



# Transition from Crop to Pasture

**Producer:**  
B & J Kilpatrick

**Location:**  
Wagin

**Farm Size:**  
1700ha

**Better transitions between crops and pastures and managing both phases well are the keys to lifting farm profitability in WA's southern medium and high rainfall zones.**

That is the advice from Planfarm consultant Paul Omodei, who is working with the Muchas Gracias grower group in Arthur River and Wagin to evaluate a range of tactics for optimal integration of pastures into cropping rotations - and improving pastures coming out of a cropping phase.

Managing these transitions better and pushing pasture productivity in this region have potential to increase both crop and livestock production, reduce weeds for the cropping phase and boost whole farm income.

The keys to this strategy are to dry sow and create density in pastures to run adequate stocking rates that make money, while attacking the annual ryegrass (*Lolium rigidum*) seed bank problem for the cropping phase.

Pasture density comes from sown cereals and stimulated hard seeded annual ryegrass and subclovers that may have stayed dormant without the physical soil disturbance. The cereals and grasses drive the winter livestock carrying capacity and the clovers produce the nitrogen (N) for following crops - as well as setting seed and contributing to the clover hard seed bank, which will be there following the next crop rotation.

Three-year, on-farm demonstration trials have been set up by Muchas Gracias group members in conjunction with the Department of Agriculture and Food, Western Australia (DAFWA) through the GRDC-funded Grain and Graze 3 project 'Crops to pasture - pasture to crops'.

Wagin growers Bryan and Jane Kilpatrick have a trial investigating pasture-crop rotations, the effects of cultivation on weed germination and the amount of extra feed produced from adding N in the pasture phase.

In the first year of the trial - in 2014 - they sowed Wandering oats (at a rate of 40 kilograms per hectare) and Dalkieth clover (at a rate of 8kg/ha) using narrow AGMOR™ sowing boots into dry pasture on April 24.

There was no pre-seeding herbicide used and they applied 40kg/ha of MAP (Monoammonium Phosphate) fertiliser.

Bryan says the aims were to boost soil water infiltration and plant density, stimulate a weed germination and provide early feed for livestock. This led to a cultivation effect on weed numbers and growth in that first year.

Geranium (*Erodium* species) and capeweed (*Arctotheca calendula*) got away early and started smothering the clover and oats, forcing Bryan to undertake a spray graze using a phenoxy herbicide.

After that treatment, they had a good stand of oats, clover and annual ryegrass and were able to use this for two intensive grazing periods in June and July.

Part of this trial is to assess how much extra stock feed is produced by the sown pasture, as they usually experience a feed gap between seeding and lambing (in early July). The oats certainly provided a bulk of feed early in the season, which was very helpful and - in a different year and on a bigger scale - could be crucial because they carry a high percentage of lambing ewes.

Bryan says a combination of improved pasture paddocks prepared earlier in the year, deferred grazing on to long term grazing paddocks and some crop grazing is ideal to set up paddocks for his lambing period.

He says crop grazing has a place in the system and is used when conditions allow, on well established paddocks with low weed burdens.

# Pastures in Rotation case study



The Kilpatricks use spray topping in spring to reduce the grass component of pasture paddocks, while being mindful of the clover setting seed.

*“Our preferred strategy is to defer as much as possible on to planned wheat paddocks - sow canola, oats and barley as quickly as possible and then slow right down to finish the wheat,”* says Bryan.

*“This spreads our wheat sowing dates and allows pastures to get away.”*

Paul says this is an integral component of the dry sowing cereals strategy. The additional annual ryegrass and weeds stimulated by cultivation can then be controlled by a ‘hay freezing’ technique - using glyphosate or paraquat - after the clover has set seed in later spring. That way, the legume component of the system is

protected and the grass weeds are almost 100 per cent controlled, which is what they want for the cropping system.

Bryan says the plan for this year is to leave the improved pasture in the Grain and Graze 3 trial and set it up for a short term cropping program in 2016. Pasture benefits of the first two years will hopefully produce higher crop yields in the third year.

DAFWA research officer Perry Dolling is monitoring the Kilpatrick’s trial for amount and timing of N applications, pasture growth rates, dry matter production per mm of rain and number of grazing days.

The Muchas Gracias group also runs a Blog (for members only), which allows sharing of wide-ranging discussions, observations, photographs and trial results.

