

Planning for the long term at 'Kelvin Downs'

The Lavel family are utilising water, wire and weirs to mimic natural processes in their cattle business.



'Kelvin Downs' is a cattle business owned and managed by Mick Lavel and his family at Springsure, Central Queensland. The key focus at 'Kelvin Downs' is to use systems that promote land regeneration resulting in a profitable cattle business.

'Kelvin Downs' has undergone dramatic ecological improvements since the Lavel family purchased the land in 2002. The family use Natural Sequence Farming, time controlled grazing and Joel Salatin's farming principles to mimic a natural ecosystem processes.

The key motivation for the family to adopt this system was seeing the land in poor condition and knowing a different result was required. The Lavel family's long-term focus and ability to embrace change has opened up many future opportunities at 'Kelvin Downs'.



Case Study Snapshot



Location: Springsure, Central QLD

Property size: 3,238 hectares

Currently runs: 1200 LSU

Average annual rainfall: 600mm

Enterprises: Beef cattle agistment.

'Kelvin Downs' is a family operated beef cattle business located near Springsure, Central Queensland that uses time-controlled grazing, Natural Sequence Farming and Joel Salatin's farming principles to create a business with long term profitability and ecosystem health.

Achievements:

- ✓ Ecosystem improvements
- ✓ Water improvements
- ✓ Business improvements
- ✓ Personal growth

Drivers of success:

- ✓ Openness to try new things
- ✓ Ongoing learning and implementation
- ✓ Passion for improving the ecosystem
- ✓ Business management

Ideas for future innovations:

- ✓ On-property community learning centre
- ✓ Layering grazing with poultry and pork enterprises
- ✓ Widespread education of food production
- ✓ Carbon sequestration opportunities

What makes this business sustainable?

The Lavel family at 'Kelvin Downs' use regenerative farming techniques to create a resilient ecosystem. The property is managed with a long term focus, balancing ecological and economic decisions. When the family purchased 'Kelvin Downs' in 2002 the property was in a state of ecological decline. Mick promptly introduced regenerative practices such as Natural Sequence Farming and time controlled grazing. The positive results from these practices encouraged the family to purchase two neighbouring properties. The aggregation is now 3,238 hectares, divided into 265 paddocks.

What makes this business sustainable?

- ✓ Ecosystem has vastly improved
- ✓ Low-maintenance and resilient business
- ✓ Increased carrying capacity and animal performance
- ✓ An endangered perennial bluegrass species is returning and colonising



Mick is a builder by trade. He spends approximately half of his time off-farm. Therefore, 'Kelvin Downs' needed to be a simple and low maintenance operation. The systems in place allow the land to regenerate with minimal human input, modelling systems that would occur in nature.

The Lavel family utilise the help of travelling international workers, called WWOOFers (Willing Workers on Organic Farms). The WWOOFers assist with animal management (checking waters, mustering cattle, feeding pigs and chickens) and building or maintaining infrastructure (constructing 'leaky weirs', fixing fences and assisting with property development). This is a mutually beneficial arrangement. It provides a rewarding, hands-on experience for the volunteers and lowers labour expenses for 'Kelvin Downs'.

'Kelvin Downs' is managed under an intensive time controlled grazing system. The number of livestock on the property is a direct function of feed availability. Movements between paddocks are frequent and dictated by the plant rest period. This system allows plants to replenish root reserves after grazing, promoting natural mineral cycles and sequestering soil carbon.

Dry (non-lactating) agistment cattle are the current enterprise managed on the property. This enterprise provides ease of management, value for time, consistent cash flow, reduced risk and greater flexibility. Currently the property runs approximately 1200 LSU (Large Stock Units). This can be increased up to 3000 LSU during an adequate wet season to match the stocking rate to utilise the feed available. The aim of this grazing system is implement light but frequent grazes during the wet season. This stimulates maximum growth before the grass enters a relatively dormant stage in the dry season.

Implementing the time controlled grazing system has doubled the carrying capacity at 'Kelvin Downs' and Mick believes there is potential to increase this further. The fundamental factor required to implement this system was property development and effective grazing management. Mick also states "the people

implementing the grazing system have to be fully committed and believe in the results."



The water system on the property is fully reticulated. Water is pumped from a bore to a tank then gravity fed to troughs. The property is subdivided into 265 paddocks, averaging 12-15 hectares in size using single-wire electric fences.

An additional management tool on 'Kelvin Downs' is Natural Sequence Farming practices. Mick has introduced "leaky weirs" to the natural watercourses on the property. Leaky weirs are designed to slow water velocity allowing it to spread over floodplains instead of

Increasing the health of natural waterways is a big focus at 'Kelvin Downs'

immediately running off the property. Vegetation around waterways is critical to stabilising soil on the bank and assisting with slowing water movement. Over time, the weirs catch sediment with the aim of lifting the bottom of the creek to the original flood plain level.

