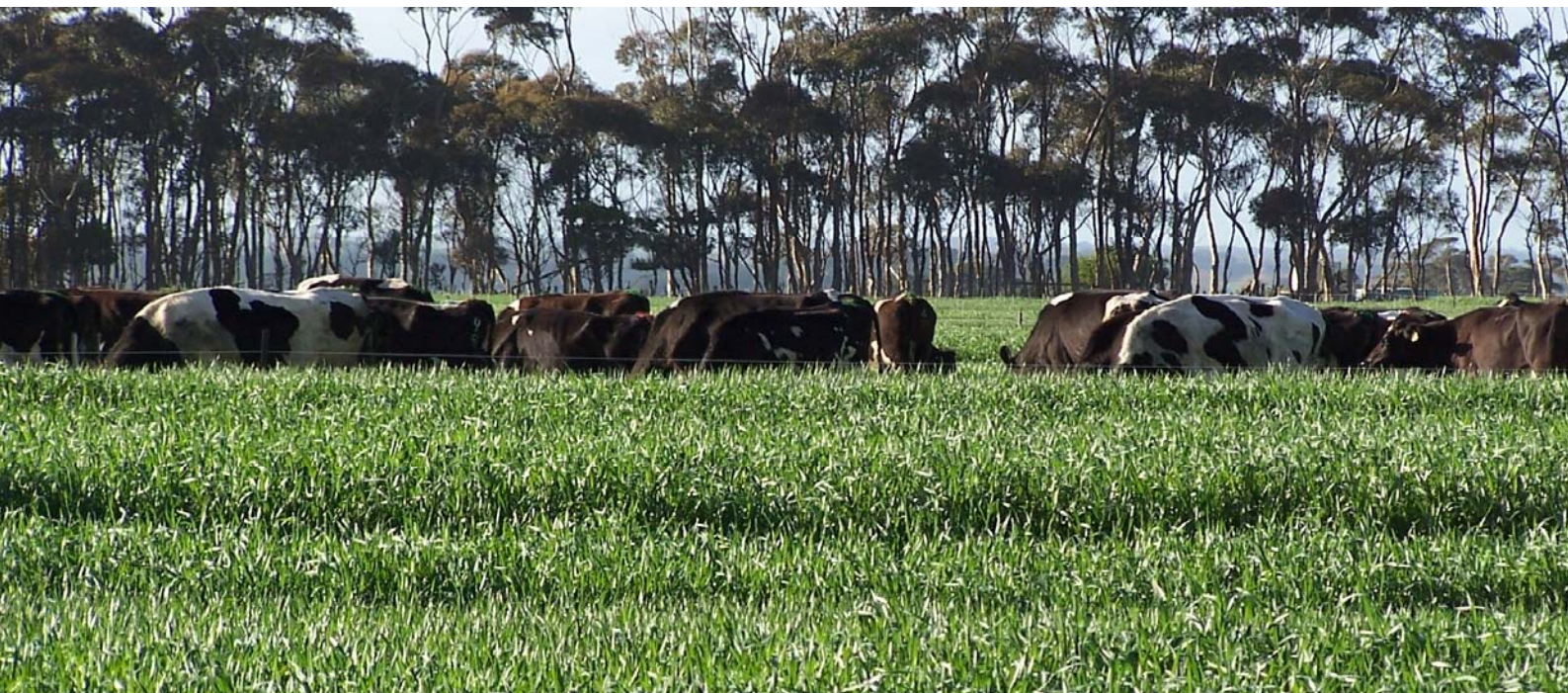


Have I got it right?

Key learnings from the 30:30 project



FIELD DAY NOTES

February 2010

Guest speakers:

Host farmer

- Overview of the farm

Nathan Shannon

- The pasture story

Dr David Chapman

- Where forage crops fit in

John Mulvany

- Your exposure to risk

Date: Tuesday 2nd February 2010

Time: 10:30 - 2pm

Host Farm : Neville and Evelyn Watkins

Date: Wednesday 3rd February 2010

Time: 10:30- 2pm

Host Farm: Mark and Lynda Evans

Date: Tuesday 9th February 2010

Time: 6:30 - 9:30pm

Host Farm : Mick and Lee Ryan,

Date: Wednesday 10th February 2010

Time: 10:30- 1:30pm

Host Farm: Noel, Gale & Jason Burleigh

Date: Wednesday 10th February 2010

Time: 6:30- 9:30pm

Host Farm: Lisa and Eddie Dwyer

Many thanks to each of the host farms who have opened up their farms for us

Alternative forages

A) Why alternatives?

