

Wheat production and quality in practice: Wheat growing in South Canterbury

J. L. Chapman

Waitohi, South Canterbury

Preamble

We farm at Waitohi, where the soil type is Waitohi silt loam over Waitohi clay. This soil is subject to waterlogging. We grow mainly autumn wheat, usually about 100 hectares and find it is a low risk crop. Our yields vary between 6 and 8 tonnes/hectare with an average of about 7 tonnes/ha. We have managed an average of 12.5% protein for our milling wheat and 8.7% for biscuit wheats in the last 2 years.

I'll outline some of the factors I see as important in wheat growing.

Factors Affecting Yield

Establishment

The first factor we see as important is the establishment of a good root system to give the plant the ability to source nutrients and locate moisture. Soil structure is important to allow good root development and we place an emphasis on top-working then ploughing to about 200 mm.

Early sowing is important. Some cultivars are more sensitive to sowing date than others. We generally sow 85 to 90 kg/ha with early sown wheat.

Fertilisers

We base our fertiliser application rate on putting in what we take out. We also make sure nitrogen is available at critical times, usually about 130 kg/ha applied just before tillering to maintain a good tiller population.

We use a lot of cycocel, between 1 and 2.5 litres/ha and timing is important, between 1st and 2nd node.

Disease control

It is important once a good crop is established to give it every chance. Having made the initial investment it is important to maintain the inputs to ensure the money is not wasted. We put on an early insecticide for BYDV, an early preventative fungicide and we keep a close eye on stripe rust, spraying as soon as it is seen. When we

see stripe rust we usually use a knock-down spray and then spray with a preventative. Just after ear emergence we put on a fungicide over all the wheat and we keep the flag leaf clean with further sprays if necessary.

Weed control

Chemical weed control is something we need to minimise and tyne weeding may have a place. Residue free wheat may be required in future and we need to prepare for this.

Improving paddock uniformity

We have a number of wet spots, low fertility areas, and humps and hollows. We 'iron out' these problem areas by paying particular attention to them, draining the wet spots and controlling the weedy areas. This can improve overall yields significantly.

Factors Affecting Quality

Biscuit wheats

It is important to have a long growing season for low protein, so our biscuit wheats are sown first. It is important to establish low plant populations and supply sufficient nitrogen. We estimate plant nitrogen requirements and apply nitrogen pre-tillering. If the plants yellow or don't thrive, we apply another 10 or 20 units of nitrogen to ensure high yields are maintained. I always emphasise a healthy flag leaf kept alive for as long as possible.

Milling wheat

We aim to supply sufficient nitrogen to meet the yield estimate and a 12.5% protein level. It is important however, to check the yield assessment at growth stage 5. We do a plant count, head count and strip open the plant to count spikelets.

If the yield has a potential above the original estimate, then more nitrogen must be applied. We apply nitrogen from ear emergence onwards, during rain if possible.

Recently we have used 'Crop Plus', a foliar supplement which contains biological micronutrients, endo- and exo-enzymes, hydrolysed protein complexes and plant growth promoters. We have used it for two years, after finding we had a protein increase of about 0.5% on trial areas. We believe it assists the plant to source nitrogen and take up other nutrients, resulting in a higher protein. However, yields need to be in excess of 5 tonnes for an economic return to be achieved.

In conclusion, we believe that although we are not paid for high quality, it is important to have a saleable commodity.

Soils

In a high input system it is important to look after the soils. Crop rotation to maintain soil structure is important. Nitrogen availability is also a key factor in maintaining good yields.

We believe it is important to keep a balance of other nutrients, especially sulphur, to help in the prevention of disease and the maintenance of quality.

Cultivar

Cultivars are very important. Disease resistant cultivars are the key to growing the crop without chemicals. However, we believe we will always need to apply nitrogen and possibly late fungicides.

Last year we had an Autumn Wheat Recommended List Trial on our property. The yields were high. The trial was sown in early May, received early weed control, 150 units of nitrogen before tillering, 5 fungicide applications and Crop Plus, but no late nitrogen. It also had 1.5 ℓ of cycocel. The results ranged from 9.0 tonnes to 11.8 tonnes per ha.

Points to note from these trials are:

- We are nowhere near our yield potential.
- There is significant variation in cultivar performance compared to the national list. For example, Monarch did very well and we will try this in a larger area this season.
- The trial had 5 fungicide applications because it was grown in a paddock of Brock. Some resistant cultivars also seemed to respond to the fungicide application.
- 'Crop Plus' improved the protein content. The paddock yielded 9.0 t/ha with a protein of 8.6%. In the trial Brock had a protein of 9.7% and a yield of 10.6 t/ha. The only difference was the application of Crop Plus to the trial.

Conclusion

I would comment that every year, every area and every cultivar have their own differences. It is important to evaluate the interactions, to observe and learn about the best reactions to timing of inputs. This approach will produce dividends.

Wheat also tends to compensate quite well and if mistakes are made, with nitrogen for example, late applications can make up for early deficiencies. Therefore, we believe you should never give up on a crop, especially after all the effort that has been put into it in the early stages. You will always get a good return on investment and on inputs.

A final tip for those of you who have old harvesting machinery. Get a cell phone, so it is quicker and easier to call the dealer for parts!