

Beyond the Benchmark: Early Indicators of Long-Term Rehabilitation Success Using Direct Seeding

Authors

Christopher Johnson, Matthew Thomson, Michael Vermeulen,
Mark Waud, James McBroom, Ruby Michael

Rationale

- Declining success rates and high costs of tubestock planting in post-mining rehabilitation.
- Direct seeding is underutilised in Queensland mine rehab due to concerns around reliability, weeds, and native grass success.

Aim

Test whether direct seeding can meet Queensland PRCP criteria while reducing costs and supporting native biodiversity.

Methodology

- ~0.4 ha site divided into “Native” and “Pasture” trial zones.
 - “Native” trial received seed mix containing 15 native species
 - “Pasture” trial received the same + pasture seed mix (8 exotic species)
- Follow-up weed control and germination monitoring over 36 months.



Results

Species Establishment

- All 15 native species germinated.
 - Native trial: high woody establishment
 - Grazing trial: recruitment suppressed by pasture

Cost Savings

- ~30% cheaper than tubestock over 3 years (direct seeding \$17,720; tubestock \$25,569).

Compliance

- Canopy density: 5,200 vs 600 stems/ha ($\approx 8.7\times$ target). Compliance assessment based on Native trial results.

Conclusion

Direct seeding is a viable, scalable alternative under the PRCP framework, provided it is paired with careful site preparation and sustained early weed control.

