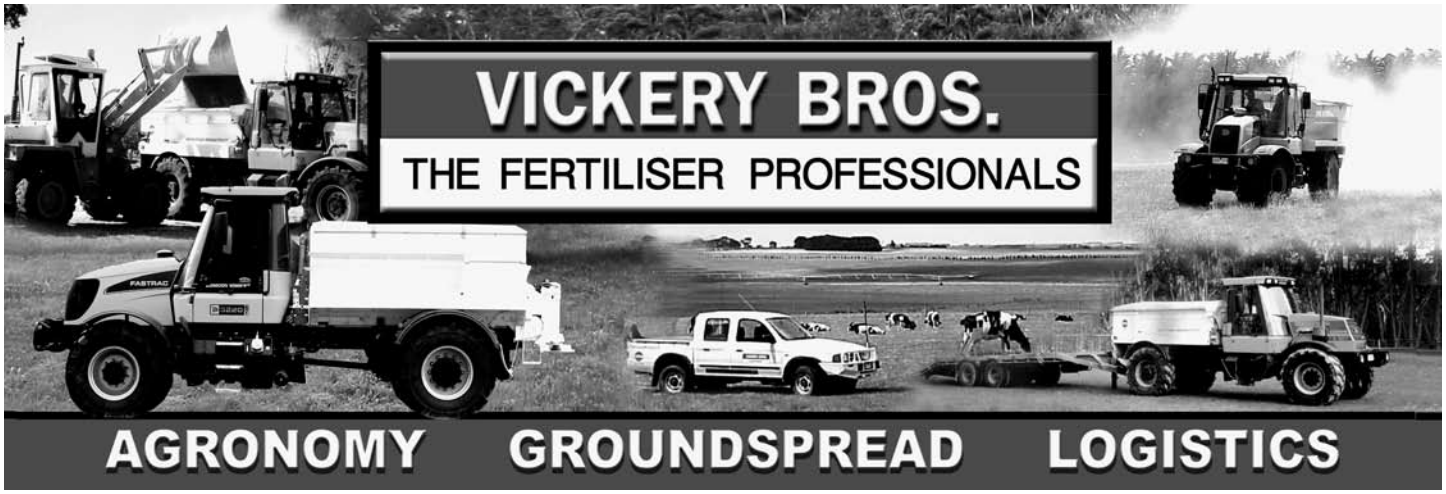


June 2006

WINTER NEWSLETTER

DO YOU HAVE ENOUGH FEED?

By Geoff Robertson

Good opening rains and excellent growing conditions in May has some pastures with reasonable levels of feed. Now however is not the time to be complacent (a few frosts have soon tested the system); a good break means we have the opportunity to have a significant feed wedge developed for winter and have the capacity to increase farm productivity and profitability.

The profitability of the farming enterprise is dictated by the number of animals run per ha, the amount of product they produce and the margin achieved for that product. The stocking rate and production achieved is ultimately influenced by the quality and quantity of pasture available and the growth rate of that pasture. In our livestock production systems the two main inputs are obviously the animals and the pasture and should therefore be part of our monitoring program.

Contents:

Animal performance is influenced by pasture quantity and quality, a successful supplementary feeding program over the last four months will have ensured your animals are in suitable condition (have you checked recently?) and are ready to produce to their optimum.

Now that we have had the break and reasonable growth most pastures will be of suitable quality to achieve required animal production, the quantity of pasture available is therefore the current limiting factor to animal production.

The main focus after the break is to achieve a targeted amount of pasture to meet your stocks requirements. Table 1 and the results from the "Life time wool production trials" reinforce the need to achieve adequate pasture availability.