1. Feed gaps: always present, and they get larger as stocking rate increases and/or seasons fail more often

- Controlling costs of production is critical for business profit
- Feed is a big component of costs (usually the largest single item)
- Pasture is the cheapest feed – so use this first and use it well (already discussed)
- Most dairy pastures are based on ryegrass – perennial rye in areas with higher rainfall / longer growing seasons, and annual or short-rotation rye in areas with shorter growing seasons
- But, ryegrass pasture grows mainly in winter and, especially, spring, leaving feed gaps in autumn, summer and often winter (to a lesser extent than the other seasons)
- To fill those gaps, the next-cheapest feed (after pasture) will GENERALLY be home-grown especially if ...
 - ... it is grazeable
 - ... it becomes available when ryegrass is not growing (extra feed grown in summer and autumn has roughly twice the gross economic value of extra feed grown in spring)
 - ... it is of sufficient quality to feed milkers
 - ... it is well-managed
- Home-grown may not be next-cheapest if:
 - ... appropriate management is not implemented
 - ... conservation and/or feeding costs are incurred
 - ... there is wastage
 - ... the season does not 'deliver' and yields are poor
 - ... feed quality is suitable only for stale cows or dries, and of course ...
 - ... the cost of purchased feed options is low

2. Under-utilised land resources: the 'average killers'

- Many farms have poor paddocks, out-paddocks, areas that the herd cannot access easily, and other miscellaneous bit and pieces that 'drag down' average feed production per hectare
- Some of these areas may be able to sustain ryegrass but, in the meantime ...
 - ... short-term crops or pastures could produce more feed while ...
 - ... helping prepare these areas for permanent pasture
- Where out-paddocks are used to grow conserved feed, high yielding crops could make good economic sense

3. Pasture replacement: 'permanent' pastures are elusive

- If we define a good, permanent pasture as one that is producing somewhere near its potential for more than 15 years, then these are very rare beasts
- When sown plants are lost, they are quickly replaced by weeds
- Weeds are usually annuals, with a short growing season and poor quality
- It is vital to rid the soil of weed seed before going back to grass – alternative crops and pastures offer options here

Key points:

- a) next to pasture, home-grown is **generally** the cheapest feed source for filling feed gaps
- b) issues to consider are grazeable versus conserved, timing of feed availability relative to need, and feed quality
- c) costs of growing, conserving and feeding must be considered, as must risks of seasonal failure and wastage
- d) there is always risk, therefore ...
- e) ... the costs must be compared against purchased feed prices, which carry a known risk
- f) ... there must be a plan, which compares feed supply to demand, and considers fall-back positions
- g) we are looking for 1) complementarity, not replacement, and 2) to use all resources to their maximum
- h) Complementarity may come from:
 - seasonal growth pattern (offering more total feed, more-evenly distributed through the year)
 - nutritive value (offering a better balanced diet)
 - supporting pasture replacement program (offer chances for weed control)

B) What alternatives?

Winter cereals

- At a glance:

- wheat, triticale, oats
- they are annuals
- grow in winter and spring
- mature to grain fill in late spring, but ...
- ... our interest is in the green forage they produce plus the starch stored in early grain-fill stages
- offer grazing and conservation possibilities

- Advantages:

- Cold-tolerant, winter-active
- Fast-establishing, cope with dry autumns better than ryegrass
- Reliable
- Good quality when grazed
- Source of early feed for autumn-calving herds (eg NE Vic partner farm)
- Potential for very high yields of silage: 12 – 16 t DM/ha between April and November, compared to grazed ryegrass 4 – 8 t DM/ha
- can provide complementary fibre for a highly digestible background diet

- Disadvantages

- Grazing is restricted to a relatively short 'window' early in crop development
- Costs of conserving silage crop
- Silage is only moderate quality (about 9.5 MJ metabolisable energy / kg dry matter, 8% crude protein, and 55% fibre)
- Losses of dry matter can be high – especially if quality is not tip-top at time of silage harvest

- Management summary:

- Oats and wheat better suited to grazing plus silage; triticale best suited to silage (which is moderate quality only)
- Sow early (early March?)
- Direct drill, 80 – 100 kg/ha
- Best to graze before stem elongation
- Take silage at boot or soft dough stage
- Silage should be chopped and, ideally, stored in pit or stack rather than bales

Cereal-legume mixtures ('Bi-cropping')

- At a glance

- Means sowing eg. wheat or oats with eg peas or vetch
- All annual species
- Legumes are not adapted to grazing, therefore this is a conservation-only option

- Advantages

- Improved protein and digestibility of the final product ...
- ... without major yield penalties

- Disadvantages

- Managing for 2 plants, rather than one, so ...
- ... trade-offs may be required (eg species may reach optimal harvest stage at different times)
- Peas can be subject to disease (don't like wet feet)

