



St Peter's School/Lincoln University
Demonstration Dairy Farm

Owl Farm - Future System

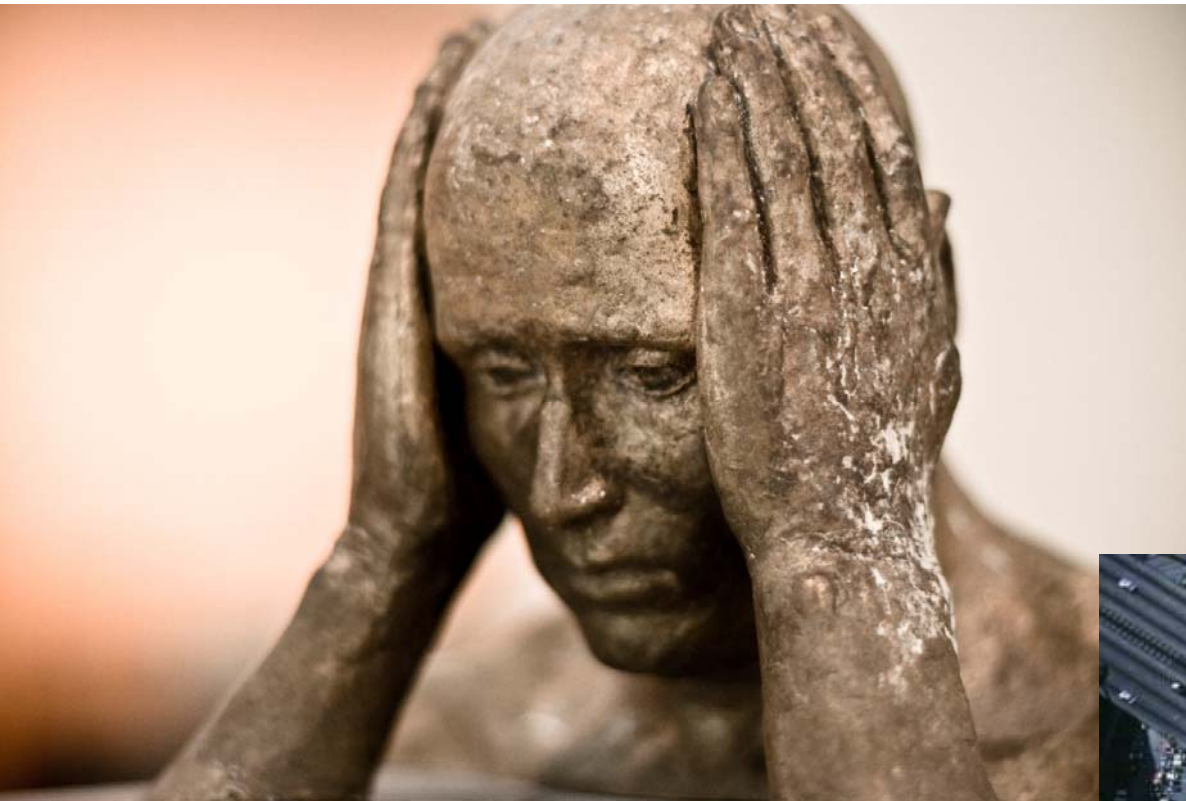
Where are we headed?





Owl Farm as a Demonstration Farm

- Here to demonstrate best practice and how we achieve our results
- We don't take our responsibility lightly – we have to get this right
- We want to lead, not just participate
- We're going to the edge of the cliff to see what's there
- We're sharing our process with you – that is far more important than the system we choose for Owl Farm



When we look at water quality improvements required, unknown Carbon policy and the ever changing nature of consumer requirements..?
“It’s Bloody Hard!”
Where do you start, and what do you do?

It felt like this picture – a birds nest of interwoven options and apparently we have to pick one?
Good grief!



The Farmer Perspective from the work we have done:

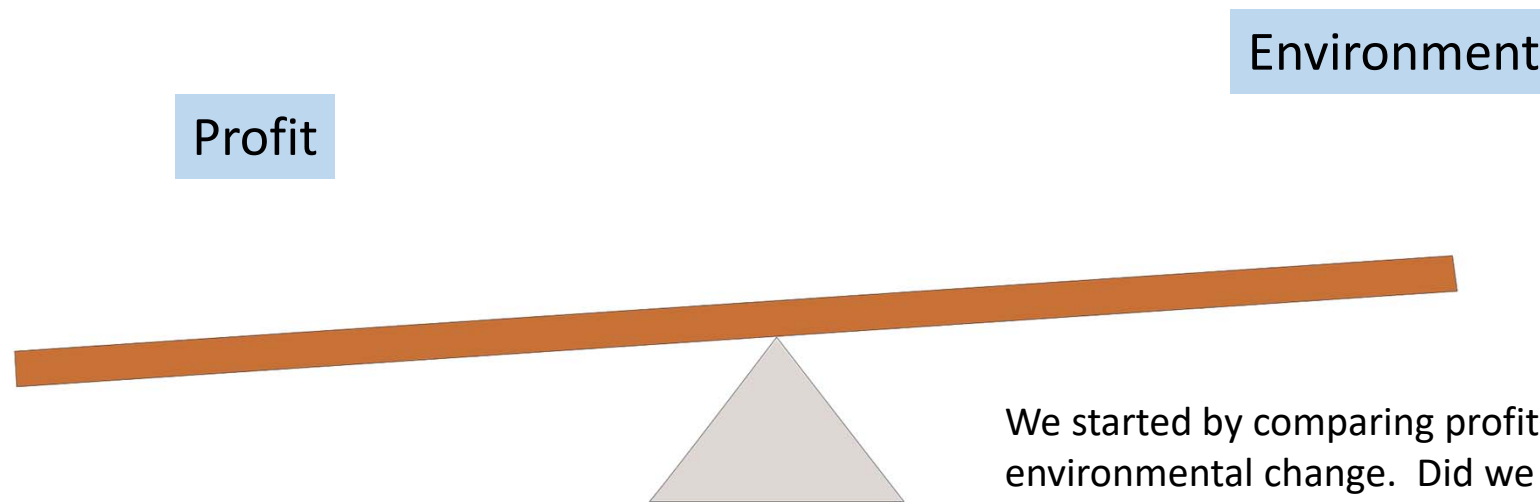
The environment we farm in is fluid

- Animal Welfare requirements
- People care and safety
- Unknown N reference point of industry
 - What happens after 10 Year?
- ETS/Carbon implications
- Biosecurity
- **This journey is a process of evolution, it's the process NOT our choice that we hope all farmers can gain insight from**



- You need a ute. Simple scenario. Easy right?
 - Double cab, single or Cab-extra?
 - Flat deck, well side or Canopy?
 - 2wd, 4wd, AWD?
 - Auto, Manual?
 - Colour?
 - Brand?
- So many choices and all of our answers are different.
- Are these the only criteria that are important?

What other criteria is important to you on your farm?



We started by comparing profit change and environmental change. Did we have to trade off one against the other – can we bend the see-saw? What impact did it have on labour though, or animal wastage, welfare? How would community react? Two criteria was not all we needed

We had 10 Targets Areas!

Profit

ROA%

Low P Losses to
water

People perf,
and safety

Efficient use of
Fresh water

Efficient milk
production

Animal Welfare &
Livestock
Performance

Productivity from
home grown feed

Community
Perception

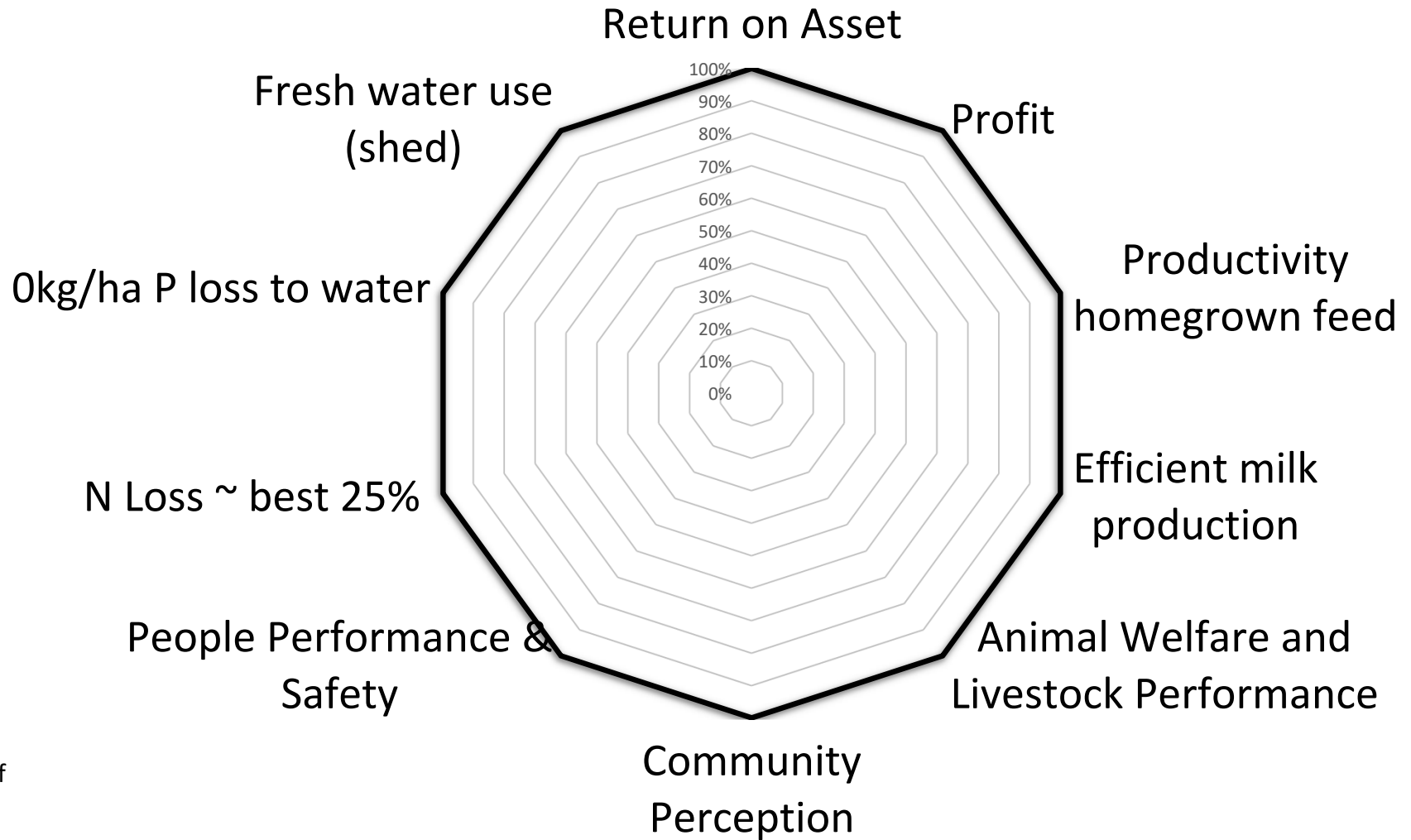
Argh! We ended up with 10 things that we felt were really important to us. A successful farm system would deliver a strong result in all of these areas for us. But how do you compare against 10 things at once?!

