NOTES

Dairy Research Foundation Symposium, University of Sydney

The Challenge of Managing Dairy Farming Businesses under Increasingly Risky and Uncertain Economic and Climatic Conditions

By

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Main Topics

- Good Farm Management
- Risk and Uncertainty
- Good Decision-making and Decisions under Conditions of Risk

Farm management is ‘a process by which resources and situations are manipulated by farm managers in trying, with less than full information, to achieve their goals’ (Dillon, 1980,p.258).

Whole Farm Approach

Central premise of farming management is that the whole phenomenon cannot be understood or explained from the behaviour of its parts in isolation.

Solutions to problems of parts are not solutions to problems of the whole.

Cannot understand or solve problems of whole by analysing part of it.

The common mistake of thinking ‘This is a good answer to part of the problem, it must be a good answer to the whole of the problem’.

Better to solve whole of problem roughly than part of the problem precisely. i.e. Better to be roughly right than precisely wrong

- ***The Whole Farm Approach*** *to management advice 'refers to advice which has been budgeted to ensure that it really does result in an improved farm plan, from the farmer's point of view'.*
- *Budgeting allows the best proposal from a number of alternatives to be selected.*
- *Occasionally one hears a rather peculiar phrase 'the whole farm approach to farm management'. I say peculiar because this statement implies there is another approach to farm management'.*

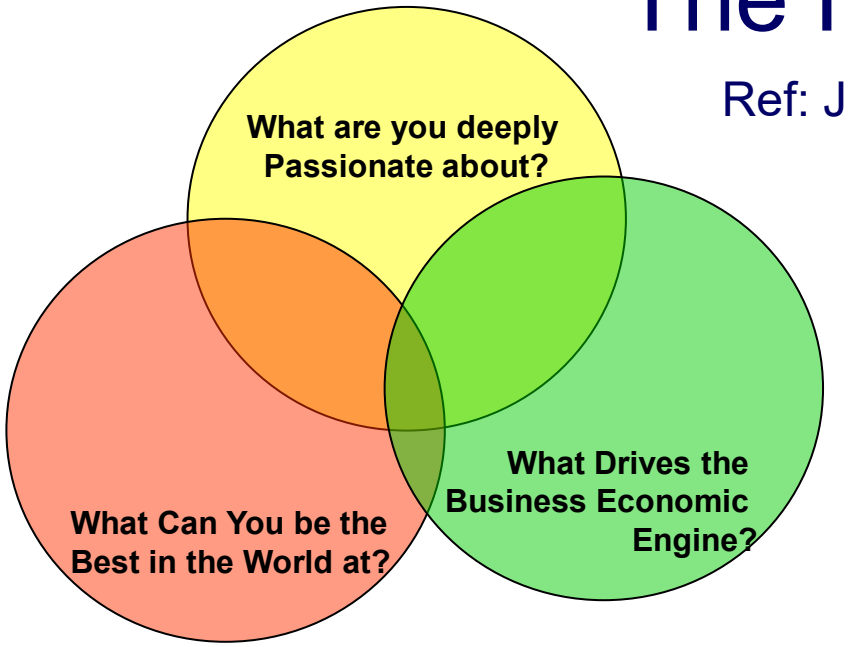
The whole farm approach:

Computation as a form of reasoning

Sophisticated Thinking, Simple Sums is the Whole Farm Approach

The Hedgehog Concept

Ref: Jim Collins “Good to Great”



The Hedgehog Concept –
Simplicity can Master a Complex World

Components of Success in Business

- High Quality Leadership
- First Who, then What (Right people on the bus - right values, good skills/trainable)
- Confront the Brutal Facts
- Hedgehog Concept
- Culture of Discipline – maintain focus
- Technology Accelerators – productivity, key innovations

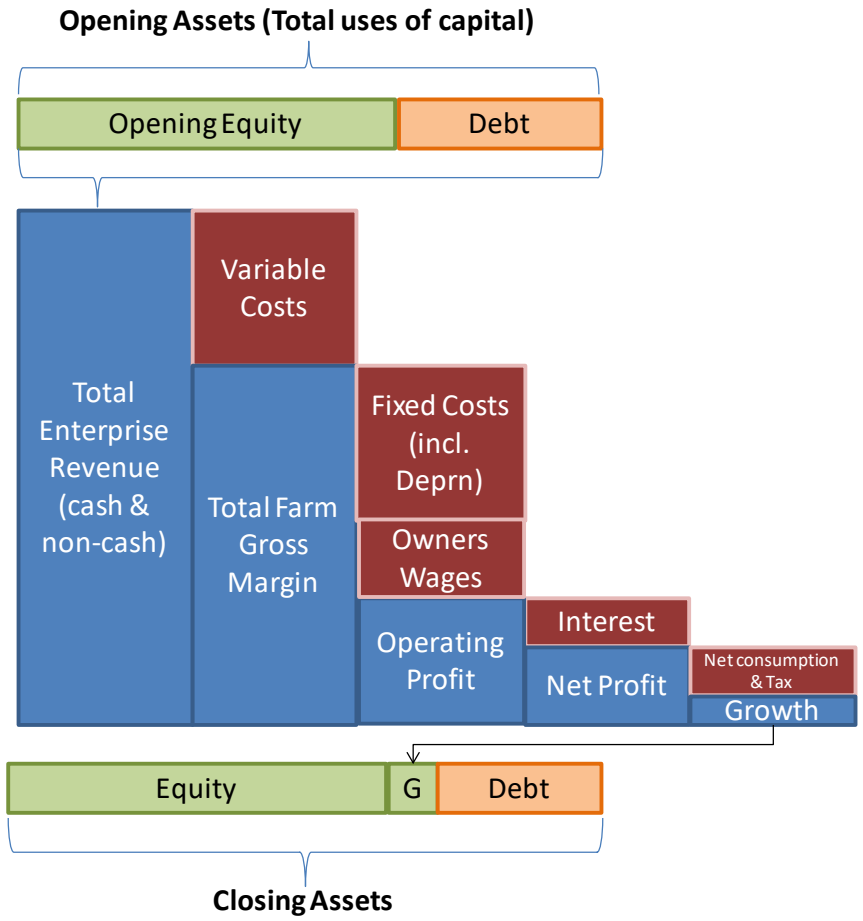
Things the most successful farmers and their advisors get right

