

# Managing Grazing for Pasture, Soil and Animal Health

Herbivores co-evolved with mixed grassland and forb ecosystems to build some of the most fertile landscapes on our planet. While grazing animals are an integral part in such communities, it is the plants, along with their microbial associates, that ultimately underpin the health and productivity of living systems. One only has to think of the amount of life in a desert compared to a rich prairie. The implications of grazing animals, in an environment, are largely correlated to the effect they have on the plant community.

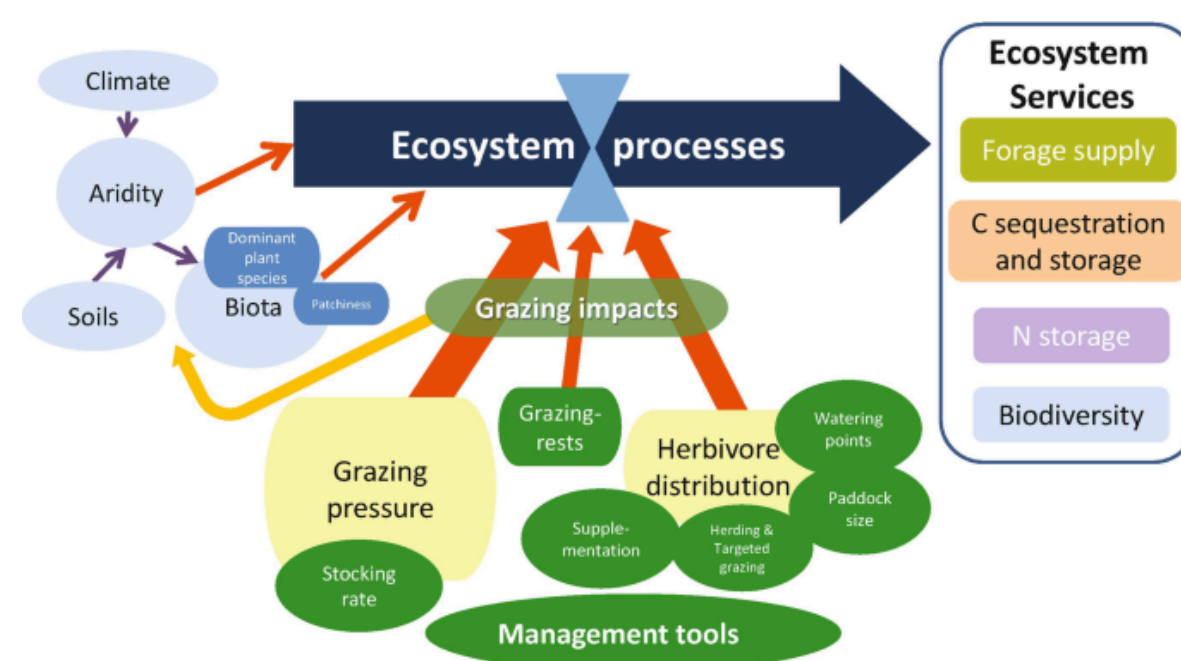
## Ecosystem Services Performed by Grazing Animals

As a plant matures and starts to set seed, leaf growth, photosynthesis and root exudation subside. A timely prune switches its hormone system back into a vegetative mode, so that they can regrow. In this way, grazing events can initiate another round of vegetative growth, with higher photosynthesis and carbohydrate production.

Bunches of larger animals' trample standing forage and residue into the soil, within reach of decomposers that are then able to break it down. In the process, nutrients and organic compounds are incorporated and released into the soil environment.

The deposits of nitrogen rich manure and urine on the carbon-based plant residue improves the carbon to nitrogen balance, making for more efficient decomposition.

Herbivore hooves create divots or pockets on the soil surface that become collection points for seed, organic materials and water, aiding the germination and the establishment of more plants.



Herbivores host a robust population of microbes in their digestive system that can break down fibrous plant material. In the process, they release and deposit the inherent nutrients, as manure and urine, on the soil, where they are available once again, to be used for plant growth.