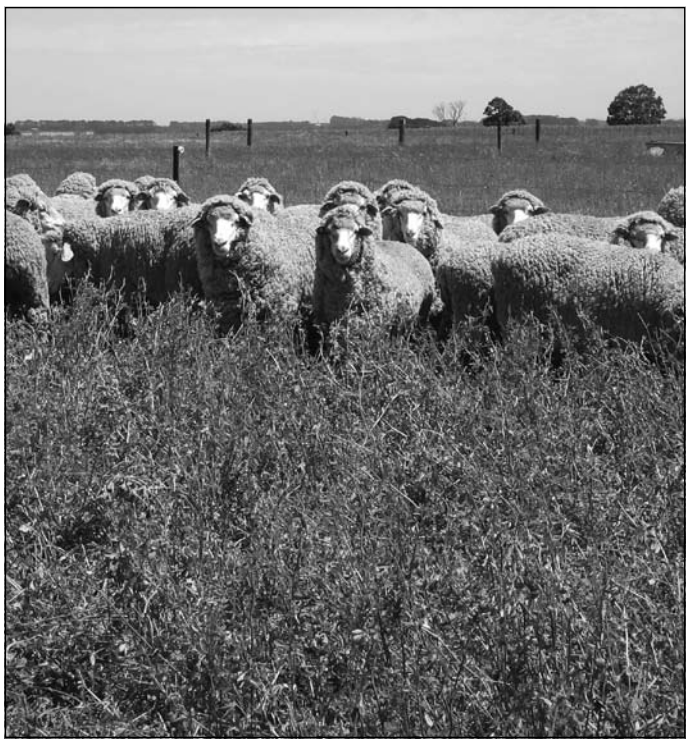


Table 1. Minimum Pasture quantity (kg green DM/ ha) required to maintain animal production.

Livestock Type	At 75% Pasture Digestibility*
Dry Sheep	400
Pregnant Ewes – mid	500
- last month	700
Lactating Ewes – single	1000
- twins	1500
Growing Sheep (32kg XB lamb)	
50 % of potential growth (125 g/day)	600
90 % of potential growth (225 g/day)	1600
Dry Cow	700
Pregnant Cow not lactating	900
Lactating Cow calf 2 months	1100
Growing Cattle (320kg 3 month old steer)	
50 % of potential growth (0.61 kg/day)	800
90 % of potential growth (1.12 kg/day)	2200

- Pastures of lower quality will require greater quantity of feed to achieve the same animal production
- **Note:** Pasture measurements for this table are based on leaving a residual of 300kg of Drymatter per ha. If you are cutting and measuring pastures an extra 300kg needs to be added to the above figures.

Source: Prograze training manual (2003)

The quantity of green pasture available can be increased through a combination of several management tools.
Supplementary feeding:
Continue feeding for two to three weeks after the break, stock can be feed in sacrifice paddocks that are due for renovation. This allows plants to develop adequate leaf area to capture sunlight and convert to energy. Stock that are set stocked tend to graze plants as they emerge this depletes the energy reserves of perennial pastures impacting on plant persistence and reduces pasture availability through winter.

Rotational grazing

Dry and pregnant stock (ewes up to a month prior to lambing) can be rotationally grazed to allow paddocks to "get away" by allowing pastures to quickly reach pasture growth phase 2, greater than 800cm, can potentially double winter pasture growth rates. Rotationally grazed paddocks must be carefully monitored and stock shifted before pasture availability drops below critical levels (see Table 1). I have seen XB ewes four weeks from lambing going down with pregnancy toxaemia because they were left in a paddock a day to long, grazing pastures to below 700 kg of DM.

Nitrogen

Pastures that have 1000 kg of DM, a high proportion of perennial grasses and good soil fertility can be treated with nitrogen to achieve greater leaf area. With average soil temperatures currently around 10 degrees Celsius (Late May) responses should be between 10 to 20 kg of drymatter per kg of Nitrogen. As soil temperatures fall into June July, responses will drop to approximately 10 kg of drymatter per kg of Nitrogen.

Resowing pastures

The amount of pasture produced on the farm can be increased by using more productive perennial species or short term annual pastures. There is however no short cuts to a productive pasture.

Weed control

Ensure good weed control prior to sowing with an effective knockdown targeted at the weeds present; it will also be worthwhile including an insecticide for earthmite control.

Species selection

The new pasture mix must match the soil and environmental conditions present, there is no point including a species with a long growing season if the rainfall pattern finishes at the end of October. The pasture mix must also match the requirements of the stock to be run on it. Recent work at the PVI by Andrew Thompson highlights the improved growth of ewes and lambs when given the opportunity to graze straight clover, this does however have environmental issues with the need to use grasses to mop up the excess nitrogen produced to avoid acidification.

