

DEFINING YIELD COMPONENTS IN WHEAT And the growth benefits delivered by an Integrated Fertiliser Management program

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What's in this Insight

This Insight defines wheat yield and discusses what growth should be expected when a good Integrated Fertiliser Management (IFM) program forms part of crop management.

Wheat Yield Factors

Wheat yield is simply equivalent to the number of heads or spikes per area, multiplied by the number of kernels per head and the weight of the kernel.

Therefore, the yield is expected to be higher if there are more heads, bigger heads or bigger grains to match your cropping potential.

Most yield components are set by the end of tillering, and in most dry-land wheat crops by the time the second tiller is seen. So, in the early stages of crop growth, watch for the number of tillers or potential heads.



- in an above average crop the first tiller should be seen when there are two leaves on the main stem
- in a normal crop the first tiller should be seen when there are three leaves
- in a poor crop the first tiller comes up when there are more than three leaves on the main stem





Seed Priming



Ultra Foliar



Wheat

Use the following diagram to work out the vigour and health of your seedlings by matching the tiller numbers with leaf numbers on the main stem.



Figure from M. Stapper

Impediments to Tillering

Some of the reasons for late tillering are :

- sowing the seed too deeply which delays the seedling emergence and utilisation of light energy
- low level of inorganic phosphate in grain
- low level of some trace elements in the grain
- insufficient soil phosphorus
- insufficient soil nitrogen
- insufficient rain during seedling growth



Interpreting Tillers

In a good crop you only need to establish two tillers early to obtain maximum yield.

Generally, approximately 50% of yield comes from the main stem with the remainder from tiller 1 and tiller 2. Therefore, establishing two tillers early, translates to maximum yield potential early.

The best sowing rate and conditions should be worked out on early establishment of two tillers.





Integrated Fertiliser Management

Modern crop management relies on an integrated approach to fertilising, so that all critical areas – Seed, Soil and Leaf – are given the best opportunity to work for the plant and eventual crop outcome. The first foliar application, along with nitrogen (e.g. urea) at 1 – 2 tiller stage, is the surest way of attending to nutrient requirements to maintain nutrient sufficiency and avoid 'hidden' yield losses.

The success of a good IFM program depends on four basic functions :

1. Treating seeds with **BSN** Seed Priming fertiliser to raise phosphorus and trace element levels to optimum or above optimum levels. This enables seedlings to set a higher yield potential, form greater root exploring ability and to better resist stress and disease.
2. Applying nutrient to soils – usually as granular N-P-K – at optimum, but not excessive levels. This is determined by fertiliser history, soil test and potential or expected yield.
3. Using an **Ultra Foliar** fertiliser to provide up to 12 essential nutrients to the plant in the most effective way. This avoids 'hidden hunger' and future unseen yield losses. This can be achieved by using specially formulated Ultra Foliar fertilisers to extend the momentum of root efficient exploration and supply essential nutrient to the plant.
4. Not jeopardising these functions by soil applications in excess of crop demand, and by only applying moderate NPK input and stepwise nitrogen applications.

More information about IFM can be viewed [here](#).

Conclusion

The outcome of good crop yield from every crop put into the ground during a growing season is the goal of farmers and growers everywhere.

Understanding how to gauge a crop's potential by appreciating the 'tiller language' better is a skill worth having. However, value-adding this understanding, by a modern approach to fertilising will give both the crop and the farmer the best start possible.



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