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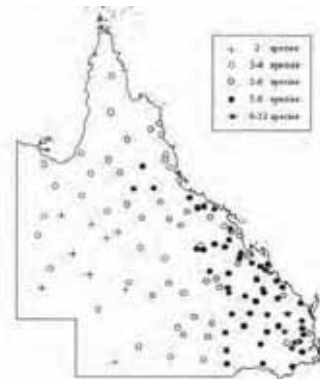
In the paddock

Dung Beetles – critical period NOW

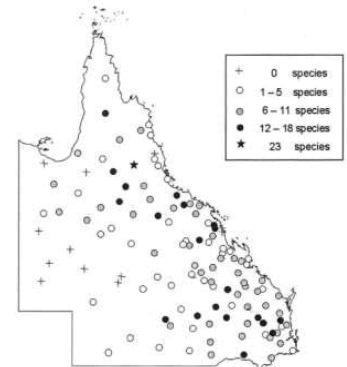
It's been 10 years since the completion of the 2000/2002 Queensland Dung Beetle Project which was supported by Agforce and even more noteworthy, it's been nearly 50 years since CSIRO introduced the first colonies of dung beetles into Australia. Two very historic events which should be important on every graziers mind this year. The map of Queensland from 2002, shows the minimum number of dung beetles you should have in your area right now. If you do not have this many or more species, there are some serious questions to ask yourself and your neighbours. Similar maps are available for areas of NSW and Vic – see your local Landcare/ CMA groups or go to www.dungbeetle.com.au.

Some Facts:

. During the project period, more than 7,300 introduced dung beetles were collected from a single dung beetle trap.



Onitis alexis



Source – Qld Dung Beetle Project – “Improving sustainable land management systems in Queensland using dung beetles. Map 1 – Native dung beetle species diversity and Map 2 is Introduced dung beetle diversity.

- More than 6,300 native species were collected from a single trap at various periods of the year.

- At the same time, other areas had 10 or 20 or even fewer beetles being collected. This variation is partly due to climate, but also management factors. In the past two months, the dung beetle population has been slowly building in most districts. If you do not have good numbers of introduced dung beetles in your paddocks, it may be due to a combination of causes:

- The drenches you are using (all dips and drenches have an impact)
- Too dry or extreme wet
- Predators (crows, ibis, cane toads)
- Regional populations are low (check the map)

Nutrient Cycling - The dung beetle is an essential tool in cycling nutrients from cattle,

sheep and horses back into the soil. In a grazing system, it is the only effective method of getting the nitrogen, phosphorous, potassium and many other minerals found in the dung back into the soil before it is lost either to the atmosphere or is washed into the creeks or streams. A high population of beetles will bury dung within 8 – 10 hours of it being dropped.

Fly and Worm control - While they are burying the dung, they are also able to consume and bury the larvae and eggs of many pests such as bushfly, buffalo fly and intestinal worms. This makes the dung beetle worth many hundreds of millions of dollars to the grazing industry. The average 500 head herd could save more than \$24,000 annually due to increased weight gain, not to mention savings in drenching and mustering costs.

If you would like more information call us or go to the website – www.dungbeetle.com.au



AgriLife research: Multi-paddock grazing is superior to continuous grazing

A long-term study in Texas, USA has verified the importance of rotational grazing for improving ecosystem health. Texas AgriLife Research scientists agree that multi-paddock grazing improves vegetation, soil health and animal production relative to continuous grazing in large-scale ranches. The study measured the impacts on vegetation and soils achieved by commercial ranchers who adapted management practices in response to changing circumstances to achieve desirable outcomes, said Dr. Richard Teague, AgriLife Research rangeland ecology scientist.

At the ranch scale, when multi-paddock grazing is managed to give best vegetation and animal performance, it is superior to continuous grazing in relation to conservation and restoration of resources, provision of ecosystem goods and services, and ranch profitability, he said. Teague said this study differed from those conducted by researchers who investigated multi-paddock grazing in relatively small experimental areas, without managing adaptively the way a successful, conservation-oriented commercial rancher would.

