



Integrated Farming Systems

For a Sustainable Future



Robert Bradley Mixed Farmer
Longford Tasmania



My Nuffield Journey Started with a series of Questions

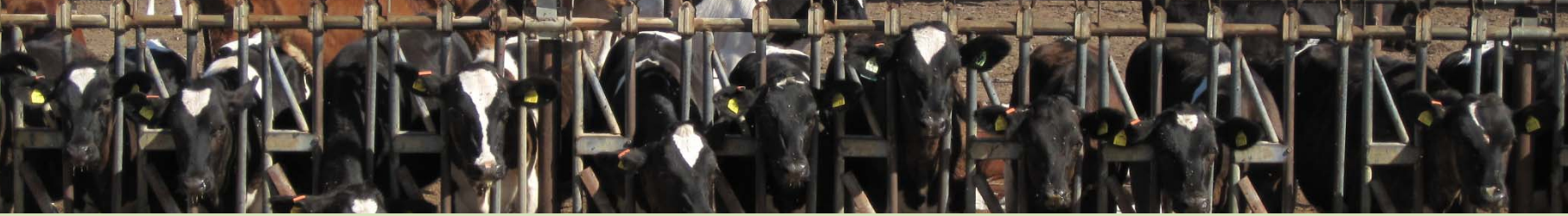
- What steps are required to keep our cropping operation sustainable into the future?
- What role do pastures have in a cropping/horticultural operation?
- Do integrated (mixed Farms) have a future?





Land Use Practices





Current Land Use – Crop Livestock Mix

Global Situation

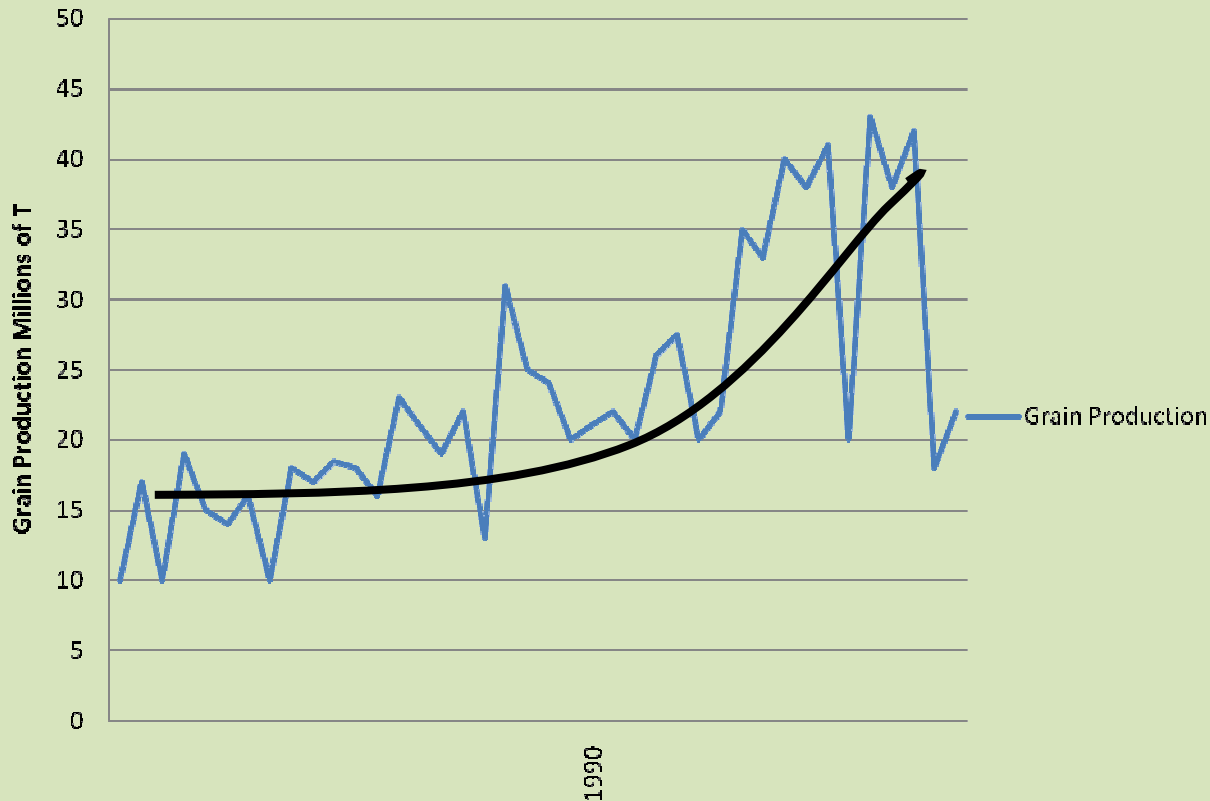
- **Separation Underway since the 1950's**
- **Space sharing of livestock and crop on the same land is disappearing**
- **Australian Situation Slower but rapidly catching up**



