

Using visual seed and pod cues for assessing prickly acacia seed viability

Introduction

Cattle are the primary spread vector of prickly acacia (*Vachellia nilotica*) seed as they readily consume both immature and mature pods off the tree and the ground (Image 1 & 2) and pass it through their gut in faeces. Peak pod fall is generally regarded to be from October to January, although recent observations have shown that pod maturity can occur as early as July and is mainly driven by seasonal conditions. This means that pods can be available to cattle for a much longer period than has been thought, making it important to know when seed in pods becomes viable in order to prevent seed spread.



Image 1: Cattle eat the pods of prickly acacia, either off the tree or the ground

Research

The Department of Agriculture and Fisheries undertook field and laboratory based studies to identify visual features of prickly acacia pods and seeds that may indicate seed viability.

Findings

- As the colour of pods and seeds on trees changed from green to grey-brown, viability of seeds increased (Image 2 & 3).
- Flat pods and soft seeds were rarely viable, however as pods began to thicken and seeds harden (even if green still) seeds were potentially viable.
- The development and viability of seeds varied at a regional scale (most likely reflecting water availability) as well as between individual trees and within individual pods on trees (Image 4).
- Seeds can progress from being unviable to viable over a period as short as one to two weeks.
- Both unviable and viable seeds are present on a podding prickly acacia tree at any point in time.

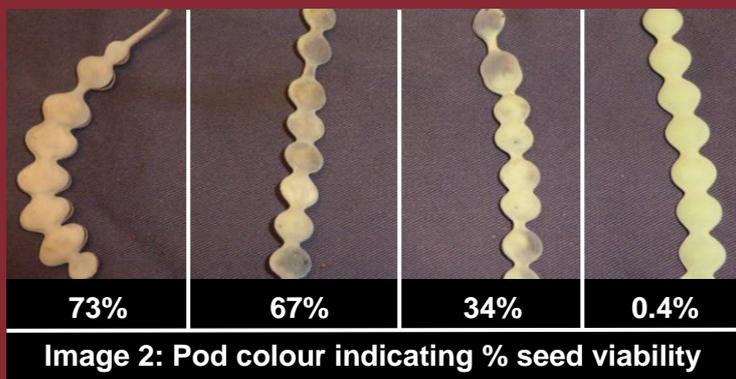


Image 2: Pod colour indicating % seed viability

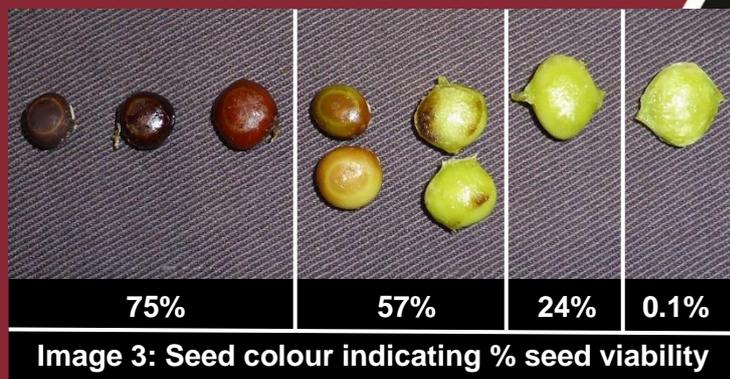


Image 3: Seed colour indicating % seed viability

Using visual cues to manage seed spread risk

- Visual cues provide a local and immediate assessment of the risk of spreading viable seed if cattle are allowed to graze prickly acacia pods both on the trees or the ground.
- Regular assessments of seed maturity using visual cues will need to be done to minimise risk of seed spread as unviable seed can become viable quickly.
- Assessments of seed maturity allow land managers to manage seed spread by determining whether cattle that have access to pods need to be quarantined for a period of 7 to 8 days before being moved to clean country.
- Using visual cues to assess seed viability is not completely reliable given the different seed development rates seen at different locations, in pods from the same tree and seeds from the same pod.
- It is important therefore that land managers consider whether seed spread will be an issue when cattle are grazing where prickly acacia is present and plan to minimise the risk of seed spread.



Image 4: Viability of seed is variable within pods as seeds develop at different rates

Summary

Prickly acacia seed can be viable well before pods drop from trees, and this risk can arise well outside the normally stated pod fall period of October to January. This dramatically expands the timeframe that stock hygiene and movement practices need to be considered in relation to prickly acacia spread. Ultimately, when pods are fattening, and just as they begin to turn grey, stock movement should take into account the possibility that cattle have viable seed in their gut with cattle quarantined as necessary for up to eight days to ensure they are free of prickly acacia seed.

Further information

Further information is available from SG NRM (call 1800 676 242 or visit <http://www.southerngulf.com.au/resources/fact-sheets/>) or from Biosecurity Queensland (call 13 25 23 or visit <http://bit.ly/2tZIGT9>)