As animals are mobile, they get around, performing their services, through the landscape.



## Environmental Risks Associated with Grazing Animals

When grazing livestock aren't managed properly, they can cause a range of environmental issues

Plants need to put on good vegetative growth in order to harvest energy from the sun, and develop decent root systems to acquire nutrients and water from the soil.

If animals graze plants when they are too young, it sets the plants back significantly, and can be fatal.

- When a significant portion of their foliage has been removed, plants have to draw upon reserves to support themselves through a phase of initial regrowth.
- If a recovering plant is re-grazed too soon, reserves are further exhausted, diminishing its capacity for regrowth. This also hinders the development of deep root systems, which compromises a plants ability to withstand drought and recover nutrients from deeper in the soil.

Overgrazing has more to do with how soon we graze a plant than how much of it is grazed.

- If given the choice, herbivores will selectively graze the most desirable species first and preferentially graze tender regrowth before consuming less palatable species. This puts our best species at a significant disadvantage.
- Grazing animals consume the flowers and seed heads of many plants. Annual species will not persist in plant communities unless they are able to set seed. Over time, all of this leaves us with less of the good plants, and lower diversity.
- When livestock are kept in areas for extended periods of time and the forage is continually overgrazed, the plant community becomes stunted and scant. This leaves the soil prone to structural degradation, exposed to the heat, wind and rain, and susceptible to erosion and nutrient loss.
- Constant animal traffic compacts the soil, and on wet ground, hard hooves cause pugging, both of which seriously hinder subsequent plant growth.
- The build-up of high nutrient excrement in places that animals frequent, such as water sources, can become a pollution issue.





# What's Best for the Animals

Grazing animals require adequate amounts of protein, energy, fibre, and essential minerals and vitamins to maintain good condition. These requirements vary somewhat between different species and breeds.

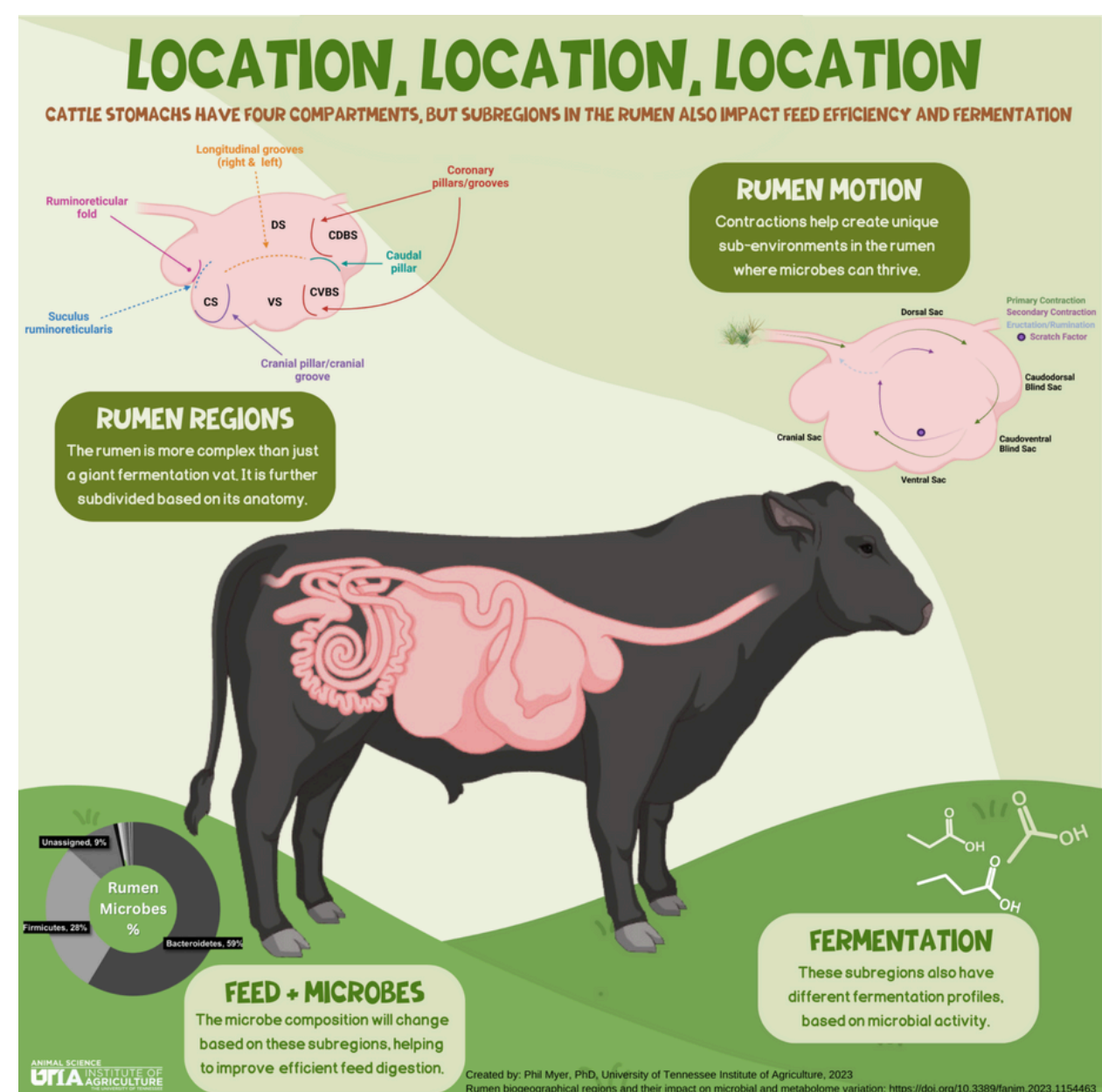
Ruminant species, such as cows and sheep, have a rumen full of microorganisms that enable them to digest the high amounts of fibre in plants like grass.

