

Managing for Soil Health— Planned Grazing to Better Manage Multi-Species Grazing

by Judi Earl

Multi-species grazing provides a variety of benefits, and producers in the Northern Tablelands of New South Wales, Australia have been reaping the rewards for many years. In this area of Australia, the predominant multi-species grazing combination is cattle and sheep—as a means of controlling parasites. However, the most recent adaptation of multi-species grazing is the focus of using the animals to improve land health, not to just produce income. Likewise, this focus on land health means that land managers are now beginning to understand the need to leave plant residuals behind to enhance pasture growth and provide for the requirements of all the animals feeding on those plants (above and below ground).

Multiple Benefits

For years producers have run multiple species as a way of diversifying income, controlling weeds and woody species, reclaiming land, providing guardian animals for their flocks and herds, and controlling parasites. But with holistic planned grazing, I have seen people move from an animalcentric approach (focused solely on animal performance) to an ecocentric approach (focused on livestock, wildlife, and soil health).

In working with producers who have begun planned grazing in 28-32 inch (700-800 mm) rainfall environment, I have seen significant increases in SOC (Soil Organic Carbon) very quickly, up to 1 percent within a 12-month period.

Tim and Karen Wright are producers who run sheep and cattle together. They have multiple cells within which they use a leader/follower approach. Each mob commonly has access to an area for not more than one day before moving on. With this approach they achieve more even utilization of forage, since sheep are bottom grazers, grazing from the bottom up, while the cattle



If you have a living soil and are managing holistically, you are by definition doing multi-species grazing. Between wildlife like kangaroos, wallabies, and cockatoos, (not to mention all the critters in the soil) you have a host of grazers that need access to plant residual. With holistic planned grazing you can factor that need into your planning.

graze from the top down. From an animal health perspective, this grazing has worked well. On the Northern Tablelands the regional norm is that sheep will be drenched from six to eight times a year, the Wrights rarely drench sheep more than once a year, if at all. This is just one example of how planned grazing provides a higher level of control of the interactions between animals and the environment.

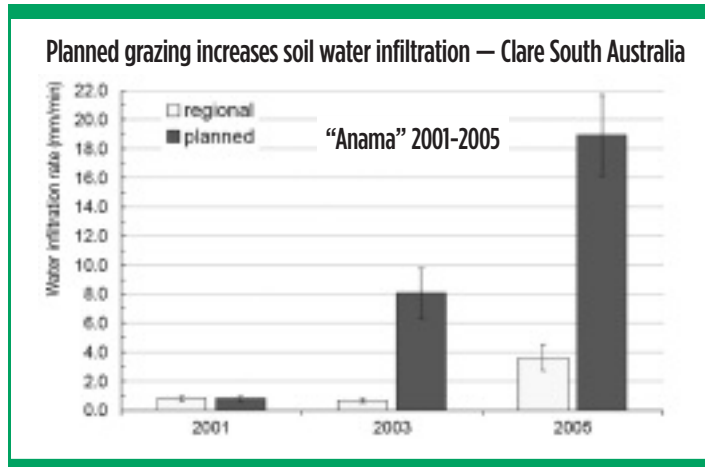
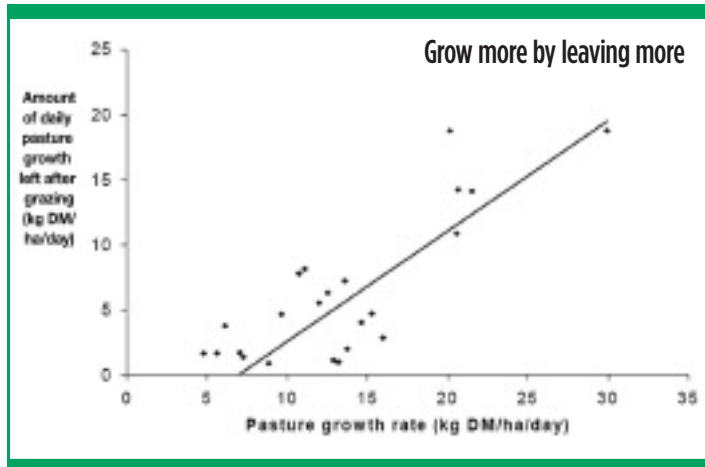
Planning the grazing to control those factors which can be controlled by graziers is critical since there are so many variables in a grassland environment. For example, wildlife can consume a significant amount of available forage. The forage intake of a kangaroo could be considered at least the equivalent of one sheep and a wallaby could be counted as half a sheep. Other grazers that depend on grasslands such as rabbits, and small native

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(Left) Goats are a good species to add to a herd that predominantly has grazers. Goats prefer browse and will help control woody species infestations. In Australia, these Boer goats are being used to control blackberry bushes and thistles.