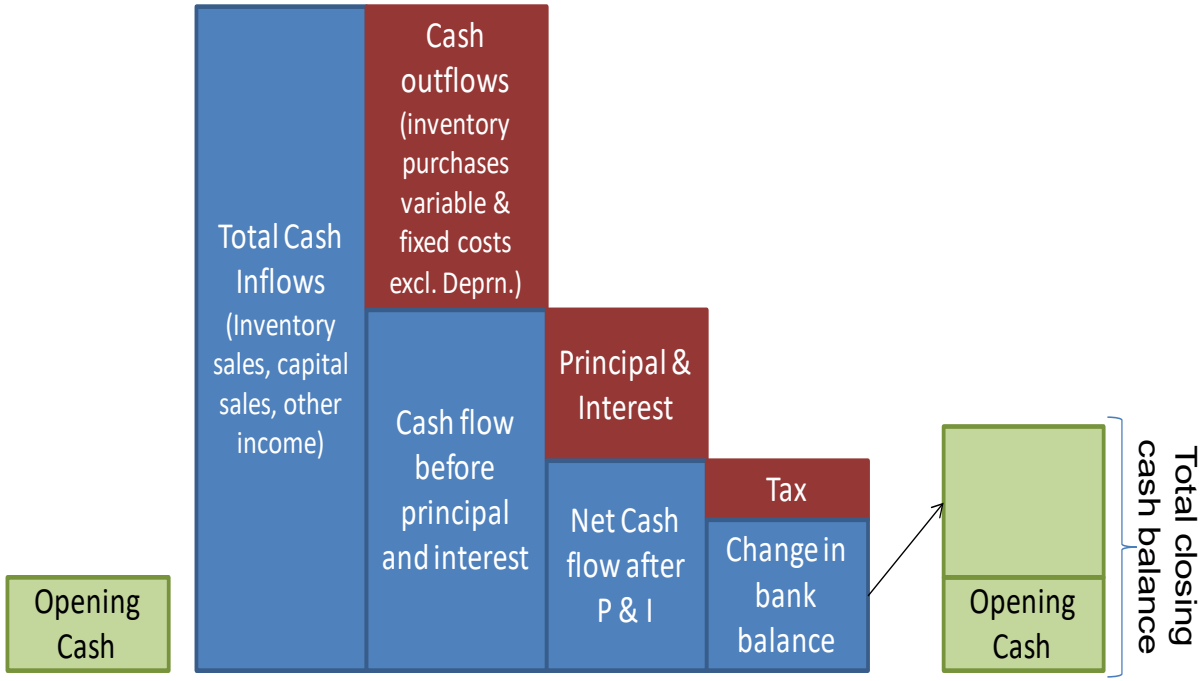
1. They think big
2. They have well considered goals
3. They use the whole farm approach
4. They distinguish between cash, profit and wealth to judge business performance
5. They understand growth, gearing and the principle of increasing financial risk
6. They know costs
7. They know how to sensibly value farm assets
8. They understand that risk creates return
9. They appreciate that uncertainty is trumps
10. They pursue continual improvement: the Status Quo is not an option
11. They know that the quality of management is the key
12. They recognize that growth and intensification increases mean and variance of profits
13. They reject unsound advice based on average technical ratios
14. They compare themselves with themselves
15. They make good decisions
16. They keep their business afloat

Imagine Alternative Futures
What is (Status Quo) and What could be?

- The future has already arrived. It’s just not evenly distributed yet.
- what do we want to do
- what have we got to work with
- where should we focus our effort and why
- what do we need to do to compete, survive and achieve our goals
- ‘Planning is useful – but surprises happen’
- Prepare for what might happen don’t predict it

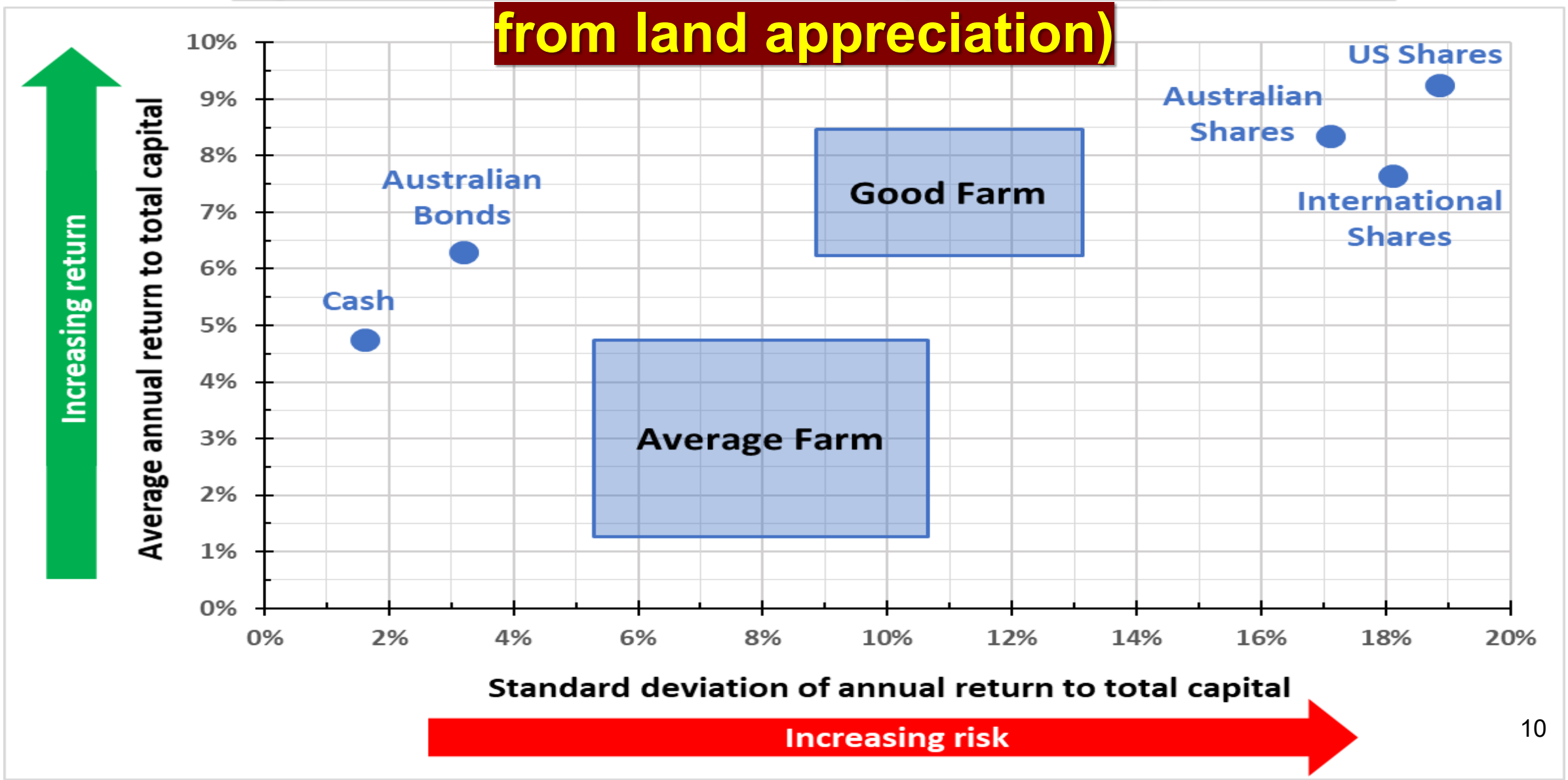
Distinguish between cash, profit and wealth to judge business performance from 3 equally important angles