What's on Our wagon wheel?

We ended up with a wagon wheel – Our aim is to have a round wheel, and fully inflated. A flat tyre doesn't make a smooth ride!

You also have to bear in mind that we have very aspirational targets – we want to get to top 20% profit and have N loss of about the best 25% of industry. Your targets may not be such a big change from where you are now.

100% on a spoke would mean we got to our target. 50% on the wagon wheel would mean halfway there. E.g. Our Target profit at a \$6 payout with (no dividend included) is an EFS of around \$3,400/ha. This year at approximately \$2700, we're at a score of about 79%

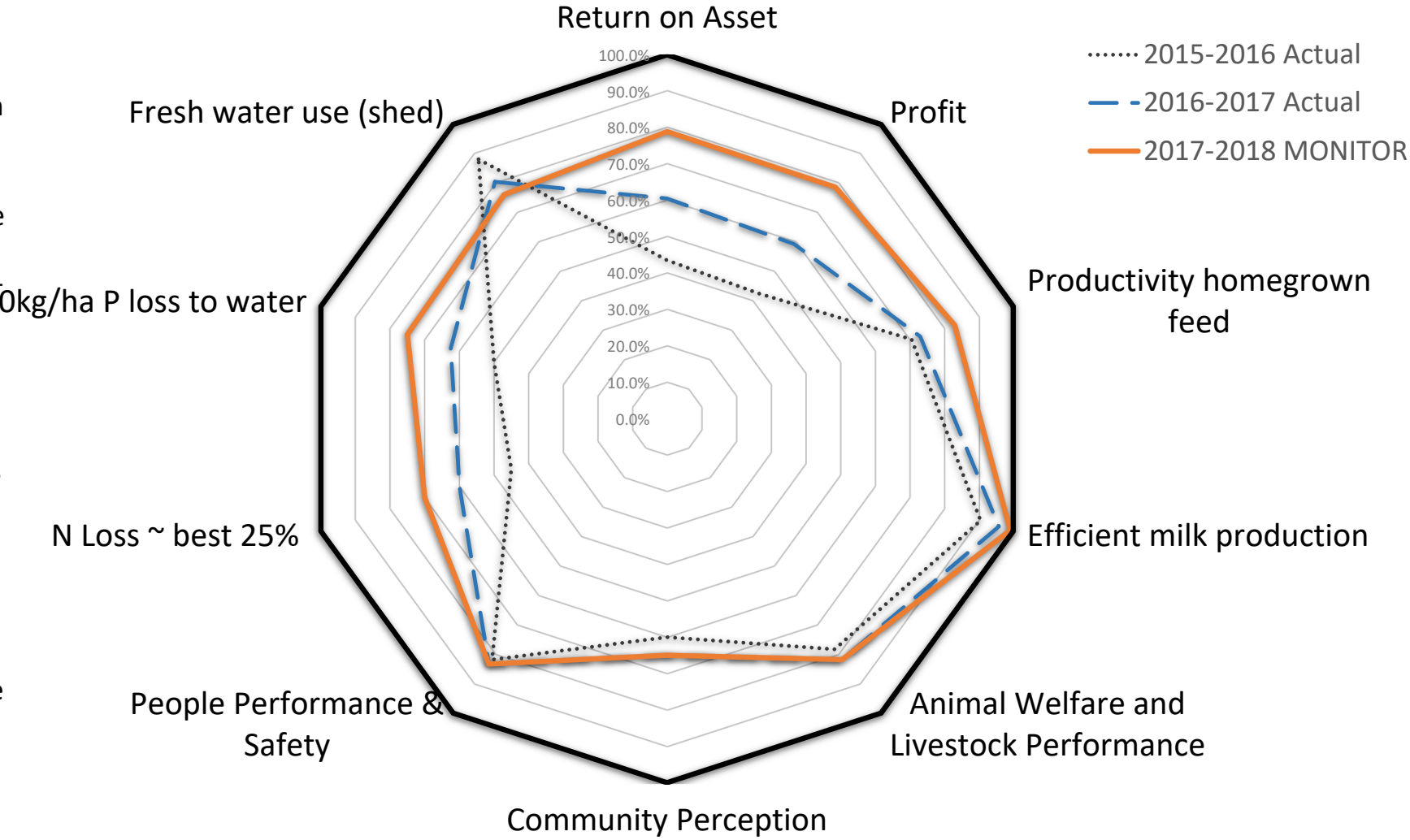


How do we perform on the wagon wheel so far?

