

EXPERIENCES IN CANTERBURY WHEAT GROWING

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INTRODUCTION

Let me explain the management of wheat growing on my farm at Methven. But to understand what I am doing, and the reasons for it, let me first give you some background to the farm and its previous management.

I am farming 290 ha of Lyndhurst silt loam, situated 5 km from Methven. The average annual rainfall is about 810 mm but we have a range from 610 mm to well over 1250 mm and, like most of Canterbury, a drought or flood may occur at almost any time of the year. The main feature of the climate is our exposure to strong dry Nor-west winds, straight out of the Rakaia Gorge.

It is a dryland farm, as no irrigation water is available.

ROTATION

The farm has been run as an all arable farm for the last 10 years. The first eight years of this period saw a rotation strictly adhered to, with a few minor exceptions. The rotation was:

two crops of Wheat, followed by
Field Peas, mainly maple, then to
Ryegrass for seed, then
Peas again.

When the rotation was originally designed,
the Wheat was for profit,
the Peas for fertility, and
the Ryegrass for soil structure.

However as it turned out;
the Wheat was not any more profitable than the
other two crops;
the Peas did very little for fertility, but were
a good break crop;
the Ryegrass had its desired affect on soil
structure.

No Rotation Now.

Over the last two years the rotation has almost completely
disappeared. There are three main reasons for this:

- * Diseases - Diseases such as eyespot and take-all were a problem, especially in second crop wheat, therefore we are now avoiding, where possible, growing two wheat crops in a row. Fusarium root rot has also caused failures in pea crops, particularly in the last two wet seasons.

- * Weeds - Weeds such as onion twitch and creeping fog were becoming a very real problem and had us worried until the arrival of roundup. These weeds are now much less of a problem but more of an expense.

- * Introduction of other crops - Crops such as white clover and several other specialist crops are now grown.

WHEAT

The wheat area this coming year totals 90 ha or about 30% of the total farm area. Let me now concentrate on the wheat side of the enterprise, and look at it under the following three headings:

Establishment

Spring Management

Harvest

within the context of this coming seasons programme.

Establishment

The first thing decided on was the variety to sow as this often has an important affect on the profitability of the resulting crop.

This season Rongotea is being sown, as it has shown to be the most profitable variety that is suitable for our area.

These are the results of the latest conclusive autumn variety trials conducted on our property, by Mr. Ian Lancaster from C.R.D., D.S.I.R. Sowing date was 15th May.

| <u>Variety</u> | <u>Yield</u> | <u>Value at \$167/tonne</u> |
|----------------|--------------|-----------------------------|
| Rongotea | 5,644 kg/ha | \$942/ha |
| Oroua | 5,155 kg/ha | 860/ha |
| Kopara | 4,533 kg/ha | 757/ha |

Sowing date: I have always been a believer in early sowing, but I have no firm evidence to show this to be any advantage. Sowing is normally done, when possible, between 12 - 25 May.

I find it extremely frustrating that the Ministry of Agriculture & Fisheries have been doing (in my opinion), such useless trials as "The Effects of Plot Dimensions on Trial Results", when such a basic and important thing as sowing date, has not, to my knowledge, been looked at, at least for many years in central Canterbury. However, I get the impression that there is a new generation of officers in the M.A.F. who are now looking at the basics of wheat production.

Seed treatment: All seed was treated this year with Baytan, as it is the most broad spectrum seed treatment available covering the important seedborne diseases.

Sowing rate: This was arrived at by using the 1,000 grain weight of the seed and estimating the expected field emergence, with an aim to establish between 200 and 250 plants per square metre. A quick rule of thumb that I use is - if the germination of the seed and seedbed conditions are both good, then I multiply the 1,000 grain weight by three. This year the 1,000 grain weight is 42 grams therefore 125 kg/ha is our sowing rate.

All wheat is sown with 250 kg/ha super phosphate, to main-

tain an adequate soil phosphate level.