Nutrient

For new pastures to preform to their maximum and maintain persistence the soil must have adequate fertility levels, ideally a soil test will have been carried out to ensure the appropriate nutrient is used at sowing. An assessment should be also made of the benefit of the application of Lime to reduce soil aluminium levels and Gypsum to improve soil structure. Paddocks that have been winter and or summer cropped prior to resowing to pasture will also benefit from the application of nitrogen prior to winter.

Insects

Earthmite, Cockchafer and Pasture tunnel moth are already causing damage in existing pastures with significant damage by earthmite occurring in early sown pastures. Paddocks need to be monitored now to assess what pests are present and to determine if the level of damage that is occurring is significant. The appropriate decision can then be made wether to spray or not and that the correct chemical is being used.

WINTER GRAZING MANAGEMENT

By Bill Feely

- Don't graze below 2-3 cm (1000 kg DM/ha)
- Preferred range of DM/ha is between 1400 kg DM/ha (4cm) to 2200 kg DM/ha (10 cm) depending on pasture density.
- Alternatively graze at the 2 ½ -3 leaf stage.
- Apply the "pluck" test before grazing newly sown pasture.
- With Diploids adopt a closer grazing regime (2cm-5cm)
- With Tetraploids a higher residual is preferred after grazing (5cm-7cm).
- Tactical grazing, a combination of rotational and set stocking.

It is important that we capitalise on the exceptional start to the season and the feed that has been generated. Whether it is an existing or newly sown pasture a diploid or tetraploid ryegrass based pastures, it is imperative that a few basic guidelines are adhered to.

Pasture Cover

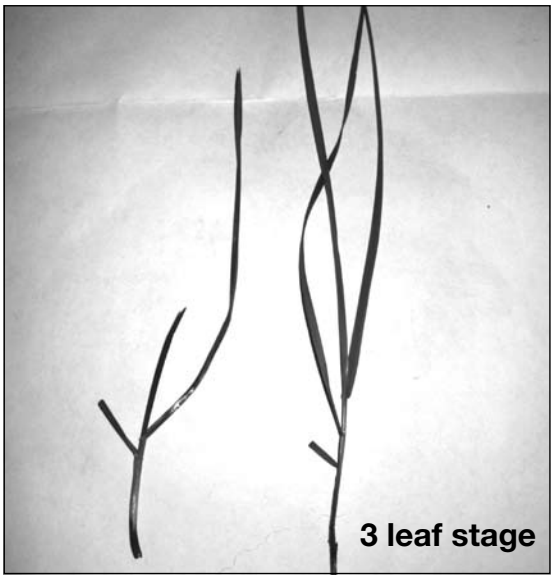
Depending on what enterprise you are running pasture persistence will be governed by the practices producers undertake. To optimise pasture performance throughout the year and minimise pasture decline a pasture base of 1000 to 1500 kg DM/ha (5 -6 cm) prior to the autumn break would be advantageous. This will help clover germination and growth; as well as maximising tillering of perennial grasses. Minimum pasture mass during the growing season should be around 1000 kg DM/ha (3cm) for high pasture quality and yield. The ideal range for pasture growth throughout the growing season is between 1200-2200 kg DM/ha (4cm- 10cm) within this parameter, animal and pasture production are not threatened. If the pasture exceeds the 2200 kg Dm/ha then the pasture quality will deteriorate. On the other hand if the pasture is taken below the 1000 kg DM/ha then issues such as amount of feed available, retardation of growth, restriction of intake and the possibility of erosion hazard and nutrient loss come into play.

Pasture Density

One factor that has to be taken into account when talking about pasture guidelines is pasture density. Very dense, closely grazed pastures will have a higher (up to 25 %) green DM/ha at the same height, where as more open lightly grazed pastures have a lower kg green DM/ha. The differences due to density are greater at pasture heights above 6 cm. Once these factors are addressed and understood it is then a matter of balancing the grazing pressure by matching pasture availability with animal demand.