(Operating profit/Total Capital Managed)*100/1=% Return on Capital, measures Efficiency
Net Cash Flow after servicing debt (P&I), measures Liquidity
Growth measures addition to Wealth

Returns to capital relative to non-agricultural investments (excluding returns from land appreciation)



Summary

We have good land, dairy cows, infrastructure, plant and equipment, and some debt (the amount we need to grow the business, not grow bust)

We love dairy farming and want to make a living from it and also create choices for our family

To have choices in and about the future, we will need to build wealth

To build wealth we will need to make annual profits and net cash surpluses-and we know profit and cash and wealth are all different aspects of the business and each has to be looked at and looked after in the system

We know profit tells us if the farm business is any good and this is shown by % return on the capital invested, cash tells us if we can pay the bills and change in wealth tells us if we are creating options – or destroying them.

To make annual profits and net cash surpluses we will have to manage well the assets and farm inputs under our control and which make up the dairy farm system

We know our dairy farm system has six parts: human, technical, economic, financial, risk and beyond the farm

To make a good job of managing our dairy system we will need to make good decisions about all the parts of the system (this is the whole farm approach)

We know that business success depends on setting clear objectives, then developing strategy to achieve them

Good decisions may or may not turn out to be right decisions, because much is beyond our control and many good or bad things could happen which we cannot control, so we have to make good 'bets' (difference between a good decision and a right decision)

We know a bit about many of the things that could happen, how likely they are to happen, and what it might mean for the business if they did happen, singly or in combination, and we know how much risk and stress we are prepared to put up with to achieve what we want to achieve

Summary (cont)

We know the future is unknowable and more things could happen than will happen, and rare events with big consequences will happen-we just don't know when and how big

We know there are trade-offs between how much profit, cash surplus, wealth, choices we can create - and the amount of certainty or risk/uncertainty we are willing to put up with in order to get these things

We know risky events are things we can put odds on happening or not happening whereas uncertainty is about things we cannot imagine happening let along put some odds on them happening

We know if things are good they can only get worse and if things are bad they can only get better (reversion to the mean is a powerful force)

We know the farm system operates on the principle that as I add a bit more input, the extra benefit from each extra input gets less and less (Principle of diminishing extra returns to extra input added to all the other inputs, which means eventually the extra cost exceeds extra income and profit is reduced)

We know that a bit more of this in this part of the system, a bit less of that in another part of the system, then does the gain here exceed the loss there, overall am I better off? (Principle of equi-marginal returns to inputs used in different parts of the system, on farm and off farm)

We know if we use resources in one way we cannot use them in another way and the benefit from using them in the alternative way that we miss out on is the cost of using our resources in the way that we do instead of the other way (this is the principle of opportunity cost)

We know about spreading exposure to risks (Portfolio principle) and how higher gearing creates higher growth of equity when things go well-and destroys even more equity when things go poorly (Principle of increasing financial risk)

We know that if there is no risk there is no need for management- just planning will do it.

We know a crisis takes longer to arrive than you thought it would and arrives more quickly than you have expected: prepare don't predict

Knowing all of the above, we know all we need to know about running a dairy farm business successfully.

Risk –can put odds on. Uncertainty has no odds.

- Managing a farm is about managing risk and uncertainty (Risk is volatility of annual profit, ncf)
- No risk, no management . Minimize risk minimize return
- Managing a risky business is about gathering relevant information; weighing it judiciously; and acting accordingly
- Combined risky events, runs of risky events – major challenges

To understand risk in farm systems, and to manage it, it is useful to distinguish two types of risk :

Business risk (prices, yields, rain, pest, disease) and Financial risk (gearing)

Risk sometimes categorized as: production, market, financial, institutional, personal

Uncertainty – no odds on it happening

Uncertainty has the challenges of dealing with unforeseen threats and solving unanticipated problems, while raising the chance of benefiting from opportunities unexpected.

Seven Principles about Managing Risk:

Principle #1 is that risk creates return.

Principle #2 Intensification and growth increases annual average profit and volatility of annual profit (and complexity).

