow trapping.

Apply phosphate fertilizer at the time of seeding.

Apply appropriate quantities of nitrogen fertilizer in the fall or early spring to optimize yield potential.

## Seeding Depth

Seeding at a depth of one inch or less will increase seedling vigor and improve winter hardiness. Winter wheat has a short coleoptile and is not capable of emerging through more than an inch of soil. Also, with limited time for growth in fall, it is imperative that winter wheat emerges quickly in order to reach the 3-4 leaf stage before freeze up. Usually by the three leaf stage, the crown is well developed and has better winter survival potential than lesser established plants. This recommendation for seeding depth is true, even under dry conditions. Research has consistently shown that shallow seeding is much more effective than deep seeding, under any conditions.

## Stubble

Direct seeding into standing stubble is important for winter wheat production. Standing stubble helps to trap snow and allows for the crown tissue to be insulated from cold winter temperatures. The trapped snow not only reduces the risk of winterkill but also improves soil moisture reserves in the spring. Harvest management of the previous crop and the impact of disturbance during seeding are important considerations. Adequate stubble trapping potential (STP) can be calculated as follows:

$$STP = (\text{stubble height (cm)} \times \# \text{ stems per m}^2) \div 100$$

**A post seeding STP of 20 or higher is recommended for winter wheat.**

Canola stubble is a popular choice due to the reduced trash and tall stems. Cereal stubble can also meet the criteria. Cereal stems may be shorter but are more plentiful. Pea stubble is not recommended for winter wheat as the number of stems and their ability to trap snow is typically inadequate. Many producers still use pea stubble for their winter wheat fields, understanding the increased risk in a year where winter conditions may be less than favourable to a winter wheat crop.

▶ **For more information** please contact one of our winter wheat specialists at Ducks Unlimited Canada

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