## More information

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# Crops on Crops Make Great Pasture

**Name:**  
North Stirlings Group

**Producer:**  
North Stirlings, WA (various trial sites)

**Tight crop pasture rotations make it very difficult to establish high density feed at the break of the season and in early winter and in early winter before clover can get established enough to maintain stock. To overcome this farmers are increasingly sowing cereals and canola with clover or into established clover pastures to fill this gap.**

**In the wheat belt, mixed farming enterprises are generally 60% to 80% : Crop – Stock ratio. This means that pasture fazes are very short, generally 1-2 years with 3-4 years of crop in between. Current day cropping leaves no room for error and weed management and crop hygiene is an integral part of getting the best return on crop investment.**

The unfortunate result of this for the sheep is that all grasses are enemy number 1! Why is this an issue when there are other plants such as clover for sheep to eat? Unfortunately these really don't get going until August or later in a bad season, whereas members of the grass (including cereals) family are much quicker to establish. To fill this feed gap farmers are increasingly looking towards sowing cereals & canola with clover or into clover pastures.

This raises issues of variety, sowing rate, time of sowing, manipulation, impact on stock and crop in following year and risk management. These issues were on the minds of a group of North Stirling farmers when they decided to look closer at the subject.

The North Stirling's group observed several options on different farms. Wheat, barley and oats were sown, while canola was spread onto a pasture.

Early observations in June were that the canola had not germinated, the barley at cereal at 20kgs lacked density and that 40kgs was in the lower end of what needed to be sown.

Sowing decisions had been driven by different reasons - oats had been selected over barley on farm due to concerns over disease affecting performance of the barley. Others selected what they had in the silo or what tended to yield the best on their farm. In the case of the canola it was opportunistic. Seeding Fertiliser was applied at a minimum rates, enough to get it out of the ground.

The main observation from the various sites was similar, as one of the members stated "with modern cropping systems unless you sow something into pastures nothing is going to grow. The farming system has changed yet some are expecting sheep to perform the way they did without any inputs."

The results are that pastures that might otherwise run 3 DSE are running 6 DSE easily. The impact this has on sheep systems is significant on several levels:

1. Stocking rate;
2. Ewe and lamb survival- applying Life Time Ewe Management Principles - ewes in better condition have heavier lambs and lower mortality. Lambs with mothers on better pastures have higher survival rates and better growth rates.
- 3 Risk management in poor seasons - Pastures in the wheat belt that aren't bulked up with cereals struggle enough in average seasons , however in poor seasons they are shocking and any sheep are too many. Generally with a poor season (late break) on an average pasture we see a steady decline in the pastures potential. For example, as the date

# Pastures in Rotation case study



of break gets pushed back we see a steady decline in stocking rate potential- i.e. from 6-5-4 . However with poor pastures the potential drops far more quickly 6-5 -1! This obviously has implications on the year in year out stocking rate that can be run with any sort of confidence.

The increased carrying capacity of the pastures had other impacts on the system. The major one being that pastures could be manipulated with confidence during winter/spring due to the knowledge that there was enough pasture density to run stock on once undesirables, such as barley grass, had been removed. This has benefits to the crop and pasture as the clover then thrives, lays down more nitrogen and seed and the following years crops has less weed competition.

## Other key observations were:

- **Barley did have some disease issues that limited its production at one site but not at another, however this was mainly later in the season;**
- **A minimum of 40 kg's of seed should be sown to get enough early density;**
- **Clover seed set won't be compromised at higher rates 40-50 kg's if grazed or manipulated appropriately;**

**All who participated or observed the sites agreed that bulking up pastures with cereals is the key to running reasonable stocking rates with their current crop/ stock rotations. The next challenge going forward is to refine pasture manipulation for the benefit of stock in the current year and crop in coming year.**

### More information

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## Lucerne as a phase pasture at Badgebup

**Producer:**  
Tim Clegg

**Location:**  
Badgebup, WA

**Tim Clegg is no stranger to Lucerne in his pasture and cropping phase however in 2013 he decided to experiment with two methods of establishment in a barley crop – Skip Row and Under-sown. In 2014, the Badgebup group followed this establishment into the pasture phase along with a traditional regenerated sub clover paddock out of barley right next door.**

Tim has been establishing Lucerne in wetter parts of the landscape for 3-5 years of pasture and back into a short crop rotation (2-3 years depending on seasons and weed control).

His skip row establishment has been far more successful with nearly double the retention of Lucerne plants into the second year. This entails a double pass operation at seeding i.e. seed barley in first pass then use RTK guidance to shallow sow Lucerne between the barley rows. There is an additional seeding cost in year of establishment but worth it in the pasture phase.