"The 'leaky weirs' will not work under most traditional grazing management systems. The grazing system must provide even grazing pressure, followed by long periods of paddock rest. Set stocking scenarios tend to result in cattle overgrazing the sweeter country around the watering points. This inhibits the growth of vegetation around the water point and defeats the purpose of the whole system." explains Mick. The desired outcome for these practices is to improve the health of natural waterways on the property. This largely contributes to overall ecosystem health which underpins sustainable and long term business profitability.

In recent years the Lavel family have observed colonies of an endangered grass species - King blue-grass (*Dichanthium queenslandicum*) - returning to 'Kelvin Downs.' This species cannot tolerate continual or

heavy grazing, so it's reoccurrence and colonisation at 'Kelvin Downs' is an indication that ecological regeneration is occurring under this management. The majority of the pastures on the property are native grasses such as Black Spear Grass, Paspalum, Forest Mitchell, and other various bluegrasses. There are approximately 40 to 50 different pasture species observed on the property. Mick knew that to achieve this biodiversity he needed to do something different to the grazing management he has observed most of his life. He states "if we want a different result, we have to do something different."

The family also utilises pasture cropping. At 'Kelvin Downs' this involved growing forage crops by drilling grain into an established pasture instead of bare ground. The aim of this practice is to improve soil biology and cultivate additional biomass for the winter months.

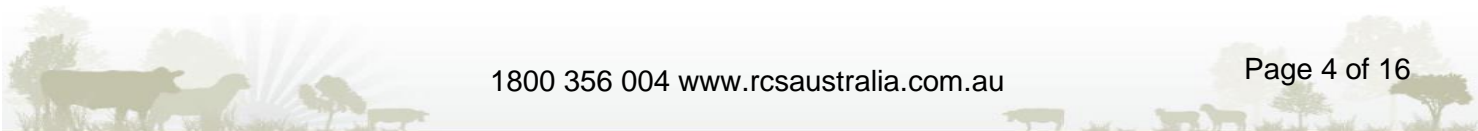
"If we want a different result, we have to do something different"

Chickens and pigs are currently being explored as potential enterprises at 'Kelvin Downs'. This practice is based on Joel Salatin's farming principles at 'Polyface' farm. This is currently happening on a small scale where free range pigs and chickens are shifted over paddocks previously grazed by cattle.

Overall, everything the Lavel family do in their business is to address the business aim; which is having an operation that produces and promotes healthy soil, healthy food and healthy people. Consistently engaging in education and keeping an open mind has been the key driver to their success. Mick feels they still have a long way to go, and is excited to see how much further the ecosystem can improve at 'Kelvin Downs'.



'Leaky weirs' aim to capture and utilise as much water as possible



Measured Success at 'Kelvin Downs'

For the Lavel family, grazing management is the biggest driver of profitability in their business. Therefore they are strong advocates for taking meaningful ecological measurements. They measure plant basal area, ground cover percentages, average annual LSU's, Stock Days per Hectare per 100mm rainfall (SDH/100mm) and rolling rainfall. Pasture budgeting and photo monitoring also show the family when they are making progress in the ecosystem at 'Kelvin Downs'.

