

Can native grasses help to control African Love Grass?

Dr. Ian Chivers, Native Seeds P/L

African Love Grass (ALG) is a substantial problem for graziers, croppers and environmentalists on the southern Tablelands of NSW. It can lead to the virtual loss of grazing pasture, the removal of nutrients water and diversity from a paddock, a hillside and even an entire farm by its aggressive growth accompanied by its unpalatable nature.

Yet at the same time, it is possible to see areas where stands of native grasses occur alongside and butting up against encroaching ALG. How is it possible that the native grasses are proving more competitive against ALG in comparison to some of the introduced grasses? Is it possible to use this capacity to fight against the encroachment of ALG? If it is, how will it be done? I hope in this series of articles to provide some thoughts about these questions.

We need to start with what we know about ALG. (I also need to provide some basics of plant physiology, but more about that in a few moments).

So what do we know about ALG? Firstly, ALG spreads by seed. Secondly, it invades areas that are disturbed in some manner. Thirdly, it has a peak germination period of mid to late spring as temperatures rise and day length increases rapidly. Fourthly, it sets seed in late summer and early autumn, with that seed largely being dormant until spring of that year. Fifthly, the seed store of ALG does not last very long in the soil and most will die within a couple of years of dropping onto the soil.

ALG is at its weakest when it is a seedling. It is not a highly competitive seedling and can be out-competed by a strong stand of actively-growing plant matter. To be specific, ALG seedlings are susceptible to desiccation, and possibly shade, while they are smaller than the 5 leaf stage. These seedlings can be prevented from growing further by strong competition for resources at that time.

To take this further I need to provide some basic plant physiology. A basic understanding of this will help to make clear what I am going to describe later on. Grasses can be divided into two groups – the cool season and the warm season types (sometimes described as the C3 and C4 types for reasons of their biochemistry). The cool season types are those that grow during the cooler times of year and which either go into dormancy or die during summer. Some well known examples of these are ryegrass, cocksfoot and phalaris. They remain green during frost periods, grow strongly in early spring and are mostly intolerant of high temperatures. In contrast, the warm season types are those that germinate during spring, grow actively during summer and will go into dormancy, or die, over winter. Some examples are kikuyu, couchgrass and the fodder crops of maize and sorghum. Generally the warm season types are more heat and drought tolerant than the cool season types. ALG is a warm season grass.

The basic form of the growth pattern of cool season grasses on the Southern Tablelands is as shown in graph 1. The features of greatest interest to pastoralists are the periods of active growth in autumn and spring. Of recent years the autumn rainfall has been limited and hence this small peak has often been negligible and most reliance has been placed on the spring period for active and substantial pasture growth.

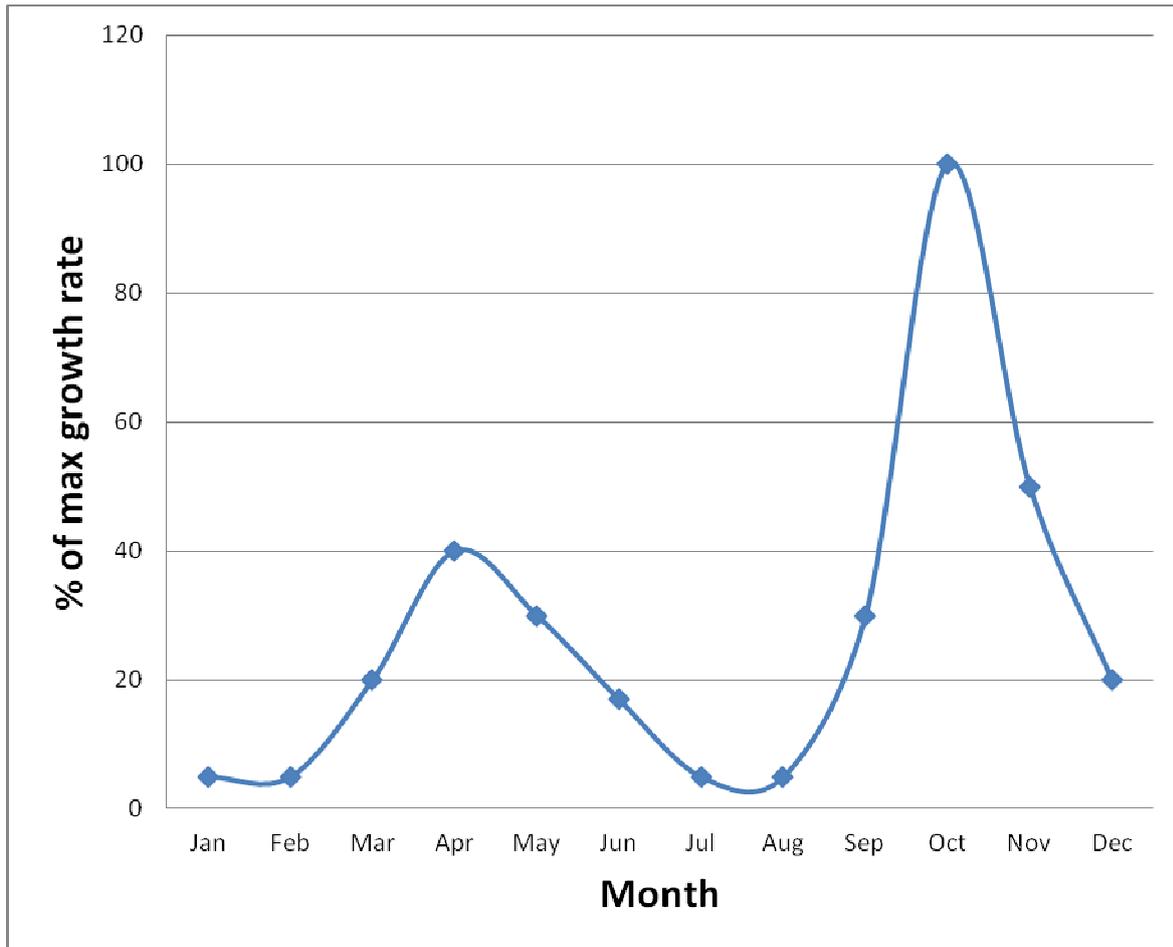
In general there are two periods during which germination of these cool season grasses occurs - in autumn and in early spring.