We have seen continued improved in profit over the last 3 years which mirrors the improvements in the amount and quality of homegrown feed, along with converting feed more efficiently to milk. Fine tuning systems and using the principles top farmers do, has helped us shift our profit closer to where we'd like it to be

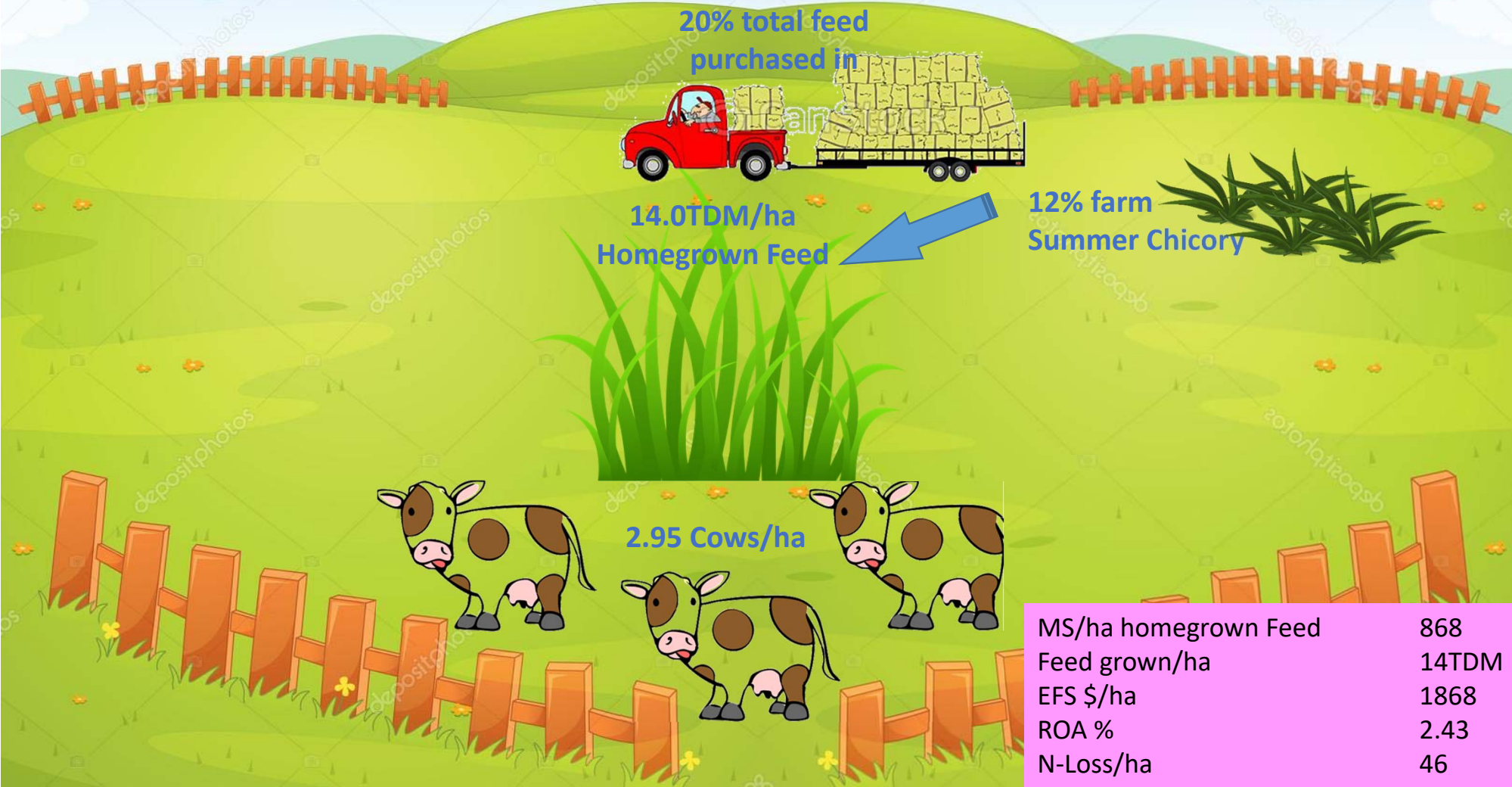
We've also seen a change in our Nutrient losses. From 46kg/ha lost down to 39 this year (forecast). This comes also from a reduction in Nutrients imported in feed, but also because more homegrown feed and more homegrown milk mans there is less surplus N lost from the system.

It's a good news story. It's a start.