Tim prefers to spray the Lucerne totally out in the year prior to cropping rather than 'Pasture Crop' mainly because he believes in doing one enterprise better rather than have a bit of both.

In conjunction with chaff cart dumps, Lucerne provides a 'complete' ration of energy, fibre and protein for growing stock in particular. Tim aims to use it mainly for lambs or young ewes. Early feed is a significant benefit as this can assist increasing energy requirements of ewes once stubbles are exhausted.

Measurements during the season showed the Lucerne paddock to have significantly more dry matter on both occasions (520kgs/ha more in June and 1,100kgs/ha more in September).

Tim's system is so flexible that if a weed blow out does occur in a crop phase he can then pull the paddock into a pasture phase with an establishment technique that provides longevity of Lucerne.



Lucerne established as a skip row with barley in 2013 and regenerated in 2014 with 38 plants/m<sup>2</sup> and measuring 3.9t/ha Dry matter.

# Pastures in Rotation case study



Regenerated sub clover established after barley in the adjacent paddock measuring 2.8t/ha dry matter



Skip row sowing of Lucerne sowing barley stubble between Lucerne rows



Use of chaff carts dumps to provide a "full" ration in the paddock

## More information

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# Grain and Graze 3 Business Discussion Groups

A series of business discussion groups have been established across WA to discuss the linkages between on-farm production, profitability and risk management. They are a chance for farmers to discuss their business, share their learnings and explore their business goals with one another in a confidential setting.

For more information on joining a Business Discussion Group, please contact one of the facilitators below.

## Business Discussion Group facilitators

**Gerard Birkbeck**  
Farmanco, 0427 501 555

**Danielle England**  
AgInnovate, 0429 676077

**Ashley Herbert**  
Agrarian Management, 0427 007 396

**David Pfeiffer**  
Synergy Consulting, 0429 990 596

**Ed Riggall**  
Ed Riggall Consulting, 0428 299007

**Carly Veitch**  
AgAsset, 0429 966 678

**Ben Whisson**  
ConsultAg, 0428 651 626

## Eastern Wheatbelt – Merredin and surrounds

One Eastern Wheatbelt based group is made up of 6 farm businesses, all within a 150km radius of Merredin. Five businesses are mixed cropping and livestock, with one 100% cropping. Major topics of discussion so far have been succession planning, management of heavy soil types, and planning for and in-season management of dry seasons.

The group has been underway for a year now, but may be willing to consider new like-minded farm business members. Please contact Carly Veitch on 0429 966 678 for any further information.

## Avon Valley – Northam and surrounds

Another new group is about to kick off, based in the Avon Valley region. The first meeting will be in mid-March. The group is open to new members who are interested in open but confidential discussions around business management and driving farm business profit. The group has a particular interest in the finding the best balance between cropping and sheep enterprises to maximise overall business profit. Please contact Carly Veitch on 0429 966 678 for any further information.

## Esperance

A small group of 5-8 businesses is operating in and around Esperance. Over the next three years they want to improve the way they run their businesses, improve management at a holistic level, have fun, with a respecting peer group and to share their knowledge and learnings along the way. This is a closed group with a confidentiality agreement in-place. This group is being facilitated by Eric Nankivell and Gerard Birkbeck, Farmanco Esperance. For more information please contact Gerard on 0427 501 555.

## Lake King

This group plan to meet three times a year on different participating farm businesses. They will tour the farm, have a look at the financials and undertake a SWOT analysis for the host business. This is strictly a closed group with a confidentiality agreement in-place. This group is being facilitated by Eric Nankivell and Gerard Birkbeck, Farmanco Esperance. For more information please contact Gerard on 0427 501 555.

## Merredin/Kellerberrin

This group has met once and will meet again before seeding. The primary focus of the group will be to discuss business decisions, future business plans, and strategic management of the business. The group is open to new members who are interested in similar farm management issues. For more information about this group please contact David Pfeiffer on 0429 990 596.

## Other groups

Other groups are in development in the Moora/Miling, Cranbrook, Varley, Katanning and Narrogin areas. These groups are open for new members. For more information on these groups please contact Danielle England on 0429 676077.

## For more information

Visit the Grain and Graze website [www.grainandgraze2.com.au](http://www.grainandgraze2.com.au) or contact the WA Project Manager, Danielle England on **M** 0429 676 077 or **E** [danielle@aginnovate.com.au](mailto:danielle@aginnovate.com.au)



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