Principle #3 is the portfolio principle.

Principle #4 is increasing financial risk

Principle #5 sell risk you don't want to someone who is prepared to bear it, for a price.

Principle #6 manage well the risks over which you have control

Principle #7 set the business up to withstand whatever may happen (uncertainty)

risk creates return

RETURNS AND RISKS FROM INVESTMENT

A preferable to B, same profit BUT B has more risk

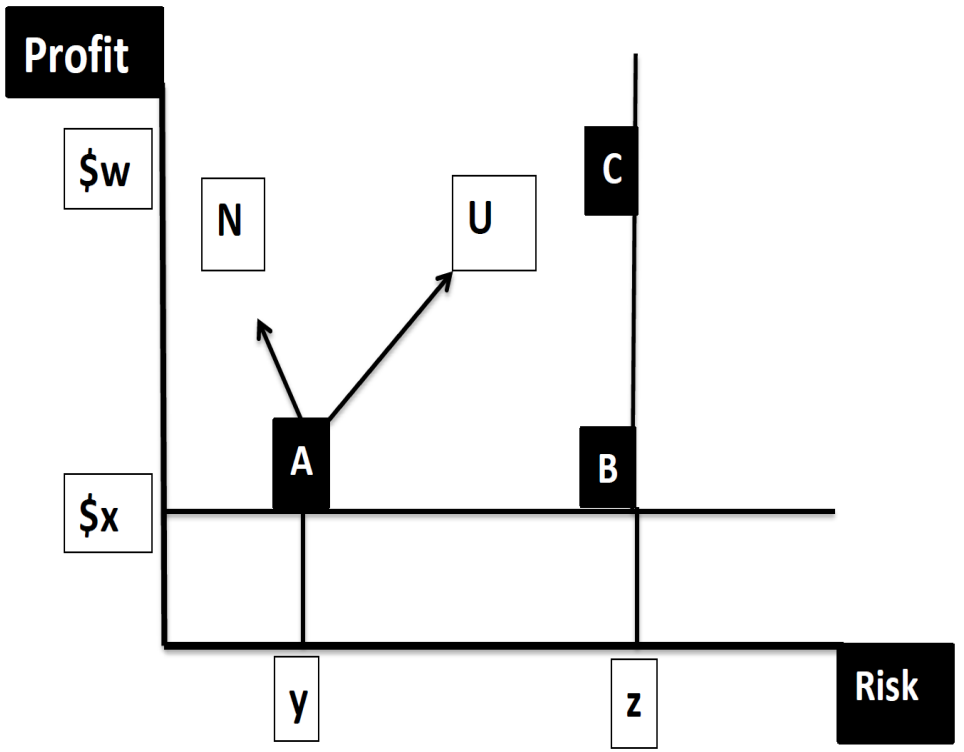
C preferable to B, same risk BUT C more profitable

A vs C depends on attitude to risk and return

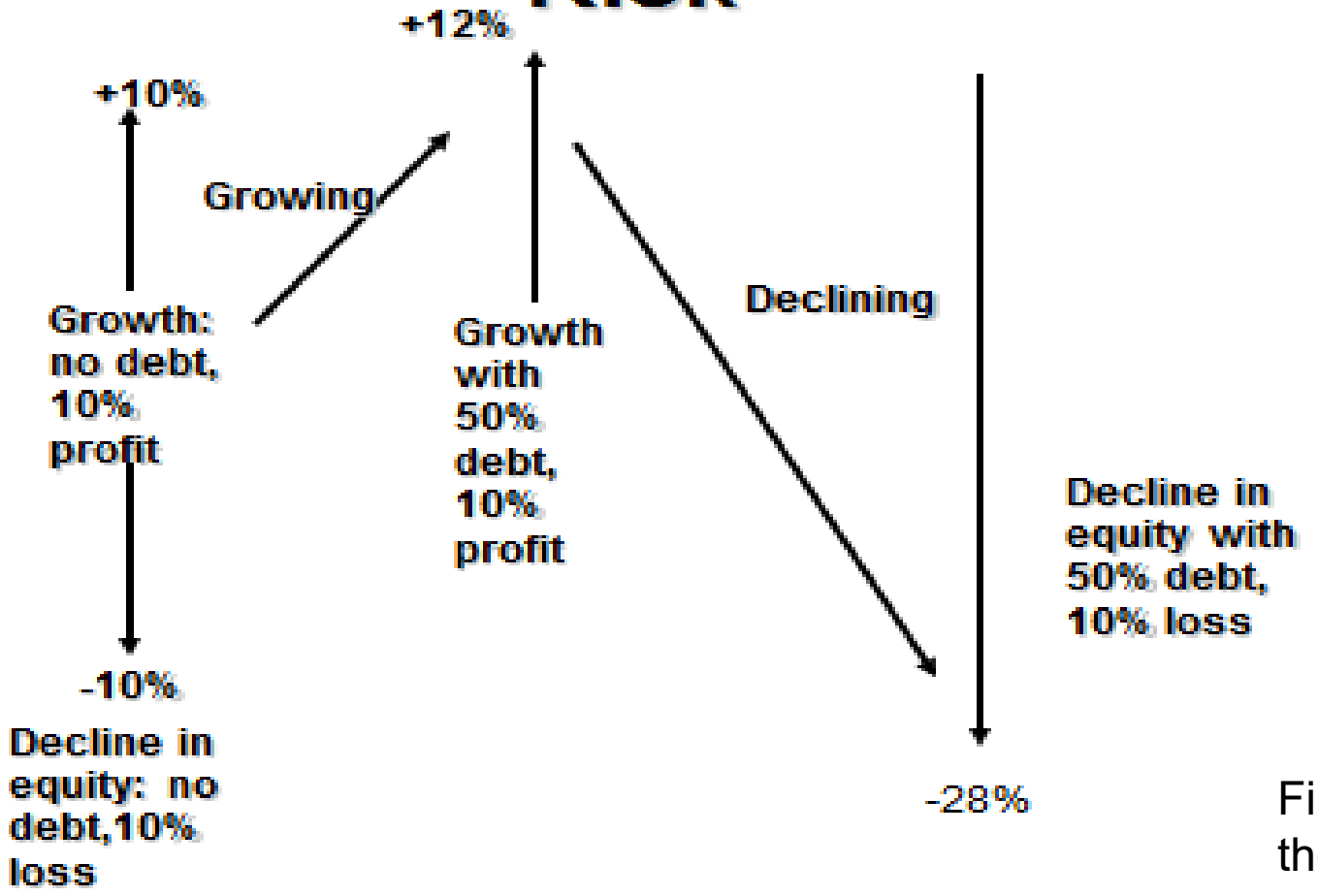
N Higher profit, lower risk: not usual

U Higher profit but higher risk: the usual case

The key is the farm decision-maker weighing up the return:risk combination/trade-off that they are prepared to be exposed to