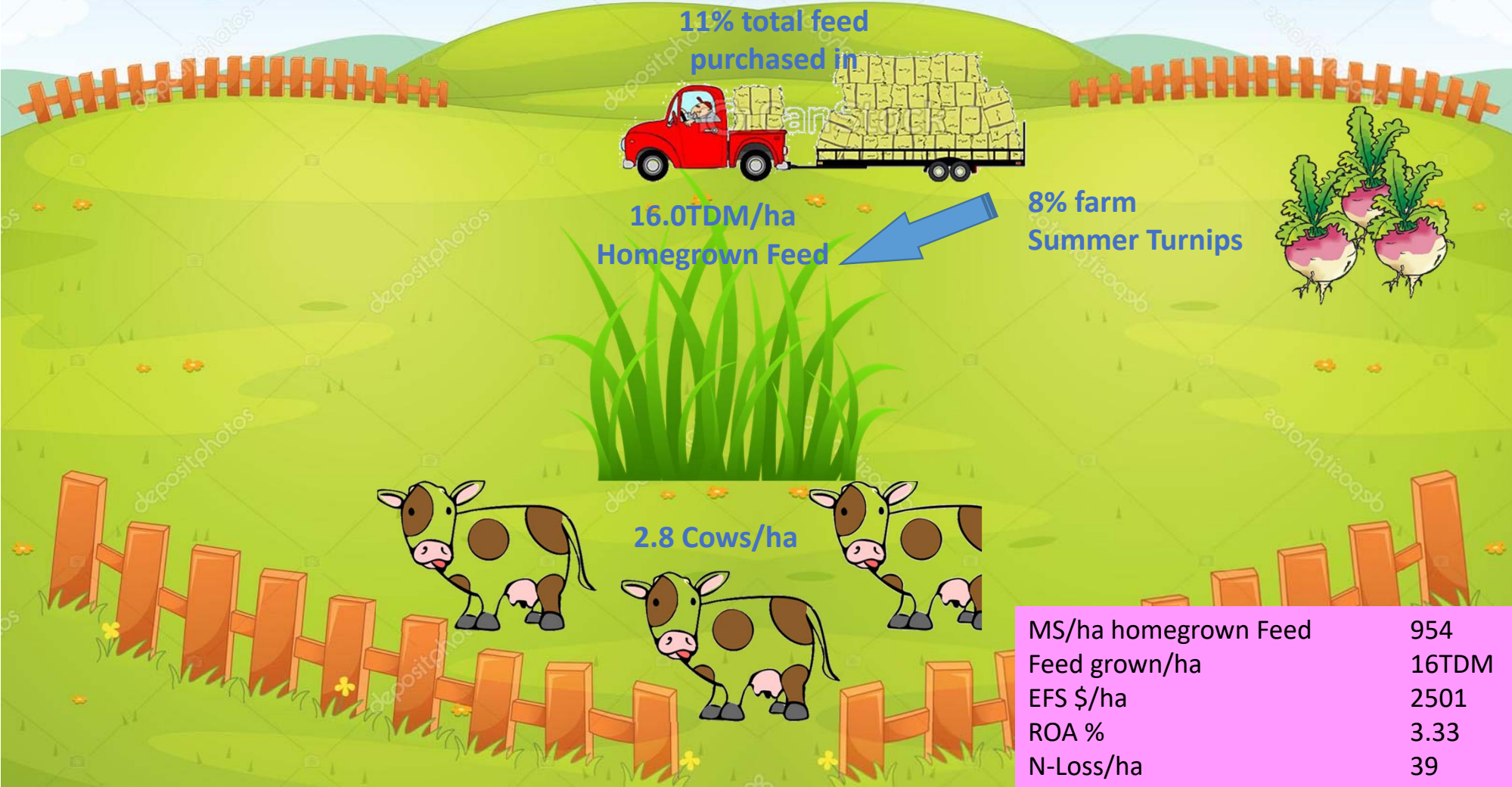
Here is what our farm system looked like at the start – for the very flat tyre on the graph before

Baseline



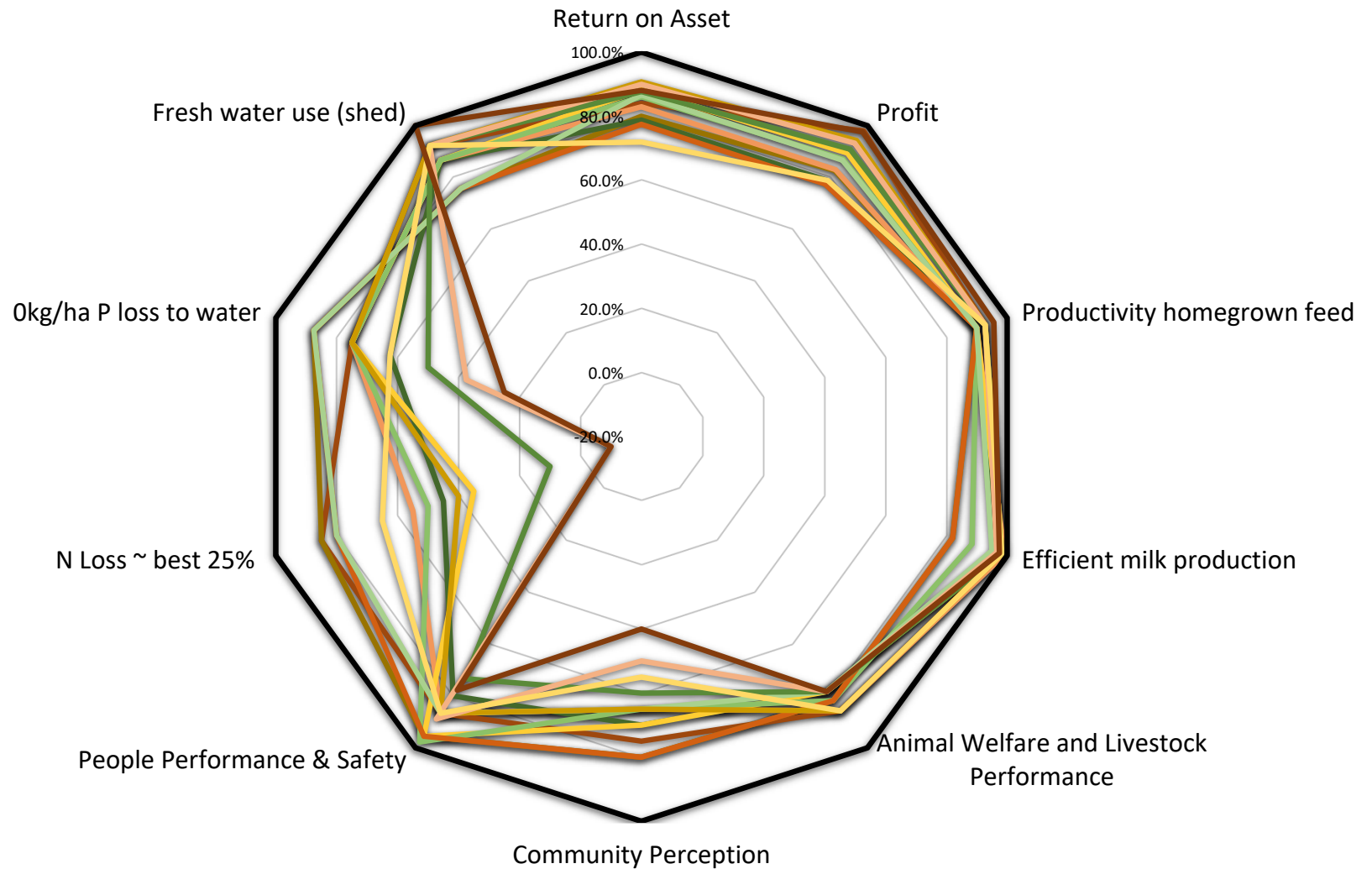
Here is what our system looks like now – we're more rounded.

