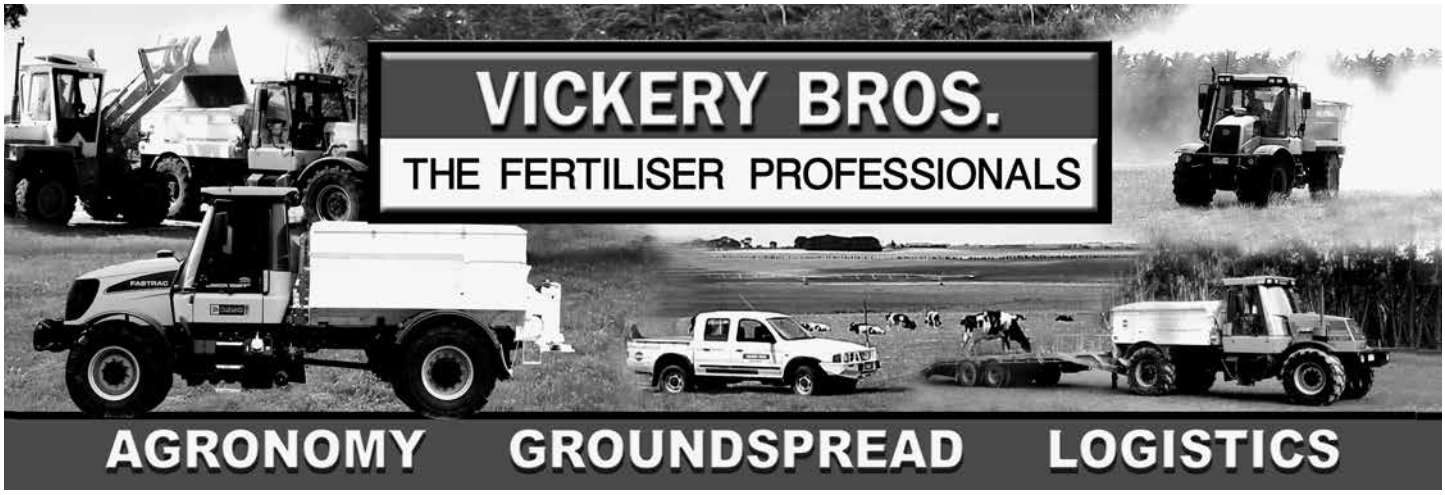


Sep 2009

SPRING NEWSLETTER

WHAT ARE FERTILISER PRICES DOING?

By Geoff Robertson

Globally:

DAP and MAP prices are at the bottom of the cycle with US inventory levels 40% below the 5 year average. Demand remains subdued due to low forward grain prices and restrictions on available credit. As the profitability of fertiliser manufacturing has fallen there will be less investment in the maintenance and upgrading of production facilities. The risk of price rises now comes from the potential slow response by manufactures to any increase in supply.

Urea has also dramatically reduced in price since last season. However the same price risks apply, the low return on investment and increasing energy costs may see development of future urea manufacturing facilities postponed.

Contents:

What are Fertiliser Prices Doing?	1
Cost of Nitrogen	2
Nitrogen Trial	3
Making Quality Hay and Silage	4
Cropping	5
Potash Important in Lucerne	6
Autumn Feed Wedge	7

MOP prices have eased but not to the extent of the ammonium phosphates and urea. The concentration of potassium deposits in Canada and Russia mean Australian importers are price takers.

The attempts by world governments to reduce carbon emissions will mean additional costs added to the price of world fertilisers and to the cost of fuel. The extent of these increases are still to be argued out but presumably in the order of 5 to 10%.

Domestically:

Local urea prices are on par with world prices, with companies running stocks down over the spring period. New urea supplies will start coming into the country in early autumn 2010 ready for the winter cropping market. We may see some price rises by then, in line with increased energy costs but a strong dollar could counter this.

DAP MAP prices are moving closer to world prices as current stocks are cleared. The first of next season's ammonium phosphates will enter the country in November and December. A strong dollar should see prices below current levels and nearer long term averages.

Potash, our understanding is that contracts are currently being negotiated for the coming year. Price will be lower than this year but we won't see the fall that DAP, MAP and urea has had.

Superphospate pricing will fall into line with the new seasons DAP and MAP price based on an equivalent price of phosphorus and the value of additional sulphur.