Principle of Increasing Financial Risk



Financial risk exacerbates the business risk faced by operators of farm businesses

Managing the risk of changing climate?

- The usual: be better technically
- Just another increase in costs and risks, higher costs of production, so increase size to get size economies and remain competitive
- Risk management but more so: higher equity, portfolio, diversification of investments, activities and spatial
- Etc etc

And

- Take advantage of new opportunities

RISK and UNCERTAINTY in analysing, planning, managing business

- Uncertain, unknowable future – what's it mean for managing our business?
- What matters is the quality of decisions in the face of uncertainty.
- Eliminate risk, eliminate return. Don't be afraid to go out on a limb- that's where the fruit is.
- Be technically good. Risk comes from not knowing what you are doing (Buffet).
- Good decisions vs right decisions
- First step in risk management is to acknowledge the reality.
- In the middle of difficulty lies opportunity.
- It is ok to take risks, provided you manage them well.
- Even a correct decision is wrong when taken too late.
- Delay sets thing to rights.
- If don't do risk management - no matter what business you are in - it's a risky business.
- If treat managing risk as a part-time job, soon looking for one.

- Volatility vs consequence.
- Risk does not mean danger-it just means not knowing what the future holds.
- Take no more risk than you need to get the return you want.
- Probability-based guesses about the future – go from helplessness to informed choice.
- One of the biggest mistakes a forecaster—or a decision maker—can make is to over-rely on one piece of seemingly strong information because it happens to reinforce the conclusion he or she has already reached.
- What if I am wrong?
- Things that baffle probability. Rare events with big impacts.
- Maximize the areas we have some control over the outcome and minimize the areas we have absolutely no control over the outcome.
- Hope deceives (All that glisters isn't gold: Even donkey droppings glisten).
- Recklessly optimistic vs recklessly conservative.

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The best *Managers* of farm risk:

- are masters of information and technically very good
- understand business risk and financial risk
- use a mix of debt and equity that can be serviced with confidence
- manage the good times to set up to exploit the bad times
- buy and sell in counter-cyclical ways
- apply the portfolio principle; spread risks with range of types of investment

Decision making

Making decisions is a process not an event- not an individual rational, linear, analytical exercise, where managers decide then act, but subject to tricks of the mind, biased judgements, over-confidence, sunk costs, seeing future choices in terms of past events, using information that may not be all the pertinent information because of the structure of the organization and groups within it involved in the process.

Decision makers make the mistake of focussing on what's the right decision, instead of what process will help make the right decision;

What should I do instead of how should I work out what I should do?

(Reference: The Art of Critical of Decision Making Michael Roberto 2009)

Decision-makers' rationality has limited – we can only know so much, only think so straight

Prospect theory - investors value gains and losses differently, placing more weight on perceived gains versus perceived losses. An investor presented with a choice, both equal, will choose the one presented in terms of potential gains. The probability of gain regarded as higher than probability of loss. Investors value gains and losses differently: a possible loss is worse than an equivalent gain. Over-optimistic about the upside.

For example, assume that the end result is receiving $25. One option is being given the straight $25. The other option is gaining $50 and losing $25. The utility of the $25 is exactly the same in both options. However, individuals are most likely to choose to receive straight cash because a single gain is generally observed as more favorable than initially having more cash and then suffering a loss.

Anchoring - the starting point in negotiation affects where you end up

Decision-makers interpret the evidence that suits their beliefs-confirmation bias

Spurious correlation drawn between events, past happenings, 'this caused that'.

Egocentrism – people 'just know', don't need analysis

Hindsight bias – the winner of the race always looks obvious after the race

Framing- whether a change is presented as risk/threat or opportunity, losses/threats vs gains

Intuition-experience, recognizing patterns, cues recognized on basis of past experience, can lead astray when encounter something beyond our experience

Drawing analogies 'This is like…..', but ignore key differences

Wisdom of crowds – two heads are better than one versus group think-going along to get along

(Reference: The Art of Critical of Decision Making Michael Roberto 2009)

Einstein- everything that can be counted does not necessarily count- everything that counts cannot necessarily be counted.

That’s not a plan, that’s an idea- and not a very good idea at that.

The information you have is not the information you want. The information you want is not the information you need. The information you need is not the information you can obtain. The information you can obtain costs more than you want to pay.

If what we end up knowing after an event, was known before the event, we would have made a some-ways different decision before the event.

Even in periods of dramatic, rapid transformation, there are vastly more elements that do not change than new things that emerge.

Face the brutal facts.

Prepare don’t predict.

Planning useful, plans useless.

Guard against the future as if it were the present.

There is a word for simple answers to complex questions: Wrong.

Solving problems by making the solution more complex than the problem!