"In our study we examined the accumulated impacts of nine years of different grazing management categories on vegetation and soil parameters at a commercial-ranch scale," he said. The study evaluated the impact of multi-paddock grazing at a high stocking rate compared to light continuous and heavy continuous grazing on neighboring commercial ranches in three proximate counties in North Texas tall grass prairie. The same management had been conducted on all ranches for at least the previous nine years.

Multi-paddock grazing was managed using light to moderate defoliation during the growing season followed by adequate time to recover, Teague said. With multi-paddock grazing and ungrazed areas, the vegetation was dominated by taller more productive grasses. With heavy continuous grazing, it was dominated by less productive short grasses and forbs, he said. Light continuous grazing had a lower proportion of tall grass species than multi-paddock grazing or ungrazed areas. Teague said there was more bare ground on heavy continuous than light continuous, multi-paddock and ungrazed areas, while soil aggregate stability was higher with multi-paddock than heavy continuous grazing, but not light continuous grazing and ungrazed areas.

Soil compaction was lowest with multi-paddock grazing and ungrazed areas and highest with heavy continuous grazing, he said. **Water infiltration rate** did not differ between grazing management categories, but **soil erosion** was higher with heavy continuous grazing as compared to other grazing management categories, Teague said. **Soil organic matter, water holding and fertility** were higher with multi-paddock grazing and ungrazed areas than both light continuous and heavy continuous grazing.

The **fungus/bacterial ratio** was highest with multi-paddock grazing as a result of the greater amounts of tall grass species, he said, indicating **superior water-holding capacity and nutrient availability and retention** for multi-paddock grazing. "This study documents the positive results for long-term maintenance of resources and economic viability by ranchers who use adaptive management and multi-paddock grazing relative to those who practice continuous season-long stocking," he said.

The general management on the ranches using multiple paddocks per herd was to graze a pasture lightly to moderately for one or three days, followed by a recovery period of approximately 30-50 days and 60-90 days during fast and slow growing conditions, respectively. This resulted in two light-to-moderate defoliations during the growing season with regrazing before the majority of plants switched from vegetative to reproductive phases, Teague said. This kept the plants in a leafy, vegetative condition during the growing season to provide a high level of forage quality for the livestock and to ensure the best possible forage regrowth after defoliation.

During drought periods, animal numbers were adjusted to match forage amounts. In the winter, the goal was to graze and trample most of the standing forage to enhance litter cover and minimize self-shading that would limit plant growth in the following spring, he said. The continuously grazed ranches in each county were stocked at approximately the same stocking rates from year to year over at least the previous nine years. They were otherwise selected by the Natural Resource Conservation Service technical staff in each county as being representative of traditional continuous-grazing ranches in the region.

"The results we measured, representing the combined positive effects of multi-paddock management, indicate the multiple advantages of this management option," Teague said. "Multi-paddock grazing resulted in a higher proportion of desirable tall grasses, a lower proportion of less desirable short grasses, annual winter-growing grasses and forbs, and higher standing crop, even with a higher stocking rate than the lightly stocked continuous grazing." Although the stocking rate was less with lightly stocked continuous grazing, the preferred plants and areas were never allowed any recovery under continuous grazing while multi-paddock grazing, correctly managed, prevented overgrazing and allowed for adequate recovery after defoliation, he said. By ensuring light-to-moderate use in the growing season with adequate recovery, the preferred forages are able to capitalize on good growing conditions, Teague said.

HAVE YOU GOT A BUFFALO FLY PROBLEM?

If you are using drenches -

- Look for a product that is excreted in the urine. You can get the list of products etc off the Dung Beetle website <http://www.dungbeetle.com.au/parasiticides.html>

Over sprays and backrubbers such as

- Supona – Excreted in the urine. Also some diazinon based eartags are also excreted in the urine.
- Cattlecoate (Kieth Whyte) 0400 012838 ACbackrubs (organic cert) <http://www.acbackrubs.com.au/>
- Bimrose oils – backrubber oil (not organic) Tom 49213800 in Rockhampton <http://www.bimlube.com.au/Backrubber%20Oil%20Bruchure.pdf>
- Neem Oil – We have had some very good reports about using Neem. Not sure of the mixing instructions.

Buffalo Fly Trap

- The DPI have a summary etc on http://www.dpi.qld.gov.au/27_15553.htm

Culling susceptible animals

Some organic producers are using a culling program to sell all susceptible breeders as another longer term strategy.



