

PRAIRIE WHEAT STAGING GUIDE



GS 00-16

GERMINATION
TO SEEDLING

Kernel absorb moisture, radicle and coleoptile emerge, 1st leaf at coleoptile tip, through coleoptile with up to 5 leaves unfolding.

WEED CONTROL

a. ***Pre-seeding (burnoff), Pre-emergence

GS (00): For best weed control, spray when weeds are small, actively growing, and not stressed. Avoid herbicide application on dry days or if there was frost the night before or the morning of spraying.

b. ***In-crop application

Wheat's critical weed-free period is the 1–3 leaf stage. Controlling weeds early reduces competition for moisture, nutrients, and light. Apply herbicide if weed pressure is high—especially if burnoff was missed or ineffective

DISEASE MANAGEMENT

a. †GS 00: seed treatment can be used to manage seedling diseases and promote healthy, vigorous, uniform seedling emergence. Refer to provincial crop protection guide for products.

INSECT PEST MANAGEMENT

a. †GS 00-19: insecticide seed treatments protect the seeds and seedlings from early-season insects, such as wireworms and cutworms. Refer to provincial crop protection guide for products.

NITROGEN FERTILITY

a. *Many producers across western Canada apply most fertilizer products prior to or during seeding, but in-crop N can be used as a risk mitigation tool. It is sometimes used as a strategy to increase grain protein content. The timing of in-crop N application is determined by the producer's objectives.

b. **GS14-15 (4-5 leaf stage): Nitrogen applied at this point can potentially increase yield.

GS 21 – 23

TILLERING

Development of main stem and + 3-5 tillers.

WEED CONTROL

a. ***Consider an in-crop herbicide application if warranted by weed pressure. Herbicide application at this stage is a common and effective window for weed control.

INSECT PEST MANAGEMENT

a. †Scout grasshoppers and manage if population reaches threshold.

NITROGEN FERTILITY

a. **Ideal time for in-crop N application for potential yield increase.

GS 30-32

STEM ELONGATION

1st and 2nd node detectable. Internode elongation begins at the 4th node in a plant with about 9 leaves.

WEED CONTROL

a. ***Aim to complete weed control by the end of this growth stage. GS 30–38 marks the cutoff for many herbicides, always check and follow product staging restrictions.

PGR

a. †GS 30-32 is the ideal window to apply Moddus or Manipulator PGRs to reduce plant heights, manage lodging and improve yields. **DO NOT apply PGR to crops under stress (heat, cold, drought, etc).**

INSECT PEST MANAGEMENT

a. †Scout grasshoppers and manage if population reaches threshold.

NITROGEN FERTILITY

a. **GS 30 (stem elongation): Nitrogen applied during stem elongation maintains yield potential.

GS 39

FLAG LEAF

Flag leaf collar just visible.

DISEASE MANAGEMENT

a. †GS 39: If diseases such as leaf spots and powdery mildew is present at an actionable level, then GS 39 is the critical stage to apply fungicide to protect flag leaf from foliar diseases.

b. If disease pressure is low at this stage, consider delaying the fungicide to GS 65.

PGR:

a. †GS 39: The latest timing to apply Moddus or Manipulator PGRs to reduce plant heights, manage lodging and improve yields.

NITROGEN FERTILITY:

a. **GS 39 (flag leaf): Nitrogen applied on and after GS 39 could increase grain protein but there is limited influence on yield.

GS 41-49

BOOTING

Flag leaf sheath begins to elongate, boot begins to swell, Flag leaf opens and 1st awns visible.

GS 50-59

HEAD EMERGENCE

The head is pushed out of the flag leaf sheath and just visible to 100% of the head visible and fully above the flag leaf ligule.

INSECT PEST MANAGEMENT

a. †Monitor for wheat midge damage.

GS 61-69

FLOWERING

Flowering begins in the middle of the head. Flowering spreads upward and downward on the head, and completes at the base.

DISEASE MANAGEMENT

a. †GS 61-69: Apply fungicides to manage FHB, if risk is present. Fungicide application at this stage can also protect the flag leaf from foliar diseases.

GS 71-85

GRAIN FILL

Kernels accumulate starch and protein. The grain loses green colour as it moves from the watery ripe to soft dough stage.

NITROGEN FERTILITY

a. **GS 71 (post anthesis): Applied nitrogen may increase grain protein, but depending on the application method leaf burning can occur. For more information, contact your local agronomist if you are interested in this practice.

GS 87

HARD DOUGH STAGE

Head loses green colour. Kernels reach maximum dry weight or physiological maturity at about 30 to 40% grain moisture. Kernel is difficult to divide with a thumbnail.

WEED CONTROL

a. ***Pre-harvest weed control/Harvest Aid

1. Apply pre-harvest herbicides only after wheat reaches physiological maturity — around 30% kernel moisture, when grain fill is complete. Check the Keep It Clean website for products that could pose market access risks.

GS 92

RIPE KERNEL

Kernel not dented by thumbnail is harvest ripe. The plant is completely yellow. Kernel has about 15 to 30% grain of moisture.

WEED CONTROL

a. ***Weed control before harvest when grain moisture is below 30%. Pre-harvest herbicide application is ideal for perennial weed control.

*** Pre-harvest aids help speed up green material dry down. Always follow the product's PHI to avoid residue issues. Some registered products may still pose market access risks—check the Keep It Clean or consult Crop Protection Guides before any chemical use.