Good decision-makers make their good decisions by doing the following things:

- Using as much information as can obtained at the time the decision is made.
- They use information, experience, intuition, judgement to develop rules of thumb that work (quick, efficient decision making).
- They use marginal thinking: a bit more of this, a bit less of that.
- Ask the right questions (the question is the answer).
- Face the brutal facts.
- Understand system (whole farm approach)
- Know there are only are only 2 or 3 key factors that matter
- Use experience, keen observation, and have a comprehensive ‘world view’
- Listen to ‘experts’ but know experts only ever see part of big picture.
- Do not over-analyse, act quickly, decisively, good options disappear
- Can say no to an opportunity – be another one the next day
- Know it takes longer than planned to reach potential
- Know knowledge is incomplete; some things just aren’t knowable; unexpected things happen all the time
- Know Nature varies unpredictably, recognize uncertainty
- Know people misunderstand one another and make mistakes
- Know we cannot predict the future accurately so have to imagine it instead.

In practice, making good decisions means using approaches to forming judgements and making decisions that explicitly incorporate good understanding of the following:

- the clouds of uncertainty surround decisions; this means the least, and best, we can do is undertake serious decision analysis, using a structured, formal and well-documented approaches.
- economics is the discipline of choice and risk applies the correct perspective; place the organization for which the decision is being made at the centre of the environment and consider the many directions and forms of connection with the world
- the folly of focussing much on past while recognizing that the past has created the constraints and possibilities of the present and future
- it is useful to explicitly imagine a small number of futures – we do this implicitly anyway, so make it explicit, and even though this does not tell us much about likelihoods, what else can we do?
- compare alternative futures, not a future compared with the current situation
- the creative enterprise of individuals in the organization as well as the 'innards' of the organization are the keys the knowledge needed for growth of organizations
- economic analysis (efficiency, opportunity cost, equi-marginal returns, is it worth doing) and financial analysis (cash flow, who funds it) growth in wealth (net worth, balance sheet structure) are different, necessary parts of analyses
- understanding about the key elements of systems and the basic sources of net benefits, and implications of changes to systems

- understanding of what the organization can be best at, in some domain
- doing what the people in the organization are passionate about
- being mindful of the dictates of the principle of increasing financial risk that constrains size
- it is important to focus on distributions not averages, and especially on events in tails and middles of distributions
- know that ‘errors compound’ in budgeting; variance around the means of two variables (e.g. price and quantity) combine into wider variance around the sum of the two variables (Income)
- the nature of main benefits and costs have to be defined well, even if we cannot measure them
- benefits and costs should be valued if can be done; remembering that putting a number on something may create an impression of precision, but ‘it isn’t necessarily so’
- thinking hard about benefits and costs we cannot measure is worthwhile
- when costs are knowable and benefits are unknowable, use the threshold/breakeven approach. For these costs and this required return on investment, the benefits would have to be of this size. Benefits of this size could/could not be achieved in the following manner.
- Compile a plausible story about the investment in question, with a few angles, exploring a few futures, and encompassing a few calculations.

The best farm decision-makers:

- **Ask the right questions (the question is the answer)**
- **Face the brutal facts**
- **Understand system (whole farm approach)**
- **Know there are only are only 2 or 3 key factors that are decisive in a decision**
- **Use experience, keen observation, comprehensive 'world view'**
- **Listen to 'experts' but know experts only ever see part of big picture.**

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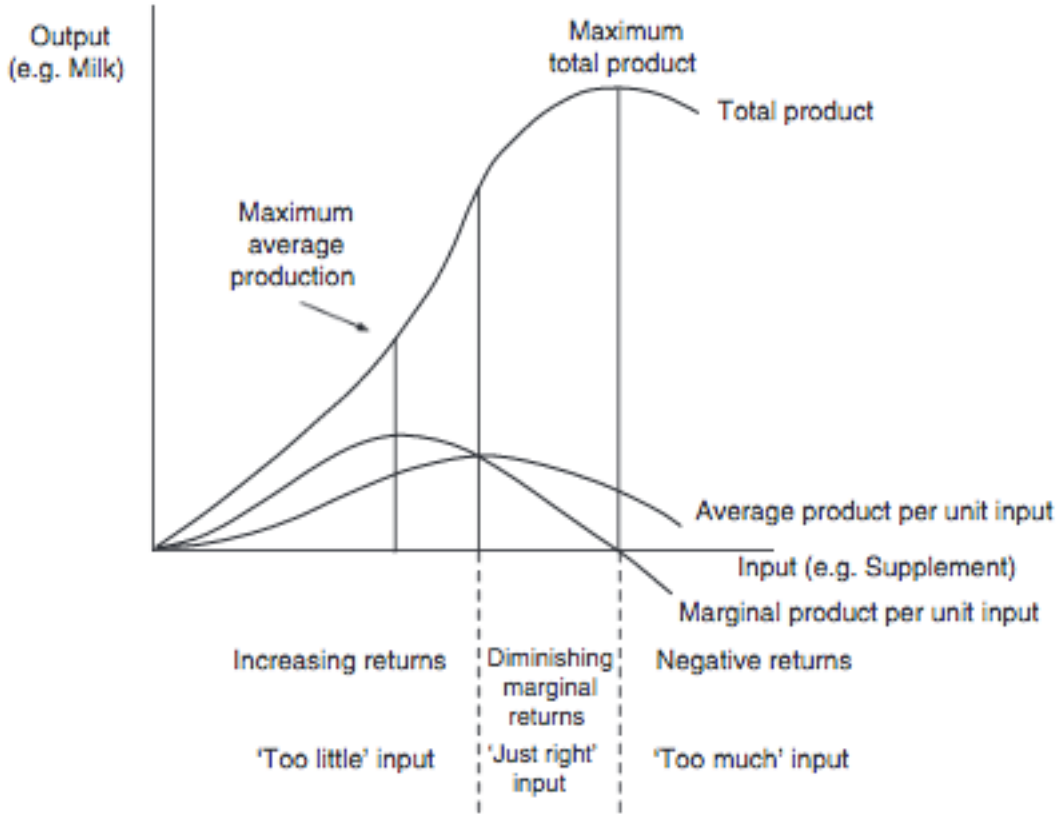
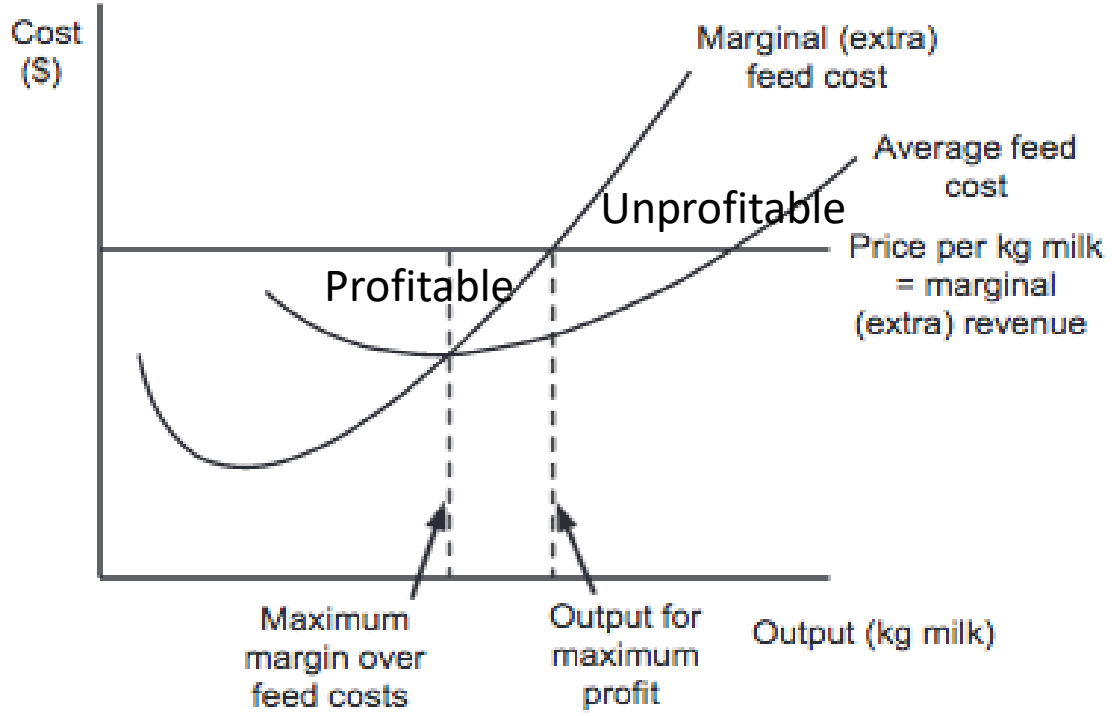
Use marginal (extra) thinking-reject advice based on average technical ratios