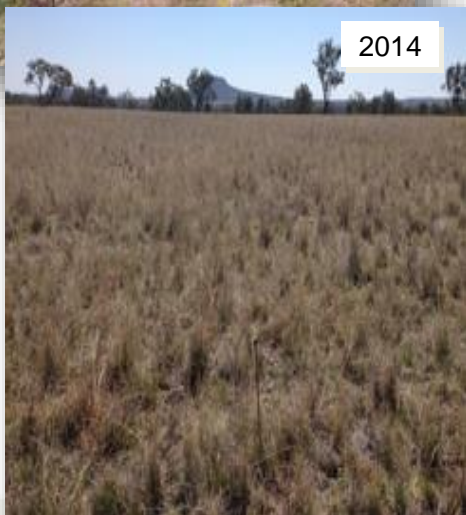
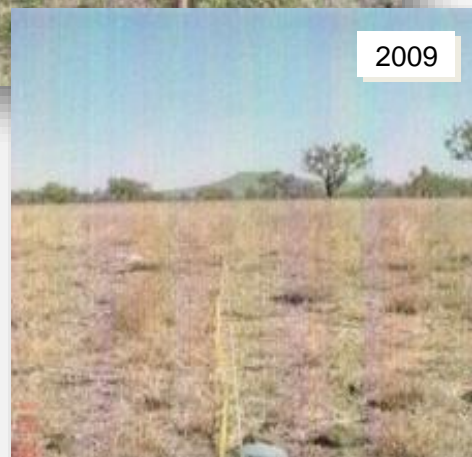
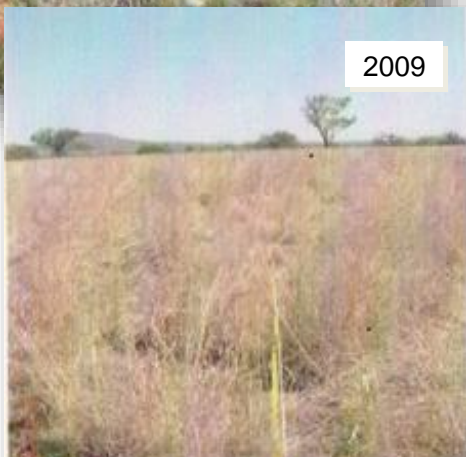
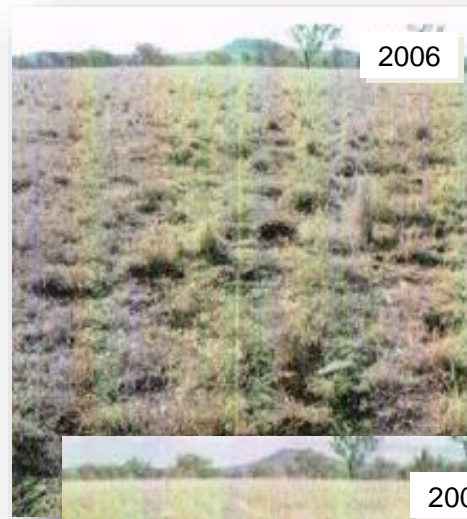
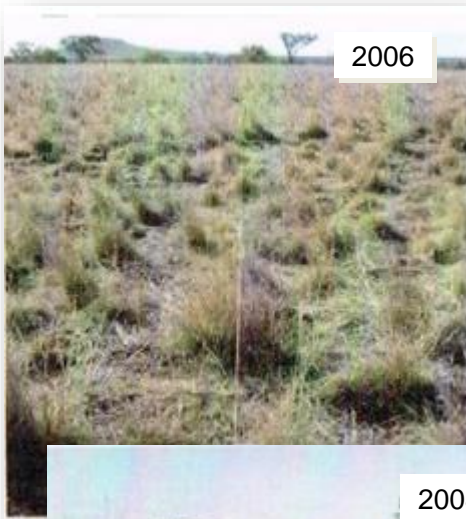
"There are always going to be wet years and dry years. It all comes back to how we manage our choices in these times."

For a business to be sustainable in the long term it must be resilient to changing factors such as drought. Mick feels that droughts can potentially be man-made. He states "There are always going to be wet years and dry years so it all comes back to how we manage our choices in these times." Mick manages drought by matching stocking rate to carrying capacity as a function of the feed budget. Mick says "once the feed budget is determined, it removes all concern about whether it rains or not. You just continually match stocking rate to feed available, based on pre-set rainfall thresholds."

The following data is from two monitoring sites on 'Kelvin Downs'.

Site 1

Site 2





The photo monitoring series shows there has been significant increases in groundcover in the last decade despite highly variable seasonal conditions in this time. Figure 1 shows the improvements in plant basal area since 2003. A healthy, established root system is critical to stabilising soil and producing productive pastures.

