

Proseed Eucalyptus Propagation Update

Presentation to
UC/NZDFI Durable Eucalypts Workshop/Research Update
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Start of Season Objectives

- Increase representation of selections from the 2014 *Eucalyptus bosistoana* growth strain trial at Woodville.
- Increase to be from additional collection from ortets at Woodville and repropagation of ramets struck the previous season at Amberley.
- Collect and set cuttings from new selections in the 2015 *Eucalyptus bosistoana* growth strain trial at Woodville: at least 5 ramets each of 1000 selections.
- Graft new selections from Wairarapa *Eucalyptus globoides* breeding trials.
- Review progress with David Cliffe of Narromine Transplants in Australia.



Oct 2017: Woodville 2014 Trial Collection Status

- Original objective was to produce at least 5 ramets each of 1000 selections.
- At last season collection 190 stools had died and another 114 had not produced coppice suitable for collection.
- Of 696 clones collected, 532 clones (76%) were struck with 228 (33%) represented by 5 or more ramets.



Oct 2017: Recollect From Woodville 2014 Trial

- A third collection was undertaken last week of Oct 2017.
- 12,800 cuttings from 638 ortets were set.
- In the event there was callusing but setting was a complete failure.
- Cause uncertain but may include:
 - Setting too early.
 - Deterioration in quality of water supplied from the Amberley district scheme.



Oct 2017: Setting Timing

- Window for best success is believed to be Nov thru Mar, ideally Dec – Jan.
- Cuttings were collected Oct because:
 - The trial area was being rapidly smothered with difficult to control weed growth.
 - It was feared that shoots worth taking would soon break out lateral shoots by which stage it was believed they would be unsuitable for setting.



Dec 2017: Repropagate Ramets From Previous Season

- By Dec 2017 2300 rooted cuttings had produced strong, healthy shoots suitable for setting cuttings.
- 7600 new cuttings were set from 460 clones.
- By end of the New Year break survival and general condition were ok but development was very different from the previous season.
- Foliage had uniformly turned a distinct, red, hungry colour and there was no sign of axil bud development.