Marginal revenue equals marginal cost maximizes profit



Diminishing marginal returns to inputs means there are no maximums in maximising profit!

Yet we talk like there is:

- Maximum pasture growth
- Maximum pasture harvest
- Fully feeding cows
- Maximum milk production

COMPARE YOURSELF WITH YOURSELF BECAUSE EVERY CASE IS DIFFERENT,

And, Partial 'Benchmark' numbers in isolation CANNOT tell the true story

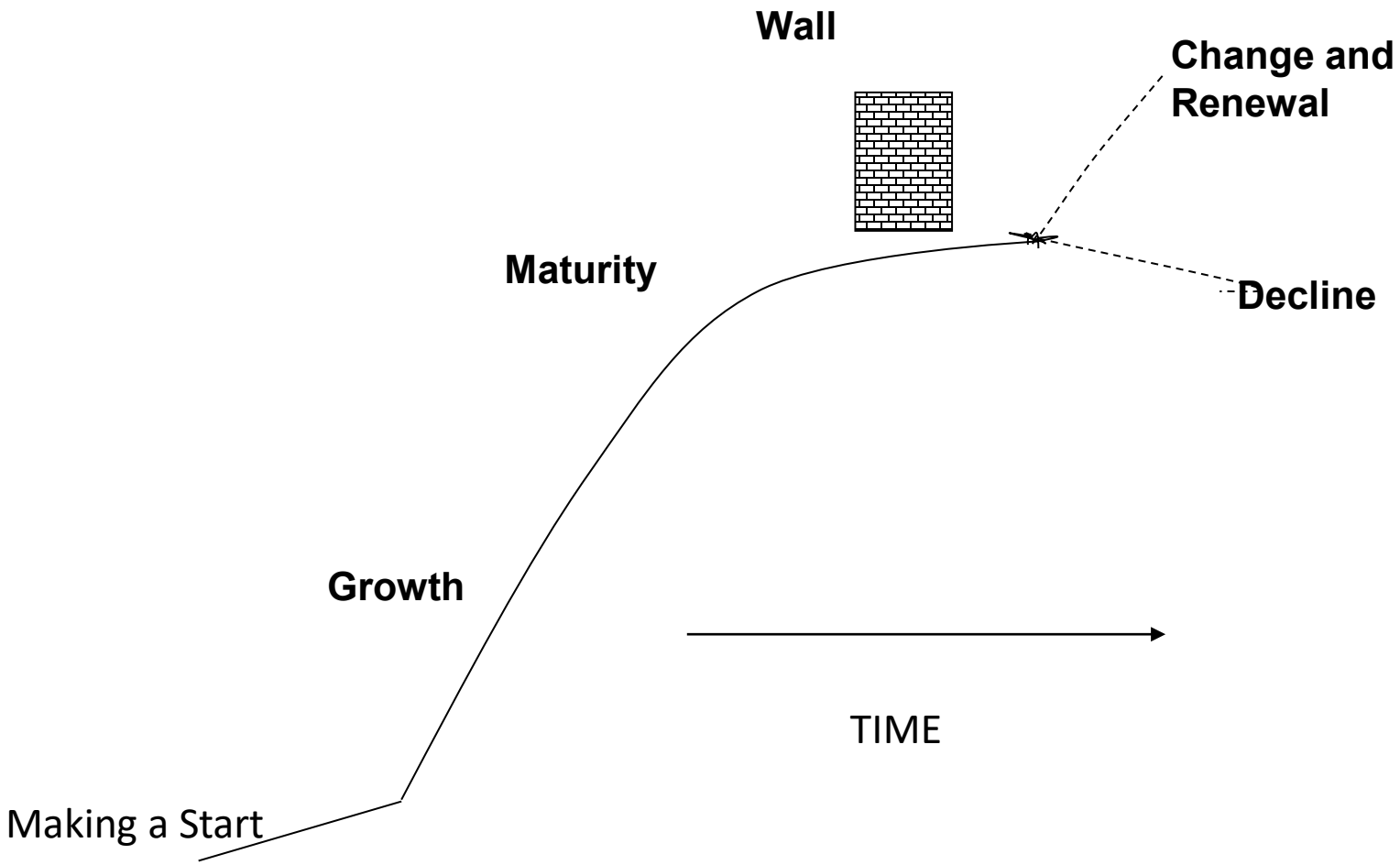
Partial benchmark data is often used to compare the performance of farms – it is not meaningful or helpful to do so.