(Right) A chicken and sheep combination helps to control parasites as the chickens can reduce worm populations.

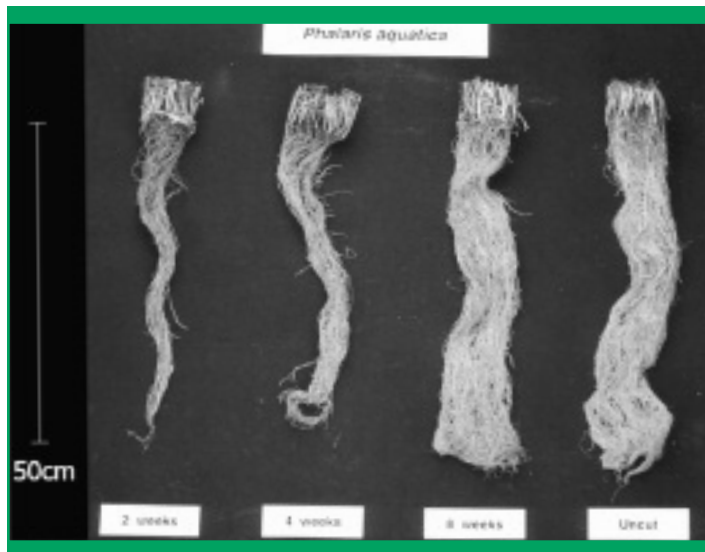


marsupials, can also have a significant influence as can a variety of birds such as ducks, cockatoos and galahs. And, any living soil will have a countless number of species which depend on the below ground bounty provided by plants, including invertebrates such as mites, collembolan, and nematodes as well as protozoa, fungi and bacteria. In fact, it is the multi-species below ground that drive agricultural production.

A key component of any living soil is the amount of organic material present in the soil, providing habitat and nutrition to the myriad organisms residing there. In terms of carbon, although it constitutes a relatively small percentage of the overall mass of soil, it can add up. A soil of average bulk density with just two percent organic carbon present in the top four inches (10 cm) translates to 9.6 tons of carbon/acre or 24 tons/hectare. This carbon is essential to not only feeding soil life and pasture productivity, but also affects water infiltration rates. On one trial site where planned grazing was implemented, within two years soil water infiltration rate increased *eightfold* in comparison to the conventional grazing treatment. Soil moisture significantly influences soil biological activity.

Increasing Pasture Growth Rate

A key driver of pasture productivity is utilization, that is, the proportion of annual forage grown that is consumed by livestock. Our research has shown that in our 32-inch (800mm) rainfall environment, 60 percent utilization



is the critical threshold. Assuming 7,040 pounds DM/acre (8,000 kg DM/ha) of forage is grown per year, around 40 percent 2,640 pounds DM/acre (3,000 kg DM/ha) of that annual production should be planned to leave as a residual to go back to the soil organic pool (i.e. to be used by the rest of your “uncontrolled” below ground herd of multi-species grazers mentioned above). In this way you can be building the biological capital and productive potential within your soil.

If you keep this ratio in mind it helps address the next issue, which is that high utilization retards pasture growth rates. The more residual green leaf you can leave behind following any graze event (lower utilization), the faster the pasture recovery rate will be. So the assumption that everything should be grazed at the three-leaf stage is actually the worst thing you can do to a pasture or an animal. That level of high utilization does not allow for the needs of soil organisms. Because there are so many variables beyond your control, it is imperative that you plan your grazing. It’s just not possible to effectively control pasture utilization under set stocking. Since soil health drives productivity, in our environment exceeding 60 percent annual utilization decreases productivity in both the short and long term. The process of holistic grazing planning is the most valuable tool any grazier can apply. For the life of me, I can’t figure out why more people don’t use it.

If you look at the pasture production chart above left, you can see how planning the grazing and leaving more residual behind can potentially increase pasture growth rate. The graph shows a doubling of annual forage production. Planned grazing can do that within three years! And, it eliminates the need to substitute hay.

All these results demonstrate the importance of doing your best for all the critters influenced by your management. If you plan your grazing, you can control your livestock, in the knowledge you are doing your best to adequately cater for everything from the microbes in the soil up the entire grassland food chain. 🌱

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The root mass on these samples of Phalaris aquatica show that recovery time is critical to regrow root mass and keep the plant and the soil healthy.

