

Liming extending the season at Rosewood

Producer case study: John Jervois

Key points

1. Topdressed lime initially increased the subclover component followed by an increase in perennials.
2. “Perennials and liming got us through the tough seasons.”
3. Implementing a liming program has improved productivity and increased carrying capacity from 13 DSE to around 17.9 DSE.
4. “All our liming has been done through an increase in profitability”.
5. Regular soil testing monitors pH and exchangeable aluminium levels and guides lime application rates.

Background

John Jervois, his partner, Rebecca and parents, John and Rose run a livestock enterprise of 700 Angus beef breeders and 900 composite ewes on an aggregation of 1,009ha near Rosewood, NSW. The average annual rainfall is 950mm, supporting perennial ryegrass, phalaris and subclover pastures.

Soils range from severely acidic lighter ‘shaley’ soils on the hills to heavier texture contrast soils on the flatter country. The most acidic soils have pH_{Ca} of between 4.1 and 4.3 to depth and exchangeable aluminium levels in the subsurface (5–20cm) of up to 65%.

The Jervois’ have a long history of lime application and their lime budgeting strategy is simple. “In the 1990’s and 2000’s we were selling feeders steers direct to JBS and the money we saved on commission was put aside for future liming,” John said. “Nowadays, this has increased to maybe 5–7% of turnover, which equates to about 600 to 1000 tonnes of lime per year,” he said.

Liming strategy

John uses a combination of a set liming schedule, soil testing and pasture observations to guide his liming program. “We used to always apply 2.5 t/ha every 10 years’, but we noticed pasture production would decline and unfavourable pastures like silver grass increased about seven years after liming,” John said. So, they now aim to lime paddocks every seven years and use pH and exchangeable aluminium levels from soil tests to determine how much lime to apply.

Their strategy in the early years was to lime to increase productivity of the poor paddocks to good and the good paddocks to excellent. John remembers a ‘shaley’ paddock



Photo 1: John Jervois, Rosewood NSW said that perennials and liming got them through the dry winter and spring of 2017, 2018 and 2019.

on their home block that had a pH_{Ca} of 3.9 in the surface 10cm and exchangeable aluminium of 70%. “We sowed phalaris and it failed, so we applied lime at 2.5 t/ha and re-sowed, followed up with two more applications five and six years later and now the paddock contains dense, healthy phalaris and is one of the better paddocks.”

John’s involvement with a local benchmarking group helped him realise the importance of matching an increase in productivity from liming with an increased stocking rate. “Back in the day we were running 13 dry sheep equivalents (DSE) and aiming for 15 DSE, now we sit around 17.9 DSE,” John said, and “all our liming has been done through an increase in profitability.”

Expanding, experimenting and improving

The Jervois' strategy was to increase the productivity of the home block before expanding their operation. In 2016, an opportunity came up to purchase a 165ha block 'Woodstock Sth' approximately 5km west of their home farm. The block hosts a MLA funded Producer Demonstration Site (PDS), which is looking at topdressed liming strategies in non-arable pasture systems and the effect on pasture dry matter, pasture composition and subclover nodulation. The Jervois' have applied different rates of lime across multiple paddocks over the past five years as part of their own trial, and these paddocks are subject to annual soil testing and pasture measurements as part of the project.

The block had a history of fertiliser application and hay making but no lime application. Upon purchasing the property, the Jervois' put a plan in place to transform it from back to front. They soil tested every paddock and identified the worst performing paddocks based on soil tests and pasture observations. The paddocks with unfavourable pastures (bent, couch and silver grass dominated) received high lime rates (5.5-8 t/ha), followed by incorporation with offset discs in some of the paddocks, before being sown down to perennial ryegrass or phalaris. "We did the much higher lime rates to see how much of a pH change we could achieve at rates which we would have never considered before," said John. "We knew the block had plenty of potential and was severely acid and we took the view that if the high rates got it to our target production level quicker, then we would be prepared to do it. Our experience with country which was limed more frequently carried the highest amount of DSE per hectare," he said. "Our approach to paddocks with OK pastures (some perennial ryegrass and subclover) was to fertilise and topdress with lime and see what happened, rather than spend \$700/ha on totally renovating them (spraying, cultivating, sowing), not to mention the lost production whilst in fallow," he said.

Pasture response to topdressed lime

John noted that topdressing with lime caused a shift in pasture composition, with an increase in subclover followed by an increase in perennials (perennial ryegrass and phalaris). "Perennials are great because they broaden the shoulders of the season, and with liming they got us through the tough seasons" he said. "We didn't have the bulk but we had the quality, and they kicked on through summer after late November rain," John said. This was evident in the dry winter and spring of 2017, 2018 and 2019.



Photo 2: Soils of the Producer Demonstration Site are typically severely acidic (pH_{Ca} between 4.1 and 4.3) to 30cm depth and have exchangeable aluminium levels of up to 65%.

Challenges and the future

John said that the challenges they faced in the early years was that they were unsure of the benefits of liming, particularly at a time when lime prices and interest rates were relatively high, and land and commodity prices were low. "The benefits were also hard to see in the good seasons that mask acidic soils that hadn't been limed," he said. Recent challenges have been sourcing lime and spreading contractors, particularly to the Rosewood area, which John believes is a result of increased in lime demand in the last two years.

Looking to the future, John will continue monitoring pH and exchangeable aluminium levels in his paddocks and follow the results coming from the demonstration site on his farm and the other site at Mannus. "The results coming from the Mannus site are encouraging," he said, referring to the increase in pH in the surface 10cm in the 3, 5 and 7 t/ha treatments just one year on since lime application. Following the change in soil pH down the soil profile at that site from different lime rates and the effect on pasture production and composition over the next two years is valuable local information. John believes that information will be a good check for potential adjustments to his acid soil management program.

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