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Grain Production



- Sheep Flock fallen from 160 to 70 million over the same time frame

Source : ABARE 2008



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Drivers for Specialisation and Separation of Livestock and Crop Enterprises

Internationally

- Cheap fuel
- Cheap Fertilizer
- Political Agricultural Subsidy Packages
- Abundant Labour Source
- Economies of Scale

Australia

- Economic- decline of the wool
- Advent of no-till cropping
- Efficiency gains in cropping machinery
- Social



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Mixed farms ...

By PETER AUSTIN

THE traditional, family-run mixed farm – once the “bread and butter” of a country property agent’s sales business – has become in today’s market one of the most difficult items to move.

It’s not because nobody wants them, but those who want them – namely, other farmers wanting to expand, or set up a family member – are often unable to raise the necessary finance.

The banks, with an eye on their farmer clients’ none-too-healthy equity levels, aren’t keen to lend for new farm purchases until they see a return to pre-drought cash flows.

Meanwhile, the off-farm investors and corporate players who do have bank or institutional funds at their disposal aren’t interested in the traditional mixed farm.

They mostly want the specialised broadacre cropping or grazing property, preferably a big one, and one that will complement their existing holdings within a region.

And the lifestyle farm buyers, such as there are of them in the still-shaky post-GFC market environment, don’t want a farm as big, or costly, as the average mixed farm.

All of this is not to say there aren’t buyers in the marketplace for mixed farms: there are, but by and large, at price levels somewhat below those still being asked by vendors.

Based on actual sales made, it is estimated values for mixed farms across NSW – the traditional wheat/sheep farms of central and southern NSW – have eased by between 10 and 25 per cent from the market peak, depending on location.

Properties priced to reflect this adjustment are still selling (mostly to



prospective buyers are looking more at a farm’s stock capabilities.

Herron Todd White Dubbo-based valuer, Scott Fuller, said some North West farmers were even sowing lucerne in paddocks that would normally be kept for winter crop, as they saw more scope for profit from livestock enterprises than high-cost cropping.

“Prospective buyers today are much more interested than before in a farm’s livestock infrastructure,” said Elders Dubbo’s rural property specialist, Richard Cornwall.

Wagga said he had had inquiries from northern farmers wanting to spread their risks with a purchase of lower-priced farmland in a (currently) less favoured district.

He believed while grain prices had been a factor in depressing demand, that factor would be outweighed by the optimism that would be engendered by a good autumn “break”.

“When they are able to grow good crops again, people feel good about things, regardless of the price of

Landmark’s Matt Currie is marketing the Clark family’s “Avoca”/“Warrawee” aggregation – a 1118ha parcel of red loam country priced at \$1543/ha (\$625/sc).

The property fronting the Mirrool Creek has a history of growing three to 3.7t/ha wheat crops, and likewise comes with two homes, good working improvements and town water.

On a similar rainfall band, and close to the geographical centre of NSW, Elders Forbes is marketing a

Profit prospect at Eurungerie

BUYERS seeking a well-managed mixed farm with excellent improvements and the wherewithal to support many enterprises appear to have overlooked “Balgowan”.

The Central West property (pictured) went to auction without result in September last year and was subsequently listed for private sale at \$1667 a hectare (\$675 an acre), but has failed to find a buyer.

This surprises selling agent, Malcolm White, of Landmark Dubbo – especially in light of the property’s recent performance and cashflow prospects.