- Management summary

- Be prepared, and equipped, for conservation and feed-out with minimal waste
- Match the stature of the cereal and the legume. For example, triticale grows very tall, making it difficult for peas to find their way to the top of the canopy where the light is. Wheat is better from this perspective.
- Match the dates when the cereal and the legume are likely to reach their optimum stage of development for silage harvest
- Recognise disease symptoms and know how to respond

Annual and short-rotation ryegrasses

- At a glance

- Generally either one-year (true annuals, such as Abundant, Progrow or Winter Star), or two-year (Italian types, such as Crusader, Feat II or Hulk)
- With hot dry summers and late breaks, Italian types last only one year
- Range of maturity dates
- Tetraploids as well as diploids
- Supply winter-spring feed
- Can be mixed with brassicas in autumn sowing (the latter providing the first 'bite' for cows)

- Advantages

- 'Known quantity' – management-wise
- Fast-establishing
- Excellent quality
- There are cultivars suitable for most environments and systems
- Grazeable (best yields)
- Can also be conserved as silage

- Disadvantages

- Susceptible to false/late autumn breaks
- Risk of nitrate toxicity in some situations

- Management summary

- Relatively straightforward
- Best yields of digestible nutrients are obtained from grazing, but ...
- ... can be managed like a monoculture 'crop' – high fertiliser (especially N) inputs

Brassicas

- At a glance

- All annuals

- There are many different types: bulb turnips (graze once – no regrowth, eg Barkant), leafy turnips (multiple grazings are possible, eg Winfred), and hybrids (eg Hunter)
- In Australia, they are usually grown for summer feed, whereas in other countries they are mostly used for winter feed.
- There is not much between these in the total feed consumed
- First grazing is usually within 6 – 16 weeks after sowing, depending on brassica type and seasonal conditions

- Advantages

- Capable of surviving periods of soil moisture deficit
- Excellent nutritive value – provided not allowed to get too mature.
- Versatile – summer, winter or late autumn feed
- Can direct-drill
- Fit pasture renovation well – because brassicas are broadleaves, grass-selective herbicide can be used with low risk

- Disadvantages

- Yields are unreliable and often low when grown for summer feed
- Summer crops are susceptible to insect pests – diamond-back moth etc

- Management summary

- Sow while still sufficient moisture in the ground from spring to promote germination and early plant establishment
- After that, it is in the lap of the gods
- Expect a wide range of possible yields – from 2 – 8 t DM/ha consumed
- Effluent can be used on established plants to help secure a useful yield
- Consider using different varieties on different areas so that timing of grazings is spread out, and doesn't all come ready all at once
- Feeding rates usually 4 – 6 kg DM/cow/day (to lift production 2-3 litres/cow.day)

Tall fescue

- At a glance

- Perennial grass
- Deep-rooted, heat-tolerant
- Suited to heavier soil types, not suitable for light soils
- Winter-active (eg Flecha) and summer-active (eg Advance) cultivars available
- Reputation for poor quality and 'palatability', but not justified given modern cultivars and appropriate management

- Advantages

- Perennial, more persistent than perennial ryegrass, less need for pasture renovation
- Summer-active types offer grazeable green feed in the spring-summer transition, on suitable soil types
- Spring growth rates can be phenomenal, easing grazing pressure on ryegrass pastures
- No toxic endophytes
- Combines well with clovers, chicory, offering high quality summer feed mixture
- Good for wet areas on the farm

- Disadvantages

- Winter-active types appear to offer no yield improvements over ryegrass
- Slow to establish, susceptible to weed competition
- Cannot be direct-drilled
- Cannot be mixed with ryegrass
- Must have super clean, weed-free seed bed
- May need pre-graze topping in spring to control quality

- Management summary

- Tall fescue is not perennial ryegrass – it must be managed differently
- For dairy, only the summer-active cultivars appear to have a place
- Graze frequently (14 – 16 days) and hard (3-4 cm) in spring

Annual legumes

- At a glance

- Includes species such as balansa clover, arrowleaf clover and Persian clover (also known as shaftal clover)
- There is a range of maturity dates available within and among species,
- Balansa clover is generally hard-seeded and will reappear in subsequent years if it gets to produce seed. Arrowleaf and Persian clover are weak when it comes to self-regeneration
- Generally best grown as a monoculture. Mixing with grasses defeats the purpose of securing a bulk of high quality feed for break-feeding in spring

- Advantages

- Highly digestible, protein-rich feed
- Can grow 6-8 t DM/ha in short period (July – September)
- Added benefit of nitrogen fixation, which enriches the soil for subsequent grass pasture
- Can be grazed, or conserved for silage or hay
- Utilisation efficiency is generally high (low wastage in the paddock)

- Disadvantages

- Relatively limited window of the year when they grow actively
- Tend to grow most vigorously at the same time ryegrass does. Arrowleaf clover is later and can be used for late spring – summer standing feed
- Can have ‘too much of a good thing’: high protein concentrations require dilution with other feeds.