The rumen also contains different groups of organisms to digest proteins, sugars, starches and fats. A consistent day to day diet makes for higher feed conversion efficiency and happier animals with fewer health problems.

The composition of forage also varies, between plant varieties and species, with stages of growth and in the different parts of a plant.

Cool season plants are higher in protein and sugar and lower in fibre than warm season (C4) grasses. The energy in cool season species is mostly in the form of sugar whereas the energy in C4 grasses is mostly in the form of fats.

Leaf matter is higher in protein and energy, and lower in fibre than stem matter. Young growth, is also higher in protein and energy and lower in fibre. As forage ages, it lignifies and becomes more fibrous and the protein and sugar content drop.



- Ruminants, in particular, require a fairly high intake of fibre and if the forage that they are eating is too low in fibre, they are prone to scouring, as witnessed by sloppy manure.
- If consuming lots of high protein forage, protein intake may be too high, relative to energy. When this happens, the excess protein is converted to ammonia gas which elevates the pH, causing all sorts of problems.

- When sugar and/or starch intake is too high, excess lactic acid is produced, causing acidosis.
- If animals are consuming mature forage that is high in fibre and too low in protein, there may not be enough protein to maintain the rumen microbes.
- Animal performance markedly improves with the supplementation of certain minerals and vitamins if they aren't getting enough from their feed.