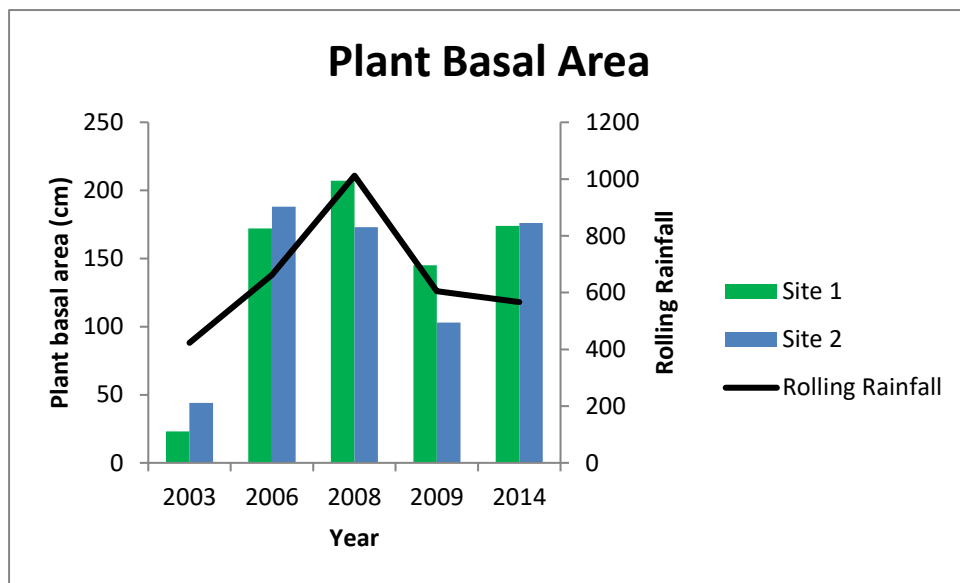


Figure 1 Plant Basal Area

Figure 2 shows a drastic increase in groundcover at both sites. Effective groundcover prevents topsoil runoff and increases soil microbial health.

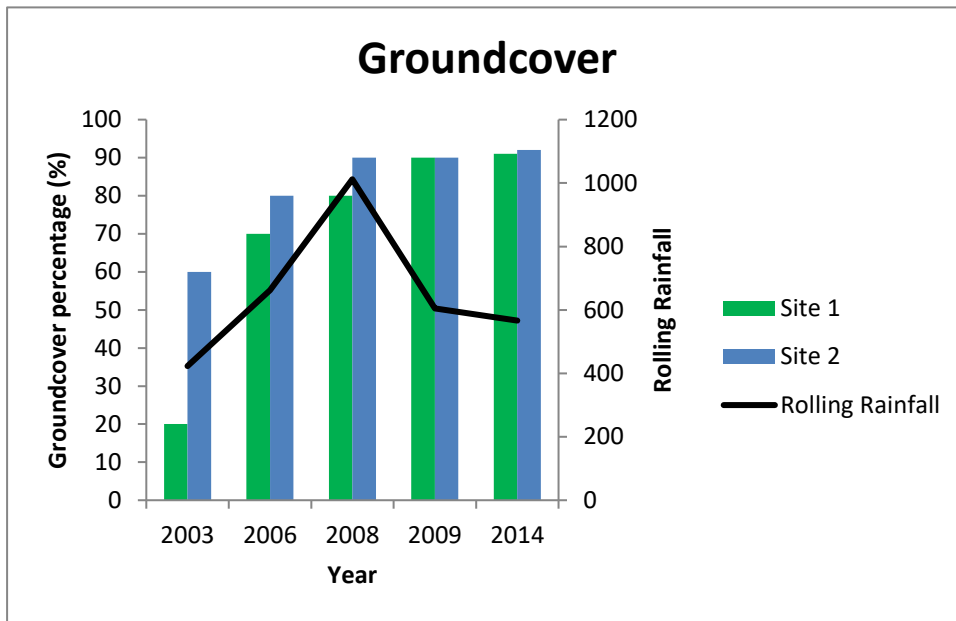


Figure 2 Groundcover measurements

Figure 3 demonstrates the significant increase in carrying capacity under the Lavel’s management at ‘Kelvin Downs’. The increase in groundcover and plant basal area from Figures 2 and 3 highlight that this is largely sustainable. This additional carrying capacity has a large impact on business profitability for ‘Kelvin Downs’.

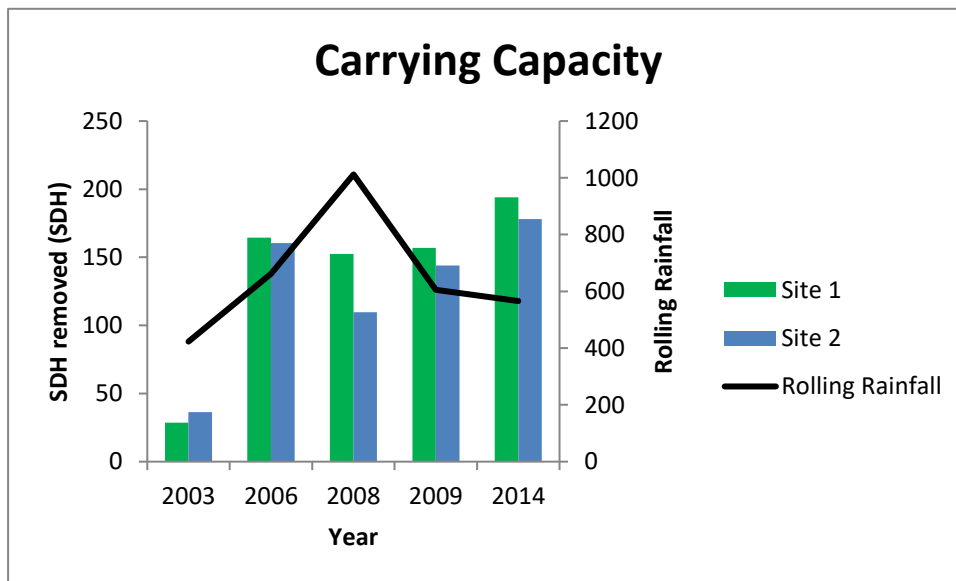


Figure 3 Carrying Capacity

Figure 4 below displays the changes in groundcover at 'Kelvin Downs'. The increase in the lowest 10th percentile line indicates that areas with lower ground cover have improved. This also shows that patch grazing is reducing as grazing pressure across the property is more uniform. It can be seen that the management system at 'Kelvin Downs' is having a positive effect on reducing reef runoff.

