Land fact

Key to increased livestock production from African lovegrass. (LF-AP-N-2.1)

Grazing strategies and management

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African lovegrass (Eragrostis curvula), a native grass of South Africa, is now naturalised and widespread throughout the Northern Tablelands and coastal areas of NSW. Under common grazing management systems, it is very unproductive, competes with introduced pasture species and, in large stands, can pose a severe fire risk.

There are several taxonomic types of African lovegrass that, botanically, are all grouped as one – Eragrostis curvula. Practically, there are visual differences. On the Northern Tablelands of NSW, the most widespread type is blue lovegrass which was known botanically as Eragrostis chloromelas. Characteristics of Eragrostis chloromelas include:

- bluish/green colour,
- shorter [although there are the short and tall types],
- less tuffty appearance,
- slightly more palatable.

The other less palatable, tussocky, greenish, tall type that is not as prevalent, was referred to as Eragrostis curvula.

These naturalised African lovegrass species (now all known as Eragrostis curvula) are not to be confused with Consol lovegrass, a selected variety of Eragrostis curvula, which has been sown in some parts of Australia. Consol lovegrass is rarely sown on the Northern Tablelands. There are more productive and palatable pasture species that are better suited to the climate and soil types of the Northern Tablelands region.

African lovegrass actively grows over the spring/summer period and hays off rapidly with a steep decline in quality and production. Managing stocking density and timing of grazing is critical for livestock producers to maximise both livestock weight gains and forage production from African lovegrass.

With the rapid decline in pasture quality in late summer, there are several months where African lovegrass provides minimal nutritional value. Samples taken around the Glen Innes area in May 2020, showed very low quality feed. See Table 1 (below).

Metabolizable energy (MJ/Kg DM)	4.8
Crude protein	less than 2%
Neutral detergent fibre levels	90%
Digestibility	less than 39%

Table 1
Nutritional values of African lovegrass

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Feed quality in Table 1 does not meet the nutritional requirements of livestock and all classes of sheep and cattle will experience weight loss when fed a diet of 100% mature African lovegrass.

Modelling from Grazfeed® suggests that a pregnant cow towards the end of the second trimester, being fed ad lib lovegrass of the above quality would lose approx. 0.9 kg per day. On this same feed, a wether would lose 0.12 kg per day.

African lovegrass stays at this "cardboard" like quality until early spring when new growth starts as temperatures rise above 10^{0}C and adequate rainfall is received.

For supplement options please refer to **LF-AP-N-2.2**. Supplementing livestock for maintenance on mature African Love Grass – Eragrostis curvula.'

Grazing strategies

Grazing strategies that keep the African lovegrass plants in an actively growing vegetative phase, can be used to aid producers to maximise livestock production. During its growth period, African lovegrass has been shown to have quite reasonable feed quality aspects, testing to levels of 15.6% protein, 8.9 MJ/Kg DM metabolizable energy and 61% digestibility. However, tests have also shown that the quality of this new growth declines relatively rapidly after approximately 30 days.

A 30-day rotation will maximise livestock performance from grazing African lovegrass.

Grazing strategies using both high stocking densities and a rotational system will keep forage growth at its optimum quality and extend the period of short green growth of the vegetative stage.

Samples taken from Glen Innes on basalt soils in the 2020/2021 season show that, over the spring and early summer period (variable rainfall experienced during this period), lovegrass pasture growth rates of 33kg dry matter/ha/day on a 30-day rotational system, were achieved. In a rotational grazing system this equates to being able to carry 49 steers (300kg each)/10ha paddocks, with the mob being moved every 30 days.

Average daily weight gains during the growth period have been modelled at 0.36kg/hd/day. Higher weight gains of at least 0.7kg/hd/day have been achieved in other trials, however this has only been for short periods during the peak growth season. This same rotational system would run 410 wethers (66kg each)/10ha paddock.

Grazing African lovegrass on a shorter rotational system of two weeks with higher stocking densities will not provide any additional benefit to the quality. It will also decrease the pasture growth rate as the plant has to place additional energy into generating new tillers.

Grazing African lovegrass down to approximately 1000kg/DM/ha (3cm) during late winter/early spring will enable a quick response from the pasture once appropriate rainfall and soil temperatures for growth occur.

High stock densities using a rotational grazing system will not be achievable across an entire property during the growth period of African lovegrass for most producers. However, this grazing strategy using approximately a 30-day rotation on as much of the heavily infested lovegrass areas as is practical, will significantly improve the production. This will increase farm profitability of that area of the property.

Where areas of the property with medium to heavy lovegrass infestations can't be utilised under this grazing strategy due to unavailability of livestock or where a winter feed reserve is required, let it "bulk up" over summer. This can then be utilised with supplementation over the cooler months.

High stock densities it not changing overall stocking rate of the property, more so it better utilises the available pasture. If purchasing extra livestock to utilise lovegrass, be mindful of winter feed requirements as lovegrass does not grow during late autumn/winter. Producers may also consider trading livestock on the extra pasture over the growth period of African lovegrass.

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The biggest obstacles producers face in using this grazing strategy are paddock size and watering points. Electric fencing is a relatively cheap and effective method to reduce paddock size to obtain the required stock density in using a rotational grazing system. When designing how to split existing paddocks, consider where the watering point(s) are and how best to take advantage of their location for each new temporary/semi-permanent paddock. Otherwise, portable watering points may be required.

In areas where African lovegrass has formed a monoculture with a bulk of mature carryover material, it is extremely difficult to make livestock eat it. Burning or slashing can be considered.

Burning is a cheap option and usually the easiest to undertake. Regular (yearly) burning is not recommended as it is detrimental to the existing pasture soil seedbank, the soil ecosystem, and the environment. An initial burning creates no long-term disadvantages but reduces overall burden, and allows regrowth.

