

CHECK THE LOAD

HOW TO ASSESS IF STOCKING RATE MATCHES CARRYING CAPACITY.



STOCKING RATE

Stocking rate is a measure of the number of stock being run per hectare of grazed land within an enterprise. It's a way of summarising the enterprise's grazing intensity or need for feed.

In temperate southern Australia, stocking rate is usually expressed in terms of **Dry Sheep Equivalents per hectare (DSE/ha)**. Different species and classes of stock are assigned differing DSE ratings based on their comparative energy requirements, allowing all stock types to be added to the calculation of annual stocking rate in a standardised manner.

This provides a sound basis for comparison, between properties, enterprises and regions, or between years on the one property.

Stocking rate is a number that is directly indicative of both feed demand and grazing pressure.



CARRYING CAPACITY

Carrying capacity is the concept that there is a stocking rate (or more realistically a stocking rate window or range) that can be sustained by the grazing enterprise in the longer term.

Within the carry capacity window, stocking rate is sustained by providing production and profit without degrading the resources and environment that underpin the enterprise.

Carrying capacity is specific to the enterprise being considered and is not a generic relationship that can be readily or reliably calculated in a hypothetical sense. Instead, it's better understood as the physical experience of the combined capabilities of the environment, feedbase and management approach to grow and use pasture feed.

Carrying capacity is not an easy concept, since the basic elements of feed supply and feed demand are not constant and can be highly variable. There is week to week, season to season, and year to year variability all impacting on how sustained the stocking rate may feel.

Whilst this may be accommodated in part by strategic changes in the number of stock being run, there are often significant limits to how dynamic this can really be.

Evaluating a sustainable stocking rate or carrying capacity is a matter of time, and keeping a record of the experience is valuable.

CHANGE AND OBSERVATION

Carrying capacity can and will change with changes to an enterprise's feed demand profile, with change to the climate's impact on feed growth and supply, or with change in the feedbase's capacity to grow feed. These changes can have both positive or negative effects on carrying capacity, reducing it or lifting it up.

For example:

- Better matching feed demand to feed supply will have a positive impact.
- Reducing the flexibility of that demand and locking in high levels of demand can be a negative.
- Poorer or more unreliable autumn breaks can have a big negative impact.
- Warmer winters may have a positive impact on winter growth.
- Declining pasture species as a result of climate and grazing stress can be an insidious but significant impact.
- Improvement of pasture, soil fertility and grazing management can all have big positive impacts.



Positive or negative, change is cause for a re-evaluation of stocking rate to either make better use of the available feed, remain "as is" at the current level of sustainable use and risk, or reduce demand to reduce risk and improve resource sustainability. Change in carrying capacity can be incremental, and apparent only across years. However, it can be observed via a range of physical and biological observations or measures.

The following tables aim to prompt a critical review of how well current stocking rate is matched to carrying capacity. Undertaking this review annually and keeping a record of the results across years can bring new trends to attention, or allow the true nature of the current situation to be examined.

REVIEWING YOUR STOCKING RATE VS CARRYING CAPACITY

1. Record your stocking rate calculation and compare across the last 5 to 10 years.

Year	Total annual DSE's	Hectares grazed	DSE/ha	Any explanatory comments?







2. Conduct a descriptive review of stocking rate (SR) as it relates to carrying capacity (CC). Question which descriptions best match your information or experience. Consider if the indicative scenario rings true, and then what could be done to make a change if that's desirable.

Indicative scenario	Description	Tick as apply
SR above CC	Pasture frequently seems too short for too long Always in pasture growth phase 1 or low 2 Spring growth period always seems short Spring growth is slow to get going. Spring surplus is rarely evident. Difficult to adequately rest paddocks. Bare ground is an issue. Annual grass weeds are an increasing problem Spring clover % is poor (below 20%), with small plants and small leaves regardless of soil fertility Perennial grasses are mostly small, and with few tillers Roots are shallow, and plants easily removed from the ground Perennial grass % is declining Supplementary feeding is significant, more than desirable Meeting livestock condition score targets is a challenge Lambing % and weaning weights are lower than desired Lifetime liveweight gain is low for sale stock It takes too long to reach sale target weights There is often stress	
SR at or near CC	Pastures can be maintained and sustained in desirable composition Pasture quality is high (more green than dead) and mass reaches phase 2 at least, during growth periods Growth is limited more by environmental conditions than pasture conditions Spring surplus is evident Root depth is not limited unduly by grazing Stock and pastures are both able to do well as pasture and livestock targets can commonly be met Like the quantity of supplementary feeding, stress is manageable	
SR below CC	Pasture supply appears generally in excess of demand Rank/dead/ unused pasture is often carried over into next growth period. This may induce poor grazing outcomes Pasture is commonly or mostly in phase 3 Grasses dominant pasture, with little or no clover. No sub clover Pasture quality is low, mostly with dead material throughout Stock may be fat, condition 4-5, but growth rates may not be as fast as desired Dystocia or birthing difficulty may be a problem Production per head is relatively high, production per ha relatively low Stress seems low. Though the absence of stress may itself be stressful, as may a need for more production	

3. If you can, summarise across years by estimating how stocking rate relates to carrying capacity. Question if change in stocking rate or improvement in carrying capacity is desirable.

Year					
DSE/ha					
Above CC					
Equal to CC					
Below CC					
Comment					

IN SUMMARY

-  Carrying capacity is the stocking rate that can be sustained in the longer term without degrading the environment and production resources, whilst optimising livestock production.
-  Calculate and record the stocking rate being run as DSE's/ha on an annual basis.
-  Review the impact of stocking rate using a checklist such as the one illustrated here, or similar adaptation.
-  Critically consider if stocking is matching, exceeding or below carrying capacity. Look for the trend across years.
-  Interpret what this trend means to you and plan a response that maintains a currently sustainable situation or seeks to change to achieve one by adjusting stocking rate or improving carrying capacity.
-  Consider that maintaining current sustainability will likely involve improving actions, and that improving carrying capacity could require an initial downward adjustment to stocking rate ahead of a future more sustainable increase.