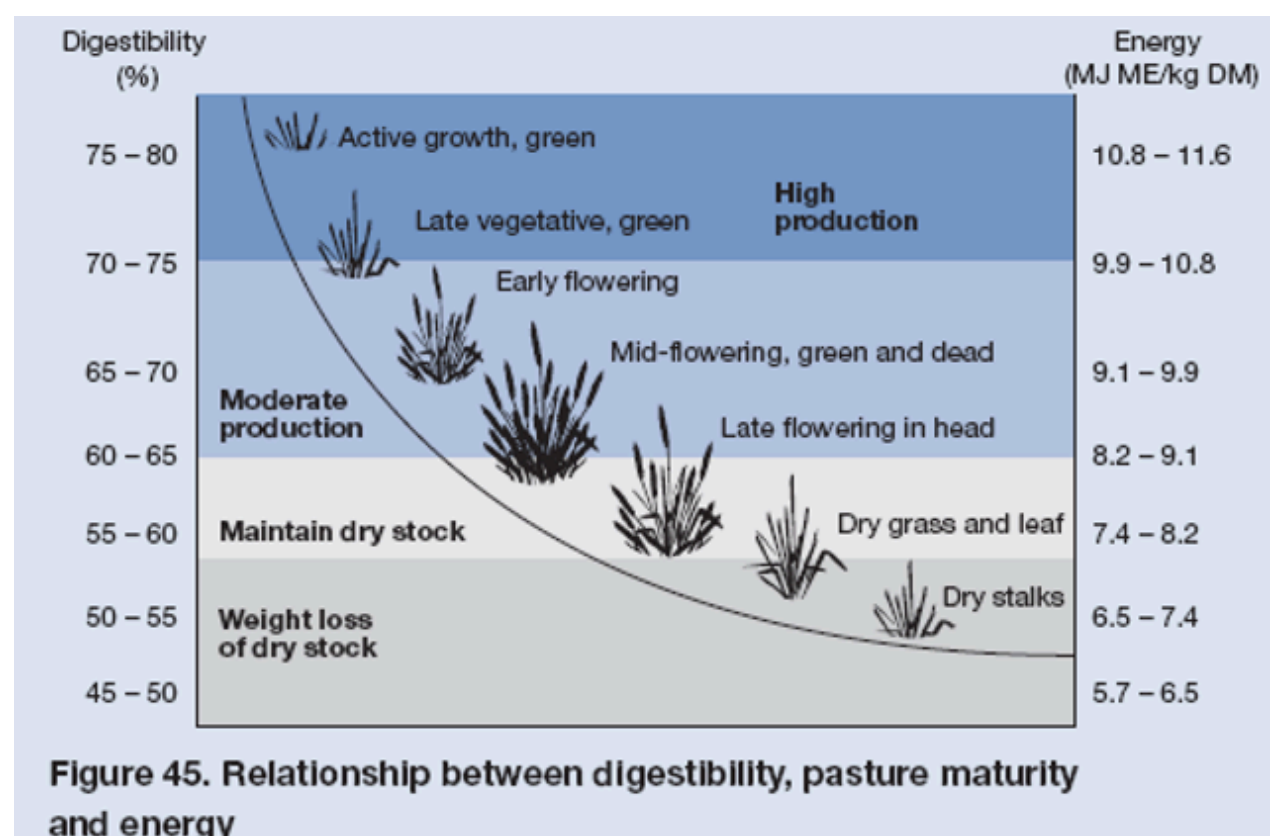


Image courtesy of Accioly Livestock Industries Services





# Grazing Strategies to Improve Animal, Soil and Pasture Health and Productivity

Ideally, we want to manage our grazing so that we:

- avoid selective grazing
- give grazed plants adequate time for full recovery
- maximize forage utilization
- provide livestock with a consistently suitable diet
- maintain adequate plant cover on the soil

- minimize traffic damage
- prevent the build-up of internal parasites

What we can manage is:

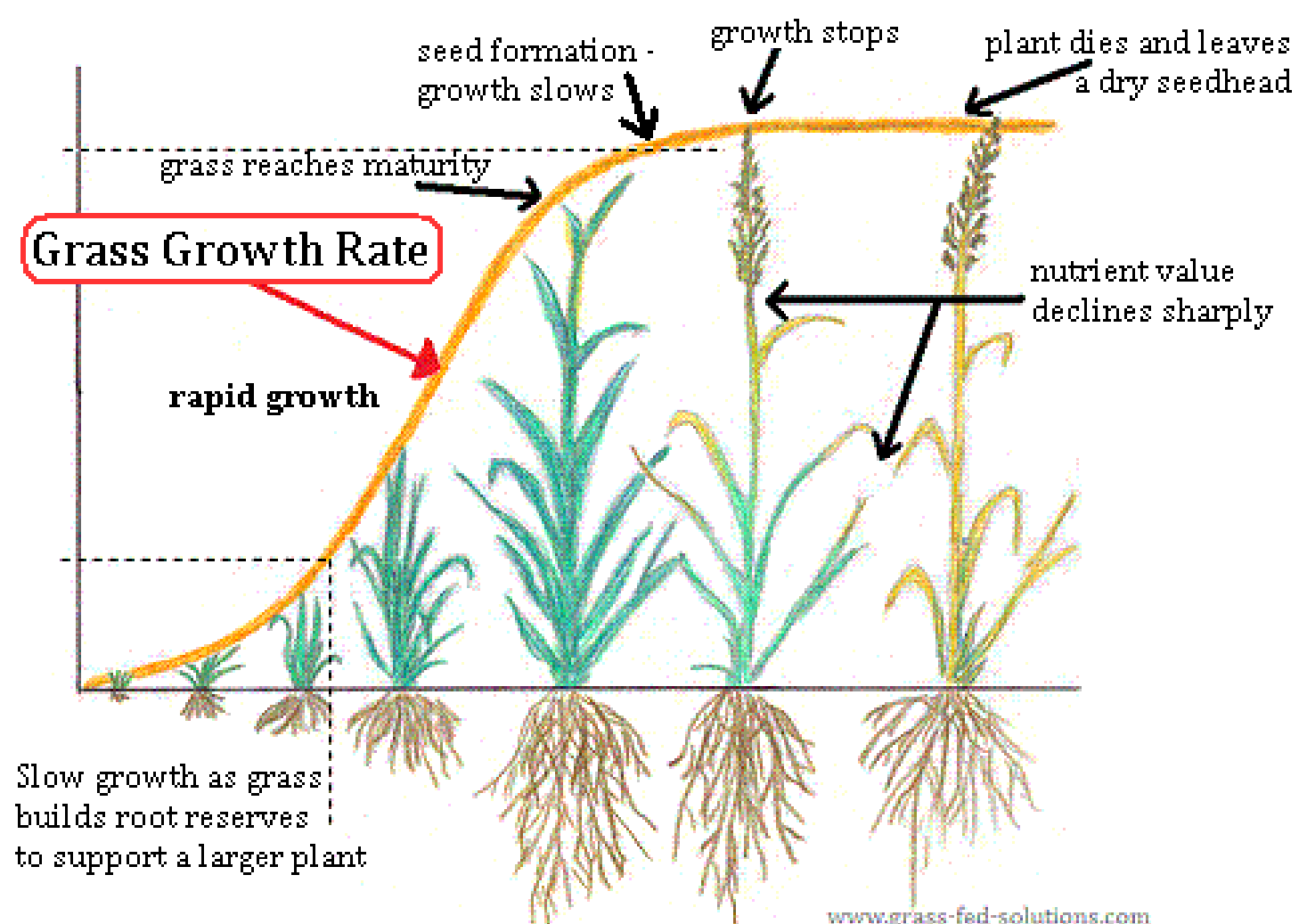
1. When we do and don't graze an area
2. The space and time allocated to graze events

It's a case of the how, not the what.

## When we Do and Don't Graze an Area

The season, topography, shelter and the state of the forage are all things we need to consider when planning our grazing events.

- As far as the forage is concerned, we want it to meet the requirements of the animals and be strong enough to handle being grazed.
- As cool season plant species are generally low in fibre and high in protein and sugar, especially when young, they should be allowed adequate time for establishment, and recovery after being grazed.
- Legume stands, particularly, are better grazed when more mature, as they are high in protein relative to energy, and low in fibre when young.
- If livestock are on young forage, early in the green season, they may need supplementation with some feed that is high in fibre, such as straw.
- It is important to make sure that livestock are getting enough protein to utilise the high fibre content in the forage, over the dry season.
- In the growing season, we want to try and graze paddocks while the forage quality is high.
- You can put aside paddocks in the growing season, and not graze them, to stockpile feed for the non growing season and reduce the need to feed out silage or hay.
- Ideally, we want to move livestock on before parasites get a chance to lay eggs on the forage, and then stay away from these areas long enough for the eggs die off, which often conveniently aligns with the recovery needs of plants.