Leaf Stage

The parameters mentioned above are a guideline as to how much and to what extreme you can graze pastures before they begin to decline. Alternatively monitoring the plants leaf stage is another way of determining when the plant can be grazed. Ryegrass plants are made up of about 25 individual single stemmed units called tillers. Each of these tillers has its own leaves and root system. It is from these tillers that all the new growth comes, consequently if the tillers do not produce new leaves the plant is no longer growing. Each tiller has three actively growing leaves, once the tiller begins to produce the 4th leaf the quality of the pasture begins to decline. So it is important to introduce the stock prior to this 3rd leaf stage to maximise the use of feed on offer. The rate at which a new leaf is produced is called leaf appearance. The rate of leaf appearance is 7-10 days in Spring and 25-35 days in Winter. So as the daily growth rates increase so does the leaf appearance rate and in turn feed on offer. Conversely as growth rates slow the leaf appearance rate will also slow resulting in less growth, requiring an adjustment in grazing management. This can be achieved either through the introduction of supplementary feed, the use of a sacrifice paddock or the strategic application of Nitrogen.



New Pastures

Proper grazing management of newly sown pasture is the most important factor that will contribute to its longevity. Correct grazing management of newly sown pasture is important to help tillering as well as preventing shading out and to allow light to newly sown clovers. The "pluck" test should be carried out prior to grazing new pasture. If you can pluck a leaf of a new grass plant without pulling the plant out by the roots, the pasture is ready for a light graze. Preferably the grazing should be done with lighter stock so as to prevent pugging and trampling.

Diploid and tetraploid ryegrasses

The proper grazing management with diploids and tetraploids is also vital to their persistence .The majority of Perennial Ryegrass cultivars are diploid and have the capacity to stand harder grazing generally to no more than 2-3 cm. Where as the tetraploids should not be taken down more than 5cm. Anything beyond this generally has an adverse effect on the plants ability to store water soluble carbohydrates. The exception to the rule appears to be two new tetraploid cultivars Banquet and Bealey.

Correct timing for the start of grazing and grazing to the correct pasture height is critical to both efficiency of pasture utilisation and stock performance. If grazing begins to early the pasture regrowth period is reduced and plant health and survival will be affected, through lowering of soluble carbohydrate reserves (grasses) and reduced leaf area (legumes). Alternatively stop grazing before pasture regrowth potential is compromised. To ensure this balance is achieved a tactical grazing approach is the best technique. Tactical grazing uses a range of grazing methods such as set stocking and rotational grazing throughout the year. This will provide the flexibility required to match animal and pasture requirements.

The most sensible and basic approach is to make sure that your stocking rate is the right one. Apply enough animals to fully utilise available pasture without depressing animal intake to below target requirements or the grazing of new growing points.

CROPPING

By Jane Wilkinson

- Consider soil health and nutrient levels required to replace removal.
- Tissue test and plant counts at 3-4 leaf
- Know correct Growth stage (GS) for optimum timing of application of N.

Crop quality and yield are strongly linked to the supply of nutrients. The end product is a combination of every phase of growth such as establishment, seedling growth, tillering or branching, flowering and grain fill. This is why monitoring for issues such as crop nutrition, disease and weeds is very important as each component has a dynamic effect on others.

Most people use some type of Phosphorus and Nitrogen product such as DAP and MAP when sowing crops. With P & N in hand, it is often forgotten to even consider the other 14 essential elements for plant growth. As yield has increased with the use of N and P fertilisers (and other factors such as plant breeding and farming systems), as has the amount of trace elements being removed, highlighting the need for these elements to be replaced.

Tissue Test

The peak demand for a majority of nutrients is just prior or coincides with peak dry matter gain such as tillering and or elongation. To reduce chances of deficiencies and therefore a yield penalty, it is essential to perform a tissue test at 3 leaf stage of cereals and before elongation in crops such as canola. (YEB between 3 leaf and 1st node stage of cereal crop). Don't wait until visual deficient or toxic symptoms occur, as yield loss can be quite considerable.

Phosphorus

- Important many processes including early root formation and growth, and seed formation. See plate 1& 2.

Plate 1 & 2. Phosphorous deficiency: stunted leaves and roots.

Sulphur

- Essential for building proteins and nitrogen fixation in legumes.
- Can cause significant yield losses in cereals, but legumes are more sensitive.