Current System – Status Quo



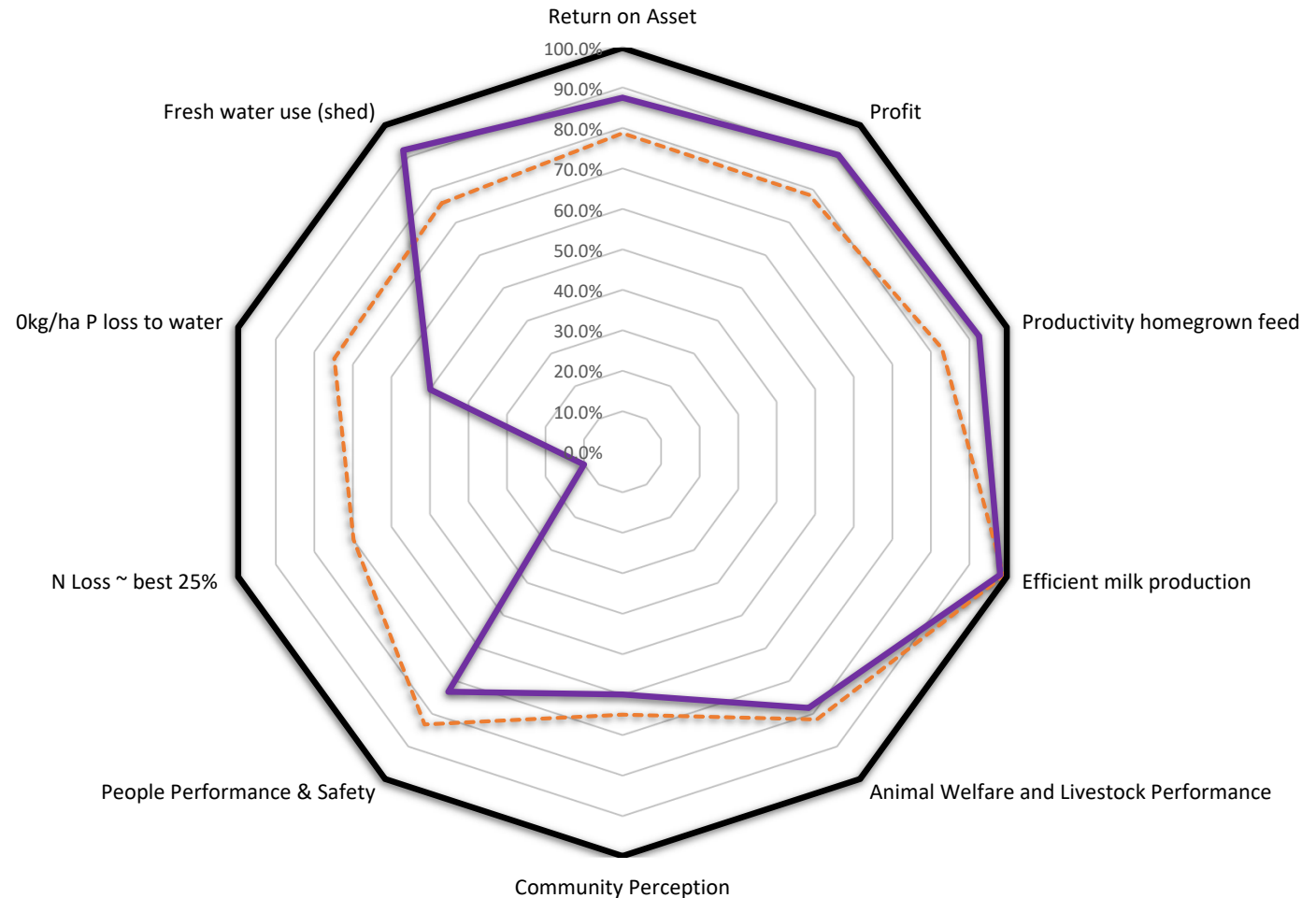
We started with 11 options . And now that we have a framework to evaluate them, we can begin to draft out systems that don't stack up. They produced rather a Range of performance on our wheel in some areas, but quite close in other areas. The key is, that If you have your goals clear, the answer will show itself.

How did the 11 options stack up?