GET TO KNOW AZOTOBACTER – “FIX NITROGEN FOR FREE”.

The atmosphere is 78% nitrogen (74,000 tonnes over each hectare) and yet the most limiting nutrient in our soils is often nitrogen. There are a number of natural methods to improving nitrogen in our soils. One which gets discussed a lot and has had hundreds of millions of dollars in research is the growing of legumes which require a bacteria called Rhizobium.

The other option is to improve the populations and soil conditions for Azotobacter. Azotobacter is one of those microbes that most people have never heard of. However, anyone who plans on having a future in agriculture will need to get to understand its importance. They are one of a host of organisms that cycle nutrients in the soil.

Azotobacter live on the carbon in the soil and around the roots of plants (rhizosphere). They fix nitrogen for free and are an aerobic (need oxygen) bacteria that live in the soil without needing a plant as a host (free-living). They absorb atmospheric nitrogen which is inaccessible to plants, and release it in the form of ammonium (NH₃) into the soil. It is also used to produce biological fertilisers, food additives and polymers. They are found in neutral and alkaline soil, in water and in association with some plants.

Azotobacter benefits include:

- It improves seed germination and plant growth
- Azotobacter are tolerant to high salts
- It can benefit crops by fixing nitrogen and supplying growth promoting substances
- It thrives even in alkaline soils above pH of 8
- Increases phosphate release
- It controls plant diseases due to substances produced by Azotobacter
- It can operate at temperatures as low as 5 °C.

However:

- It is a poor competitor for nutrients in soil.
- Azotobacter is less effective in soils with poor organic matter content
- Azotobacter also requires calcium for nitrogen fixation.

The use of many bio-fertilisers with Azotobacter strains has been recorded to be equivalent to up to 60 kg/ha N in a cropping season or 100kg/ha in a year. In recorded trials, wheat yields have increased by 300 – 1000 kg/ha from being inoculated with Azotobacter. Most of our sub-tropical grasses also have a healthy relationship with the Azotobacter, whereas temperate grasses do not achieve such success. In association with sub-tropical grasses Azotobacter may produce more than 100kg N per year per hectare.

Most producers, planting crops or pastures could be inoculating seed at planting with Azotobacter as it will improve germination and reduce fertiliser application. It is certainly a low up-front cost with a high potential gain.

Some of the Azotobacter products available include Eco N, Bio- N and Twin N. Check product labelling prior to mixing with other nutrient products as these are live microbes and some products can kill specific organisms.

GBP has trialled Eco N on the pasture establishment trial at Rockhampton in December 2011. If you would like to find out if you have Azotobacter or other microbes in your soils, CQUniversity and GBP are conducting a soil microbe testing program over coming months throughout Queensland. For more information, call Cathe 49383919.

Get your soil samples in - microbial testing - CQUniversity

The Rockhampton based CQUniversity Soil Microbe testing program began last week and will continue for the next 3 – 6 months in the first stage. Dr Sandrine Makiela, microbiologist at CQUniversity is calling for more soil samples to be submitted for biological testing in an exciting new project. Farmers and graziers who wish to have the health of their soils assessed are asked to call Mick on 49383919 or Sandrine on 0419 771 664

All samples need to be collected in specific sampling containers and under strict protocols as designed by CQUniversity and Microbial Labs Australia (MLA) in Adelaide. The soil analysis will measure the amount of fungi, bacteria, nematodes and protozoa as well as some key ratios of nutrients available. The science being used is world class. Call Cathe for more info on 0749 383919



Healthy Soils Incorporated

An exciting new NRM group formed in 2011 in central Queensland to assist in the gathering of research information and on-ground implementation

of healthy soils methodologies throughout Queensland. The group based in the Rockhampton region consists of grazing and cropping producers, researchers, educators and small business's with a goal of building healthy soils, plants and communities.