Nitrogen

- Max 40-60kg/ha N with seed in band.
- Some grasses reduce root cation exchange (nutrient uptake) capacity under low nitrogen supply. (Black& Batten, 2003)
- N application when in short supply will increase water use efficiency. (Glendinning, 2000)
- Excess will cause excessive vegetative growth and may lead to reduced seed set when moisture is limiting.
- N response to wheat are most likely in soil pHCaCl above 4.5, low or no soil borne disease or weeds, normal sowing date, adequate soil moisture, low crop nitrogen status , low tiller numbers & N fertilisation no later than GS30. (Black & Batten, 2003)

Potassium

- Maximum with seed in band is debateable, but we suggest at the most 20kg/K/ha.
- Is often over looked and could be causing a dramatic yield penalty. It can have a positive effect on size and oil content of grain and botanical composition of pastures.
- Best applied before or soon after sowing, but may be side dressed if high leaching occurs or soil level is low.
- Studies indicate increased water use efficiency, disease resistance and lodging resistance. (Ed. White, 2000)

Zinc

- Deficiency is equally severe in both high and low rainfall areas.
- A good response can occur when Sulponyl Urea herbicides have been used as they cause root pruning and hence uptake is limited.
- Wheat following canola may show a good response with Zinc impregnated fertilisers such as granulock due to the death of certain soil biota during the canola phase that help the nutrient to be plant available.

Copper

- It plays an important in many metabolic processes in addition to pollen production. Deficiencies can cause sterile heads.
- Red Wheat cultivars are particularly sensitive.
- Copper deficiency is generally but not restricted sandy soils low in organic matter.

Manganese

- The availability of manganese in soil is strongly related to soil pH. It is typical to get a response on acid-to-neutral, sandy soils.
- Severe deficiencies can cause death of the plant.
- Can cause split or shrivelled grain in lupin pods or delay maturity of deficient plants.

Conclusion

- We can help you determine crop demand for nutrition through our experience, soil and or tissue tests. If your crop is already sown it may be possible to apply deficient nutrient such as K when N must be applied.

References:

Black, S. & Batten, G. (2003) as cited in
Pratley (Ed.) (2003) *Principles of field crop production* (4th ed.)
Oxford: South Melbourne

Glendinning, J.S. (Ed.) (2000) *Australian Soil Fertility Manual* (rev. ed.).
CSIRO: Collingwood.

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Peter Hawkins and Bruce inspecting Barley

NITROGEN MANAGEMENT FOR CROPS THIS YEAR

By Bruce Lewis
AGRONOMIST Vickery Bros

Nitrogen supply for crops is an important factor in determining crop yield and protein. This year with the favourable start to the season we may well be looking for rainfall and soil moisture to lift crop yield potential. Market preference for higher protein grains will also continue to flow through to quality premiums for higher protein grades.

Nitrogen decisions can be worked out using a budget approach. i.e. Nitrogen required by the crop based on the grain yield potential and the target protein of the grain vs nitrogen supplied by the soil and fertiliser. This year if we are to lift the yield potential due to the seasonal conditions it will follow that nitrogen required by the crop will also increase to maintain the same protein. To grow a 5tonne /ha crop of wheat with a protein of 10.5% will require 207kg/ha of nitrogen.

Soil Nitrogen Reserves

Crop rotation, nitrogen inputs and the time since an effective nitrogen fixing legume has been grown are the main factors that drive soil nitrogen levels. Pastures that have poor fertility and poor legume content do not produce soils with high available soil nitrogen levels. A soil following 2 or 3 years of canola and cereals will have depleted soil nitrogen levels unless significant fertiliser nitrogen has been applied. A clover crop can apply significant quantities of soil nitrogen. Studies in Australia have shown that pasture legumes fix,

on average, 50kg of nitrogen per hectare (N/ha) for every tonne of herbage biomass. Thus, a pasture producing two tonnes per hectare of legume biomass would fix 100kg N/ha. Testing available soil nitrogen levels in the soil is done by sampling to a depth of 60cm.

Mineralisation

Available nitrogen is mineralised from soil organic matter during crop growing season which contributes to the crop supply. Soil organic matter levels are used to estimate how much nitrogen is mineralised during the crop growing season. Mineralisation can also be calculated in reverse after the crop yield and protein is known together with the available nitrogen in the soil at planting.

Nitrogen Needed?

Once soil nitrogen levels are established and crop yield and target protein are determined a calculation can be made as to if and how much nitrogen should be applied as fertiliser.