Check out these comparative analysis numbers for a group of farms

Benchmark Parameter	Best Result per Parameter		Parameters of 'Best' Farm	
	Result	Farm ID #	Result	Farm ID #
Stocking Rate (cows/ha*)	3.74	37	2.08	2
Pasture Harvest (tDM/ha)	12.4	38	8.4	2
Milk per Cow (litres)	10,730	22	6,022	2
Milk per Ha (litres)	21,033	37	12,555	2
Cows per Staff Unit	74	16	67	2
Debt per Cow	$125	58	$1,859	2
Pasture Cost ($/tDM consumed)	$68	38	$107	2
Concentrate Cost ($/tDM consumed)	$166	9	$248	2
Milk Price (c/litre)	46.0	42	41.4	2
Cost of Production (c/litre)	29.8	11	35.8	2
Return on Capital	**10%**	**2**	**10%**	**2**

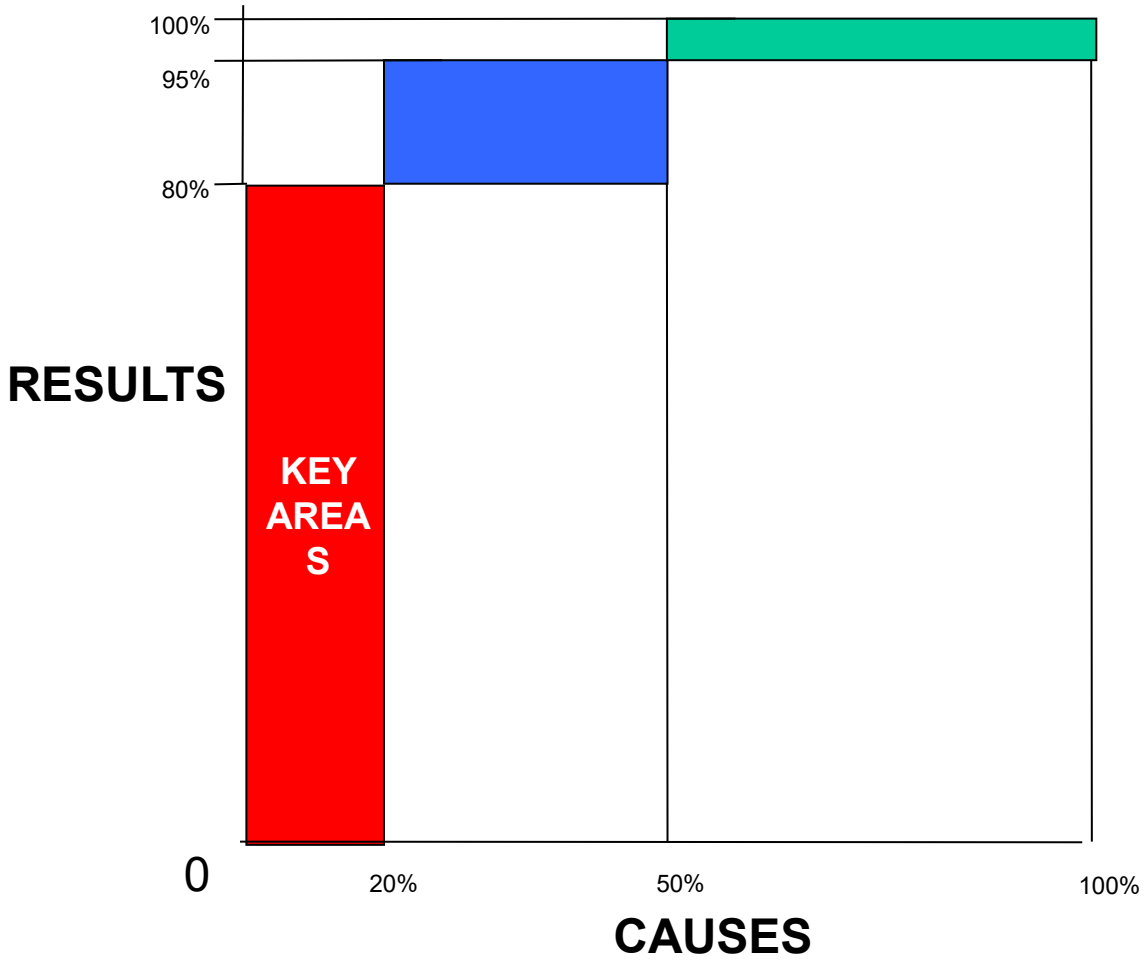
Farming is like a decathlon…not individual 'events'… but overall system performance!
(The Sum of Many Parts) – And the Winner is Farm Number 2

Where Is The Company On The S Curve



PARETO ANALYSIS (80/20)

Identify Key Result Areas



Know What Matters: The **important/urgent matrix**

IMPORTANCE \ URGENCY	HIGH	LOW
HIGH		
LOW		

keeping the business afloat

To stay in business over a medium or long time it is necessary to:

- preserve and improve the productive capacity of the resources of land, labour and capital;
- have returns to capital that are equal to or better than alternative uses of the resources involved.
- It helps a lot to have more good luck than bad luck.