**Marketing options explored**

**Russell and Bronwyn Brunton** have owned their property, Frogs Hollow at Theodore, since 2015 and currently background 250 steers on 590 hectares.

Depending on season- al and market conditions, approximately 250 flatback weaner steers (ranging from 220 to 250 kilograms) are purchased during the winter months from local saleyards. The steers are rotated through four paddocks of pastures and foage crops and gain up to 1.2kg per day until they reach approxi- mately 320kg, when they are then moved into leucaena paddocks.

Studies have found that steers can gain up to 0.7kg per day when they graze leucaena and sown grass pastures. The Bruntons use the leucaena to keep the cattle growing in the dry season when the grass lays off.

After grazing on leucaena pastures in winter and spring the steers are prepared for sale in early summer. A sale weight of 380 to 420kg is ideal for the business, as the steers can be directly marketed to various Queensland feedlots.

Russell and Bronwyn aim to sell by January, so the paddocks can be spilled in preparation for the next sea- son’s steers. They undertake regular weighing to monitor cattle performance, and this assists with cattle and grazing man- agement, and planning sales. Due to the successful per- formance of their cattle on leucaena, the Bruntons are interested in establishing more, but wanted to understand the economic implica- tions of doing so. They contacted the Queensland Department of Agriculture and Fisher- ies (DAF) for assistance in undertaking an economic analysis of the current and potential profitability of their operating strategy.

**Herb Budgeting Tool Available Online**

**The Breedcow and Dynama herd management program** has been updated and is now available online. Developed in 1988 by Bill Holmes, formerly a principal agricultural economist with the now Queensland Department of Agriculture and Fisheries (DAF), the program was designed for graziers and advisers. "There have been six major updates to this herd budgeting tool since it was developed over 30 years ago and this year, we have moved the platform online," DAF grazing economist Tim Moravek said.

The Breedcow and Dynama package is used to assess choices for the management of beef cattle herds run under extensive conditions. It presents budgeting processes, adapted to the special needs of extensive beef producers. Breedcow and Dynama can be used for four key herd budgeting processes:

1. Comparing the likely profitability of the herd under different management or turnover systems (Breedcowplus).
3. Deciding what to sell when the plan goes sour or what to buy when there is an opportunity (Bullocks and Cowtrade).
4. Evaluating investments in herd or property improvement to determine the rate of return on extra capital, the number of years to break even and the peak debt (Investan).

"Improved usability, in- formation sharing and help guides are included and the online tool improves the ability to be helped remote- ly by agricultural econo- mists based in regional Queensland."

**For further information contact your local beef extension officer or visit breedcowdynama.com.au.**
Researchers at The University of Queensland are investigating how fire and grazing can be managed to optimise nitrogen inputs by biocrusts to improve the productivity of grazing lands in northern Australia.

In the research, funded by Meat & Livestock Australia, biocrusts are being put through their paces at the Kidman Springs fire experiment 400 kilometres south of Darwin (NT Department of Primary Industry and Resources) and the Wambiana Grazing Trial at Charters Towers in north Queensland (QLD Department of Agriculture and Fisheries).

**What are biocrusts?**

Biocrusts are the ‘living skin’ on the surface of the soil and are made of many tiny organisms including cyanobacteria, fungi, green algae, bacteria, lichens, liverworts, and mosses.

They grow when it’s wet or dry and become inactive when it’s dry, just like plants.

**Why do we care about biocrusts?**

They stabilise the soil surface by intertwining with soil particles to bind them together, preventing erosion from wind and water.

They photosynthesise and fix carbon - algae, cyanobacteria, lichens, liverworts, and mosses are all green and photosynthesise just like plants. The carbon they pull from the air is incorporated into the soil and available for plants.

In the dry season the biocrusts dry out and partly desintegrate.

**How do they look like?**

In Northern Australia biocrusts often appear as dark staining on the soil surface in the dry season (top left) and dark green slimy films during the wet season (top right).

**But wait, aren’t soil crusts a bad thing?**

There are two types of soil crusts. Living biocrusts are distinct from dead physical crusts that form on degraded soils.

Physical soil crusts inhibit water infiltration and plant growth. Living biocrusts enhance soil moisture, soil fertility and plant growth.

**What effect do fire and grazing have on biocrusts?**

Biocrusts in Australia’s tropical savannas, like our native vegetation, have evolved with fire and hence are adapted to fire.

Fire can enhance biocrusts by removing litter, trees and shrubs that would otherwise compete as ground cover, yet you need the right amount of fire; not too much, not too little.

Biocrusts on burnt sites at Kidman Springs regrew just as well after fire as those on unburnt sites.

