

'European style' production benefits

By Donald McMurrich, sales agronomist, Cotton Grower Services

With more than a touch of irony, it has been an irrigated cotton farm ("Calrossie") near Boggabri in the often harsh climes of northern NSW, which has provided an opportunity to test the appropriateness of 'European style' grain production systems in the Antipodes. With water availability no longer a restraint, we could implement the same management principles that have evolved in Europe, New Zealand and other, less harsh, cropping environments.

These principles have delivered the kind of production increases shown in the productivity chart for Germany in the preceding article — principles that I believe have the potential to contribute to significantly increased yields and returns across Australia.

SYSTEM OVERVIEW

This is the second season we have been working on this production system, attempting to adapt and refine it to suit the area, the available varieties and the very unpredictable climate.

There are many aspects to the current European production system but throughout, attention to detail is critical — and this applies from the ground up.

Pre-plant

After the previous crop is harvested, or at the end of a fallow period, we sample the soil to determine the available nutrients and determine what starter fertiliser will be needed. Starter fertiliser MAP was the preferred form because of its slightly acidifying effect on these alkaline soils.

Over the past two seasons we have been working with Phosyn performing plant tissue analyses on a regular basis.

Varietal selection

Experience and local yield and quality trial results prompted us to use Gairdner barley, H45 bread wheat and Arrivato durum wheat.

Pest control

In barley and wheat I believe we may not be controlling aphids as well as we might and this inhibits our control of Barley Yellow Dwarf Virus. This year we will be trialing seed treatments versus over the top insecticide applications for the control of aphids.

Establishment

On Calrossie last season the decision was made to broadcast the wheat seed over the harvested cotton area, incorporate with discs and water up. A more precise approach is planned for this season.

Our target established plant population is dependent on a number of factors — the higher the plant population the higher the level of inputs required to realise on yield.

At establishment we need to know very clearly the levels of available N in our soil.

We want to control the number of plant tillers — too much N means too many tillers; too many tillers with an already high plant population will lead to too many ears per square metre; too many ears per square metre means too many grains; too many grains equals high screenings.

Highly fertile soil or early application of nitrogen tends to promote early growth in all crops, similar to early sowing, and should be avoided if aiming for high yields.

On Calrossie, when rotating into irrigation blocks after a good performing cotton crop, there will be limited available N in the soil. But after another crop or a fallow, care would have to be taken because an excess of available N could be a possibility.

Canopy management

• Late tillering

In the spring we began top-dressing nitrogen — usually Nitram. The rate of N to apply depends on the variety, crop, expected yield and intended market of grain.

• Stem extension

As the crop moves into its reproductive stage (Zadoks GS 31 or stem extension) a plant growth regulator (PGR) can be considered to restrict the height of the plant and reduce its tendency to lodge — a real problem in high yielding crops as we discovered.

The decision to go with a PGR will depend on the plant variety, amount of N used and expected yield. In wheat Chlormequat (Cycocel) was our only option at this growth stage. On the barley we used Ethrel.

Stem extension (Zadoks 31) is also a critical time for a fungicide. By increasing the plant population, using PGRs and having irrigation we are creating a 'fungus-friendly' microclimate within the crop canopy.

Depending on the variety, I would sug-

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TABLE 1: High, middle and low input irrigated wheat gross margins per hectare, Calrossie Farm, Boggabri, 2003

| Income (\$/ha) | High input | Middle input | Low input |
|---|-----------------|-----------------|-----------------|
| High: 8.6 t/ha @ \$180/tonne | \$1548 | | |
| Middle: 7 t/ha @ \$180/tonne | | \$1260 | |
| Low: 5 t/ha @ \$180/tonne | | | \$900 |
| Variable costs (\$/ha) | | | |
| Establishment | 100 | 100 | 100 |
| Seed | 110 | 80 | 40 |
| Starter | 110 | 110 | 150 |
| Herbicide | 20 | 20 | 20 |
| Plant growth promotant (Cycocel) | 20.60 | 20.60 | – |
| Spring nitrogen | 200 | 120 | – |
| Micronutrients | 5 | 5 | – |
| Application | 40 | 30 | 10 |
| NatraKelp | 40 | – | – |
| Fungicides | 60 | 35 | – |
| Water: \$50 if one watering needed | 100 | 100 | 50 |
| Harvesting | 110 | 70 | 70 |
| Haulage | 30 | 20 | 20 |
| Levies | 18 | 18 | 18 |
| Total variable costs per hectare | \$963.60 | \$728.60 | \$478.00 |
| Gross margin per hectare | \$584.40 | \$531.40 | \$422.00 |