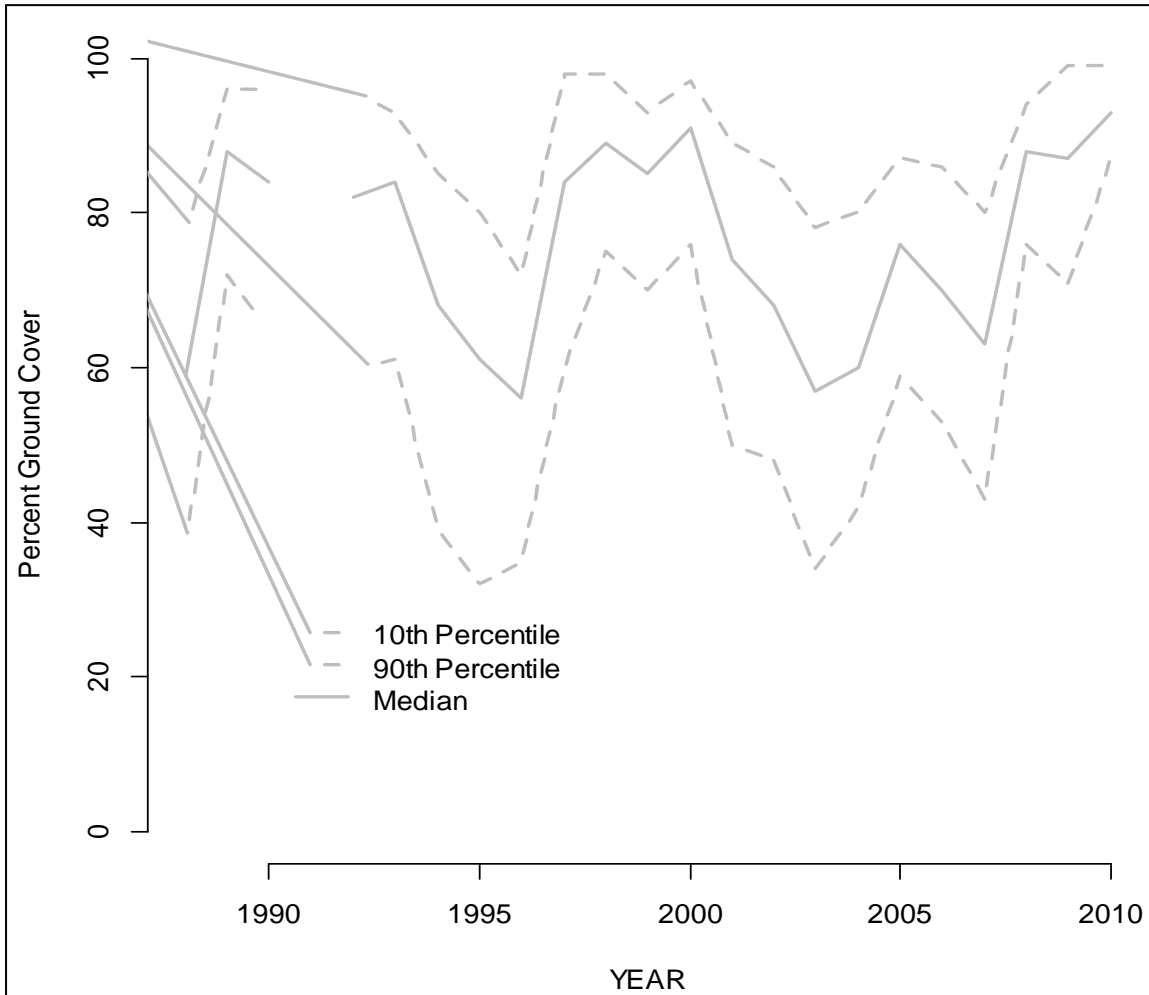


Figure 4 Groundcover trends at 'Kelvin Downs'

Source: Daniel Gregg CQ University

The cost comparison example below highlights the economics of time controlled grazing in comparison to traditional set stocked management at 'Kelvin Downs'. Set stocked management refers to cattle that continuously graze all paddocks on the property as opposed to rotating mobs and spelling pastures.

