

3030 Field Day Notes

“Where might forages fit?”

October 2009 - Greg O’Brien

Project 3030 aims to increase dairy profits by increasing the consumption of home-grown feed. Perennial ryegrass remains the cornerstone of southern dairy systems and getting the best from ryegrass remains the first priority for profitable dairying.

However, perennial ryegrass does not fully meet cow requirements. Part of the energy gap is typically met by the purchase of concentrates. Cow fibre requirements can be met by home-grown ryegrass silage and hay. On many farms, there are still gaps in feed supply over and above this.

Alternative forages may have a role, grown either on the milking platform or on out paddocks.

Cost-efficiencies can be gained by incorporating forages in a pasture renovation program. In many rainfed districts, perennial ryegrass does not persist as well as desired, thinning within three years. In this instance, options to improve growth potential could include renovating ryegrass pasture more regularly. However, being established from seed, crops and pastures will have a down time in feed supply that needs to be managed. So, it is important to start with a plan.

When does your feed shortage occur and what is the best way to fill it?

Strategies include the use of urea on pasture, conserved silage and hay, agisting off young or dry stock, and purchasing feeds. Each has their own set of costs, risks and management issues.

Do your homework. Is it a good or bad idea to use alternative forages on the home farm or turnout block to help increase production and fill feed gaps? Or do they create increased risk with insufficient profit?

The first four years of 3030 farmlets indicated that increased dry matter production could be achieved by the growing of crops on the milking platform but profits did not increase as much as desired. Part of this was due to dry seasonal conditions that required extra purchased feed on the farmlet - due to this farmlet having a much higher stocking rate. Part was due to failed summer crops in the dry summers, part was due to poor utilisation of the winter cereal silage grown and part was due to the cost of conserving the cereal silage and feeding it back. Addressing these issues will increase the profitability, whilst the reverse is also true.

Ways of reducing costs associated with growing crops include more direct grazing and less conservation, incorporating cropping in the renovation program, and utilising the turn out block so not to reduce the performance of the milking platform. Each option has its own issues. Direct grazing may be cheaper, but can the quantities needed be grown (eg summer crops to fill summer gaps are subject to rainfall variability). Transport of fodder back to the milking platform can incur significant costs.

In relation to costs, it costs almost as much to grow a failed crop as a high yielding crop. Cultivation costs, seed costs, fertiliser costs, etc can be diluted by a high yield or the unit price of feed can sky rocket if low yield or consumption occurs.

Skimping on costs can be risky. If you save \$100 - 200 per ha in costs but reduce yield by several tonnes or more, you have missed out on some pretty cheap feed. Similarly, cost per tonne of feed can rise dramatically if the timing or management results in a significant yield loss.

General Considerations

There are many more forages that can be grown in addition to those currently being trialled by 3030.

3030 looks for cost-effective ways of filling feed gaps whilst increasing total annual consumption and profit.

Crops that complement each other are essential. Sometimes a compromise might need to be made (eg harvest one crop early to optimise the performance of the following crop or pasture). Exploring options to ensure good agronomic fit as well as fit with the overall feed plan is important.

Look at other species or mixes to identify those that best suit your needs.

Today is about exploring options 3030 has trialled.

What do alternative species offer?

Project 3030 is currently looking at annuals and short rotation herbs and legumes. All are suited to the rainfall expected in southern dairy districts. For some, it is about taking advantage of the more reliable winter/spring growing conditions to produce high yields, whilst other options focus on adding summer active perennials with annuals via short-rotation cropping programs.

The transition between crops needs to be well timed and as short as possible to maximise yields and returns from paddocks used for this purpose. These options will most likely be more expensive than perennial ryegrass pasture, so must have significant upside to warrant the extra work and risk associated with the cropping program.

Forage species in the trials have a range of attributes making some more suited to milking stock than others. It is important to consider what feeds are required by the dairy business and in what quantities.

Winter cereals

Winter cereals are high yielding, are tolerant of lowish soil moisture conditions but are of moderate quality (determined by stage of maturity at harvest). They don't like prolonged waterlogging. Cereals can be grazed with minimal impact on total yield, provided they are grazed at the correct time (source notes on cereal management www.dairyextension.com.au and go to Project 3030 resources)

Cereals do not require grazing, making them attractive where grazing is not available or required.

They should only make up a small portion of a milker diet (up to 20% of milker drymatter intake if combined with higher quality feeds) due to their high fibre content together with lower than desired protein and energy content. They are a good companion to lush pasture plus grain diets (eg winter and early spring). Cereal silage is a good dry cow diet or can be combined with high energy feeds to grow dairy heifers.