Start with the systems that drove profit highest. Can drive at high profit systems but for us the enviro footprint deteriorates badly with either more nutrient cycling in the system, or just more captured on feedpads, more rainfall captured adding effluent volume. We would then have to add more money in capital improvements to extend or effluent area and other techniques to drop our footprint back to current levels, and we wanted to make it better not worse. Not to mention the extra capital spent hits the bottom line. We feel this may not be well perceived by any audience, how would our total audience-set respond to milking more cows, more feed coming in?. Some of it is also NOT replicable (everyone winter milking doesn't work based on soil type, contour, available market for premiums!). This is not the right leadership position for us – it does not meet our goals. Other systems drove big positive environmental change, but took or profit below where we are now. That didn't work either.

Highly productive systems = High profit



We ended up with two Farm systems that did a reasonable good job of hitting targets all the way around the wagon wheel.

They are slightly offset with each other, and they are stronger in different areas.

They also throw up a host of different challenges in HOV they need to be achieved, and other threats and opportunities they bring to the business.

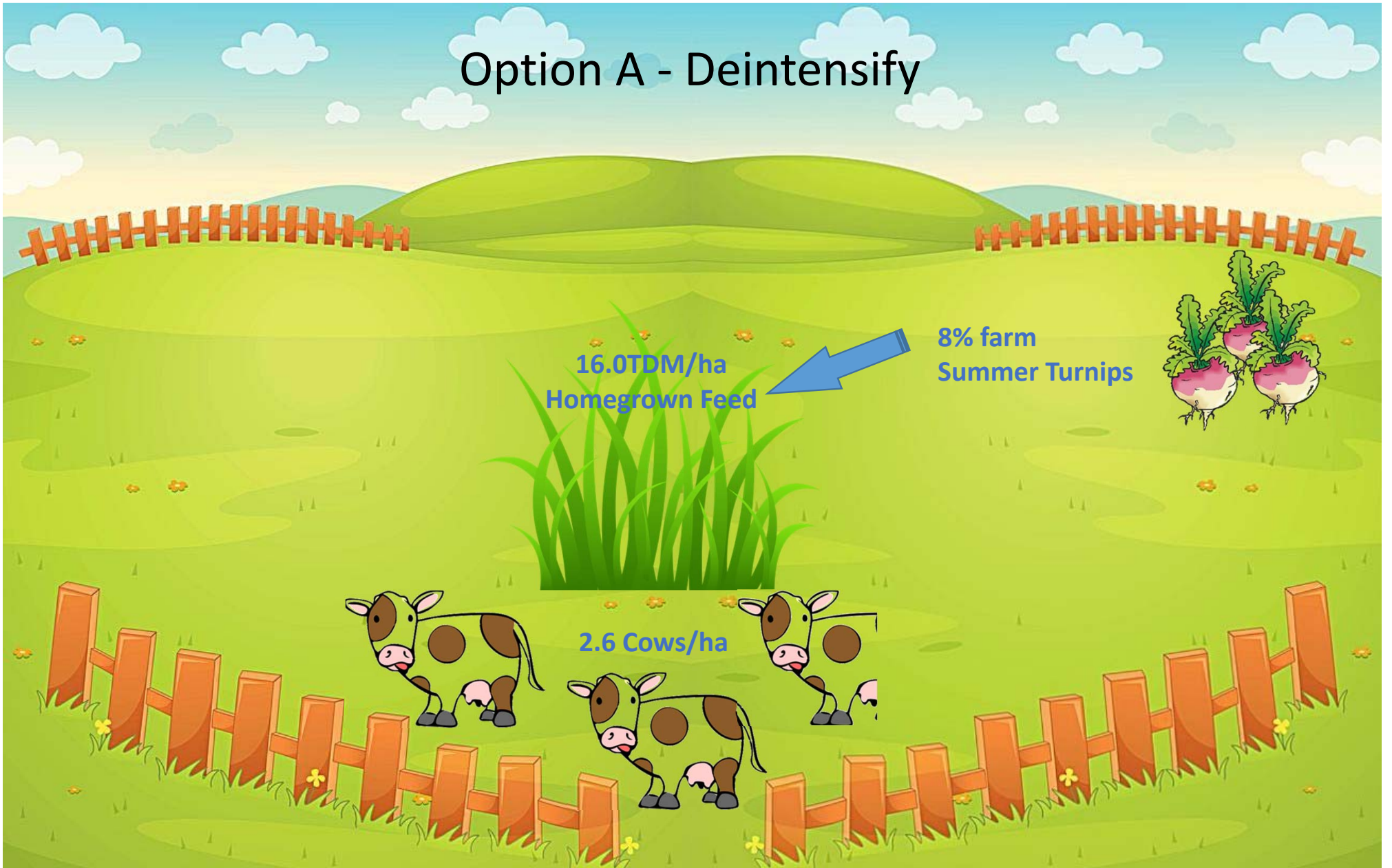


Option A - Deintensify

16.0TDM/ha
Homegrown Feed

8% farm
Summer Turnips

2.6 Cows/ha



Option B - Infrastructure

5-10% total feed
purchased in

Feed pad for efficient
utilisation of all feed

Cows stood off pasture
to capture nutrient and
Prevent over-grazing

16.5TDM/ha
Homegrown Feed

8% farm
Summer Turnips
8% farm
Maize Silage

Cost
~\$750k

3 Cows/ha

For us, choosing option B or the invest in infrastructure pathway, would lead to this farm system.

This would mean a feedpad plus an area for cows to be stood off when they don't need to be on pasture. E.g. winter when allocations of pasture are low, soils are wet and pugging is a frequent risk.