Inventory:

The biggest risk for the coming season may be supply. With poor returns and increasing costs of debt for all fertiliser manufactures and importers. This year domestic fertiliser companies may be wary about over committing to importing product and risk carrying too much inventory. As fertilisers become a low profit business with higher risk the days of high stock levels may be numbered. Alternatively a marketing approach which shares some of the price risk with customers may be viable.

COST OF NITROGEN

By Geoff Robertson

There is some confusion over the actual level of nutrients applied in liquid fertilisers and hence the true cost of nitrogen on the ground. This often occurs when a good marketing campaign gets in the way of the facts. Products have to be selected based on their effectiveness and the cost of their expected response. When applying nitrogen to grass based pastures or crops we are obviously after the lowest cost of extra dry matter grown or grain produced. This is influenced by three things.

1. Pasture or crops will be responsive to nitrogen
2. Product is supplying nitrogen that is available to the plant
3. The cost of the nitrogen applied

Pastures will be responsive to nitrogen:

Pastures with low levels of clover or clovers that are not fixing nitrogen due to deficiencies in molybdenum and or potassium should be responsive. Soil phosphorus levels greater than Olsen P of 12ppm and low soil aluminium levels are also required. Low soil temperatures over winter reduce mineralisation of soil nitrogen reserves, hence plants will respond to applied nitrogen.

Product is supplying nitrogen that is available to the plant:

As plants take most of there nitrogen up as nitrate the rate of conversion dictates the response time of plants. Dry matter and yield responses in pasture and crop trials in our environment between May and October show that there is minimal volatilisation losses with all products. Avoid applying nitrogen to wet water logged soils to avoid leaching.

The cost of nitrogen applied:

As there is little difference in response to the various forms of nitrogen during winter and spring. The cheapest form of N applied will be the most effective.

The following exercise highlights the various cost of nitrogen:

Application of 40kg of nitrogen per hectare using urea and U.A.N. (50:50 liquid urea and ammonium nitrate) compared with ammonium nitrate (A.N.liquid) applying 25kg of N, A.N. is applied at a reduced rate to prevent burning of plants.

	Urea	**A.N.**	**U.A.N.**
Form	Solid	Liquid	Liquid
Analysis	46% N w/w	25% N w/v	42.5% w/v
N applied	40	25	40
Application rate	87 kg/ha	100 l/ha	94 l/ha
Delivered cost	$485/tonne	$1030/1000 litre	$620/1000 litre
Product cost	$42.20/ha	$103/ha	$58.27/ha
Application cost	$7.00/ha	$12/ha	$12/ha
Total cost per ha	$49.20/ha	$115/ha	$70.27/ha
Cost per kg of N	$1.23/kg of N	$4.60/kg of N	$1.76/kg of N

Given the variation in cost, A.N. should only be used when it is probable that you will achieve a greater than 275% of the expected urea response. UAN should only be used if it is expected that the response will be 43% greater than urea.

Spring reminders:

- Nitrogen for spring growth
  - o Optimise growth while conditions are right.
- Hay and silage fertiliser
  - o Don't let low nitrogen and potassium levels limit production and sustainability of hay and silage paddocks.
- Lime for summer crop paddocks
  - o Set the paddock up for resowing.
- Topdress summer crop seed and fertiliser
  - o Saves time and cost of sowing
- Lime for Lucerne paddocks
  - o High soil aluminium levels limit Lucerne persistence.
- Soil test
  - o Check major nutrient levels for next seasons fertiliser plan
- Tissue test
  - o Monitor trace element levels for good stock and pasture performance

NITROGEN TRIAL

By Harry Armstrong
Sales Agronomist

Granular urea has traditionally been the product of choice for producers wishing to increase crop yields and pasture growth rates. Expected production increases, application rates and timing of application have all been well researched. Different types of N e.g. urea, ammonium nitrate etc generally produce the same growth responses.

Recently various forms of liquid nitrogen have become available and are being promoted throughout the region.

A common misconception is that foliar applied nitrogen is taken up via the leaves of the plant and therefore becomes available to the plant quicker.

The fact is that only 5-10 % of foliar applied nitrogen is taken up through the leaves, it is almost entirely accessed via the soil by the plant roots.

Vickery Bros set up a trial in June this year to compare 3 commonly available nitrogen products.

