Grazing Management Fact Sheet 4

Stocking rate, stock density &
using DSE values to estimate pasture intake

Why

Understanding the feed requirements of different types and classes of livestock is essential to ensure stocking rate is matched to the carrying capacity of the land.

Estimating the feed requirements of your livestock is required to calculate feed budgets, pasture growth rate and pasture utilisation.

These calculations help to evaluate the farm performance and to increase productivity and land health.

What

One Dry Sheep Equivalent (DSE) represents the consumption of 1 kg dry weight (also called dry matter DM) of pasture. In other words, 1 DSE = 1 kg pasture dry weight eaten each day. One kilogram of pasture dry weight (also called herbage mass) of average quality contains the energy required for a mature 50 kg wether or dry ewe to maintain its bodyweight.

This is the fourth in a series of four fact sheets designed to provide a guide to increase pasture production and potential carrying capacity and at the same time improve the health of your land resource.

How

The nutritional requirements of all types and classes of livestock have a DSE rating expressed as multiples of the requirement of a 50 kg wether maintaining weight. Pregnancy, lactation and growth require animals to increase their intake to maintain their energy needs. The changing DSE ratings indicate the amount of additional feed particular animals require over the maintenance level of a 50 kg wether.

The table below lists some examples of DSE ratings and pasture requirements. A more complete list is available on the final page of the AIMS Pasture Checklist (see www.aimsag.com.au).

Class of stock	DSE rating	Daily intake of pasture dry weight (kg DM/day)
30 kg lamb growing at 50 g/day	0.9	0.9
50 kg wether maintaining weight	1	1
60 kg ewe with twin lambs	3	3
300 kg steer growing at 1 kg/day	10	10
500 kg cow with new calf at foot	16	16

= 1 kg dry weight of pasture

300 kg steer growing at 1 kg per day eats 10 kg DM/day = 10 DSE

60 kg ewe with twin lambs eats 3 kg DM/day = 3 DSE

An understanding of the nutritional requirements of livestock and how they change throughout the year is critical to preparing a grazing plan, conducting a winter feed budget and controlling pasture utilisation to ensure stocking rate remains within the property's carrying capacity.

Pasture utilisation refers to the proportion of the pasture grown within a period of time that is consumed by livestock. In the Northern Tablelands up to 60% on an annual basis, is considered a sustainable level of pasture utilisation to enhance long term production potential.
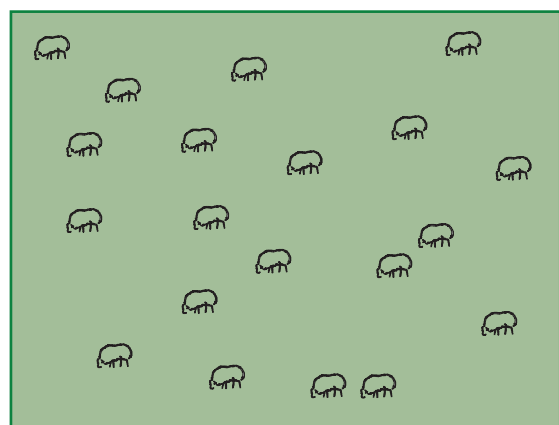
For example, if annual production of pasture dry weight = 6,100 kg DM/ha, the maximum amount allocated for livestock should not exceed 6,100 x 0.6 = 3,660 kg DM/ha. This would be equivalent to an average annual stocking rate of 10 DSE/ha OR 10 kg pasture dry weight/ha/day (3,660 kg DM/ha ÷ 365 days in the year).

This ensures adequate pasture material is returned to the soil to contribute to building soil organic matter, maintaining maximum ground cover and improving soil health.

The only way to effectively control pasture utilisation is to plan and monitor the grazing process and achieve optimal control and flexibility by having fewer mobs and allocating more paddocks to each mob. This allows the land manager to use stock density as a tool to improve land condition.

Stocking rate and stock density

Stocking rate is the number of DSE carried on an area. It is usually calculated over a 12 month period. The area may be a paddock, a group of paddocks or the whole property.
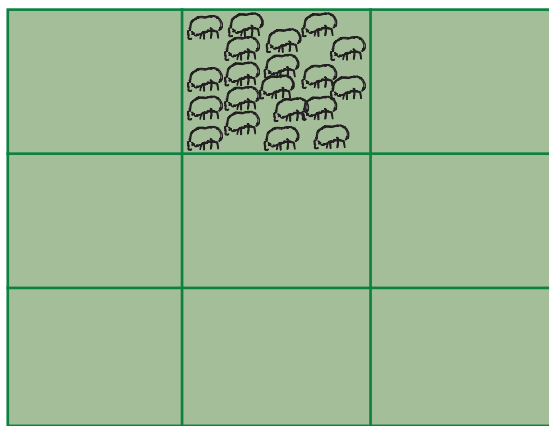
For example:

- If a mob of 750 wethers (@ 1 DSE) are run on a property with a grazable area of 100 ha for a 12 month period the annual stocking rate would be:
  Annual stocking rate
  = 750 DSE ÷ 100 ha
  = 7.5 DSE/ha.

- If a mob of 2,500 wethers (@ 1 DSE) are run on the same property with 100 ha grazable area for only 5 months of the year the annual stocking rate would then be:
  Annual stocking rate
  = (2,500 DSE ÷ 100 ha) x (5 ÷ 12 months)
  = 10.4 DSE/ha.

Stock density refers to the number of DSE that is grazing an allocated area or paddock on any one day. It indicates the amount of pasture dry weight those livestock remove each day based on their nutritional requirements. It is also expressed as DSE (equal to kilograms of pasture dry weight consumed) per hectare.

For example:

- If a mob of 1200 wethers (@ 1 DSE) are run in a paddock with a grazable area of 6 ha for one day, stock density = (1200 head x 1 DSE) ÷ 6 ha
  = 200 DSE/ha.

- For every day these animals graze this paddock they are removing 200 kg/ha of pasture dry weight. If these animals stayed in this paddock for 3 days, the total amount they would remove = 200 kg /ha/day x 3 days
  = 600 DSE days/ha.

This is equivalent to animals consuming 600 kg/ha of pasture dry weight. With both examples above, the stock density is 200 DSE/ha.

1 x 27 ha paddock with 100 ewes and lambs @ 2.4 DSE. Stocking rate = (100 x 2.4) ÷ 27 ha = 8.9 DSE/ha. Stock density = (100 x 2.4) ÷ 27 ha = 8.9 DSE/ha.

9 x 3 ha paddocks with 100 ewes and lambs @ 2.4 DSE. Stocking rate = (100 x 2.4) ÷ 27 ha = 8.9 DSE/ha. Stock density = (100 x 2.4) ÷ 3 ha = 80 DSE/ha.

Tools available to assist in measuring herbage mass, calculating pasture growth rate and developing a grazing plan are available for download from www.aimsag.com.au and navigating to software.

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