Two weeks ago the last of its 2009 lucerne-finished lambs topped the Dubbo market at \$150 a head, and after more than 200 millimetres of rain since Christmas, preparation is under way for a 534ha winter crop planting.

About 80ha will be undersown to lucerne, augmenting the 690ha of lucerne pastures, which underpin the 1000-ewe prime lamb operation (two lambings a year).

Owned by Geoff and Bev Purvis, who are ready to retire, the 1383ha (3418ac) property fronts the Newell Highway near Eurungerie, 35 kilometres north of Dubbo.

Described as 95 per cent arable, the gently undulating property has self-mulching to red loam soils and average rainfall of 575 millimetres to 600mm.

Improvements include new steel cattleyards, reticulated water system, extensive shedding and an attractive four-bedroom pise homestead.

1215ha property comprises open plains of chocolate to red soil located 50 kilometres east of Coonamble with all improvements.

It was offered together with the adjoining “Part Almora” of 279ha – a combined area of 1494ha of which 400ha has been cultivated.

A more intensive cropping proposition is “Deanderrah”, a 2597ha property just to the north-east of Coonamble of which 2200ha has been cul-



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What are the Sustainability Issues in Intensive Cropping/ Horticulture

- Decline in Soil Health
- Herbicide Resistance
- Loss of Agricultural Chemicals
- Increased Agricultural Chemical Regulation
- Lack of Diversity (GMO's, Size of the genetic pool)
- Increased Environmental Awareness from Retailers and Consumers
- Climate Change , ETS , Carbon tax
- Water Scarcity



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Have we created a system dependant on “Takeaways and Buy Ins”

Both intensive crops and livestock are reliant on purchased inputs and very little input generated from the system itself

Reliant on continuing Cheap, fuel, Fertilizer and labour

“A profitable system based on small margins and a need to continually increase scale, and productivity to remain competitive and viable”

“Maintained viability and production by investing heavily in chemistry and technology and not ecology and systems”

“Our conventional farming systems buy in our “sustainability” and how long will cheap inputs remain?”





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California "Beauty"



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Bring it back home again: Tasmania and Southern Australia

We don't have cheap labour , young reliant soils , relatively our fuel and fertiliser costs are high and will continue to rise.

“ In southern Australia despite intensification of cropping farm business profits vary less with % of land cropped than with the management skill of the individual farmer” (CSIRO Plant Industries)

What Management practices can we implement to achieve improved sustainability .

Management Strategies

Market Engagement



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Integrated Production Systems: Organic Industry

- Growth in Organics - now 4% UK, 2.5% US & 30% Danish markets
- Moved from Cottage Industry to Industrialized production
- Production Systems are forced to be self sustaining to meet the criteria
- Research effort into: Green manures, ley pastures , fertility building crops
- Organic system has its own sustainability issues – reliance on steel and diesel
- Integrated livestock enterprises make the system profitable throughout the rotation



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Organic: Southern England- Peter Wastage

- Integrated Dairy and Horticulture
- 4 years of Clover Rye grass Pasture's
- 2 year of Crop (Hort. Cereal)
- Milking 1200 Cows in 4 units
- Simple System, Building Nutrient and recycling residues
- Dairy Unit makes it work, being paid to build and soil N, control weeds, maintain soil structure
- "Understanding legumes and pasture's makes nitrogen fertilizer irrelevant "



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Pasture Leys- What is there value to a cropping system

Wheat Yields following 6 years of rye grass and white clover are 30% higher compared to a continuous Cropping rotation (Glen Francis), with no applied Fertiliser.

Measurable improvement in soil N with a strong correlation to yield improvement

The length of the pasture phase determines it yield building effect

Effect of the pasture rejuvenation is relatively short

3 to 4 years after pasture crop yields have returned to the same as continuous crop

Pasture Ley needs to be the same length as the cropping phase for significant improvement in yield to occur



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The Economic of Pasture Fertility and soil Building Phase

- At current nitrogen fertiliser prices pasture leys are unviable in the short term
- The effect of pastures on soil N are quite short lived and harvested by the subsequent crops
- Soil structural benefits are slower to occur and payback over a longer period of time at a slow rate (Francis Ryan HRDC)
- Soil structural improvement hard to correlate to economic improvement in short term
- Reliant on a viable livestock operation with low Nutrient removal rate, to be economically effective