In the following years, the grazing management strategy implemented should be selected to prevent excess build-up of plant material. This also keeps the canopy open to increase winter and summer pasture species (annual and perennials) in the overall yearly pasture production of the paddock.

Research has shown that burning can increase the density of tillers, stimulate flowering and increase seed production. (McFarland and Mitchell 2000).

A word of caution:

Please note that African lovegrass burns with high intensity and can move across the landscape quite quickly. Precautions should be taken to ensure it remains in the contained area and associated fire regulations are adhered to. Due to the heat generated by this high intensity burning, it is recommended that burning is undertaken during the cooler parts of the day or after a shower of rain when the material contains some moisture. The cooler burn reduces the detrimental effects associated with "hot" fires.

Slashing and/or mulching is also an effective way of stimulating fresh growth. Again, it is recommended that it is not used every year as a tool to decrease the bulk of dry standing matter, due to the high wax content primarily on the stalk of African lovegrass. This is one of the reasons why African lovegrass plant material takes a long time to breakdown – the reason why it has been used as a garden mulch. If a large density of this material sits on the surface on the soil, it acts like a weed mat, reducing the opportunity for other desirable species to emerge. The wax breaks down slower than the plant material, leaving a semi-impervious soil layer and reducing water infiltration.

Control

For light infestations, control with chemical or mechanical means is usually the best option. Biosecurity protocols should be implemented when moving stock from heavily infested areas to clean or lightly infested areas.

Impact of fertiliser on growth

The question always arises as to whether African lovegrass areas should be fertilised. Firstly, nutrient levels should be checked, primarily through soil tests. Then look at the pasture composition of the paddock(s). Of the key nutrients, legumes (clovers) are the major responders to phosphorus and sulphur, whereas grasses require high inputs of nitrogen.

For light to moderate infestations on acid soils where a soil test indicates deficiencies, a response to sulphur, phosphorus and other trace elements will be beneficial. However, desirable grass species and legumes will need to be present or added, to be economical. If legumes are lacking, they can be added when topdressing with fertiliser. This action will increase pasture production and the competition will help slow or prevent further encroachment of African lovegrass, particularly when implemented with a changed grazing management system.

In areas of heavy infestation or monocultures of African lovegrass, the use of fertiliser will depend on how you plan to utilise the lovegrass. If the plan is to change your grazing system to fully utilise it and if soil tests indicate nutrients are deficient, then applying fertiliser (as above) will be beneficial as legumes and grass species can express themselves with the "open" pasture canopy, providing additional forage yield and quality, particularly during winter. Nitrogen can also be beneficial in promoting extra pasture growth and quality during the growth period (summer) of African lovegrass. The economics of this practice need to be carefully considered.

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The introduction of legumes, along with appropriate fertilisers, can significantly reduce the need to topdress with nitrogen.

If your grazing system is going to remain the same in these heavy infestations/monocultures of African lovegrass (in other words greatly underutilised) then the application of fertilisers will most likely be uneconomical. The exception is on soils that test very low in phosphorus, whereby using a phosphate-based fertiliser will increase animal performance (through improved body phosphorous levels) but have little effect on lovegrass growth.

Conclusion

With increased seasonal variabilities associated with climate change, African lovegrass may become even better suited to the Northern Tablelands climate. This, in combination with present management, will increase its prevalence. If already present, eradication of the plant species is extremely unlikely. However, a change in management systems can reduce the impact of African lovegrass on your farm production.

In areas on the farm where no African lovegrass is present, be extremely vigilant in keeping it out through farm biosecurity measures such as taking care when moving livestock, vehicles, and machinery from infested areas to clean paddocks. Plant competition is the key. This is achieved through maintaining good groundcover throughout the year by using appropriate fertiliser and grazing management.

With light to medium infested areas, implement management practices to reduce the infestation to minimal levels (control). This involves one or a combination of chemicals, mechanical control (individual plants or cropping of whole paddock), nutrition/fertilisers and grazing management.

Heavily infested areas need careful considerations to ascertain the best option. In areas of difficult terrain and lots of obstacles, the options are very limited and grazing management to utilise the lovegrass is usually the most practical and economical option.

In open country that is accessible by machinery, there are more options apart from grazing management/ utilisation. Cropping, introduced pasture, chemical wiping, mulching/slashing can all be considered on their own or in combination to control African lovegrass.

Being vigilant on a regular (at least annually) basis, combined with appropriate fertiliser and grazing management, can achieve success in keeping African lovegrass out or at least minimise the impact it has on your property. With heavy infestations, considering systems as outlined above, to maximise the production from African lovegrass, is usually the most economical method of attacking the problem.

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References

MCFARLAND, J.B. and MITCHELL, R. (2000) Fire effects on weeping lovegrass tiller density and demographics. Agronomy Journal, 92, 42–47.

TALIAFERRO, C.M., HORN, F.P., TUCKER, B.B., TOTUSEK, R. and MORRISON, R.D. (1975) Performance of three warm-season perennial grasses and a native range mixture as influenced by N and P fertilization. Agronomy Journal, 67, 289–292.

BERG, W.A. (1986) Effect of 20 years of low rate pasture fertilization on soil acidity. Journal of Range Management, 39, 122–124.

FIRN J (2009). African lovegrass in Australia: a valuable pasture species or embarrassing invader? Tropical Grasslands, [online] 43, pp.86–97. Available at: https://tropicalgrasslands.info/public/journals/4/Historic/Tropical%20Grasslands%20Journal%20archive/PDFs/2009%20issue%20pdfs/Vol_43_02_2009_p86_97.pdf [Accessed 1 Jul. 2021].

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