Meeting the Rehab Objectives

Leana Nel
Advance Seed
Research Manager
Leana@advanceseed.com

One of Advance Seed's research goals is to identify which species physiology are more suited for the rehabilitation of different post- mining environments. Identifying the main challenges faced in rehabilitation of tailings and waste materials and facilitating possible solutions using commercial forage species, has been the focus of a research team from the University of Pretoria and North West University. These teams, led by Dr Wayne Truter and Prof Klaus Kellner, Piet van Deventer and Dr Anine Jordaan, respectively, have shown that some species are more suited to certain environments. In addition, the use of Agricote® can be beneficial to the establishment process in some of these extreme growing conditions. Lucerne is one of the species used in the research and results show that Agricote® coated seed had higher germination in acidic growth media, such as gold tailings and coal discard. These growth media are usually plagued by high metal contents with the acid growing conditions, which results in significantly lower germination and survival of seedlings of most plant species.

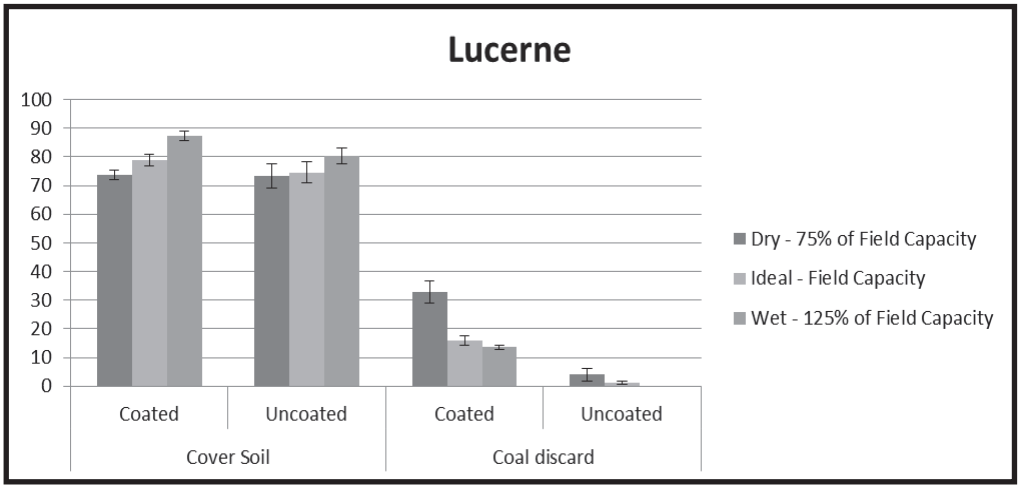

Figure 1: Germination and emergence results of lucerne planted in cover soil (Red Sandy Loam) and coal discard, treated with different soil moisture regimes

The balance between water availability and reducing water flow through a profile can also influence the success of a species. An example of this can be seen in the figure below (Figure 1). In cover soil, the higher water content was beneficial to the emergence of lucerne, while the opposite is true in coal discard. This is likely due to the acid generation potential of the coal discard and the high Aluminium content. It is however clear that the coated lucerne can improve the chances of successful establishment of plant cover for rehabilitation.

The micro environment created by the coating material provides a matrix which improves seed to soil contact and buffers the emerging radicle from chemical damage. Amelioration of the growth medium can significantly improve the results and ensure a better stand establishment. Successful establishment is the basis for successful rehabilitation and is very important when considering long-term sustainable vegetative cover.