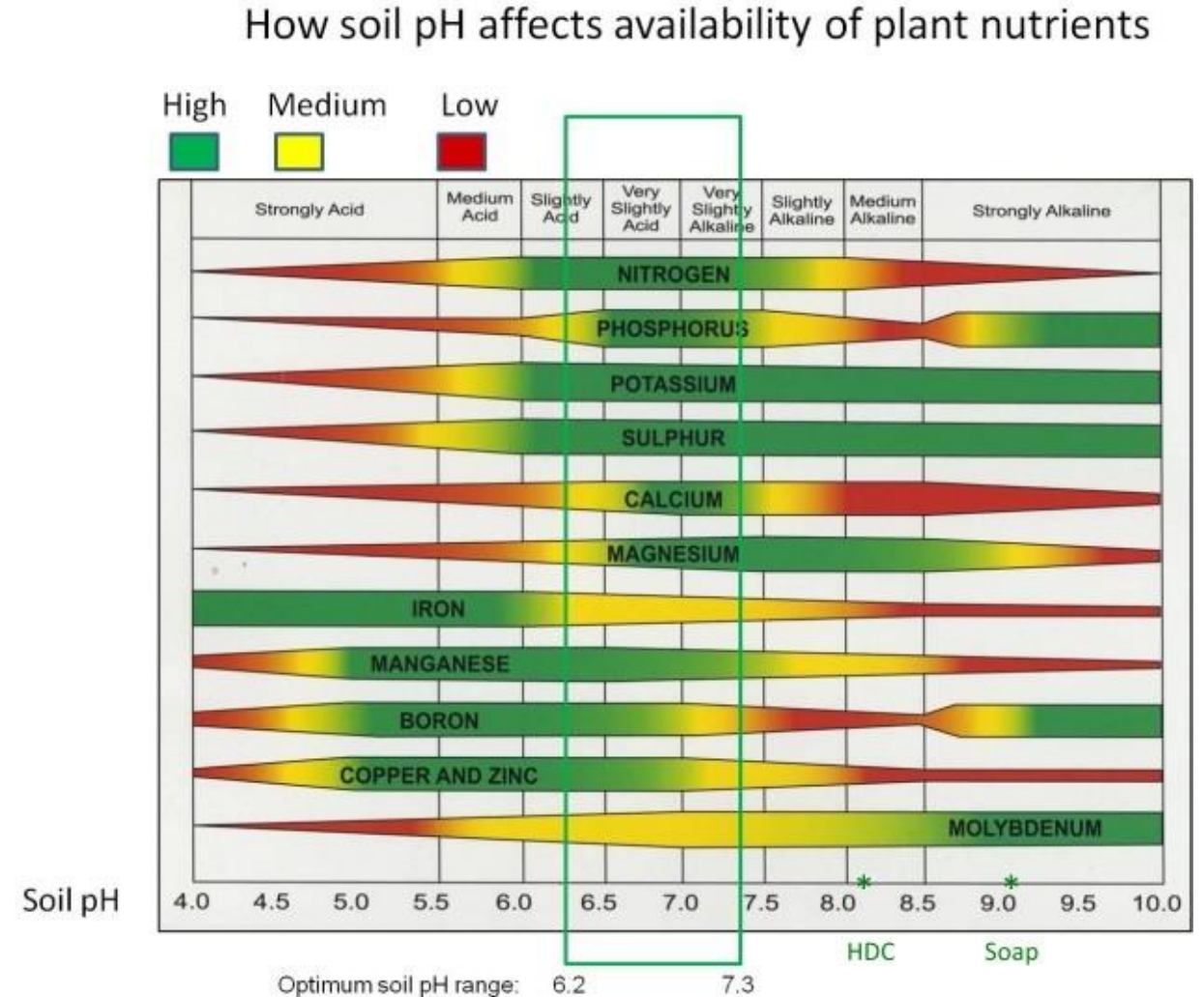
Dec 2017: Health Issues

- Advice was sought from Steve Alloway, a local propagation authority.
- The only factors identified that could account for uniform ill health were hormone treatment and water quality.
- Strong gel hormone (8 gm/L) had been applied as the previous season that appeared to produce a better strike.
- From Sep 2017 Hurunui District Council had introduced permanent chlorination of the Amberley water supply.



Dec 2017: Water Quality

- Samples submitted to Hill Laboratories returned pH 8.1 and sodium and chloride levels at top of medium range.
- Propagation tables were replumbed to an alternative, softer water source: pH 7.1 with sodium, chloride and zinc levels at bottom of medium range.
- Cuttings never recovered.
Final strike was 17%



Mid-Jan 2018: Hormone Trial

Treatments:

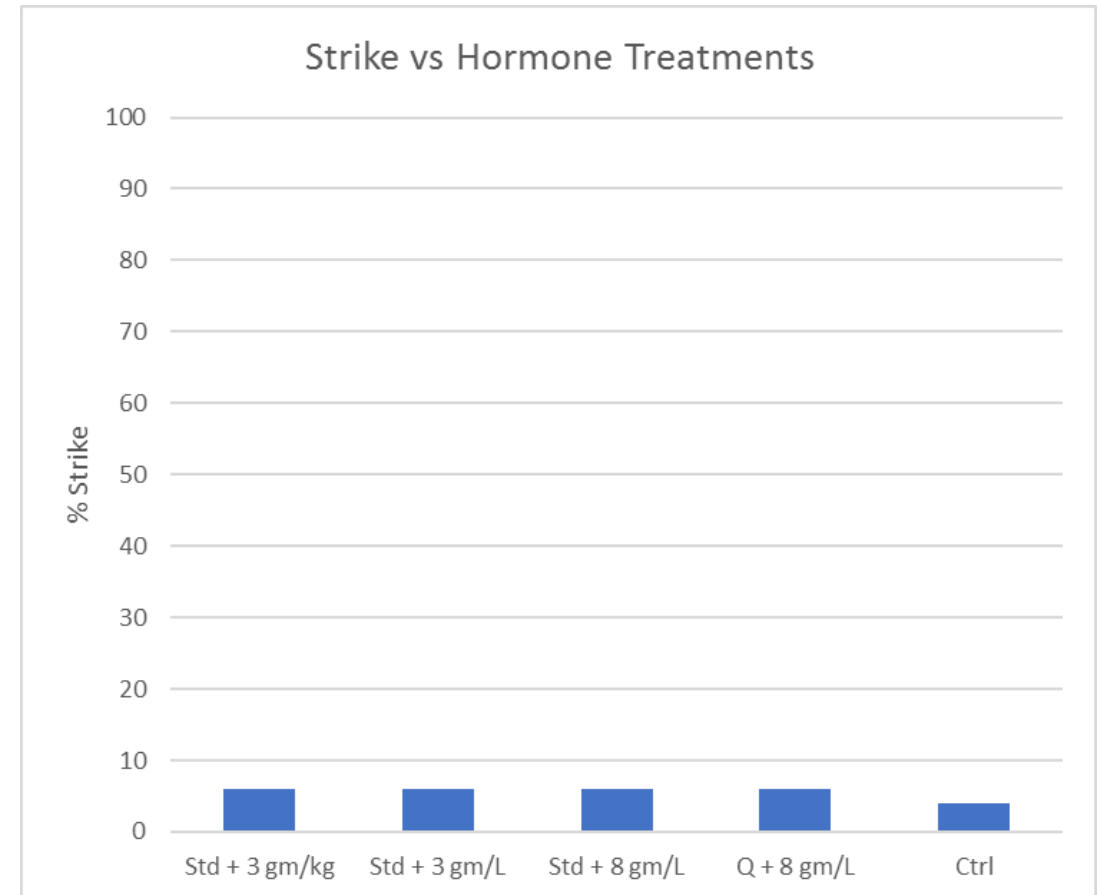
Myclobutanil + powder 3 gm IBA/kg

Myclobutanil + gel 3 gm IBA/L

Myclobutanil + gel 8 gm IBA/L

Triadimenol + pyrethroid + gel 8 gm IBA/L

Myclobutanil only (control)



End Jan 2018: Collect From Woodville 2015 Trial

- First of two collections.
- This time, to avoid tripping on discovery that preselected stools had died or had no suitable cutting material, the objective was to produce at least 5 ramets each of up to 10 top individuals from each family.
- 7817 cuttings set.
- Softer water supply for propagation tables installed soon after setting.
- 3284 cuttings (42%) struck



End Jan 2018: Caught Napping

8 January



31 January



Early Feb 2018: David Cliffe Visit and Review

- No additional insight on Dec setting health issues.
- Emerged that cuttings set when Proseed staff visited Narromine Transplants in Nov 2015 were “macro” cuttings. David suggested we could do better with “mini” cuttings and demonstrated the alternative type of material to collect and set.
- Best practice stool pruning demonstrated.
- Recommendation to grow stools in small pots with a drip hydroponic system.



Mid-Feb: Repropagate Ramets From Previous Season/2

- To make the most of available material both macro and mini style cuttings were set.
- Setting completed after installation of softer water supply to propagation tables.
- Of 490 macro cuttings set 153 (31%) struck.
- Of 1264 mini cuttings set 578 (46%) struck.