A granular systemic insecticide has been used where grass grub have been expected to cause problems, and it will, where used, protect against cereal aphid.

Sowing depth is watched closely to see that seed is covered, but not too deep.

Finally in the establishment phase, plant counts will be done four to five weeks after sowing. This stage is the easiest time to get an accurate count because plants have one strong leaf, and therefore there is no confusing what is a plant and what is a leaf of another plant.

Spring Management

Nitrogen: Nitrogen policy is formulated in late July when the wheat is at growth stage two. There are two factors to consider - amount and timing.

The *amount* of nitrogen to be used will be determined by the paddock history and the amount of winter rainfall. We have used the commercially available soil nitrate testing service in the past, but it has usually only confirmed what we have already decided on, as this service, although it is a good one, is (in my opinion) about one month too late.

The *timing* of Spring nitrogen will be determined by plant count. If this count is low, more nitrogen will be applied at an early stage - that is at growth stage 2 to 3 and probably in the first week in August - to promote more tillering. Otherwise, about half will go on at this stage and the other half at growth stage 5 to 6, which will be

in the first half of September. In other words a total of between 80 - 100 units or 500 - 600 kg/ha of sulphate of ammonia is used.

Disease: Recent experience has shown that it is necessary to control speckled leaf blotch. This has to be done early, when symptoms are almost invisible. This will be done with 500 gm/ha Benlate and one percent spraying oil before the end of August.

With the availability of Bayleton we can now control mildew, if it is likely to be a problem, and control rust if it appears. This requires very regular inspection of the crop during the growing season.

We expect to spray by helicopter just after flowering, with 500 ml/ha Bayleton to protect the flag leaf and hopefully one or two below it from disease during the important grain filling stage. We will also check the crop for grain aphid before the helicopter arrives and add insecticide where necessary.

Weeds: If twitch weeds are present it is too late to do anything; they should have been eradicated before sowing.

Wild oats get first priority as our long term aim is to eradicate this weed by preventing any seed returning to the ground. If it is thought that any paddock, or part of it, will be unroguable, then we will spray with Avenge, which has in the past given very good, consistent results. The whole farm is mapped showing all patches of wild oats, so we know where to look to find them and this map is updated every year.

Broadleaf weeds: control may not be economic for the wheat crop, but my aim is to keep the area relatively clean for future crops.

Harvest

I have no artificial drying facilities for wheat, so large capacity machinery is used to harvest when conditions are right. We have had no sprouting problems in the last ten years of arable farming.

I installed my own weigh-bridge last year, which is used in conjunction with a seed dressing plant on the farm. But it also gives us instant, accurate yield data from each paddock at harvest time, allowing for different management practises to be accurately compared and it is proving to be an extremely useful management tool.

Yields over the last three seasons with Kopara, have averaged as follows:-

| | | |
|---------|-----------|--|
| 1977/78 | 3.82 t/ha | this was the last and severest of the very dry seasons |
| 1978/79 | 4.48 t/ha | |
| 1979/80 | 4.31 t/ha | however, if we exclude 28 hectares extremely hard hit by take-all then the figure is 5.2 t/ha. |

SUMMARY

In summary let me give you what I have called my blue print for wheat production for maximum returns on my farm.

- * Make sure the paddocks going to wheat are clean from twitch weeds.
- * Treat seed with Baytan.
- * Sow the right variety on or about 15 May and do not plant too deep.
- * Sowing rate set to aim at 200 - 250 plants per square metre.
- * If plant counts are satisfactory, apply 40 - 50 units of nitrogen at growth stage 2 to 3 and another 40 - 50 units at growth stage 5 to 6.
- * Spray with Benlate 500 gm/ha and one percent oil in the last week of August.
- * Spray weeds in September - wild oats first priority, broadleaf weeds next.
- * Spray with 500 ml/ha Bayleton, post flowering, by helicopter.
- * Rogue any wild oats not sprayed, before seed is shed; this usually requires covering the paddocks twice.
- * Harvest as soon as grain moisture is at an acceptable level.