INSECT PEST MANAGEMENT

a. †Scout wheat stem sawfly damage at harvest time.

NOTES

WEED CONTROL

***Weed control should be based on factors like weed pressure, species, growth stage, and environmental conditions. Since herbicide timing varies by product, **always read and follow the label.**

A layered weed management approach, utilizing multiple herbicide modes of action, cultural methods and weed seedbank control are needed to fully combat the constant battle with weeds and herbicide resistance.

DISEASE MANAGEMENT

† Refer to scouting and FHB risk maps to make decisions on whether a fungicide is needed and which product(s) to use.

PGR

† Avoid applying PGR if the plant is stressed, or expected to be stressed 14-28 days after application, due to cold, heat, drought, etc.

INSECT PEST MANAGEMENT

▪ Always refer to the Guide to Crop Protection for an updated list of registered products and pre-harvest intervals before applying insecticides. Beware of beneficial insects and the economic threshold of the insects you are controlling.

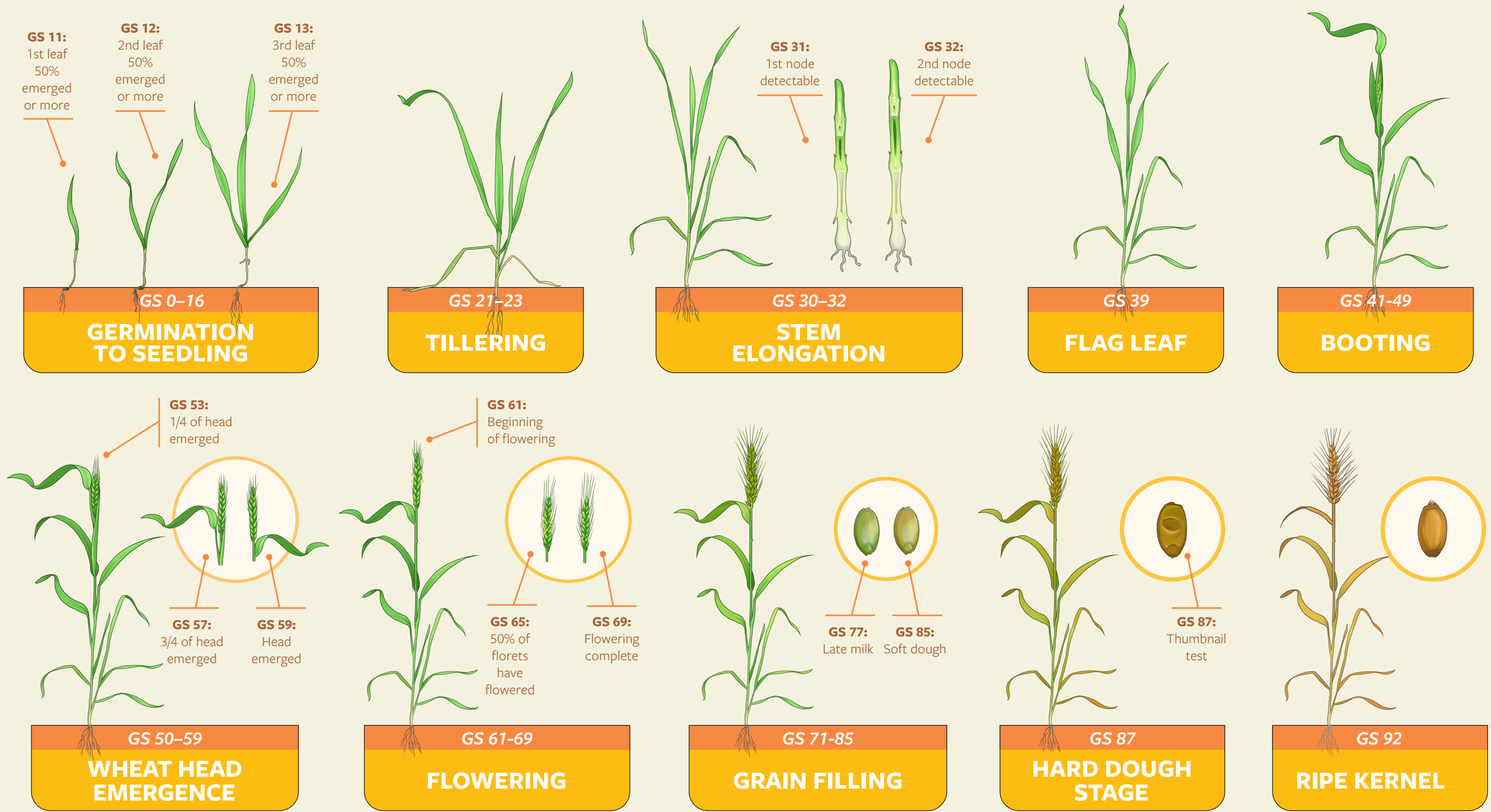
NITROGEN FERTILITY

* 50-60% of N is taken up by the end of tillering in wheat. Apply N at or near planting to ensure wheat nitrogen needs are met.

** It is important to note that rainfall is required for in-season nitrogen application to be successful. Lack of rainfall can leave nitrogen stranded on the surface, increasing its risk of loss via volatilization and reducing availability for plant uptake. If urea is applied to the soil surface, then a urease inhibitor should be considered.

This guide follows the Zadok Growth Staging Scale.

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