Product	App. rate	Nutrient applied/ha	Applied cost/ha
Granular urea	87kg/ha	40kg/N/ha	$48.85
UAN (Easy N)	94 litres/ha	40kg/N/ha	$68.70
AN (Ammonium nitrate)	100 litres/ha	25kg/N/ha	$112.50

AN was applied at the lower rate of 25kg/N/ha because it can burn foliage at higher rates.

Sites:

Trials were located at 4 sites.

Hawkesdale, Yambuk, Digby & Mt Gambier.

All sites consisted of recently sown and well established modern perennial rye grass. Hawkesdale, Yambuk & Mt Gambier are typical rotationally grazed dairy pastures and Digby is a techno system grazing dairy heifers.

Sites were soil tested. All had adequate to high Olson P levels. Yambuk and Digby sites were low in potassium (K), so these had (K) applied with the N applications. Digby site was low in Sulphur (S), so some (S) was applied with the (K).

Tissue samples were also taken at the start and during the trial.

Soil temperatures were also taken at regular intervals.

Treatments were applied around the 3rd week in June and final harvests taken 5-6 weeks later.

Trial design:

Randomised plot designs were developed by Gavin Kearney - Biometrician. Three treatments were replicated 10 times at each site. Plots were 1.5m X 3m with 0.5m gaps between plots to prevent cross contamination from different treatments. No control plots were necessary as we only intended to compare differences between the 3 treatments.

Visual scores as well as measurements with an electronic pasture probe were done at harvest. All plots were then harvested with a mower and weighed.

Results were analysed by Gavin Kearney - Biometrician.

Summary:

No visual differences were apparent at any stage during the trial. Tissue samples taken at various stages also showed no significant differences.

No significant differences in dry matter were found at 3 of the 4 sites between any of the treatments in the trial. The only site that showed any statistically valid difference was the Hawkesdale trial. Here the U.A.N. plots produced 24% more dry matter than the urea plots and the urea produced 21.6% than the A.N. plots. However when the cost of the additional production was calculated, Urea produced the additional dry matter at 5.3cents/kg, U.A.N. 5.3cents/kg and A.N. 19.0cents/kg.

Conclusions:

The winter of 2009 was milder than average, and the soil temperatures we recorded during the trial period were above average. Long term average soil temperature for June at the DPI Hamilton is 8.5 degrees, this year it was 8.8. Average for July is 7.6, this year it was 8.2. Claims have been made of better growth responses to liquid N products applied during cold and wet winters, and this was not a cold wet winter.

Cost is a major consideration when looking at different N options for your situation. There may well be products that produce increased dry matter production, but it is important to compare them on a cost per kg of extra feed grown basis.

Lucerne field day:

Wednesday 30th September. 9.30am - Noon. Lunch provided.

Forsyth's property, Mokanger Rd, Cavendish Map Ref 432 B1

Guest speakers:

Reg Hill-Wrightsons. Grazing options for Lucerne in SW.

Philip Jobling: Nu Farm. Managing weeds in Lucerne.

RSVP by 23rd September to:
Harry Armstrong 03 5575 2777 or 0417 052 095
Email: harry@vickerybros.com

MAKING QUALITY HAY AND SILAGE

By Kate Shaw

This season is shaping up to be a great opportunity for farmers to replenish valuable fodder reserves. With good winter rain and the real possibility of a good spring, now is the time to consider which paddocks to use for hay or silage production. To have the best chance of producing as much quality hay or silage as possible, the early preparation of these paddocks is essential.

Pests & weeds:

Watch for prevalence of insects such as red-legged earth mite, lucerne flea, aphids and blue oat mite and spray with an appropriate pesticide before their population increases dramatically. Pastures, especially legume pastures, locked up for fodder production are most at risk of pest infestations.

If capeweed or other weeds have infiltrated large areas of the paddock, spray with an appropriate herbicide as soon as possible. Weeds reduce the quality of crops and are competition for valuable nutrients and moisture.

Nutrients:

High quality hay and silage production requires good soil fertility. Paddocks that have been earmarked for fodder conservation should be soil tested to check that there is adequate soil fertility.