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Old Practices Married with New

Intercropping- Under sowing

- Inter-row sowing with GPS in the Spring
- Captures a longer growing season
- Competes well with weeds
- Grazed and Harvested for Hay Silage
- Reduces Cultivation
- Long and short term pastures
- Organic and Conventional

Yeo Valley Somerset UK



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Ontario Canada

Intercropped Red Clover in Wheat Stubble

Yield increases in the following crops

9% Year 1

8% Year 2

7% Year 3

70kg/ha N Fixed



Integration with the Market- Moving Down the Value Chain

- Sustainability practise on farm improve as business move down the value chain
- Selling the system as well as the product to the consumer
- Production techniques used as a point of difference

Organic ,Pesticide Free, Free Range, Local, Farmhouse, GMO Free

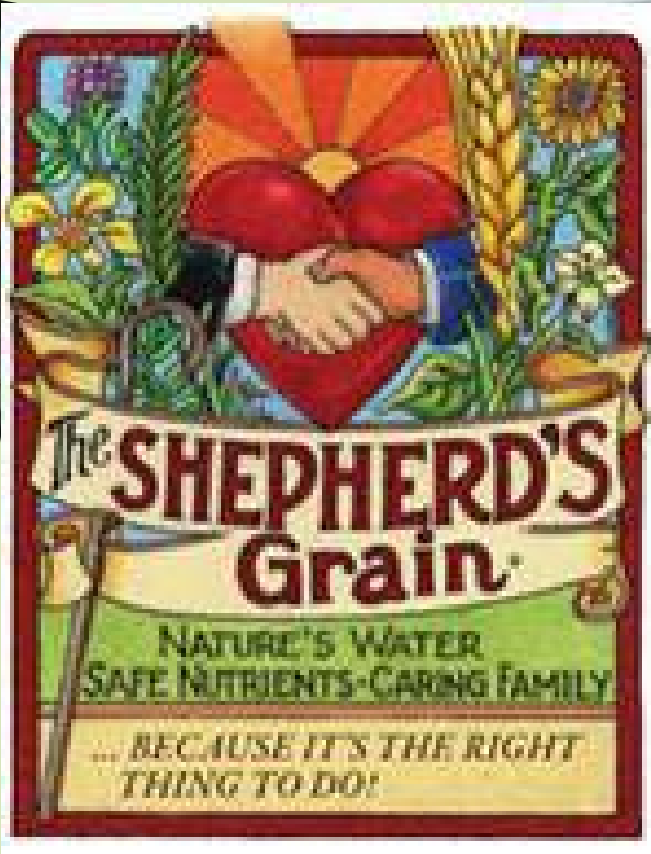
“Improved margins has allowed us to focus on both the product and the manner in which it is produced”

Fred Femming - Shepards Grain



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Alvis Bros Ltd – Integrated West Country Farming & Cheese Making Business

Dairy



Cheese Factory



Arable



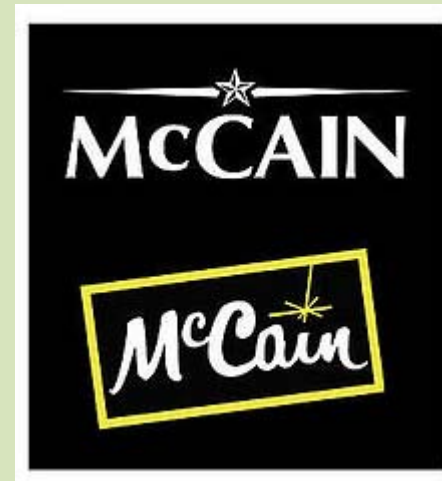
Pigs



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Will the market force us to be more sustainable



- By 2015 reduce greenhouse gas emissions by 20 million ton in the supply chain
- Reward shelf space

