FACTSHEET

Do pure clover swards need nitrogen and phosphorus fertiliser at sowing?

October 2023

Phosphorus is widely applied at drilling when establishing new pastures but is nitrogen also required for pure clover swards being established into previously under-developed land?

There has recently been a shift to establish pure clover swards on sheep and beef farms to improve feed quality and to fix nitrogen (N) in the soil.

During establishment, the formation of nodules on the new clover roots that fix N may delay the supply of N. Also, soil Phosphorus (P) can be required at sowing to encourage root growth in young plants but cannot always be accessed initially.

Therefore it may be advantageous to apply both N and P at sowing. This is especially important when soil N levels are low, where the land has not been previously improved.

Key messages

- On land that has not been fully developed and has moderate soil total N levels, there is no requirement for N fertiliser to be used at drilling when establishing clovers.
- On such land if soil Olsen P levels are in or near the target range of 20 – 30, there is a smaller chance of starter P fertiliser improving the early growth of clovers in a pure sward.

Research

Trials were set up near Lake Ellesmere in Central Canterbury and Amberley in North Canterbury. Pasture on these sites consisted of browntop and other poor grass species. The pastures were sprayed with glyphosate, and white (4 kg/ha) and red clover (2 kg/ha) were drilled in October 2021 near Lake Ellesmere and near Amberley in March 2022.

Both of the sites had medium total N levels of 0.4 -0.5 ppm but the Central Canterbury site had an adequate soil Olsen P of 19 compared with a low Olsen P of 10 at the North Canterbury site.

The following fertiliser treatments were placed near the seed:

- Control – no N or P.
- N only – 65 kg urea/ha to supply 30 kg N/ha.
- P only – 95 kg TSP/ha to supply 20 kg P/ha.
- N and P – 150 kg DAP/ha to supply 27 kg P/ha and 30 kg N/ha.

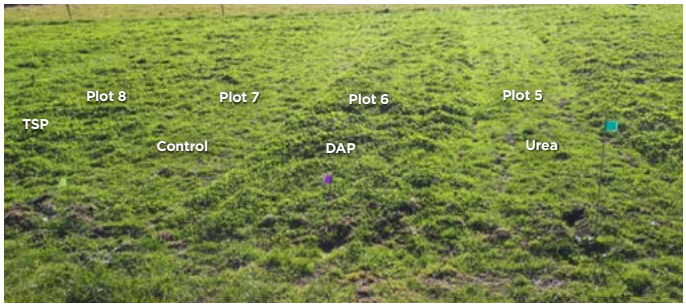
Results

Lake Ellesmere

- In the first two measurements, clover DM production was not different across treatments.

Amberley

- The first measurement, three months after sowing, showed a clear response in clover production to P but not to N as shown in the photograph:
- However when the clover was left to grow for another three months this difference in clover production was not present. There was a similar lack of response to N or P three months later after the pasture was grazed and left to regrow.



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Further information

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