Cost Comparison Example:

Set stocking management vs time controlled grazing on 8000 acres at Springsure, Central Queensland.

Set stocked management:

Cost of development = \$0

Sustainable carrying capacity of 1 LSU per **15 acres** = **533 LSU** maximum to run on 8000 acres

Time controlled grazing:

Cost of development = \$30 per acre in wire, fencing, poly pipes & troughs.

$$\$30 \times 8000 \text{ acres} = \$240,000$$

Sustainable carrying capacity of 1 LSU per **6 acres** = **1400 LSU** - more than doubling the maximum carrying capacity compared to set stocking management

Return on Investment: Set stocking management vs time controlled grazing

With extra carrying capacity from using time controlled grazing:

An extra 876 LSU @ \$3.00per head on agistment for 12months = *\$135,000 return/annum*

Paying off the cost involved to convert to time controlled grazing in two years.

And saving further:

To achieve the time controlled grazing carrying capacity of 1400 LSU, **with a set stock management** you would need to purchase another 8000 acres. If land costs \$500 an acre:

$$8000 \text{ acre} @ \$500 = \$4,000,000$$

By not having to pay for an additional 8000 acres of land, you would save a further \$4,000,000 to run the same amount of LSU's under a time controlled grazing system.

The main conclusion that can be drawn from this cost-comparison example is that time controlled grazing provides a significantly greater return and improves long term ecological health simultaneously. Set stocking has less economic benefit and is detrimental to long term ecosystem health.

