Maximising Pasture Productivity in Acidic Soils

Is liming turning your pastures yellow? It could be a manganese deficiency.

Liming is essential for correcting soil acidity, but on Kangaroo Island's sandy ironstone soil, it can trigger manganese deficiency.

Thanks to Meat & Livestock Australia's Producer Demonstration Site Program, AgKI are undertaking a four year paddock scale demonstration investigating pasture responses to manganese after liming.

Jenny Stanton is delivering this project on behalf of AgKI and here some of her key learnings to date:-

- If liming locks up manganese, we may also be limiting clover's ability to fix nitrogen and grow more pasture.
- KI's coarse sandy soils are naturally low in manganese. At low pH, there is just enough Mn available. But liming raises pH and makes much of that Mn harder for the plant to access.
- One year after applying 2.5 t/ha of lime sand, limed clover became Mn deficient, whilst the unlimed clover had marginal-adequate Mn levels.
- Mn is critical for photosynthesis. Adequate Mn nutrition means optimum photosynthesis = more energy for the rhizobia in clover nodules = more N fixed from the atmosphere = stronger clover = more nitrogen entering the pasture system. More nitrogen = more pasture growth.
- **3 years after Mn application, the Ecketts site grew 1.3t DM/ha dry matter more than the non-treated site (4.7t DM/ha vs 6t DM/ha) for the 2026 growing season or 500kg DM/ha extra per graze.**

- On unlimed soil, Mn was relatively easy to correct. Even 25 kg/ha $MnSO_4$ was enough to lift plant Mn after one year with higher rates not providing any extra lift in Mn in the plant.

- On limed soil, Mn was much harder to correct. Most treatments made little difference. Ony 75 kg/ha granular $MnSO_4$ lifted Mn into the adequate range.

- Foliar Mn assists as a short term correction after liming, by passing the soil and its tendency to lock up manganese, whilst granular Mn provides a long term strategy.

- Mn wasn't the only trace element affected. Liming also caused the copper levels to become deficient.

Visit the AgKI website at www.agki.com.au for more information on the project page (including short interview with Jenny Stanton about the project) and article from the 2026 Ag Trials and Triumphs book.

The next field day to look at this project will be in September 2027.



Image 2 Field Day August 2026



Image 1 Manganese deficient clover

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