The next meeting of the “Healthy

Soils Incorporated” group will be held at 5.00pm on Friday the 17th February in Rockhampton. The meeting at the CQUniversity campus. Members and new potential members are welcome to attend. For more information, call group secretary Peter Hunt on 0419775617

"Something for Everyone"

"ROOKWOOD"

*"Extensive Waters - rotational grazed"
Gogango. Central Queensland*

Rookwood is 8,600 ha (21,250 ac) situated 100 kilometres West of Rockhampton in the heart of the cattle country, close to Gracemere saleyards. Rookwood has consistently carried 3,000 mixed cattle in the past five years and is fully grassed and ready to grow beef - RIGHT NOW.

- An ideal property for a breeding and growing out operation or back-grounding with a great balance of country comprising of Brigalow, Belah, Ooline and softwood scrub, soft alluvial soils and open forest type country that is mainly Beef wood, Broadleaf iron bark and broken scrub. Soils vary from brown Brigalow loams and clays to lighter duplex clays. The main features include

- A highly developed watering system covering all major paddocks.
- The King family have constructed 7 large dams totalling more than 100,000 cu metres as well as laying more than 40 km of 63mm and 75mm water mains reticulating water to all major paddocks.
- Extensive development with 76 paddocks
- Rotational grazed for 5 years.

(An exceptional property - Price On Application)

For more information about Rookwood, please call Mick Alexander on 0438 395255.



"Roson Park", Canoona (Rockhampton, Qld) Excellent condition.

Roson Park is 2,256 Ha or 5,574 acres on 3 titles, situated 55kms north of Rockhampton with an approximate carrying capacity of 600 cows plus progeny.

It is fully cleared with large shade areas remaining. Subdivided into 23 paddocks with the cattle yards able to handle 650 head.

- 2000 acres improved to silk sorghum and improved pastures
- 3500 acres frontage to Alligator Creek

6 bores delivering up to 10,000 gallons per hour

With high capacity reliable water and close to Rockhampton, Roson Park should be inspected to appreciate this property -

Fully grassed and waiting for stock. Price - \$1,800,000 o.n.o. For more info - call Mick on 0438 395255.



"What a lovely farm"

"Carlton Park", Texas QLD

Price \$650,000

Carlton Park is Working farm 228 ha (565ac) close to Texas QLD. Comfortable family homestead set in low care gardens. Solar power grid connect & solar hot water. Excellent water from bore, elec.pump,pipeline to 25000 litre tank on highest point reticulating to troughs and homestead. Set up for easy management, 16 paddocks, mostly new fences. Farm has been developed for sustainability, biodiversity and low-cost production, working with nature to provide a healthy, happy lifestyle. Owners now retiring. All offers considered.

For more information contact Mick Alexander

PH: 0749 383919 Email: mick@grazingbestprac.com.au



If You would like to advertise for sale, purchase, lease or agist, please contact our team at Grazing BestPrac anytime on 0749 383919 -

In the next edition, we will also be releasing a list of towns where we will be holding the next rounds of "Healthy Soils, Healthy Pastures" and "Property Planning Workshops" in coming months.

Pasture Rundown – a practical viewpoint.

In some regions around the world, pastures are replanted every 5 – 6 years, because they simply will not persist. In other regions, the pasture is renovated using blade ploughs and ripper tynes, while in other areas, farmers use a ley pasture/ cropping rotation to stimulate soils and reinvigorate pastures/ crops. And in other areas, stock are used to stimulate production. Even fire has been said to improve production? Whatever method is used, the renovation cycle is a spiral which produces less and less production each time it is renovated (figure 1).

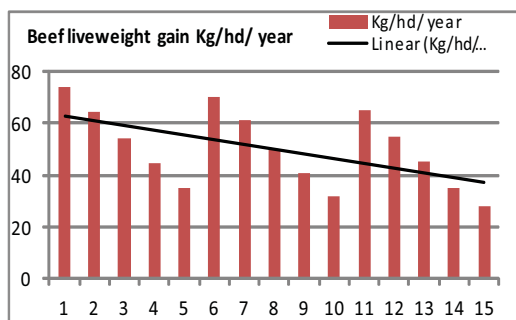


Figure 1. Note the trend for pasture production over 15 years. (modelled data)