The warm season grasses have a very different growth pattern to the cool season grasses (Graph 2). The main features here are the absence of growth over winter and the strong growth over the late spring and early summer. Germination for these grasses occurs in mid spring and the plants tend to grow very quickly once they germinate.

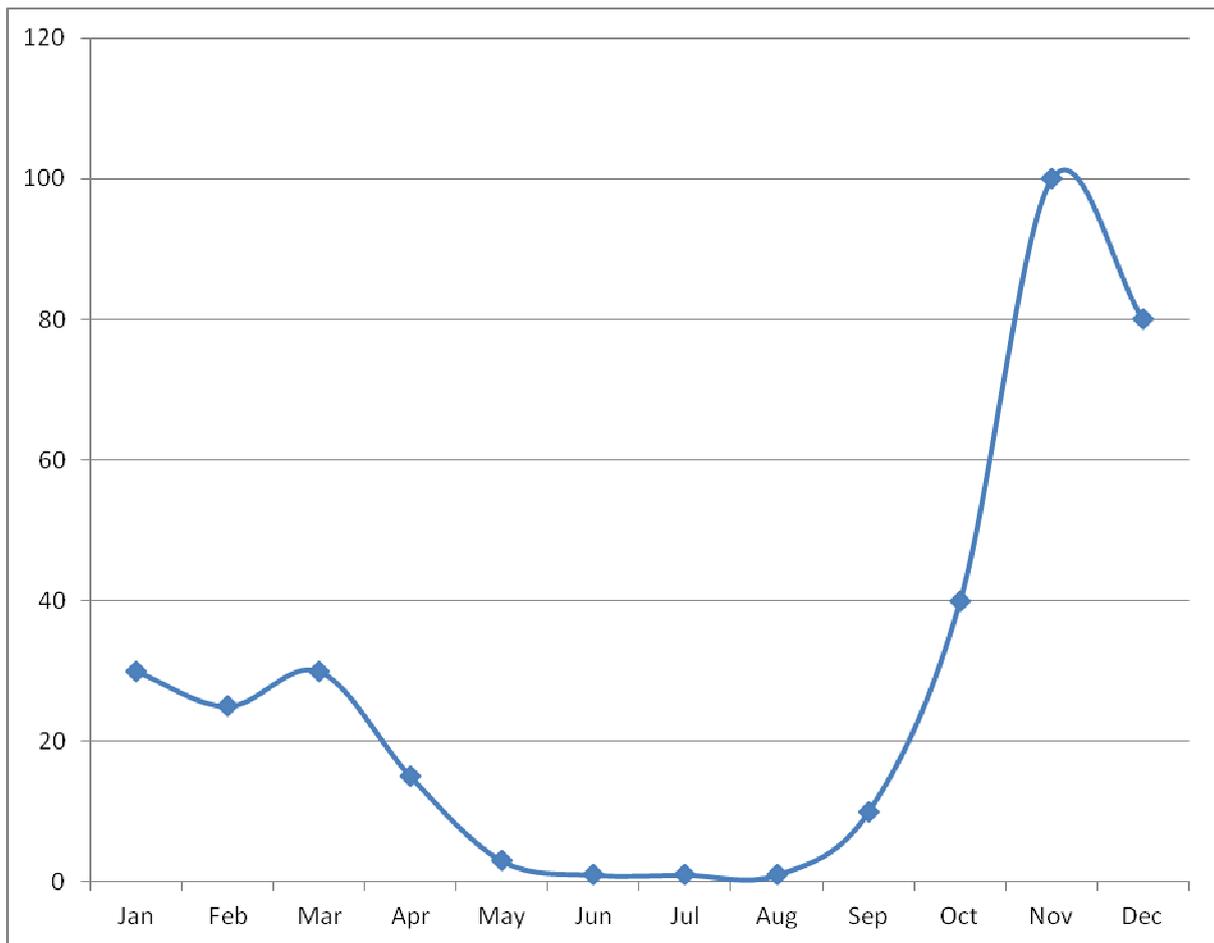
The differences between these two growth patterns provide an opportunity to influence the growth of the emerging warm season grasses, and especially the ALG. By applying strong cool season growth in early spring the chance of good establishment of weeds such as ALG is substantially reduced. We see this regularly as ALG can only get established on areas in which the cool season cover is either degraded or removed. This can occur through achieving good seedling establishment in autumn, or possibly in early spring, and having those cool season grasses established and competitive with the ALG when it germinates and tries to establish in mid spring.

ALG seedlings can be suppressed by competition for water, light and fertility. This will occur with a vigorous growth of cool season grasses that are actively growing at the time when ALG seedlings are young and trying to become established.

In the next article I will talk about the various options for providing that competition to the emerging ALG seedlings.



Graph 1: The relative growth rate of cool season grasses such as ryegrass and phalaris during an average year on the southern tablelands of NSW



Graph 2: The relative growth rate of warm season grasses such as African Lovegrass, kikuyu and couchgrass during an average year on the southern tablelands of NSW. Note the absence of growth during their dormancy period over the winter months.