Winter cereals are flexible as they are not all the same. They differ in their ideal sowing dates, maturity dates and grain to stem ratio at harvest (affecting quality). Those with longer growing season are good for early sowing, providing autumn/winter grazing and fodder conservation. Some cereals are very winter active, making them suited to late sowings whilst still yielding well at harvest.

Possible roles for cereals includes:

- Grown on a turnout block that doesn't have grazing stock, to provide moderate quality silage.
- Part of a double cropping renovation program.
- Early autumn sown on a portion of the farm to provide early grazing followed by silage (eg many forage oats). Sowing with annual ryegrass enables several grazings plus quality silage to be made.
- Winter sown following a crop harvested in late autumn/winter or following damage by redheaded cockchafers or autumn crop failure (eg many barley cultivars)

Winter cereals/legume mixes

In recognition of the lower than desired feed quality of cereal silage, Project 3030 is looking at cereal/legume mixes. If grazed, peas will not regrow, so are mainly a conservation option. The paddock needs to be relatively free of broad-leaved weeds. There is information on yield and quality of cereal/pea mixes and trials using other cereal/legumes are underway at DemoDairy.

Basically, having peas in the mix improves quality (particularly protein). The stature and the proportion of peas in the seed mix seems to be important. Short-statured cereals seem best, with tall-statured cereals tending to dominate the pea component. Having 75% peas in the mix (by seed weight) results in a high proportion of pea in the harvested crop without affecting yield greatly. A pure stand of peas can yield well but may lodge, causing difficulty with harvest (hence cereals are used to support the pea). Some peas are reported to be self-supporting.

Possible role of cereal/legume mixes include:

- Silage; where quality and yield are important and there isn't a requirement for grazing
- Maybe conserved as hay but drying peas without leaf shatter could be challenging.

Annual ryegrass

Annual ryegrass is a species that is familiar to dairy farmers and so its growth requirements are well understood, giving reliable results. Quality of ryegrass is high (unless harvested as a mature crop). It requires multiple harvests or grazing to ensure high yields (unlike cereals and peas that can be more efficiently harvested in a single harvest).

Possible role of annual ryegrass includes:

- Flexible option - grazing with the option of high quality silage
- Part of a double cropping/renovation program

Sulla

Sulla is a short-lived (2-3 years) legume that is suited to short growing seasons. It is relatively new in southern Victoria but has potential for high silage/hay yields in spring. Sulla doesn't like wet feet and is dormant over summer.

It has the advantage of lasting more than a year (reduced sowing costs) and may be able to produce beyond 2-3 years if re-seeding can be managed successfully.

Possible role of sulla includes:

- High yielding good to high quality silage (or hay?)
- Minimal or no grazing (although it has been grazed successfully, there isn't local experience).

Annual legumes

Annual legumes are attractive as a high quality feed for fodder conservation. Clovers tend to be a slow growing seedling, providing little grazing before spring. There has been exceptions to this that need to be better understood (eg good winter growth of Balansa was recorded on the 3030 farmlet and was associated with high seeding rates and early autumn establishment). They are a moderate yielding, high quality species.

Peas and vetches can provide higher yields than clovers. Peas have suffered from wet soil conditions more than the other legumes trialled by 3030 to date.

Possible role of annual legumes includes:

- Due to their quality, conserved legumes are attractive as a milker feed or for growing dairy heifers.
- They can build soil nitrogen for following crops and pasture, plus may provide a disease break in a cropping rotation.
- Legumes can be conserved as hay, reducing conservation costs whilst retaining good quality. It may be more difficult to conserve peas as hay due to high yield together with the thickness of stem and pods creating difficulty with drying.

Chicory

Chicory and other perennial herbs such as plantain are short-lived, summer active perennials (2-3 years stand life). Due to their deep tap root, that can tap moisture to depth, providing valuable feed when pasture is limiting over summer/autumn. They are relatively pest resistant making them attractive where pests limit performance of species currently grown.

By providing direct grazing, costs associated with conservation are avoided. More yield data is required, but the yield potential appears lower than other species. Quality is high. It is important to have good weed control before sowing, as control of broad-leafed weeds can be a problem.

To overcome the issue of yield, whilst retaining the advantage of summer grazing offered by chicory, 3030 has trialled spring sown chicory with autumn drilled cereal. This has been successful (see talk by Joe Jacobs).

Possible role of chicory includes:

- Base forage in a short-rotation cropping program to fill summer/autumn feed gaps in milker feed plan.
- Drilling winter forage cereals in autumn can be used to increase annual dry matter yield - providing a moderate quality silage and possibly a winter grazing. The ability to direct drill another forage into established chicory is a cost saving over double cropping options that require cultivation.
- Can be mixed with plantain and red clover (and grasses - but grasses may dominate the mix).