For example a soil with available soil nitrogen levels of 59kg/ha and an estimated mineralisation of 93kg/ha will supply 152kg/ha of nitrogen. This would be sufficient to grow a crop of 3.8 tonne/ha at a protein of 8.5%. If a yield of 5tonne/ha with a protein of 10.5% is targeted additional nitrogen of 55kg/ha would be required. A quick gross margin calculation shows that it is better to grow the higher yielding crop with the better protein. There are nitrogen products becoming available that regulate the supply of nitrogen to better fit the crop requirements.

Weed control

Weed control is very important in growing crops with positive gross margins. Weedy crops do not give worthwhile grain responses to applied nitrogen. Weed control needs to be managed with crop rotations allowing reductions in viable weed seeds.

Disease

Root and leaf diseases need to be managed to allow crop leaf areas and root systems to optimise nutrition opportunities. Crops grown in rotations with higher root disease potential are unlikely to give optimum nutrient responses. Selection of tolerant varieties and control of leaf rust with fungacides is important for optimising crop potentials.

PERENNIAL RYEGRASS TOXICITY- ANOTHER REASON FOR PASTURE RENOVATION

By Harry Armstrong

The problem

Ryegrass staggers, otherwise known as Perennial Ryegrass Toxicosis (PRGT), is caused by toxicity of chemicals produced by some endophytes that occur in various pasture plants, mainly perennial ryegrass. Although these endophytes may be advantageous to the plants, the same endophytes may have detrimental effects on stock under certain situations.

Endophyte helps to ensure the persistence of the host plant by giving it some degree of protection from insect attack and drought tolerance. Unfortunately this unpalatability to insects also extends to livestock.

Hidden losses

Producers whose livestock suffered during the very serious outbreak of ryegrass staggers in 2002 and the subsequent outbreak in 2005 no doubt have vivid memories (even nightmares) of the significant stress and financial losses incurred at the time. What is less well recognised are the sub clinical and often undetected losses in production caused by ryegrass pastures containing high endophyte levels. Endophyte ill-thrift has been well documented from research undertaken in New Zealand, and is possibly the most important factor limiting livestock production on perennial ryegrass pastures in south eastern Australia. Graham Lean has estimated the economic losses from the 2002 outbreak at $5.11 per dse.

Apart from the financial losses caused by PRGT the animal welfare issue must also be considered. It must be strongly emphasized that the causes of PRGT are well known and that solutions are available.

Solutions

As yet there are no "cures" for PRGT hence, if you consider it to be a concern on your property you need to start putting prevention measures in place. This may involve eliminating some of the high endophyte pastures and sowing low or nil endophyte pastures as 'safe' paddocks.

Pasture re-establishment must be well planned and executed in order to ensure newly sown low or nil endophyte pastures are not quickly overtaken by volunteer high endophyte plants. Double summer cropping is one method that can be used to control existing varieties prior to sowing new pastures. Care must also be taken not to reintroduce high endophyte seed via hay fed out.

Replacing high endophyte ryegrass pastures with alternative species such as phalaris and fescue is an obvious solution. For those wishing to stay with ryegrass based production systems, there are many new varieties available offering endophyte free or novel endophyte status. (Note: novel endophytes have been selected that do not have the same detrimental effects to livestock.) Information is available regarding endophyte status, and also traits such as persistence, for all cultivars.

Annual and biannual ryegrasses are all endophyte free. Plants cannot suddenly become infected with endophyte, the endophyte is carried in the seed, so the plant either contains the endophyte or it does not.

Remember when replacing stands of Victorian Perennial Ryegrass with new, more palatable and productive nil endophyte varieties, you may need to provide increased levels of nutrients and make some adjustment to grazing management to enable them to persist and reach their true potential.

2006 Forward Purchase Plan

Vickery Bros. are once again offering clients the opportunity to prepay for products and services prior to the end of the financial year and to receive discounts off list price.

Product	**Discount off list price**			
	Despatch time			
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Products priced less than $299/tonne	$5.00	$5.00	$10.00	$2.50
Products priced greater than $300/ tonne	$5.00	$10.00	$20.00	$5.00

Procedure:

Payment must be made before June 28th 2006 for products that will be despatched between 1st August 2006 to June 29th 2007.

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Customers Funds will be credited to their account.

Customers must nominate the use of prepaid funds at time of ordering products to attract discount.

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