- Management summary

- Be aware of the diversity of species and cultivars, and their maturity dates
- Match maturity date with your growing season environment
- Treat like a special-purpose crop, break-feed at 3-6 kg DM/cow/day in a ration that supplies adequate protein

Double cropping

- At a glance

- Involves 2 crops on the same area of ground per year, for example a winter cereal followed by a summer brassica
- Means that land is not left fallow for any length of time – because the growth cycles of the component crops are complementary
- But, it is a step-up in management, requiring good knowledge of crop management and optimum harvest times and methods

- Advantages

- Potential for very high total tonnages: up to 24 t DM/ha was grown from some treatments in south-west Victoria in 3030 within a 12-month period
- Individual advantages of winter cereals and summer brassicas still apply

- Disadvantages

- There is often a trade-off between harvesting the cereal early enough to ensure sufficient moisture in the soil for brassica to germinate and establish – which means some of the yield of the cereal may be foregone
- Heavy soils present risk that cereal cannot be harvested when required for optimal summer crop performance
- The individual disadvantages of winter cereals and summer brassicas noted above still apply

- Management summary

- This tends to be a ‘high-risk, high-reward’ proposition
- Will work best in areas with longer growing season
- Timing of management decisions is critical
- Important to ‘do your homework’ well if considering this

Lucerne

- At a glance

- Perennial legume
- Usually grown as a monoculture. It can be sown with species like red clover and chicory, but these grow at the same time of year as lucerne and are not really complementary
- Many different cultivars on the market, differentiated mainly by their winter activity. Ratings are given from 4 (winter dormant, most productive in spring and summer) to 10 (highly winter active, grows through spring, summer and autumn if plants can access water).
- Not adapted to acid or poorly drained soils. Prefers deep, light-textured, fertile soil with pH 5.5 or higher
- Deep root system allows plants to tap sub-surface water and therefore keep growing in summer

- Advantages

- Excellent feed quality
- Produces in summer when green, grazeable feed is in short supply. Lifesaver during drought conditions if on the right soil type (eg. south-west Victoria Partner Farm)
- Versatile – grazeable, but also makes very good hay

- Disadvantages

- Very specific soil requirements restrict its use in dairying regions
- Not tolerant of frequent, hard grazing. Needs different rotation management compared to ryegrass

- Can be susceptible to diseases and pests (though modern cultivars have better resistance)

- Management summary

- Well worth a look, if there are paddocks or areas on the farm with suitable soil type

C) So, what about the system?

Out with the old, in with the new?

- 3030 farmlets at DD **did not** provide evidence to support large-scale change (i.e 40% of milking platform given over to complementary forages)
- While this looked good 'on paper' relative to ryegrass, ...
 - ... perennial ryegrass exceeded expectations, by quite a margin – management lessons here
 - ... 2006 drought – crop failures meant high feed costs on the more-heavily stocked complementary forages system
 - ... more costs, more risks
 - ... silage crop quality was generally poor, and did not fit easily into the diet of milkers
 - ... feed wastage rates were high, which pushed up the average cost per tonne DM consumed
- Over 4 lactations, the mean return on assets of the complementary forage system was 13.5% (\$2,886 operating profit per hectare), compared to 12.9% for well-managed, ryegrass only (\$2,540 profit/ha)
- This was despite 31% greater home-grown forage consumption rates in the complementary forages system compared to ryegrass-only (9.7 versus 7.4 t DM/ha/year respectively)
- So, yes, we can grow and consume more feed using species that complement ryegrass, but it is by no means certain that this will result in worthwhile profit improvements if the system is changed substantially

Horses for courses? Pick-and-choose is the way to go

- Exploit the strengths of different crops and pastures to suit the on-farm need
- Likelihood of success is greater when ...
 1. ... the growing season for ryegrass is short and unreliable
 2. ... there are under-utilised land resources
- Use a forage plan to help select plants and combinations that complement ryegrass

D) If nothing else, take home ...

- Ryegrass is a proven performer – 3030 has proven that it performs even better than expected **IF** we do things right (FPFP etc etc)
- Don't throw baby out with bath-water
- Get ryegrass right first – it is your cheapest route to better profits
- That said – there are viable alternative options ...
- ... that can definitely work in farming systems
- Think about other pastures and crops in the context of complementarity
- Be clear about what you are looking for / wanting - a forage plan is a very good idea
- Have realistic expectations
- Understand where costs and risks reside, and gauge how well you can manage them