

Setting up fertiliser test strips to help identify constraints to pasture growth

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Fertiliser test strips can be used in addition to soil and leaf analysis to identify which nutrients might be limiting pasture growth and what fertiliser products should be used. They are particularly useful for identifying trace element deficiencies (eg. Molybdenum) as soil tests are not a satisfactory method. Where the soil test indicates that macro nutrients like phosphorus (P), potassium (K) or sulphur (S) might be marginal, the test strip can clarify if a response to that nutrient is likely. Where the soil test indicates that the macro nutrients are adequate/high, test strips can be used to evaluate other products such as lime, gypsum, urea or gibberellic acid.

The method for setting up test strips described here is similar to that being used in the replicated “subtractive” fertiliser trials that are being conducted on farms in the Central Ranges area as part of an MLA funded Producer Research project on “Improving phosphorus use efficiency”. The subtractive fertiliser trials have one nutrient missing, in turn, from each plot/strip. This allows the most limiting nutrient to be identified. These trials also include urea and gibberellic acid to look at how much extra winter feed can potentially be grown.

Setting up the test strips

Soil test

Select a paddock which you have recent soil test results for.

Site

Place strips in an area of a paddock that is representative. Don't put them near stock camps, gateways, troughs, trees, firebreaks or hay sheds. To cater for variation within a paddock, 2 sets of strips can be set up per paddock.

Place strips running down the slope to avoid fertiliser washing from one strip to another.

Tests strips will be more useful if they are put on areas that have not been top-dressed this year.

Size

The suggested layout (see plan overleaf) allows you to compare 5 treatments, all with and without nitrogen.

Peg out five strips, each 2m x 10m in size. Leave at least 0.5 m gap between the strips, to make assessing the growth response easier. You can use steel posts or wooden pegs to identify the four corners of each strip. (note stock can rub on steel posts and bare out pasture).

Products & rates

A Control strip, where no fertiliser is applied, is included in the layout. Each strip is 0.002 Ha. All the fertiliser products supplied (except urea) have been weighed out for this area.

The urea has been weighed out to cover an area of 2m x 5m (bottom half of each strip). The urea for all 5 strips has been put in the one plastic bag.

If you wish to add more strips to evaluate other products (eg. lime)

–remember to draw them onto the plan so you know what was put where.

Product supplied	Quantity (g/plot)	Rate (kg/ha)
1 x Super	400	200
1x Super Moly (0.025%)	400	200
2 x Super Mo	400	200
Potash	200	100
1 x Urea (500g bag is for 5 plots)	100g for ½ plot	100
1 x gibberellic acid	0.04	20 g/ha

Time of application

1. March/April (before autumn break):

Apply the Super, Super Moly, Super Moly Potash (1), and Super Moly Potash (2) to the appropriate 2m x 10 m strip. (See plan).

2. Mid-late May (when pasture growing):

Apply urea to bottom half of all 5 strips (see plan).

3. Early June:

Apply gibberellic acid (see plan)

How to apply products

- Run baler twine around the corner pegs of each strip to ‘outline’ the test strip.
- Place fertiliser product in a bucket.
- Spread product, by hand, uniformly over strip area (stay inside the baler twine). To do this, go over each strip twice, using half the fertiliser each time.

- The gibberellic acid is a crystal that that needs to be dissolved in water to apply. You can use a watering can – fill it up with water and dissolve the gibberellic acid in it. Go over the strip twice using half the volume of water each time.
- Remove the baler twine – leave corner pegs/posts in.

Fencing/stock exclusion

Stock need to be kept off the test strips for a period so that you can see the effects of the treatments. A temporary fence (steels posts & ring-lock for sheep or a hot wire for cattle) will be required around the site, but you will need to be able to open it up for grazing. There are two key times the strips need to have stock excluded.

1. If applying urea in May, the strips should be closed up for at least 6

weeks to allow the response to be assessed. The test strips can then be grazed off. Plots with GA need to be closed up for at least 3-4 weeks.

2. The test strips should be closed up again in early spring, around the time when paddocks are normally locked up for hay. Potential pasture growth is high at this time of year which means the treatments have their best chance of showing their effect. Once the final assessment is done, the plots can be grazed off.
3. There is no need to continue the strips for a second year unless you are keen to see if there are any carryover responses (eg. lime).

Assessments

When

1. Inspect and assess the strips at

least 6 weeks after the urea and gibberellic acid have been applied (eg. late June – mid July).

2. Inspect the strips regularly after they are locked up in spring (eg. September–October). The final assessment must be made before the grasses run to head.

What to assess/measure

Compare the treated strips with the Control strip. Also compare treated strips with one another.

When comparing strips, things to consider are:

- Height of pasture (use a pasture ruler)
- Composition (%) – amount of clover, grasses, weeds.
- Size and colour of clover leaves
- Take photos to help you record any responses.

Example layout of test strips

