A summary of Podger's work on the effect of waterlogging on jarrah

1. The susceptibility of jarrah forest eucalypts to waterlogging

(File W.A. 6 EM. 6.2A) 1963/64

Method

Year old seedlings grown in forest soil were immersed in water up to the root collar and left until they died.

Results

	Survival range	Mean
*E. marginata**	39- 67 days	49 days
E. accedens	39-102 days	79 days
E. patens	53- 55 days	54.5 days
E. wandoo	53- 97 days	82 days
E. calophylla	112-263 days	194 days
E. megacarpa	39-207 days	126 days
E. rudis	335-369+ days	335+ days

* 3 replicates of each species

2. The susceptibility of jarrah forest eucalypts to waterlogging

(File W.A. 6 EM. 6.2A) 1964

Method

As 1, except 18 replicates of seven species used.

Results

	Survival range	Mean
E. marginata	60-196 days	101 days
E. accedens	99-332 days	228 days
E. patens	106-263 days	212 days
E. wandoo	200-260 days	233 days
E. calophylla	196-354+ days	269+ days
E. megacarpa	29-208 days	145 days
E. rudis	291-354+ days	291+ days

3. Susceptibility of several *Eucalyptus* spp to waterlogging

(File W.A. 6 EM. 6.2B) 1963

Method

Five plants in 1 gal. containers were waterlogged for two months and then live roots present six weeks after waterlogging were assessed.

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Results

	Waterlogged	Control
E. marginata	1.0*	2.4*
E. accedens	3.0	3.8
E. patens	2.0	2.7
E. wandoo	2.6	3.0
E. calophylla	2.2	2.8
E. megacarpa	2.7	3.0
E. rudis	3.8	4.0
Banksia grandis	2.0	4.0

* Root assessment scale : 1 = no live roots

4 = abundant live roots

4. The effect of temporary waterlogging on jarrah mortality

(File W.A. 6 EM.6.2A) 1964/65

Method

20 x 6" pots containing soil from healthy forest were sown with jarrah seed (10.2.64) and then thinned to five plants per pot. Some plants were frost damaged (30.5.64) and were replaced with wildings from the Scenic Road- Coach Road area. Pots were waterlogged (19.8.65) for 0, 10, 20, 30, 40 and 50 days, and jarrah mortality assessed 25, 32, 41, 53, 60 and 99 days after the start of waterlogging.

(No indication given whether plants were watered to field capacity, just watered, or droughted after waterlogging.)

Results

Days of Waterlogging	Deaths after 25 days	32 days	41 days	53 days	60 days	99 days	Total Deaths	Total No. Plants
0	0	0	0	0	0	1	1	?10 ?15
10	0	0	0	0	1	0	1	15
20	1	1	1	1	0	0	4	15
30	1	0	2	1	0	1	5	15
40	1	0	3	1	3	0	8	15
50	2	1	0	1	3	0	8	15

5. The effect of two weeks waterlogging of jarrah and marri seedlings in diseased forest soil

(File W.A. 6 L.T. 6.5) 1963

Method

1 gal. pots containing forest soil were sown with either jarrah or marri (7.1.63) and thinned to 1 plant per pot. The pots were waterlogged for two weeks (18.6.63-2.7.63), and then allowed to drought in summer. The plant heights were measured

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at the beginning of waterlogging (21.6.63) and again after 14 weeks (30.9.63).

Treatments: jarrah, diseased forest soil, unsterilized (J, D, U)
jarrah, diseased forest soil, sterilized (J, D, S)
jarrah, healthy forest soil, unsterilized (J, H, U)
jarrah, healthy forest soil, sterilized (J, H, S)
marri, diseased forest soil, unsterilized (M, D, U)
marri, diseased forest soil, sterilized (M, D, S)
marri, healthy forest soil, unsterilized (M, H, U)
marri, healthy forest soil, sterilized (M, H, S)

5 replicates of each treatment

Results

Treatment	Mean increment in inches (21.6.63-30.9.63)	Comments
J, D, U	1.94	1 dead 21/10
J, H, U	1.75	1 dead 9/8, 1 dead 21/10
J, D, S	3.1	1 dead 9/8
J, H, S	1.5	2 dead 16/10, 1 dead 28/10 1 dead 1/11, then 2 coppice
M, D, U	3.1	2 dead 7/10
M, H, U	2.1	2 dead 7/10
M, D, S	2.4	1 dead 7/10, 1 dead 16/10, 2 dead 21/10, then all coppiced
M, H, U	2.5	4 dead 7/10, 1 dead 21/10

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July 1982