During the wet season burnt biocrusts on alluvial soils grew faster than unburnt biocrusts.

Grazing can potentially open spaces for biocrusts to reduce plant cover, nevertheless, trampling by hooved animals is not something Australian ecosystems have evolved with, so our biocrusts are quite susceptible to heavy trampling.

At the Wambiana Grazing Trial, biocrust cover was higher and healthier with moderate grazing than with heavy grazing.

**How can we manage grazing to benefit biocrusts?**

During the dry season biocrusts dehydrate and become dormant.

The carbon and nitrogen they fix is broken down and recycled by other organisms in the biocrust, and becomes incorporated into the soil and available to plants.

We suspect that spelling out the wet season while biocrusts are actively growing and grazing during the dry season when they are dormant will not only benefit palatable plants, but also biocrusts, allowing them to maximise their growth and nitrogen fixation.

For more detailed information on biocrust, visit futurebeef.com.au (search for ‘biocrust’).

Robyn Cowley, Northern Territory Department of Primary Industry and Resources, 0418 829 493.

Wendy Williams, The University of Queensland, 0418 246 001.

*Biocrusts* are the ‘living skin’ on the surface of the soil and are made of many tiny organisms including cyanobacteria, fungi, green algae, bacteria, lichens, liverworts, and mosses.
How to make dry season supplementation work

DRY season supplementation is a common practice to help cattle handle poor quality dry season pasture.

Cattle performance is affected by the combination of reduced feed intake due to lower digestibility of the pasture and lower nutritive value i.e. protein and energy. The cost of feeding has risen sharply in recent years due to increases in the cost of products such as molasses, grain, protein meals and whole cottonseed.

Supplementation can be a valuable tool but needs to be carefully managed for a cost effective result.

Cattle need grass

Cattle production relies on the ability of cattle to economically utilise pasture of varying quality.

Supplying non-protein nitrogen to help cattle utilise poor quality grass is relatively easy and cheap, but supplying roughage or large amounts of energy, because pasture is limiting has become very expensive.

The long standing dry season strategy of feeding 2kg of MBU per day now costs $15-$20/head/month in central Queensland.

Using supplements to maintain excessive grazing pressure is detrimental to pastures and land condition.

What can a supplement achieve?

The marked increase in nutrient requirements of cows once they calve presents an annual nutritional challenge (Table 1).

The substantial protein and energy deficits faced by lactating cows mean that dry season protein supplements can only minimise weight loss.

Commonly used dry season protein supplements contain very little energy (Table 2).

Animals cannot physiologically consume sufficient to achieve a useful energy intake.

To supply a useful quantity of energy, high energy feeds such as protein meals, whole cottonseed, fortified molasses, or high grain mixes are required.

Class of animal and target supplement intake

The target protein intake for dry season supplementation of breeders is 150 g/day and for growing cattle 75g/day.

Where breeders are fed high energy supplements due to poor seasonal conditions, the target energy intake is 15-20 MJ ME/day.

Weaners under 160kg require a palatable high energy and true protein supplement such as:

- Fortified molasses 1,000 g/day
- Protein meals 500 g/day

Table 1. Nutrient requirements, intakes and deficits for a 450 kg breeder grazing low quality dry season pasture (Crude protein 4.8pc, Dry matter digestibility 47pc).

<table>
<thead>
<tr>
<th>Pasture intake (kg/day)</th>
<th>Pasture only</th>
<th>Pasture + dry season lick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lick intake (g/hd/day)</td>
<td>0</td>
<td>150</td>
</tr>
<tr>
<td>Protein (g/day)</td>
<td>570</td>
<td>570</td>
</tr>
<tr>
<td>ME (MJ/day)</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Lactating cow – calv to 4 months</td>
<td>911</td>
<td>911</td>
</tr>
<tr>
<td>30% urea lick</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>10% urea block</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Whole cottonseed</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>MBU</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

Table 2. Protein and energy content of common supplements (analysis on as fed basis).

<table>
<thead>
<tr>
<th>Feed</th>
<th>Crude protein (%)</th>
<th>Metabolisable energy (MJ/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial liquid supplement</td>
<td>20</td>
<td>3.8</td>
</tr>
<tr>
<td>30% urea lick</td>
<td>100</td>
<td>1.1</td>
</tr>
<tr>
<td>10% urea block</td>
<td>34</td>
<td>5.8</td>
</tr>
<tr>
<td>Canola meal</td>
<td>35</td>
<td>9.0</td>
</tr>
<tr>
<td>Whole cottonseed</td>
<td>21</td>
<td>13.0</td>
</tr>
<tr>
<td>MBU</td>
<td>25</td>
<td>8.1</td>
</tr>
</tbody>
</table>

Ease of management

The practicality of supplements must also be considered. Liquid supplements can appear good value but if intake cannot be controlled costs will be much higher than expected.

