



# Winter Cereals

*Sustainability in Action*



## AGRONOMICS

### WINTER WHEAT AND AGRONOMICS

The most critical factors that set the stage for a successful winter wheat crop are to:

- ▶ Seed early
- ▶ Seed heavy
- ▶ Seed shallow
- ▶ Seed into standing stubble

#### 1 Seed Early

Seeding early is the most important thing a grower can do to produce a vigorous plant with improved chances of winter survival. Plants that enter winter with three or four leaves usually have well-developed crowns. The crown is the area at the base of the shoot from which the plant regrows in the spring.

The optimal seeding window across most of the Prairies is between September 1st and 15th.

*The exceptions to this rule include:*

- The Peace Region of Alberta where ideal seeding dates are earlier than the rest of the Prairies due to cooler fall temperatures. Producers in this area should aim to seed around August 15th to 20th.
- The Chinook belt where seeding can be postponed because of long falls and milder winters. Producers in this area can seed into late September.

Producers should not wait for moisture prior to seeding. Winter wheat needs very little moisture to germinate. Under dry conditions, seeding into dry soil and waiting for rain to germinate the crop has been a far more successful strategy than delaying seeding until after rainfall. Research has demonstrated that postponement of seeding until after the middle of September can result in a 5-10 per cent yield penalty for each week delayed.

#### 2 Seed Heavy

Proper seeding rates can vary by variety and location but the rule of thumb is to seed at 1.75 to 2.5 bushels per acre. Higher seeding rates create a denser, more uniform stand and are especially important in high moisture areas.

More importantly, plant populations of approximately 30 plants per square foot are critical to winter survival, crop competitiveness and yield potential.

*To calculate seeding rate:*

- Seeding rate (lb/ac) = desired plant population/ft<sup>2</sup> X 1000 kernel wt. (g) / seedling survival rate (0.70) / 10
- 1000 kernel weight is used as the average number of seeds per pound varies
- Seedling survival rate of 0.70 is used to take into account germination and emergence rate (similar to spring crops) plus the impact of winter survival as some plants invariably do not survive harsh winter conditions.

#### 3 Seed Shallow

Soil moisture in most stubble fields in the fall has been depleted, leaving a very dry seedbed for winter wheat. Under these conditions, seeding shallow (1/2 to 1 inch) allows the seed to take advantage of moisture provided by fall rains. Research has shown that as little as 1/3 inch of rain is often enough to successfully establish winter

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wheat that was seeded shallow. Conversely, deep seeding delays emergence and often results in a spindly plant that is more susceptible to winterkill. Research has consistently shown that shallow seeding is much more successful than deep seeding.

#### 4 Seed into Standing Stubble

Direct seeding into standing stubble is important for winter wheat production. Standing stubble helps to trap snow that insulates crown tissue from cold winter temperatures. Snow cover ensures the soil temperature at the crown (1/2 to 1 inch deep) stays well above killing temperatures, even with air temperatures at -40 degrees Celsius. The trapped snow not only reduces the risk of winterkill but also improves soil moisture reserves in the spring.

Tall, dense stubble provides optimal snow trapping capability. Canola, barley, oats, flax or the stubble of a forage crop all consistently provide this type of stubble. Wheat stubble also provides tall dense stubble but is not recommended due to the potential risk for wheat streak mosaic virus. This disease may develop from a 'green bridge' created when a previous cereal crop and the emerging winter crop are too close together, allowing the movement and survival of the disease vectoring mites. At least seven to 10 days between the dry-down of spring cereal crops and the emergence of winter wheat is necessary to prevent problems with the disease, as the wheat curl mite needs a live cereal plant for a host at all times. Radiant is currently the only winter wheat variety resistant to the wheat curl mite. Crops that do not provide tall dense stubble such as field pea and lentil are not recommended.

Harvest management of the previous crop including cutting height and straw/chaff spreading also plays a role. Producers should strive to minimize stubble disturbance during harvest and subsequent seeding operations.



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

In Alberta

**Edmonton: Janine Paly**

Phone: 780-930-1257, Cell: -780-232-1987

Email: j\_paly@ducks.ca

**Lethbridge: Melissa Stanford**

Phone: 403-345-6564, Cell : 403-795-5017

Email: m\_stanford@ducks.ca

In Saskatchewan

**Humboldt: Larry Durand**

Phone: 306-682-1626, Cell: 306-231-6339

Email: l\_durand@ducks.ca

**Yorkton: Kevin Hardy**

Phone: 306-782-2108. Cell: 306-621-8037

Email: k\_hardy@ducks.ca

**Regina: Mark Akins**

Phone: 306-569-0424, Cell: 306-535-0132

Email: m\_akers@ducks.ca

In Manitoba

**Brandon: Ken Gross**

Phone: 204-729-3507, Cell: 204-761-0169

Email: k\_gross@ducks.ca

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Ducks Unlimited Canada and Bayer CropScience for the future of agriculture includes a stewardship model that recognizes the agricultural productivity of farmland while retaining and improving the habitat available to North America's waterfowl and other wildlife.

Call 1 866 384 DUCK (3825) or visit [wintercereals.ca](http://wintercereals.ca)



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