DairyNZ farmfact

1-26 ProGibb® SG

ProGibb®SG is a gibberellic acid (GA) formulation (40% GA) marketed by Nufarm Ltd. Gibberellic acid is a plant growth regulator that is widely used in horticulture and has also been trialled on pastures. There is a large body of science about gibberellic acid and ProGibb® SG has been tested on NZ pastures. When applied to pasture ProGibb® stimulates growth through reserve mobilisation and leaf and stem elongation. Grasses, clovers and weeds all respond.
The greatest benefits from ProGibb® are likely to be achieved when:

- The benefits are considered in a farm systems context
- ProGibb® is used in spring when feed shortages are forecast and pastures are grazed between 3-4 weeks after application
- ProGibb® is used in the autumn to increase lactation length by increasing feed supply without compromising pasture cover targets for winter.

Management to capture benefits of ProGibb® SG

To capture the benefits of ProGibb® the following needs to be adhered to:

- Apply to actively growing pasture (optimum soil temperature 7-16oC) with adequate soil moisture and fertility. Correct any soil fertility issues before using ProGibb®.
- Spray ProGibb® (20g/ha + Contact™ at 25ml/100L water) within 5 days after grazing. Do not spray before grazing. ProGibb® can be applied to wet foliage. Do not spray if raining or rain is likely within 1 hour.
- Best responses are obtained when ProGibb® is applied to pastures with residuals of 1200-1500 kg DM/ha. Pastures must be grazed down to the same pasture height to capture yield responses.
- Recommended practise is to graze pastures within 3-4 weeks after application to capture the maximum benefits from using ProGibb®. Limited trial suggests that yield responses are maintained or slightly reduced through to 5-6 weeks. By 6-7 weeks after application the yield benefit of ProGibb® may be further reduced.
- ProGibb® is not a substitute for fertiliser. Generally, the responses from ProGibb® and nitrogen are additive. But where pastures are very N deficient nitrogen also needs to be applied to achieve maximum ProGibb® responses.
- Farmers can confidently use their own spray equipment to apply ProGibb® - highly accurate GPS systems are not required. Water rates from 50-200 litres/ha give good results.
- ProGibb® needs to be applied in anticipation of filling a feed deficit and therefore requires careful planning. Farmers should assess the amount of extra feed that ProGibb® will grow and when it will become available for grazing as part of this planning.

Farm Systems Approach

To capture the benefits of ProGibb® the benefits need to be considered in the context of the farm system. This differs to the research results which report the "component" benefits of a technology.

Spring Application

ProGibb® can either be used strategically to increase feed supply in the spring (i.e. a change to the farm system) or as a tactical response to a projected feed deficit.

Where ProGibb® is used strategically, management will need to change to capture the extra feed by either calving earlier or bringing balance date forward (when pasture supply = pasture demand).

Where ProGibb® is used tactically there is a limited time window for optimum response. The optimum situation is where ProGibb® is applied when planned rotation length means that the pasture will be grazed within 3-4 weeks to maximise response and before balance date to avoid ProGibb® creating a feed surplus.

Rotation length dictates the area that can be sprayed with ProGibb® each week. Under longer rotations, the small proportion of the farm that can be treated each week means that ProGibb® will not provide a rapid increase in total farm cover, but will increase feed supply over time. This differs to nitrogen (N) where a large portion of the farm can have N applied at one time to increase pasture cover over the whole farm. ProGibb® and N can be used in combination since the effects from both are additive.

The biggest DM responses to ProGibb® are when soils are warm and moisture and fertility adequate. If ProGibb® is applied too late in the spring it can create a feed surplus risking loss of pasture quality or having to harvest the surplus to maintain quality. ProGibb® can have the same effect of feeding out too long in the spring or applying nitrogen too late in the spring. However, using ProGibb® to take more paddocks out for silage or cropping may be an option considered by some farmers.

Autumn Application

ProGibb® can be used in the autumn to fill a feed deficit providing that the treated pastures are grazed 3-4 weeks after application and this fits in with the round length required to build pasture cover for winter.