Loose lick composition can be adjusted to achieve the desired nutrient intakes at reasonable cost.

Breeders need body condition is critical for effective supplementation

Because supplying large amounts of energy for lengthy periods is uneconomical and dry season protein supplements can only reduce weight loss, breeders require body condition reserves to handle the period from late pregnancy to the seasonal break.

Breeders in store condition or better (Body condition score 3 plus at calving, will in most situations achieve good conception rates if the seasonal break is not too late.

Stocking rate must be the first consideration, animals need to be able to consume their potential pasture intake and maximise diet quality by selection rather than having to consume whatever is available.

Weaning is the next consideration as it reduces breeders’ energy requirements by around 50 per cent.

Early weaning is a proven strategy on light country and in dry years. In many situations, more timely weaning as an example, May versus June is all that’s needed to improve breeder body condition.

Weaning is a making valuable because it prevents cows calving too soon and enables calves to be weaned before feed quality declines too much.

In year round mated herds, the timing of muscarinisation is critical to reduce the number of cows lactating for long periods in the dry season.

Segregating breeders into calving groups can assist weaning management and reduce supplement costs.

Mick Sullivan, Principal beef extension officer, DAFF Rockhampton, 0428 104 374.
Great potential to integrate sheep and lambs

The benefit of diversification

There is great potential for farmers in closely settled areas to integrate sheep and lambs into their mixed farming operations, with diversification and effective management key to driving profitability, particularly in drier times.

That’s according to Stuart and Pru Barkla, who together manage their 160-hectare property, ‘Mt Molar’ Clifton, Queensland, where they currently run 130 breeding ewes, 200 goats and a lamb trading enterprise.

“Diversification has been key to the sustainability and profitability of our enterprise, offering a more balanced business and giving us the opportunity to better manage risk,” they said.

“Integrating sheep production in our business involved investing in a good set of sheep yards and completely fencing the boundary with an exclusion fence.

“Due to consistent dry seasons in our region, our sheep production has enabled us to maintain our business throughout this drought and continue to optimise the use of our land and pasture through rotational grazing in conjunction with supplementary feeding.”

The Barklas said management decisions around how to optimise livestock production significantly impact productivity and profitability in mixed farming enterprises.

“You must ensure you have the capacity and strategies in place to mitigate risk of mortality to your livestock, for example protecting your flock from feral animals and dog attacks,” they said.

“We participate regularly in 1080 baiting programs, which assists in both the control of feral animals and protects our Australian native animals and birds.

“Although living in these areas provides easy access to assisted feeding and other resources, producers need to look for ways to optimise their business and ensure the safety of livestock, from exclusion fencing to ensuring sheep genetics are suited to the region.

“If you’re considering diversifying your enterprise into sheep production, seek professional advice so you have a better understanding of your business’s potential, to guide your future management decisions.”

Stuart and Pru Barkla, ‘Mt Molar’ Clifton, say that diversification has been key to the sustainability and profitability of their enterprise.

The benefit of diversification

Time to take stock of your weaning options

WITH BMOM issuing a La Nina watch, variable summer rain likely and much of Queensland still in drought, livestock producers are urged to maintain flexibility in their businesses and take stock of their management options for weaning lambs.

Milly Nolan, extension officer with the Queensland Department of Agriculture and Fisheries (DAF), said producers need to be aware of management strategies that can be used to minimise stress in and around weaning.

“When looking at weaning management options, the live weight of the lamb should be the key consideration, with a higher weight resulting in a greater chance of survival and therefore success,” Milly said.

“Early weaning for one, decreases feeding costs through targeted nutrition and allow for greater flexibility in ewe management decision-making and earlier implementation of worm control programs in lambs.

“If early weaning is done in the yards, it can help ensure that lambs are given the best feed, allowing weaning to occur when lambs are at even lighter live weights.

“Compared to traditional methods, yard weaning has shown to minimise lamb weight loss, reduce stress through quicker adaptation to ewe separation, and allow for closer monitoring for flock health.”

Leading Sheep has released nine short clips recorded from the ‘Weaning in Dry Times’ webinar, visit leadingsheep.com.au and search ‘weaning in dry times’.

Producers looking to get into sheep can learn from Australia’s industry experts via the ongoing H Series of webinars featuring information from across sheep and wool production topics.

To find out what tools are available to help wool producers manage varying seasonal conditions, contact leadingsheep@daf.qld.gov.au. Leading Sheep is an important partnership between DAF and Australian Wool Innovation, and is supported by AgForce.