Applying nitrogen will generally increase pasture and crop growth but the poorer the fertility the poorer the response. Using a complete NPKS mix to correct other nutrient deficiencies eliminates any limitations to the quality and quantity of fodder produced. Where there is a deficiency, correcting it early is essential. It is important to consider the effect of harvesting silage or hay and the impact this will have on the farms fertiliser profile. Allowing continued depletion of nutrients, even from fertile paddocks will eventually reduce yields and decrease the productivity and quality of future production. Replacing the nutrients removed is essential.

Table 1. Nutrient removal in hay and silage

	Total nutrients removed by 1 ton of hay or silage			
Fodder type:	**N**	**P**	**K**	**S**
Pasture hay	25	2.5	17	2.5
Pasture silage	30	3	15	3
Cereal hay	20	2	12	1.5
Cereal silage	14	2	25	2
Lucerne hay	34.5	2.7	19.6	3.2
Legume hay	30	3	22	2

From the table above we can calculate that the removal of a 4 ton/ha hay crop will remove 10kg/ha of P, 68kg/ha of K and 10kg/ha of S. To replace these nutrients will require an application of 272kg/ha of super potash 1:1 or an equivalent.

This assumes that the entire crop is taken from the paddock and none is returned.

Removing nutrients from a hay or silage paddock may also reduce the pH of the soil. So in general, areas that are harvested for hay or silage regularly will acidify more quickly requiring semi regular applications of lime.

A regular soil and tissue testing program will keep track of nutrients transferred both around and off the farm.

Nitrogen:

A balanced N management program is advisable for successful fodder production. If you do not supply the crop or pasture with sufficient nitrogen it may run out of fuel before the expected harvest date. But if you oversupply the crop or pasture with nitrogen you will end up cutting very heavy crops of low quality fodder. In addition excessive N may cause lodging in cereals, toxic nitrate levels or bitter unpalatable fodder. An application range of 30-50 kg N/ha is generally the most effective. Expect pasture responses of about 18 kg of dry matter per hectare for every kg N applied, 4 - 6 weeks after nitrogen application during spring.

Potassium:

Another critical nutrient for successful hay and silage production is potassium. Pastures and crops can take up luxury amounts of potassium shortly after application. If there is a known potassium deficiency, consider split applications, one in autumn and then again at paddock lock up. This will then ensure a sustained supply of potassium to the growing crop or pasture.

Locking up the paddock:

Early closing of a paddock allows the pasture to grow longer before the reproductive stage thereby ensuring sufficient bulk and maintaining quality. However too early and the time of cutting may also be too early resulting in difficulties in wilting. Silage paddocks should be locked up for around 40 days, whilst for hay paddocks 50 – 60 days is estimated.

Cutting:

The stage of maturity and when mow it will influence the final product greatly. There is always a compromise between yield and quality. Ensure the pasture or forage crop has high feed value and sufficient bulk before cutting - plenty of leaf,

not too much stalk, with no seed heads - unless it is a grain crop. A guide of when to mow different species for hay is:

Cereals - there are two ideal stages: between boot and ear emergence (feed quality high, low yield); at the soft dough stage (feed quality low, yield high).

Lucerne - the correct cutting time is a compromise between protein content and yield. Aim for pre flowering to around 10% flowering.

Pasture - cut when the seed stems are first emerging. From this point onwards the quality will rapidly decline.

In general silage should be harvested 2 - 4 weeks ahead of the time for haymaking. As with hay delaying cutting often produces a higher silage yield; quality from early cutting is usually higher. Pasture re-growth is usually greater from early cutting, which means that total production from the pasture (as both silage and re-growth) is higher.

Wilting:

Pasture and crop can wilt sufficiently for silage within 2 to 3 days in spring, whereas hay will take much longer, up to 7 days. Aim to achieve at least 35% DM for pit silage and 50 - 60 % DM for baled silage. Hay should be wilted to 85% - 90% DM.

Whatever the conservation system, it is essential to aim for a rapid wilt. Fast wilting means less bacterial spoilage for silage, and higher lactic acid concentration during fermentation, whilst for hay, fast wilting means less energy losses due to respiration, less fungi/bacterial spoilage, and less chance of rain damage.

To sum up:

The quality of the conserved feed is determined by three factors:

- Quality of fodder. Is determined by supplying the paddock with sufficient nutrient, effective weed and pest control and when it is cut.
- How quickly it is made. By baling or ensiling at the right moisture content as quickly as possible and avoiding weather extremes.
- How well it is stored. By ensuring protection from weather and well made bales for hay and a well sealed pit, stack, bale or mound for silage.