gest very susceptible varieties of wheat and most barley crops need a two-spray program — one application at Zadoks 31 (the start of stem extension), then another at Zadoks 39 (when the flag leaf has emerged).

The rates and products will vary according to the season and variety.

Growers should also note that fungicides are crop protection products, not disease eradication products. They should be put onto green leaf areas (to keep them green) at given growth stages.

At present there are only a limited number of fungicides in the Triazole family available to us for commercial use.

Together with NSW Agriculture

(Gunnedah) and chemical companies we are trialing other fungicides.

These have proven to be superior products internationally and the early indications are that Australian cereal crops are similarly responding well to them.

LAST SEASON'S RESULTS — TABLE 1

Harvesting costs went up with the increase in yield, largely because of lodging. We must work to avoid this — it costs money because it slows down the harvest, it leads to increased grain loss prior to and during harvest, and can cause down-grading of grain quality in a wet season — and may lead to an additional cost with grain drying.

We have lodged an application with the APVMA for more PGR trials. These include later PGR use to prevent lodging in wheat.

'EUROPEAN STYLE' IS POSSIBLE

We have established that it is possible to grow cereal crops under irrigation in NSW using a 'European style' production system — a system which can increase yield and significantly improve the net return per hectare. It is also a system that delivers rotational benefits, which include a large amount of organic matter being returned to the soil.

We are now asking ourselves how the winter cereal production system and varieties can be improved for the future.

Ultimately we want to tailor an agronomic package to a given variety. In Australia we believe there is a need for improved 'specifically for irrigation' varieties with a higher genetic yield potential.

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Legal challenges launched against water sharing plans

By Paul Frederick, Kemp Strang

Kemp Strang is acting for applicants in five different sets of proceedings before the New Land and Environment Court that challenge the validity of the Water Sharing Plans for:

- The Upper and Lower Namoi Groundwater sources;
- The Namoi Regulated River Water Source;
- The Lower Gwydir Groundwater sources;
- The Gwydir Regulated River Water Source; and,
- The Lower Murrumbidgee Groundwater Sources.

The challenge to the plan for the Upper and Lower Namoi Groundwater sources is

set down for hearing for five days from May 10, 2004. The challenge to the plan for the Gwydir Regulated River Water Source is set down for hearing for five days from June 7, 2004. The other challenges have not yet been set down for hearing.

The challenges raise various issues relating to the conduct of the Minister for Land and Water Conservation (now the Minister for Natural Resources) in making the plans and the content of the plans themselves. Irrigators may be interested in three of the issues raised in the challenges:

- In general, little or no assessment of the socio-economic impacts of the proposals contained in the plans was carried out prior to those plans being gazetted. It will be

argued that because of this the plans were made in breach of the Water Management Act and are therefore invalid. Expert evidence from an economist will be used to support the argument that the socio-economic effects of the plans were not properly assessed or considered by the Minister.

The groundwater plans contain formulas for the reduction in water entitlements over the 10 year life of the plans. The formulas are arguably inconsistent with each other. The delays in the implementation of the plans from July 1, 2003 to July 1, 2004 have resulted in further complications in the operation of the formulas. If these things can be established the Plan, or part of it, may be invalid.

In August 2001, Cabinet made a decision to cut entitlements across the board rather than to use weightings based on the history of extraction by each licence holder. This has resulted in increased economic impacts on active irrigators.

It will be argued that the Minister erred in law by following the Cabinet decision in making the plans without considering the particular circumstances which were relevant to each Plan. It is interesting to note that in 2003 the Minister announced in Parliament that the Government was reconsidering its policy of across the board cuts.



Irrigators in three valleys are taking action against the NSW water sharing plans.