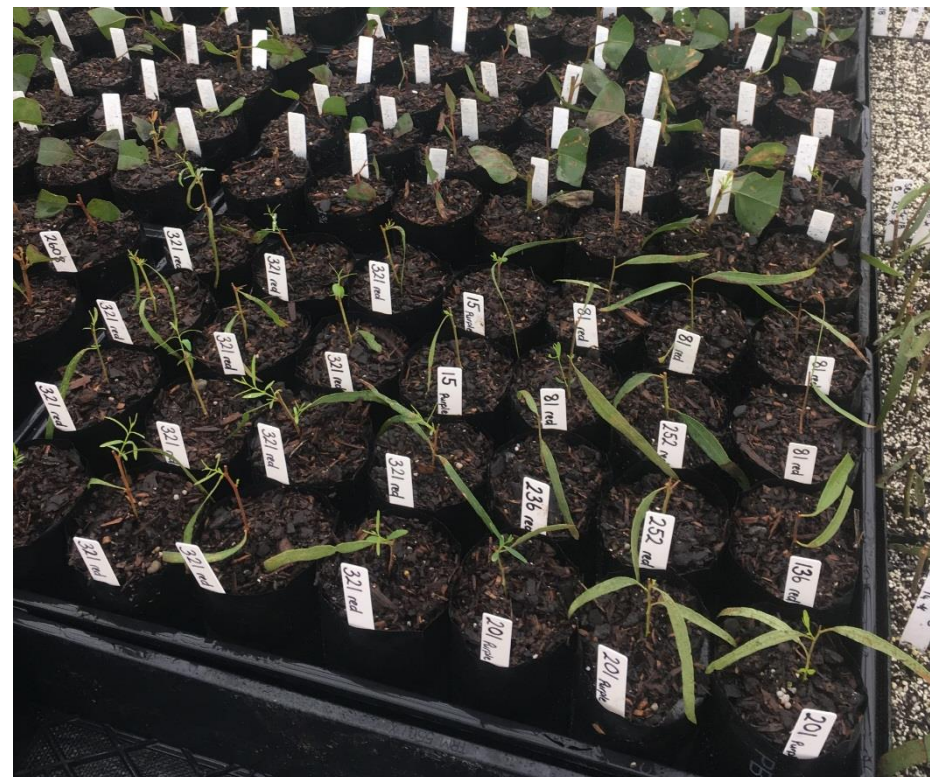
End Feb: Collect From Woodville 2015 Trial/2

- Both macro and mini style cuttings were set.
- Setting completed after installation of softer water supply to propagation tables.
- Of 7186 macro cuttings set 3061 (43%) struck.
- Of 5496 mini cuttings set 2573 (47%) struck.
- In total (both collections), of 642 clones set, 616 (96%) were struck with 505 (78%) represented by 5 or more ramets.



April: *E. argophloia* Settings

Set 18 April. Cuttings 8 weeks after setting



Mid-Feb: Graft *E. globoidea* Selections

- Scion material collected from breeding trials at Atkinson and JNL Ngamu in Wairarapa.
- Owing to a poor take at the time many selections collected and grafted from Atkinson in 2016 were recollected.
- Other new selections were included.
- 480 grafts completed: 16 each of 30 clones.
- Only 33 grafts of 16 clones took.
- First grafting sweep completed 4-5 days.
- Second sweep completed 6-8 days.



March: *E. globoidea* Grafting Trials

- Scion material ex Amberley archive.
- Grafts completed in 1-3 days.
- Treatments:
 - “Standard” graft (44%, 53%)
 - Standard graft + mist (40%)
 - Standard scion with foliage + mist (0%)
 - Short scion (55%)
 - Short scion mummy wrapped (50%)
 - Short scion + aggressive rootstock trimming (55%)
 - Pretreated scions (April grafted, 0%)



April: *E. bosistoana* Grafting

- In the face of cutting propagation proving unreliable, to test suitability of coppice shoots as scion wood.
- Three grafts each of 13 clones, each the best performer from it's family.
- Successful grafts will go to completing Amberley *E. bosistoana* seed orchard.
- Completed very late waiting for late sourced rootstock to get to size.
- Take still progressing: about 50% to date.



Biosecurity Issues

- Myrtle rust has now been identified outside Palmerston North...
- Eucalyptus variegated beetle (EVB)
 - Current precautions have been effective.
 - Mini cutting material carries increased risk.
- Silver leaf disease.



Current Position and Review

- Approximately 1070 *E. bosistoana* clones captured with about 70% (760) represented by 5 or more ramets.
- Develop cutting technique for commercial production now?
- Grafting *E. globoidea* still to crack.
- *E. globoidea* cuttings should be tested.
- In Brazil and Sth Africa only 2-5% of original *E. grandis* and hybrid genotypes pass all selection criteria. 70-80% of genotypes may fail on propagation ability alone.
- This season, for NZDFI, of 642 *E. bosistoana* clones set, 616 (96%) were struck with 505 (78%) represented by 5 or more ramets!