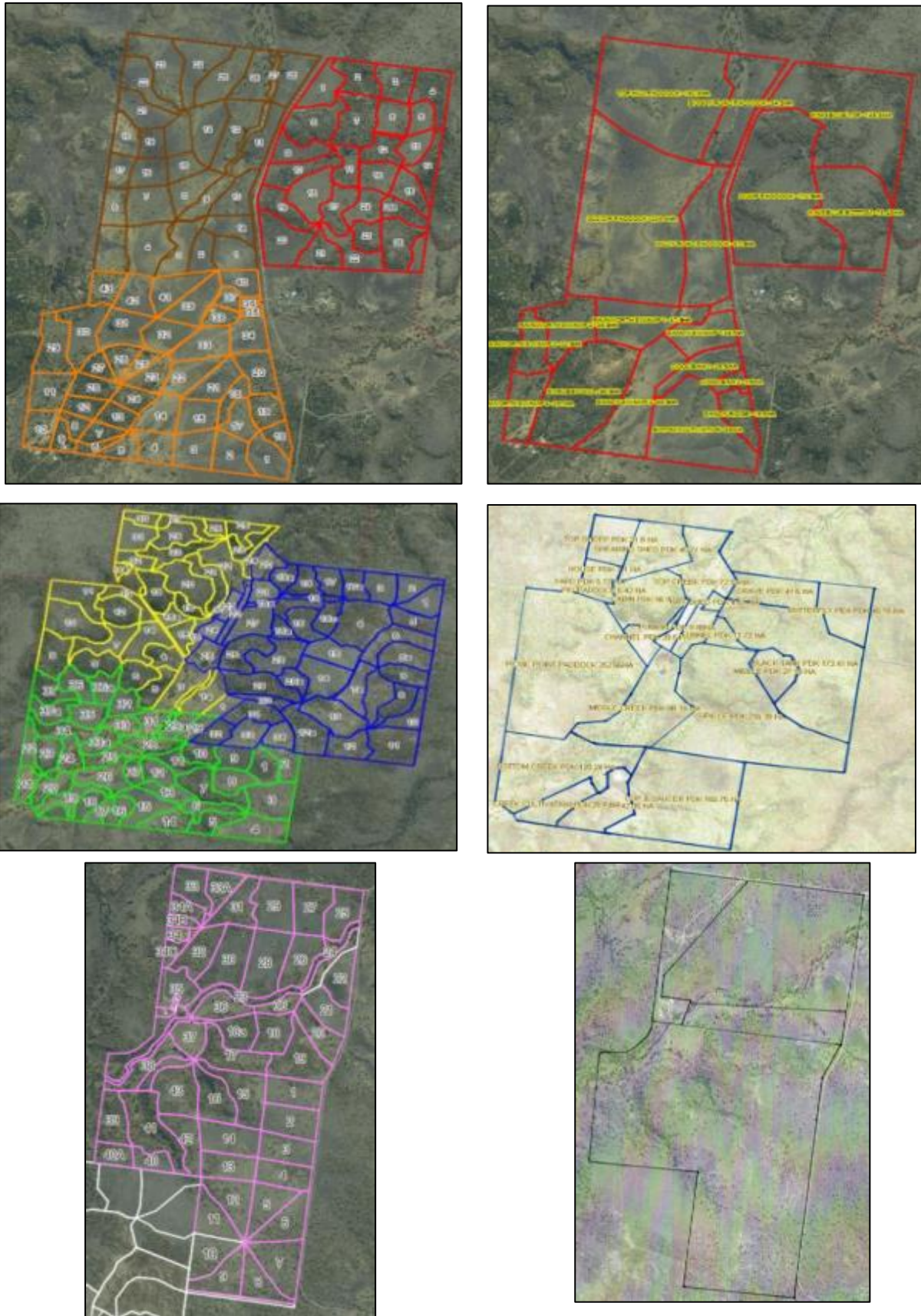


Figure 5 Three aggregations of 'Kelvin Downs' pre and post-development

Figure 5 outlines the amount of property development accomplished at the 'Kelvin Downs' aggregation. Mick has received funding for property development from Fitzroy Basin Association (FBA) and Central Highlands Regional Resource Use Planning Co-Operative (CHRRUP). This has predominantly been to assist with land type fencing, fencing off water courses and water development. Funding for land development has been helpful to improving the land productivity in this business. This grazing intensification is fundamentally what has allowed the increase in carrying capacity, making 'Kelvin Downs' a viable business in the long term.

Motivations for Change

When the Lavel family purchased 'Kelvin Downs' in early 2002 the land was degraded and in a state of ecological decline. The property was showing typical symptoms of limited watering points, heavy and continuous grazing management. There was obvious overgrazing at water points and large quantities of unutilised grass a further distance from water. Seeing the land in poor condition provided Mick with the drive to create a different end result. He was determined to create a business that was underpinned by an ecosystem that was improving, not declining. Mick knew he had to make a substantial return on his investments, and was aware that the land in its current state wasn't going to achieve this.

"We cannot continue to sacrifice the health of the land to get an income"

In 2002 Mick attended the RCS Grazing Clinic and found the knowledge he was looking for. He acknowledges this was the single biggest turning point in creating a new level of thinking, which then allowed other key changes to unfold. The concept of using animals to improve the ecosystem resonated with Mick. After receiving this information he states "it seemed crazy not to do it." Mick knew that seeing results at 'Kelvin Downs' would be a long process; but he states "We cannot continue to sacrifice the health of the land to get an income. We must start thinking long-term."



After completing the RCS Grazing Clinic, Mick finished the RCS GrazingforProfit school in 2005. He then committed to three years in ExecutiveLink, graduating in 2009. This was an era where Mick gained a lot of momentum in his business. There was support, inspiration, networking, accountability, likeminded peers and idea sharing. Having a mentor and support network can be an important asset for assisting with change. It allows individuals to draw on peer experiences and it challenged Mick to think outside the box, prompting innovation and creativity. Mick states one of his strategies when he sees opportunities is "Work out who does it best and learn off them."

Since 2002 the Lavel family has completed an enormous amount of property development, all with a long term focus on improving ecosystem health. In the days of completing

this development, Mick was able to gain leverage and stability from his building business. Once property development was completed in late 2012 Mick observed he could complete his cattle movements in approximately 10 hours a week. This low input system is a significant achievement as it allows Mick to complete off-farm work developing security and creating an effective work-life balance.

When the Lavel family were adopting these new management practices they were aware there were some risks involved. Particularly with time controlled grazing. While Mick was confident he could use the animals to regenerate the ecosystem, he was investing money in capital and it was new territory for the business. Despite the uncertainty, Mick was able to embrace change and produce a positive result for the property.

The Lavel family see their management practices are having a positive impact on the Great Barrier Reef. The increased groundcover and plant biomass results in significantly less top soil runoff. Mick has also observed that high rainfall events result in clearer runoff that is moving slowly across the property.

The main obstacles the Lavel family have faced are financial pressure and time management associated with running multiple businesses. They have been able to persist in challenging times by staying focused, increasing knowledge and concentrating on continual personal development. Mick states that the underpinning factor in any business management is people. "It all comes down to people. The people in the business must be in a good headspace to make decisions and embrace change."

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The Lavel family at 'Kelvin Downs'

Innovations

The Lavel family's drive to grow and acquire knowledge has put them at the forefront of the industry. Time controlled grazing is an innovation adopted almost immediately at 'Kelvin Downs' and despite this intensive grazing system, 'Kelvin Downs' operates on half of a full time equivalent. This is a result of strategic property development that is reliable, low maintenance and provides value for time. It is also underpinned by simple business systems. Cattle movements occur daily requiring minimal time and labour. Efficient stock movements are enjoyable for people and animals. Single wire electric fences and a reliable reticulated water system are the innovations that have allowed this to occur.