CROPPING

By James Stewart

The autumn break came just after ANZAC Day which was great for knockdowns to achieve early weed control for renovating pastures and cropping paddocks. This also helped when sowing commenced as we had good soil moisture and temperature levels.

Potential yields:

Growers should have a realistic estimate of each paddocks yield potential right from the start of the season. As the season progress's and decisions have to be made regarding nutrient applications, the crops yield potential should be reassessed and inputs adjusted accordingly. A yield potential based on growing season rainfall and the crops water use efficiency is the simplest method.

Yield Potential of crop = (growing season rainfall GSR, mm (April to October) less evaporation mm) X water use efficiency WGE of the crop.

Table 1. Suggested WUE for high rainfall zone.

Crop	Water Use efficacy (WUE) kg/ha/mm	Evaporation (mm)
Wheat	15 to 18	110
Barley	18 to 10	90
Canola	10 to 12	110

Table 2. Potential yield based on 400mm GSR.

Crop	WUE	GSR	Evaporation	Potential yield (t/ha)
Wheat	15 to 18	400	110	4.35 to 5.2
Barley	18 to 20	400	90	5.6 to 6.2
Canola	10 to 12	400	110	2.9 to 3.4

Note as GSR increases water use efficiency tends to drop.

Achieving these potential yields means obviously getting the right amount of rain. But plant numbers and the correct amount of nutrient at the right time is also critical.

Plant numbers:

Early crop inspections reinforced the good start with good plant numbers and weed free paddocks. Canola counts

ranged from high 20's into the 80's with the ideal range between 30 and 50 plants per metre squared. Barley counts were just as good ranging from 150 to 190 which is within the ideal plant range count. Ideal Wheat plant counts range from between 180 and 220 which most growers have achieved. The low canola counts were generally attributed to slug damage, which is becoming more of an issue with some cereals also being checked. The high plant counts in canola reflected too higher sowing rates (more than 4kg/ha) and a variation in seed size. Seed counts and germination checks should be carried out before sowing to ensure the correct plant numbers are achieved to attain the optimum yield, this is important for both canola and cereals.

Copper and zinc:

The wet winter has reinforced the need for copper and/or zinc to be included in our sowing fertiliser. The application of foliar copper and zinc is a useful tool to top plant levels up but given wet paddocks and poor spraying conditions, can not be relied upon to meet the plants total needs.

Nitrogen:

Top dressing of crops has been in progress over the last month for barley and canola while the wheat is just around the corner. There has been a lot of advertising and discussion of liquid forms of nitrogen lately.

UAN analysis breakdown is 50% urea, 25% ammonium nitrate and 25% nitrate nitrogen, what does this mean? The nitrate nitrogen is available to the plant immediately while the ammonium nitrate takes time to convert to nitrate nitrogen. This becomes available to the plant while the urea portion takes 7-10 days to break down to nitrate nitrogen for plant availability.

Analysis of UAN is 42.5%N compared to urea at 46%, UAN has a bulk density of 1.32 meaning 1 tonne of product equals 757 Litres.

Make sure when you are comparing products you are taking this into account to determine the cheapest cost of applied nitrogen.

Spring reminders:

As we get closer towards harvest we need to be weary of diseases such as rusts in wheat, spot form net blotch and scold in barley. Army worm (grubs) were a big issue in some areas last year and if you are considering spraying be careful of withholding periods as you draw close to harvest.

Next years cropping program starts this spring. On the agenda for new paddocks is spray topping, soil testing, assessing paddocks for water logging and organising lime and gypsum for early next year.

A reminder for when harvesting crops, yield maps are a great tool for assessing how your nutrient management has gone and planning for the coming seasons soil tests, so take the time to make sure the yield monitoring is working.