Also summer when pasture allocations are low and over-grazing pasture will adversely affect pasture persistence.

From a welfare point of view, we think we need to consider all the way up to comfortable stand off areas, that offer shade for cows also. This could look like anything up to a composting barn, with feed out facility enclosed.

The key thing to note, we aren't looking at any more bought in feed than we have now, it's the ability to increase homegrown feed with maize silage and have strategic feed levers to pull that allow us to maximise milk output.

Other farms are partway down this pathway with feedpads already. You might add a roof, or an adjacent loafing pad, or both in stages over time.

<u>Data at March 2018</u>	Current	Deintensify	Infrastructure
Cows Milked	425	390	450
Production kgMS/ha	1,200	1,000	1,400
EFS/ha	\$2500	\$2900	\$3300
Nitrogen Lost	39	34	33
Feed imported	600kg/cow	0	600kg/cow
Nutrient tools	few	few	Significant
Animal welfare tools	few	few	Significant
Soil/pasture protection	little	little	Significant
Capital required		~50K	~750K



- We reached this point and we patted ourselves on the back. We found two options for us! 😊
- Then the discussion started...
 - What about if you have a run off? Or winter off?
 - What about if you are winter milking now – do you need to stop?
 - What if your in-shed feeding and feedpad work like clock work and you don't want to change the operating procedures?
- Our systems, were right for us. Not everyone.
- Our systems represent **PATHWAYS** and all farmers would need to travel down one of those if they needed to reduce nutrient loss to waterways.
- **The Journey we have travelled to define our own goals, is what sets the framework for the correct system for a farm. Same pathways, different destination.**

Two pathways to reduce Environmental losses, but maintain viable farming businesses

De-intensify
plus innov/Tech/Science

Reduction and restriction of total nutrients cycled
to minimise Environmental losses

Negatives

Positives

Invest in infrastructure
plus innov/Tech/Science

Nutrients Captured by holding cows off Pasture to
minimise Environmental losses

Negatives

Positives

Two pathways to reduce Environmental losses, but maintain viable farming businesses

De-intensify plus innov/Tech/Science		Invest in infrastructure plus innov/Tech/Science	
Reduction and restriction of total nutrients cycled to minimise Environmental losses		Nutrients Captured by holding cows off Pasture to minimise Environmental losses	
Negatives	Positives	Negatives	Positives
Inflexible	Lower capital	Not “grass fed story”	Nutrient utilisation
Less cost dilution	Less impact on soil	Capital costs risks	Less pugging, care for soils
Pasture mgmt. harder	More attractive – to staff	Extra labour	More homegrown feed
Lower prof @ high payout	Higher prof @ low payout		Feed utilisation better
	No extra debt		Better public perception
	Public perception better		Better animal health with more feed

Both pathways are viable, based on sound principles and will help us reach our goals. The process of getting here has been long. Because each of these systems, still has a reasonably long list of negatives and positives that it presents. These are the pros/cons the audience came up with on the day



- In Reality there is a middle ground or third pathway.
 - For many farmers and for us now, there is a third pathway of “sit and wait”.
 - This is ostensibly – to keep on going as we go making small changes and waiting until either A: we must change now, or B: technology arrives that allows a dramatic shift in nutrient loss to waterways in our current system.

Owl Farm - A sustainable farming Business

De-intensify to achieve environmental outcomes now + more with tech and science

Wait for technology and science to achieve enough environmental outcomes

Invest in infrastructure to achieve environmental outcomes now + more with science and tech

Negatives

Positives

Some farmers will not support this choice

Takes a strong position of Leadership to industry

Interim and total opportunity cost could be significant

Environmental outcomes occurs through reduction in nutrients cycled

Very little flexibility in system to deal with variable climatic experiences

Fewer variables, makes for a simpler system. Ability to make clear decision rules is easier.

Will not be easy to extract highest returns from homegrown feed with minimal stocking rate

Money saved on capital outlay could be deployed elsewhere later for productivity gains

Provides no change to current levels of animal comfort

New Zealand used to farm like this. Much faster journey to understanding optimisation

Provides no tools to protect pastures and soils from damage

Negatives

Positives

Technology could be slow to arrive

Integration could be seamless

Technology may require capital outlay later

No capital outlay in interim

Solutions could be "flash in the pan"

No loss of income in interim

Technology could add considerable costs

Technology could add revenue opportunities

Negatives

Positives

Some farmers will not support this choice

Takes a strong position of Leadership to industry

This system requires investment in infrastructure for immediate Environmental impact

The immediate investment for the environment gives large and rapid Environmental outcomes

"You can't unpour concrete" and recover capital spend if it doesn't work out like you hoped

Insulates profitability and presents many opportunities for increased returns

Uncontrolled feed inputs risks increased nutrient cycling. Discipline needed to prove system

Flexibility presented by being able to re-arrange inputs provides huge opportunities to drive profit.

Will be easier, but still difficult to extract higher returns from homegrown feed with more cows

Actively taking steps to improve animal comfort

Potential ETS influence on this system unknown

Actively standing off cows to protect pasture, soils, and prevent loss of sediment and ecoli to water



- Found two options for Owl Farm.
- They are just OUR SPECIFIC examples of two systems.
- The two pathways, are the same for all of us moving forward.

Doesn't matter where you've come from – there are only two roads for us moving forwards. But the thing to remember, is, we may be on the same road, but it doesn't mean we're driving the same car. Could be a Ferrari, an Amarok ute or a campervan – that's all up to you.



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