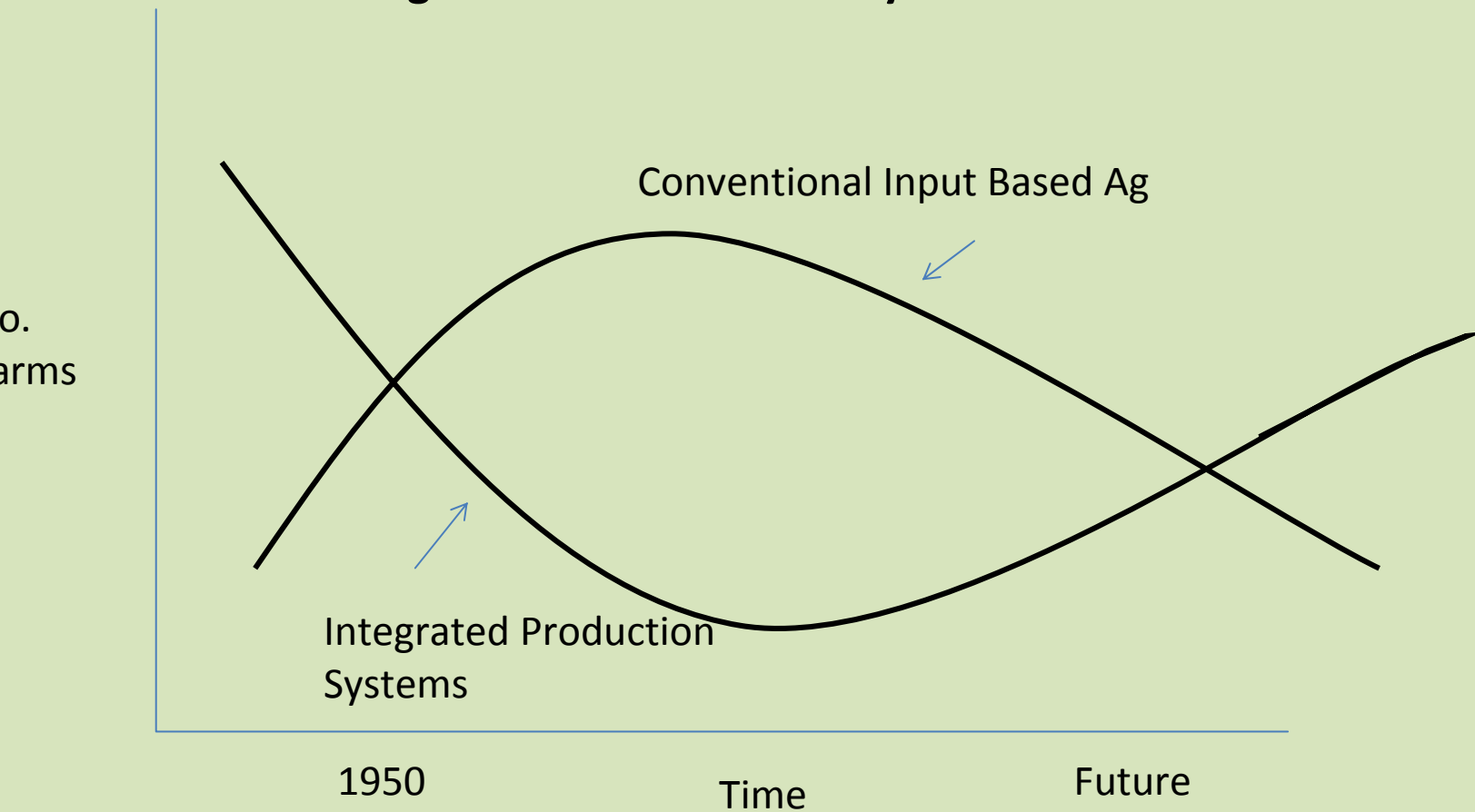
M & S aim to have 50% products With environmental or ethical attributes by 2015



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Agricultural Production Systems



Source : Tom Tomich UC Davis



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Conclusion – Recommendations

- Many of Australia's and the world's cropping and livestock systems are built on a continuing supply of cheap fuel and fertilizer
- Changes to these farming systems will be forced upon us by:
 - **Consumer sentiment, regulation, increasing cost structures, climate change and governmental response to climate change**
- Sustainability is a marketable attribute
- Need to develop a hybrid of conventional and organic farming that delivers quality produce and sustainable outcomes
- **Mixed farming has a vital role it play in Australia's Agriculture's economic future.**



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Many Thanks Rob Bradley