Boosting the productivity of stony country

Producer case study: Katherine Bain

Location	Stockyard Hill, Victoria
Area	2000 ha
Enterprise	Fine wool and prime lamb production
Livestock	Merinos, White Suffolk crossbred sheep
Pastures	Phalaris, sub-clover, native pastures
Soils	Basalt flats and stony barriers formed on young larva flows
Rainfall	625mm

For the Bain family at Stockyard Hill in southwest Victoria, improving productivity has always been a priority. Their 2000-hectare property, St Enoch, includes a mix of arable land, native grasslands, and stony rises formed by the nearby Stockyard Hill volcano. Historically, efforts focused on improving the arable quarter of the farm and reducing paddock sizes across the farm for better grazing management. With that now done, and Katherine Bain returning to the farm in 2021 with her partner Ben and alongside her parents, Deb and David, there is a new focus.

Image 1. Katherine Bain in one of the family's paddocks at Stockyard Hill.

With half the farm made up of stony terrain, the Bains set out to lift stocking rates from 6–8 DSE/ha to 12 DSE/ha across their August-lambing fine wool Merino and White Suffolk crossbred lamb enterprise.

"The stony country has good structure and drainage," Katherine explained, "but years of farming on naturally acidic and low phosphorous soils have further acidified and reduced phosphorus levels."

Diagnosing the limiting factors

Soil testing revealed the key constraints: low phosphorus (Olsen P levels between 5–8 mg/kg) and acidic soils, with some paddocks showing pH ($CaCl_2$) as low as 4.1. Many had no history of liming because of trafficability.

Katherine had completed Meat & Livestock Australia's PayDirt course, which introduced her to Liebig's Law of the Minimum – the principle that plant growth is limited by the least available nutrient or condition.

"I started identifying which paddocks needed lime straight away and which could wait. Those with pH below 4.3 were prioritised for lime, while others received superphosphate to boost phosphorus."

The fertiliser and lime program

In 2024, contractors broadcast lime where possible, and planes applied 180 kg/ha of superphosphate. Despite drought conditions and no autumn break, the response was immediate.

“The clover leaf size was the biggest surprise,” Katherine said. “It looked like clover from improved pasture – larger leaves, faster growth and more of it.”

Before lambing this year, untreated paddocks grew 800–1000 kg DM/ha, while treated areas reached 1200–1500 kg DM/ha and this trend of additional growth continued through spring.

Katherine’s father had trialled super and molybdenum 20 years earlier, finding it highly effective. While lime improves molybdenum availability, unlimed paddocks received superphosphate plus molybdenum to maximise clover growth.

Plans for the future

The Bain’s plan to focus on 300 hectares (annually) of stony country initially, aiming to:

- lift Olsen P to 12–15 mg/kg over a few years before transitioning to maintenance levels
- raise pH above 5.5 to address deeper acidity
- conduct tissue tests to monitor what the plants are getting and check copper levels, as applying molybdenum or liming can reduce copper levels and lead to deficiencies in livestock.

They’re also exploring a tow-behind lime spreader to better navigate rocky terrain and may rock-pick areas to create access tracks. Aerial spreading of lime pellets was considered but deemed cost-prohibitive given the extent of soil acidity amelioration required.

Once soil fertility improves, the Bain’s may look towards introducing new, more productive clover cultivars or even phalaris, by broadcasting and livestock treading in seed to further enhance productivity.

“We’ve got good soil,” Katherine said. “Fertiliser and lime are cheap ways to drive stocking rate change.”

Resources

MLA Healthy Soils Hub
https://www.mla.com.au/extension-training-and-tools/feedbase-hub/healthy-fertile-soils/

Visual Indicators of Soil Condition
https://www.mla.com.au/globalassets/mla-corporate/extensions-training-and-tools/documents/soil-poster-book-mobile.pdf

Published 16-Apr-2026

For further information: Jessie Wettenhall, Southern Farming Systems **T** (03) 5256 1666 **M** 0447 848 815
E jwettenhall@sfs.org.au **W** sfs.org.au/project/mla-innovative-mixed-farming-project