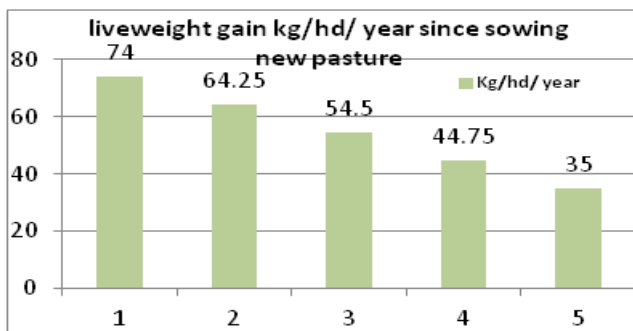


Figure 2. Source Proc. Aust. Soc. Anim. Prod. Vol. 16 (Robbins, Rickett, Humphreys)

Pasture rundown requires an understanding of Carbon and Nitrogen (C:N ratio), plant management, nutrients, microbial management and soil analysis. Simple one fit solutions may be a total waste of time. Primary producers with millions of dollars invested in assets need valid information for decision making.

In the past decades, most producers have noticed the decline in productivity of their pastures. In a grazing situation, the usual answer is to renovate the pastures again or blame it on the pasture species or the trees. Yes, short term this will work and we have all seen the results and the data. But the relentless decline continues. Figure 2 shows the average decline of production liveweight gain from green panic pastures at Brian Pastures Research Station, Qld 1976 – 81.

This is commonly called the “rundown spiral”. We can renovate over and over again and the end result is getting less and less (figure 1). Renovation stimulates the mineralisation of soil organic matter and of plant and root residues. The causes -

- **Lack of nitrogen:**

Pasture Rundown is thought to be linked to tie up of nitrogen which is then thought to lead to a loss of desirable species. The accepted problem is that it is an imbalance between carbon and nitrogen. As our grazing system produces more biomass carbon (new leaf, stem and roots) from renovation, the decomposition process needs more nitrogen to break down the large amounts of leaf, stem and roots. The soil is similar to a rumen of a cow. The carbon (energy) and nitrogen (protein) are food sources for microbes. For bacteria alone to decompose 1000 kg of carbon (trash), they may need up to 200kg of nitrogen. This nitrogen has to be sourced from the plant, soil, microbes and atmosphere. And if our soils are deficient in microbes to fix nitrogen, then the system will slow down to a point where production is reduced. The soil will be starved as well as the plant even when 78% of the atmosphere is nitrogen.

- **Carbon decline:**

The second issue is the decline in carbon within our soils – renovation causes large amounts of carbon to be oxidised and lost from the grazing system. Although grazing soils are higher in carbon than most farming soils, they are generally still net miners of carbon. Plants are able to sequester large amounts of carbon if they are managed for rest and able to regrow.

- **Reduced microbial activity:**

Microbes are essential to cycle most nutrients including nitrogen and carbon for plant uptake. Conventional pasture management is thought to lead to reduced soil microbial activity that then leads to pasture rundown after a number of years. Microbes are the key mechanism for feeding plants and cycling nutrients. The most accurate method of assessing soil health is to measure the microbial activity.

What can we do?

- Soil test as first step - know your starting point.
- Legume introduction – increase rhizobium in soil fixing nitrogen
- Microbe introduction - increase Azotobacter etc in soil (free living)
- Renovation – needs a change of management
- Thin out trees reduce shading effect
- Plant new pasture and manage differently
- Retain trees – increase mineral cycling
- Grazing Management – rest pastures and rotate stock
- Fertilise deficient pastures -
- Add microbes or stimulants

Summary.

If pasture rundown is as simple as low nitrogen, then the microbes (Rhyzobium and Azotobacter as well as a host of others) that fix nitrogen are keys to improving pasture productivity. However, the issue is far deeper than simply nitrogen. It is whole of grazing system issue including nutrients of carbon, phosphorous, calcium and many others. It is also a general rundown in microbe populations and activity. Pasture rundown is different in every soil and needs to be assessed in every situation.

Action – The first step is to conduct soil nutrient and microbial analyses of soils that are considered rundown and compare them to those pastures and soils that are considered healthy. The simple fact of comparing paddocks will assist in pinpointing issue to work on. At this point, no-one has the answers, but there are a range of specialists who can assist in solving problems with both nutrient and microbial management. If you would like to take action, our team can point you in the right direction for support. 1300 780872