By only grazing well established and fully recovered species, we enable plants to build reserves, regrow faster, put more exudates into the soil etc... and the forage has a better nutrient profile, courtesy of more developed root systems.



## The Space and Time Allocated to Graze Events

In nature, dense and moving grazing herds are an important component in a symbiotic arrangement with the larger living communities of open landscapes, where what works best for the animals is aligned with what is best for the rest.

### Space:

- There are numerous benefits to be had from sizing our grazing areas (breaks) so the herd density is high enough that they have to eat what's in front of them and trample what they don't eat onto the soil, in good time.
- Selective grazing gives the unwanted weeds an advantage over more desirable forage plants. When the herd density is high enough, anything that's not eaten is at least stomped to the ground.
- When animals are free to wander they tend to make tracks, and gather and rest in certain spots, making for uneven traffic and poor distribution of dung and urine.
- Whilst a significant amount of plant material is stomped to the ground with dense herds, this protects the surface of soil from the elements and provides food for the soil biology

### Time:

- Regrowth usually starts around three days after a graze, its therefore most important that animals don't get the chance to graze this regrowth, as this significantly knocks plants back! This is not so applicable in the dry season when plants aren't actively growing.
- If we are rotating our animals, we want to ensure their day to day dietary intake is fairly consistent, and this involves shorter breaks.
- By bunching the animals tighter, in smaller areas, we utilise more of the forage in each graze event, and buy time for recovery in our rotation cycle.
- Livestock must be moved on before they compact or bare off the soil. Maintaining some residual or living plant cover at all times is essential for soil health.
- If we have to keep livestock in an area for an extended period of time, at calving for instance, then it is best to only do so on fully recovered pasture and then allow full recovery afterwards. Sacrificial or otherwise damaged paddocks may need to be renovated, reseeded etc... and again, allowed ample time for plant establishment and recovery.





## Making a Case for High Intensity Grazing Management

The benefits that can be achieved when we manage our grazing properly include:

- increased growth, and higher quality, feed
- more efficient utilisation of forage
- greater plant diversity in our pastures
- improved soil function and fertility
- extended growing seasons
- better livestock condition, reproduction and growth
- lower hay/silage requirements
- less need to seasonally reseed paddocks

So, we can increase our production and lower our input costs if we optimise our grazing management, but our initial set up and daily labour requirements are greater.

### How does it stack up?

- How much capital do we have to invest in setting up?
- How much available time/labour do we have to put towards managing livestock?
- What does our existing infrastructure look like? How easy is it to modify the current operation?
- What's the size of our enterprise? Keeping in mind, it takes about the same amount of time to move a small herd as it does to move a big herd.

If looking to scale up a livestock enterprise, high intensity grazing management offers a way to significantly increase production, and is a much cheaper than purchasing the real estate needed, to increase our production by the same amount, under more conventional management.

Once a property has been well set up for high intensity grazing management, the extra cost of in labour is more than compensated for by the reduced input costs.

**We have to earn the right to run high stocking rates.**

To achieve the desired outcomes, we must be prepared to set up small enough areas to get the necessary herd density, and take them off the area for long enough to get the required recovery.

Grazing animals this way can be a very rewarding experience.



*It is much more effective to set aside some smaller paddocks where you can commit to doing it properly, than take half measures across the whole farm. This will give you a much clearer understanding of what's involved and what is possible.*



This document is a downloadable summary of the online article & content hub 'Managing Grazing for Pasture, Soil and Animal Health'. The full article can found at: <https://lower-blackwood.shorthandstories.com/managing-grazing/index.html>

The article was produced by 'Talkin' After Hours', the Lower Blackwood Landcare's Online Community & Information Hub, and written & collated by Mark Tupman from Productive Ecology. The aim of the article is to assist land managers in making informed decisions around grazing for Pasture, Soil and Animal Health.



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