

Seed Quality vs Quantity and Value for Money

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Outline of presentation

1. Seeds as a valuable resource
2. Seed supply - history
3. Perceived Value for Money
4. Seed Quality and Quantity
5. Changes in the Seed Supply industry
6. A shift in perceptions
7. Concluding Remarks



Seeds as a valued resource

- The rehabilitation and restoration industry rely heavily on seeds
- Topsoil stockpiles are a valuable but uncontrolled source of seeds
- Targeted seed collections often required to improve rehabilitation and restoration outcomes
- Seed collections supplied through in-house collections or via seed supply contracts



Seed Supply market - History

- Little regard for provenance requirements
- Seed sold using a \$/g for each species, with lowest \$/g considered best value for money
- Seed prices are extremely cheap and often not economically feasible for commercial collectors
- Difficult species often not targeted (limiting species diversity)
- Seed quality tests are conducted on an ad-hoc basis and if/when there is poor rehabilitation results.



Perceived Value for Money

- Industry largely driven by Perceived Value for Money
- Perceived Value for Money = Cheapest \$/g
- Actual Value for Money = need to consider Quality and Quantity of seed supplied not just \$/g



3 SEP 201



3 SEP 2014



3 SEP 2014

Seed Quality & Quantity

The quality of individual seed collections can vary greatly depending on:

- Environmental conditions
- Insect predation
- Seed maturity
- Harvest and cleaning methods
- Storage Conditions
- Seed age



Seed Quality & Quantity

These in turn affect:

- Seed/Fruit Size & Weight (Seeds/gram or 1000 seed weight)
- Purity
- Viability
- *Seed Dormancy State*
- Value for money!



Seed Quality & Quantity Assessments

- Currently, there are no requirements for seed quality information to be provided with commercial seed collections
- Tests are ad-hoc and often conducted if/when there is poor rehabilitation results.
- Tests need to be conducted PRIOR to sowing seed so that quantities can be adjusted according to the test results



Seed Quality & Quantity Assessments – Seed Counts & Purity



*Eremaea
asterocarpa*

Versus



\$4.50/g

124 seeds/g, and 37% Purity

200g = **\$900**

200g = 24,800 seeds

**NEED X 3 VOLUME TO GET
SAME QUANTITY OF SEED @
TOTAL COST OF \$2,700**

\$10.00/g

335 seeds/gram and 100% purity

200g = \$2000

200g = **67,000** seeds

BETTER VALUE FOR MONEY

Seed Quality & Quantity Assessments – Viability tests

What is the viability of these seed lots?

Senna artemisioides subsp. *filifolia*



Stirlingia latifolia



Petrophile macrostachya



Ptilotus rotundifolius



Seed Quality & Quantity Assessments - Viability

Senna artemisioides subsp. *filifolia*



54%
Viability

Petrophile macrostachya



11%
Viability

Seed Quantities - 2 collections of the same species

Eremaea asterocarpa



Versus



1kg

\$4.50/g

124 seeds/g, and 37% Purity

1kg = \$4500

1kg = 124,000 seeds

**NEED X 3 VOLUME TO GET SAME
QUANTITY OF SEED @ TOTAL COST
OF \$4,500 vs \$3,700**

370g

\$10/g

335 seeds/gram and 100% purity

370g = \$3700

370g = 123,950 seeds

BETTER VALUE FOR MONEY

Seed Quantities – Difference between species

Bulk seed collections

10kg of *Acacia jennerae*

versus

100g *Calothamnus quadrifidus*



20 seeds/g

10kg = 200,000 seeds



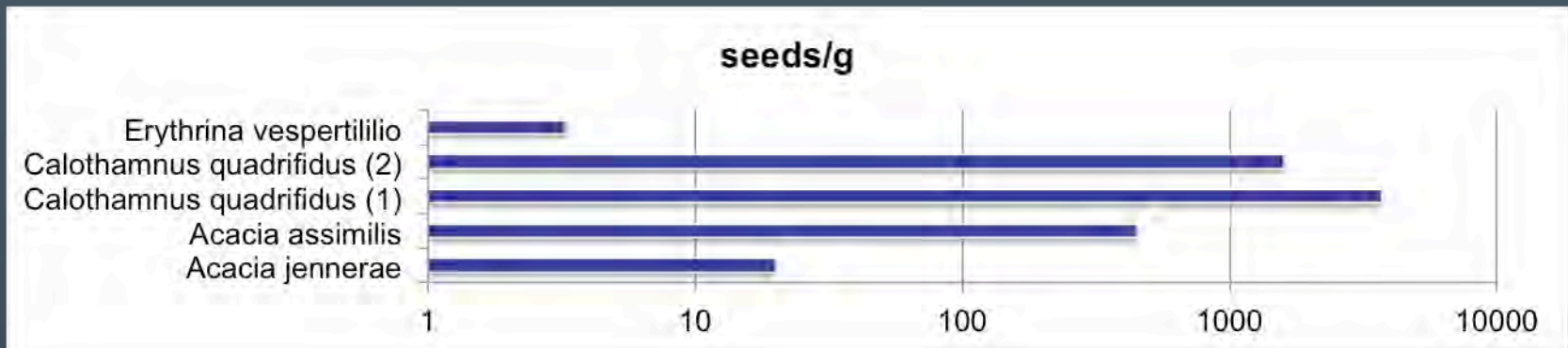
3,700 seeds/gram

100g = 370,000 seeds

BULK WEIGHT DOES NOT EQUATE TO MORE SEED - IT IS SPECIES DEPENDENT

Seed Quantities – Seed mixes

- Seed mixes often derived from an arbitrary kg/ha rate for varying regions
 - Swan Coastal Plain = 4kg/ha
 - Pilbara <15kg/ha
 - Jarrah forest = 1-2kg/ha
- Seed weights vary greatly between genera and individual seed collections



- Sowing rates (kg/ha) should be determined on rehabilitation targets such as estimated plants/ha and expected species not the other way around

Changes in the Seed Supply Industry

- Requirements for Provenance seeds
- Current seed prices (\$/g) are extremely cheap and often not economically feasible for commercial collectors
- Difficult species often not targeted (limiting species diversity)
- A shift from \$/kg to day rates will allow greater variety of species to be targeted (not just the easy to collect/ bulk collections)



A shift in perceptions

- Cheapest \$/kg is not always best value for money
- Quality tests should be conducted prior to sowing seed and not after
- kg/ha should be based on the rehabilitation targets and species mix used, not a generic/arbitrary amount
- Using day rates allows increased species diversity and rehabilitation sites that mirror species mix of undisturbed sites



Concluding Remarks

- Seeds play an important role in rehabilitation and restoration projects.
- Seed quality information is critical in determining value for money, sowing requirements and maximising rehabilitation / restoration outcomes.
- Seed is cheap. Good quality seeds do not cost – they save you money.
- Western Botanical's SeedLab provides accurate assessments of seed quality and seed dormancy alleviation specifically for Western Australian native flora.





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