Running agistment cattle as the sole enterprise is a strategy for regular and predictable cash flow. This assists with budgeting and strategic planning, and requires less time input, removing the need for husbandry practices such as branding and weaning. The enterprise is also more resilient to market fluctuations and changing climatic conditions.

In the future Mick aims to further increase complimentary enterprises such as pigs and chickens. Joel Salatin's farming principles use free range animals to mimic natural patterns, resulting in healthy, ethically produced grass-fed meat that is beneficial for the landscape. This food is then sold to local communities where an effective price is received because it shortcuts numerous steps in the supply chain. The overall operation is transparent, allowing members of the community to learn and contribute to food production. This is an exciting innovation for the future at 'Kelvin Downs'.

The introduction of Natural Sequence Farming principles on 'Kelvin Downs' assists in creating natural systems. Mick introduced 'leaky weirs' to slow water movement with physical barriers, maximising water use efficiency and preventing runoff of valuable nutrients.

Another innovation at 'Kelvin Downs' is the utilisation of free labour from WWOOFers. Mick's ability to provide a fulfilling work environment encourages these volunteers to dedicate time and energy into development and management at 'Kelvin Downs' saving significant overhead business costs.

Mick believes there is a significant disconnection between rural and urban communities and would like to use 'Kelvin Downs' to assist in closing this rural-urban divide. The Lavel family aspire to create a learning or community centre at 'Kelvin Downs' that gives people from cities an opportunity to connect and learn about food production and the ecosystem. The growing demand for organic and grassfed beef shows that sustainable food production is trending upwards. Mick can see the potential business opportunity in this community centre, which will provide many benefits locally and beyond.

What does the future hold?

The Lavel family aim to keep growing the business and ecosystem at 'Kelvin Downs'. Future production targets include:

- ✓ Consistent weight gain on cattle all year round
- ✓ Increasing carrying capacity to sustainably run 4000 LSU annually
- ✓ Adding 'layering' i.e. free range chicken and pig enterprises that utilise grazing land after cattle have been removed from the paddock
- ✓ Increased water utilisation from Natural Sequence Farming
- ✓ Diversifying income stream by adding a conference room/rural retreat



These goals would be predominantly measured by business benchmarking analysis i.e. Profit Probe. The ecosystem improvements would be measured using current techniques for measuring ecological change (groundcover monitoring, SDH/100mm etc.) plus whatever future technologies allow meaningful ecosystem monitoring.

The opportunity to add layering is founded on techniques similar to Joel Salatin's farming principles. Mick acknowledges that for these additional enterprises to be viable they must be profitable. For it to be achievable more water infrastructure may be needed down the track as well as infrastructure for the chickens and pigs. Any additions to the business will require more labour. Mick's strategy is to encourage WWOOFers or volunteers to assist with the development. In exchange he will provide them with education about holistic food production and give urban people a positive, hands-on experience that is constructive for both parties.

“Everybody should be educated on holistic food production – not just graziers.”

Mick emphasises that the key principles to achieving any progress in a business is **education** and **implementation**. He feels that any method or practice that aids with actual implementation of regenerative management practices on-farm would greatly assist the industry. This could include ongoing support, access to expert advice or professional consulting, team learning opportunities or developing a process for accountability. Mick considers that everybody should receive education on holistic food production - even those not working in agriculture. This would raise awareness of what is involved in sustainable food production and how to support those who are achieving this.

An innovation that would make a significant impact to the agricultural industry is carbon offset or sequestering opportunities. Mick believes that carbon opportunities or any proactive regenerative management incentives are the broad scale change that the industry needs to achieve healthy soil, healthy food and healthy people. Mick has said “Management that looks after the land should be rewarded. Management that is detrimental to the land should be strongly discouraged.”

For the industry to be sustainable it needs to be able to make ecological decisions, not just economic ones. Unfortunately the nature of the industry at the moment means many graziers are running businesses on very low profit margins and sometimes have little choice. Mick acknowledges that when graziers are struggling their focus is on maintaining a viable business, not reducing runoff. However, business profitability and ecosystem sustainability are undoubtedly linked. A large-scale change in the industry such as carbon sequestering opportunities could be the solution to increasing profit margins and encouraging ecological sustainability.

Mick understands that graziers have a large responsibility with the reef “because we are custodians of such a large land area.” Fortunately, there is a strong relationship between ecosystem health and business profitability. He states “We must start farming for the long term. We cannot continue to sacrifice the health of the land to get the income.” Mick can see that regenerative grazing management is a fundamental step to environmentally sustainable and profitable grazing enterprises.

“Management that looks after the land should be rewarded. Management that is detrimental to the land should be strongly discouraged”