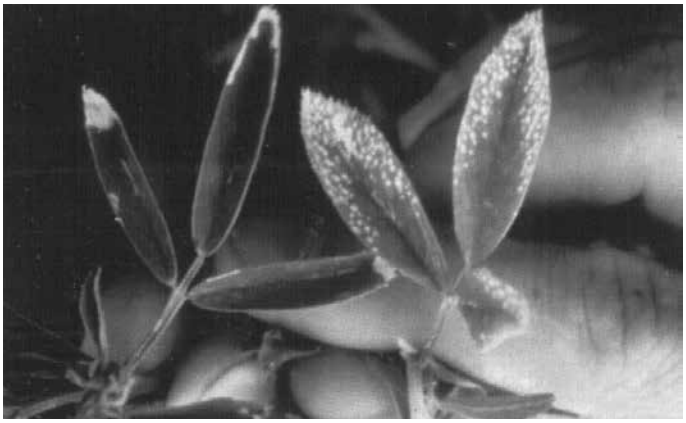
Hoping for some spring rain!!

POTASH IMPORTANT IN LUCERNE

By Bill Feely

Drier winters, the need for an alternative to summer crops and a plant that can make full use of summer rains has seen a real increase in the amount of Lucerne being sown in the area. Its versatility in being able to be harvested for hay and silage as well as providing valuable quality grazing means a higher level of nutrient management than traditional perennial pastures. At a cost of establishment of around $300/ha, the Lucerne stand must be encouraged to persist for as long as possible.

Low potassium (K) levels can seriously affect the longevity of a lucerne stand. Potassium is known to affect plant susceptibility to diseases and pests by influencing tissue cell structures and



Lucerne leaves showing symptoms of potassium deficiency.

biochemical processes. Physical resistance to pests is improved because adequate K supply ensures complete closure of plant stomata and increases the lignifications of vascular tissue. Potassium deficient plants have low total carbohydrate content,

but have a higher concentration of soluble sugars which provides a suitable substrate for the growth of many pathogens. Potassium deficiency in lucerne is easily identified by small white spotting on the margin of the leaf.

The amount of potassium removed from a cut of Lucerne hay is quite dramatic, given that a tonne of hay will remove a minimum 20 kg of potash. If the paddock gets cut 2-3 times then the amount becomes dramatic even at moderate yields. Generally speaking a minimum requirement for irrigated Lucerne would be 100 kg of K per annum per ha and dry land Lucerne a minimum of 60 kg per annum.

The decision of how much and when to apply fertiliser should be based on the current soil fertility levels and the amount of hay and silage removed from the paddock. As the newer lucerne varieties have the capacity for year round production the fertiliser program should match the stands growth requirements.

A balanced program would be:

Autumn: 125 to 150 kg/ha super potash 3:1
Spring: 150 to 200 kg/ha super potash 1:1
November: Foliar application of K including trace element.

Tissue testing prior to the application of the foliar nutrient will ensure the correct trace elements are applied. Many lucerne stands in the area are coming up molybdenum deficient.

MARCH SOWN WINFRED CREATING AUTUMN FEED WEDGE AT GLENCURRA

By Bill Feely

Summer crops over the last few years have been a little bit hit and miss throughout the district. The relatively dry springs, diamond back moth infestations and crops been sown at too high a seeding rate have meant variable results with pre Christmas sowings; many of these have been failures unless you have had the luxury of irrigation. Not all springs are going to be dry (we hope) and there will be seasons where soil moisture will be more than adequate and growing summer crops shouldn't be an issue.

However one alternative which is working well at Bill Hodsman's "Glencurra" dairy farm at Drumborg is delaying the sowing of the crops till March. Bill along with main worker Steve McRae have put these crops in for the past 5 seasons and the results have been very successful achieving dry matter production of 7 t/ha.

In mid February paddocks are ploughed and scarified twice at right angles to help break the soil down.

Next a turbo rotor is used working the top soil 1.5"-2.0" (40-50mm) deep, this breaks the soil down more and helps the deep ripper to pass through a lot easier without blocking up.

After deep ripping gypsum is spread at 1.5 t/ha. The paddock is then hit with the turbo rotor at 40-50mm working the gypsum into the soil plus levelling the paddock out prior to sowing.

Sowing mix

Winfred rape @ 2 kg/ha
Waverly white clover @ 2 kg/ha
Leura sub clover @ 1 kg/ha
Single super 400 kg/ha.

This mix is then broadcast out of the back of a super spreader truck and then rolled with a tyre roller. Once the paddocks have been grazed the paddocks they are sown to annual ryegrass and then cut for silage. The paddock is then sown down back to a permanent pasture in the following autumn.

Contact the professional team at Vickery Bros.
Making it easy to grow more grass.

Agronomy Team

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