Economics

At a cost of $12/ha for ProGibb® the minimum cost of extra feed is 4c/kg DM at the average response measured in trials of 310 kg DM/ha. The estimated cost to apply by contractor (including product) is $42/ha (range ($25-$35/ha to apply), giving total cost of 14c/kg DM for 310 kg DM/ha. The cost of feed eaten will depend on pasture wastage. In cooler conditions the responses will be lower and costs higher and vice versa for warmer conditions.

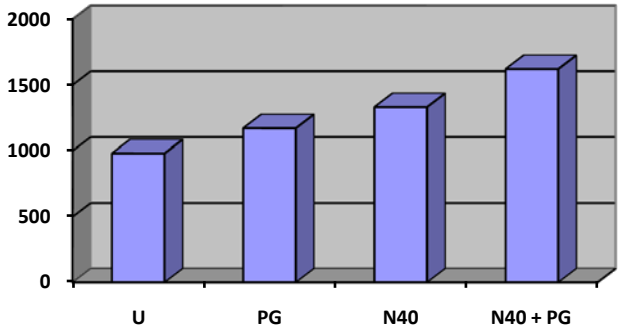
The science - pasture responses from ProGibb®SG

Nufarm Ltd has carried out a number of replicated field trials with 37 trials summarised in a review by Dr. D. C. Edmeades. The average growth response measured within 28 days after application (when ProGibb® was applied within 5 days after grazing) was 36% with a range of 12%-63%. These results were measured by mowing pastures to approximately grazing height. Across all Nufarm Ltd trials to date (where ProGibb® was applied according to label directions), the average response from ProGibb® was an extra 310 kg DM/ha over untreated controls. Pasture responses are reliable if label directions are met. Provided fertility was adequate subsequent pasture growth was unaffected by ProGibb®.

Analysis of foliage (Hill Laboratories) from 10 different paddocks throughout NZ showed ProGibb® had no effect on pasture quality or pasture foliage nutrient levels.

Massey University ran a trial on ProGibb® in spring 2008. The treatments were applied on 1 September - untreated control (U), sprayed with ProGibb® only (PG), spread with urea only (40 kgN/ha) (N40) or treated with both products (N40+PG). Four weeks later, yield measurements (mowing) showed responses of +195 kg DM/ha for ProGibb® alone, +355 kg DM/ha for urea alone, and +645 kg DM/ha for ProGibb® + urea. The results are shown in Figure 1. Two important points emerged from this trial. Firstly, the effects of N and ProGibb® were additive, so farmers can confidently apply N and ProGibb® together. Secondly, the responses from ProGibb® were within the range expected from the Nufarm trials.

Figure 1 Pasture DM (kg/ha) responses to ProGibb® and Nitrogen



(W. Hofmann, Massey University, 2008)

Response to ProGibb® over time

ProGibb® responses in pasture occur quickly so most trials with ProGibb® have measured pasture responses after 3-4 weeks. Only four Nufarm trials have measured responses after longer re-growth periods before grazing. These trials show that the yield response at 5-6 weeks was similar to or less than the response at 3-4 weeks. There are sound scientific reasons to suggest that yield response to ProGibb® might diminish as pasture mass increases. Trial data and first principles suggest that longer regrowth periods (up to 6 weeks) will still give yield increases, but pastures should not be allowed to grow past usual pre-grazing mass. The recommended practise is to graze pastures at 3-4 weeks after application to capture the maximum benefit from ProGibb®. Further research on timing of grazing will be useful to farmers.

References:

Edmeades D.C. 2009. ProGibb® SG an independent assessment of the science. *AgKnowledge report for Nufarm Ltd.*

Matthew, C., Hofmann, W.A., Osborne, M.A. 2009. Pasture response to gibberellins: a review and recommendations. New Zealand Journal of Agricultural Research 52:213-225.

Additional data from Nufarm Ltd.