Triticale agronomy

The aim of this trial was to investigate the effects of seeding rate and nitrogen rate on triticale.

Summary

Triticale is very responsive to high inputs of seed and fertiliser. Adequate fertiliser is needed to achieve protein levels above 10%.

In dry springs triticale yields are 10-15% below wheat, due to triticale's longer grain filling period.

Background

Triticale is gaining popularity in the Mallee in continuous cropping programs – it is now being treated as a crop which will give an economic return.

Triticale is a cereal hybrid derived by crossing wheat *(Triticum* sp.*)* with cereal rye *(Secale* sp.*).* Although the market is small when compared with other winter cereals, as it must compete with barley as the preferred winter feed grain, breeders have recently released improved and better adapted varieties that have good yield and grain quality characteristics, with many of the factors identified as the cause of inferior performance having been eliminated.

Triticale usually flowers earlier than wheat planted at a similar time, however grain filling takes longer and grain size may suffer in a hot dry finish. Its stubble is coarser than either wheat or barley. Triticale is also higher in energy than barley and has many desirable nutritional characteristics for all classes of livestock.

Key points

Triticale is a direct substitute for barley or wheat in animal feed rations. In pig and poultry diets triticale is equal to or better than wheat or maize in terms of energy value and superior in terms of protein content and quality (essential amino acid content and availability). In dairy rations triticale has an advantage over barley due to its high metabolisable energy, palatability and ease of milling.

Triticale will grow on similar soils to wheat and barley, but is also adapted to soils that are too acid for the other cereals. It is relatively boron tolerant and is tolerant to high aluminium soils. On alkaline soils where other cereals are affected by manganese, zinc or copper deficiency triticale is less affected.

Triticale can out-produce other winter cereals on lighter, lower fertility soils. It has more vigorous root system than wheat, barley or oats binding light soils and extracting more nutrients from the soil.

It can out-yield barley under good conditions, and its dual purpose use as grain or forage makes it a useful crop for mixed enterprise farms.

Tahara has been the main variety for over a decade, but it has now been superseded by new varieties such as Treat, Abacus and Kosciusko, which have stronger straw compared to Tahara and resists lodging better. The new varieties also have better grain plumpness and weight. Like Tahara the new varieties also have resistance to the three rusts; stem rust, stripe rust and leaf rust.

Nutrition: The nutrition requirements of triticale are similar to wheat. In low fertile situations triticale is very responsive to fertiliser. Adequate nitrogen and phosphorous must be available to ensure a high yield and a grain protein above 10%. In South Australia high rates of fertiliser applied to triticale on sandy country have resulted in increased yields.

Diseases: All recommended triticale varieties have effective resistance to stem, leaf and stripe rusts. Triticale is susceptible to crown rot and common root rot. Triticale is less susceptible to take-all and yellow leaf spot than wheat although it will carryover the disease into following years.

Methods

The trial was located at the Birchip site. Tahara triticale was sown on June 7. Buctril MA (1.2L), Hoegrass (800ml), Lontrel (75ml) and wetter (0.2%) were applied August 12.

Table 1. Sowing and nitrogen rates for triticale

Treatment	Sowing Rate	Nitrogen Rate
1	175pl/m2 (66kg/ha)	50kg Urea
2	175pl/m2	100kg Urea
3	250pl/m2 (95kg/ha)	50 kg Urea
4	250pl/m2	100kg Urea

Results

In this trial there were no differences in yield (t/ha) between the different nitrogen and sowing rates.

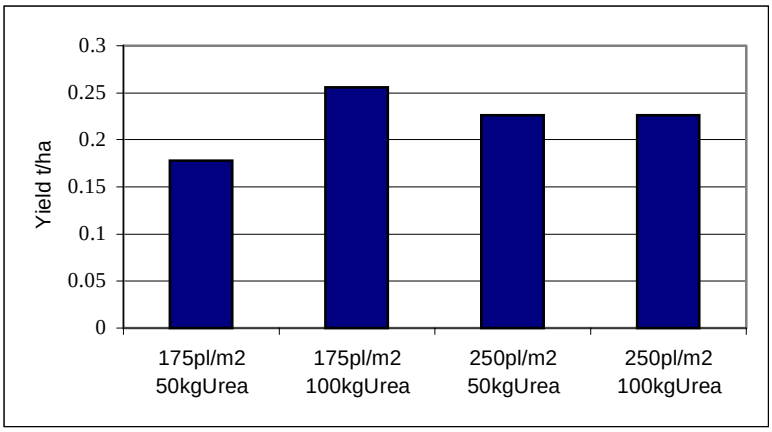

Figure 1. Yield (t/ha) of triticale under different sowing rates and nitrogen applications

In this trial plant counts and tillers numbers were recorded and listed in Table 2.

Table 2. The effect of seeding and urea rates on plants and tillers.

Treatment	Plant counts/m^2	Tiller counts/m^2	Tillers per plant
Target 175pl/m^2 50kgUrea	200	274	1.4
Target 175pl/m^2 100kgUrea	210	287	1.4
Target 250pl/m^2 50kgUrea	255	339	1.3
Target 250pl/m^2 100kgUrea	280	325	1.2

Interpretation

Due to triticales long grain filling period it is more susceptible to dry spring conditions, and the very low yields recorded in this trial indicate that Tahara has been affected accordingly, with yields ranging from 0.18t/ha to 0.26t/ha.

Triticale is also known to have low tiller numbers in some varieties, and to achieve similar plant populations as wheat, seeding rates should be increased to compensate. In this trial tillars ranged from 1.2 to 1.4 tillers per plant. At the higher sowing rates tiller populations did not vary when compared to the lower seeding rates.

Commercial Practice

Aim to achieve the same plant populations as for wheat – ie. set the seeder 25-40% (NSW Agriculture) above the setting recommended for wheat as triticale grain is larger than wheat grain.

Purpose/growing conditions	Best sowing rate (kg/ha)
Grain only	60-90
Grain and grazing	100-120
Undersowing pastures	35-45
Irrigation / high rainfall	100-120

Grazing

The ideal grazing time is when the canopy is closed (GS21 – GS29) using a continuous grazing system. Do not graze below 5cm with prostrate varieties and below 10cm for erect varieties.

Extra care is needed with on-farm storage as it has a softer grain than other cereals and is more prone to insect attack.