

WHEAT UNDER IRRIGATION

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THE FARM

Situated about 7 km north of Ashburton on the western side of State Highway 1, it consists of 310 ha of Lismore stoney silt loam, around 15 - 18 cm in depth, over a mixture of clay and shingle and is quite free draining.

The soil has a field capacity of around 75 - 80 mm of water and in a pasture situation, during late spring/early summer, moisture availability will reduce to wilting point in around 18 - 21 days - assuming no rain falls and depending on winds.

The property is now virtually all irrigated, by the border-dyke method and is run as a mixed sheep and cropping unit.

I have moved towards more cropping as development of the irrigated area increased, because of water availability, the design capacity of the water supply being suitable for irrigation of approximately two thirds the area commanded. In a total pasture situation I could only count on being able to irrigate about 80 ha per week which would give a return time of 28 days. However, with a proportion of the farm in autumn/winter sown crop and a further part in early spring sowings followed by some later sowings of crops such as linseed after spring grazing, I find that I can usually

stretch the available water over the whole area.

TABLE 1. CROPPING PROGRAMME (1980/81)

peas	12 ha
wheat	65
oats	6
barley	26
lupins	6
grass seed	40
white clover	45
red clover	15
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total	215 ha

I have started, during the last three years, a continuous rotation of wheat and white clover. So far I am quite happy with it; however time will be needed to see if any problems arise with ~~take~~-all and so on. In fact during the previous season one paddock of wheat in this system was infected with a significant amount of eyespot which could be partly put down to the higher humidity in the base of the crop caused by vigorous clover regrowth. This will be better controlled this season!

WHEAT GROWING UNDER BORDER DYKE IRRIGATION

Drilling

It is generally accepted that accurate drilling would be one essential input to maximum yields. We need even

spacing of seeds down the row and also even and optimum depth. A significant problem, regarding good depth control, is being experienced when working across the border dykes. Firstly, as the rear wheels of the tractor cross the dyke the front coulters of the drill can almost come out of the soil and at the same time the rear coulters tend to penetrate more deeply. Secondly, as the drill itself climbs the dyke the rear coulters tend to come out of the soil with the front penetrating more deeply and vice versa as the drill descends back to level ground. As I see it this means that some 15% of the paddock is sown at more or less than optimum depth.

I would like to think that staff at Winchmore Research Station could look at this aspect. For my own part I have been considering a double disc type opener, which has depth gauging bands fitted to each disc to maintain a more precise depth.

Sowing rate

In previous years this has been around 125 kg/ha. If it is taken that 70% of this seed survives to maturity and the 1,000 seed weight is 42 grams, this leaves a plant population of 208 per square metre, or approximately 83% of the desirable minimum.

I have tried to stimulate tillering with nitrogen in early August, but the additional tillers do not seem to produce very good heads and some of the smaller tillers die off. It is my observation that if each plant can produce two strong tillers with good heads, I would be well on the way to better yields. The smaller tiller problem may be connected with the soil type or any of many other possibilities.

However, this season I have been sowing in May at 180 kg/ha with 1,000 seed weight of 43 grams, which at 70% survival to maturity gives a plant population of 293 per square metre.

Having hopefully got somewhere near my target figure of 290 per square metre, I intend to apply most of the nitrogen fertiliser after tillering at growth stage 5.

This should:

- * avoid producing too many smaller or secondary tillers.

- * stimulate the two main tillers.

At a later stage I would use a little more nitrogen to help with grain weight.

An insecticide is being used with this years plantings.

Rates of Nitrogen

Rates of nitrogen varies according to paddock history, crop appearance and the season, but would be around 70 - 100 kg/ha of nitrogen. The fertiliser has usually been applied as liquid urea because of the good distribution pattern possible. It is also possible to include chemical applications at certain times.

Timing of Irrigation

I try to irrigate from early October - depending of course on the seasonal conditions - to keep vegetative growth and

head formation going as much as possible. Moisture during the earlier part of the spring appears to be quite essential as I find patches missed that never seem as good - even though they may be irrigated at the booting stage. I also ensure that adequate moisture is available during the booting stage and if water is available the crop would be irrigated at flowering. It is essential to start irrigating early rather than when the crop really needs water because by the time watering of several paddocks is completed some damage could have been done.

Crops need to be inspected often. If chemicals such as fungicides are to be used, they should be applied earlier rather than later when damage may have already been done and when perhaps the chances of an economic response have lessened.

CULTIVATION

Cultivation time out of clover usually amounts to three hours per hectare including rebordering and drilling, broken down as follows:

3 surface cultivations	35 minutes
ploughing	35
rebordering	25
2 cultivations and harrowings	25
drilling	60

If I allow, say, an average of \$40 per hour for tractors and grader the total cost would be around \$120 per ha to go from one crop to another although this could be halved by undersowing the next smallseeds crop.