



Department of
Primary Industries and
Regional Development

Digital Library

Experimental Summaries - Plant Research

Agriculture

1987

Winter waterlogging effects on crops and pasture production.

D. J. McFarlane

Follow this and additional works at: <https://library.dpird.wa.gov.au/rqmsplant>



Part of the [Agronomy and Crop Sciences Commons](#), and the [Fresh Water Studies Commons](#)

Recommended Citation

McFarlane, D J. (1987), *Winter waterlogging effects on crops and pasture production..* Department of Primary Industries and Regional Development, Western Australia, Perth. Report.

This report is brought to you for free and open access by the Agriculture at Digital Library. It has been accepted for inclusion in Experimental Summaries - Plant Research by an authorized administrator of Digital Library. For more information, please contact library@dpird.wa.gov.au.

Trial: 87NA76/5340EX

Title: Winter waterlogging effects on crops and pasture production

Aim: To quantify the physical extent and economic significance of winter waterlogging on crop and pasture production in the Upper Great Southern Region of Western Australia.

(NOTE: OIC for the project is Dr D. McFarlane, Soil Conservation Branch.)

Details: The project includes the monitoring of water levels in 209 shallow wells in representative landscapes in the Upper Great Southern. Crop and pasture production was monitored adjacent to some of the wells. In this report only information related to the pastures is reported.

In grazed paddocks pasture growth adjacent to 36 wells spread over five locations was assessed at intervals of three weeks during the growing season. Exclosures moved every three weeks were used. Growth and botanical composition were assessed by using a calibrated visual rating system with three observers. Clover seed reserves were assessed in winter and spring.

Results:

1. Pasture growth, kg/ha/day, and total seasonal production, kg/ha for 1987.
2. Seed reserves, kg/ha, at 12/8 and 8/12/87.
3. Site histories.
4. Graphs of effect of waterlogging on pasture growth at four sites (prepared by D. McFarlane).

Note: Waterlogging intensity calculated in terms of the SEW 30 index (the product of the duration that saturation occurred within 30 cm of the soil surface and the intensity of the waterlogging above 30 cm).

Comments:

1. Rainfall received during 1987 was less than the average. May and June were particularly dry with only 50-70% of the expected rain being received.
2. The occurrence and intensity of waterlogging during 1987 were much lower than that for a year of average rainfall.
3. Locations receiving the most rain had less growth on the waterlogged sites in winter but higher growth in spring. At the driest location, Tutanning, the wettest site had the highest rate of pasture growth throughout the growing season.
4. Seed reserves in winter at the three locations receiving the most rain were lower at the more waterlogged sites. At the driest location, Tutanning, the reverse applied.

Table 24. Pasture growth rate (kg/ha/day) and total seasonal growth (kg/ha)

Location	Germ to 17/5	20-5 to 10-6	10-6 to 1-7	1-7 to 22-7	22-7 to 12-8	12-8 to 2-9
Dryandra	8.8	4.8	37.3	9.7	9.5	33.5
Rosedale Central	6.2	12.9	16.4	13.6	7.3	32.5
Tutanning	4.4	4.8	13.9	7.0	11.0	57.0
Yornaning South	(6.2)	(12.9)	14.5	15.1	7.6	42.9
Yornaning West	5.5	9.1	7.6	11.1	2.7	10.7
Grand average	4.9	6.8	17.4	11.4	7.7	36.4

Location	2-9 to 23-9	23-9 to 13-10	Seas. growth 168 days
Dryandra	81.5	50.7	4,946
Rosedale Central	54.3	20.6	3,430
Tutanning	33.1	9.3	2,941
Yornaning South	51.2	16.1	3,496
Yornaning West	32.6	5.1	1,765
Grand average	50.0	19.7	3,234

NOTE: For Yornaning South, where samples not taken on first two dates figures used are those from Rosedale Central for the two times. Another site at Rosedale North was abandoned when the farmer cropped the paddock.

Table 25. Clover seed - kg/ha - winter and summer

Location	Seed 12-8-87	Seed 8-12-87
Dryandra	102	339
Rosedale Central	34	172
Tutanning	60	158
Yornaning South	224	513
Yornaning West	40	53

History of sites

	1981	1982	1983	1984	1985	1986	1987
Dryandra				Not supplied			
Rosedale Central	P	W	P	P	O	P	P
Tutanning	P	O	P	P	O	P	P
Yornaning South	P	W	P	W	P	P	P
Yornaning West	P	O	P	O	P	P	P

P = Pasture
W = Wheat
O = Oats

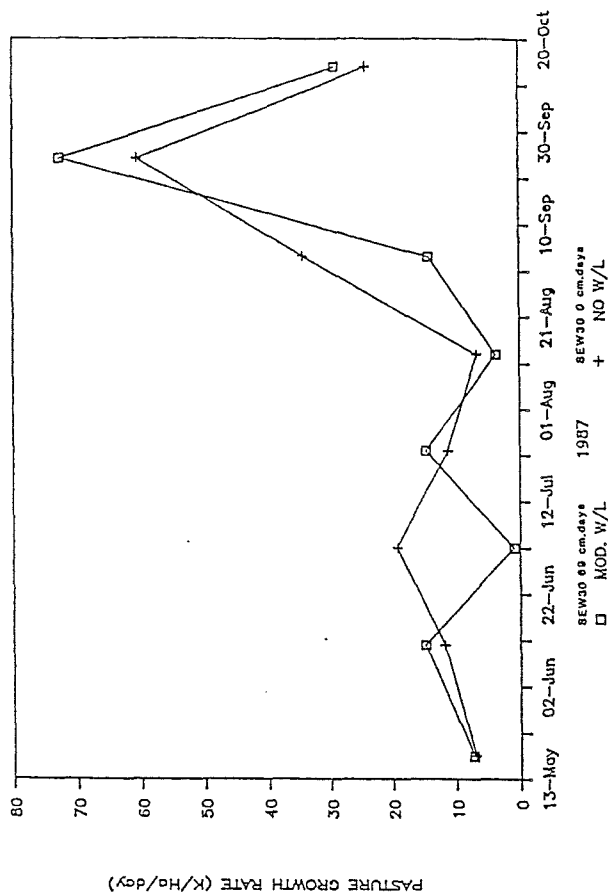


Figure 6 (b): Effect of watering on pasture growth, Rosedale (Noombing).

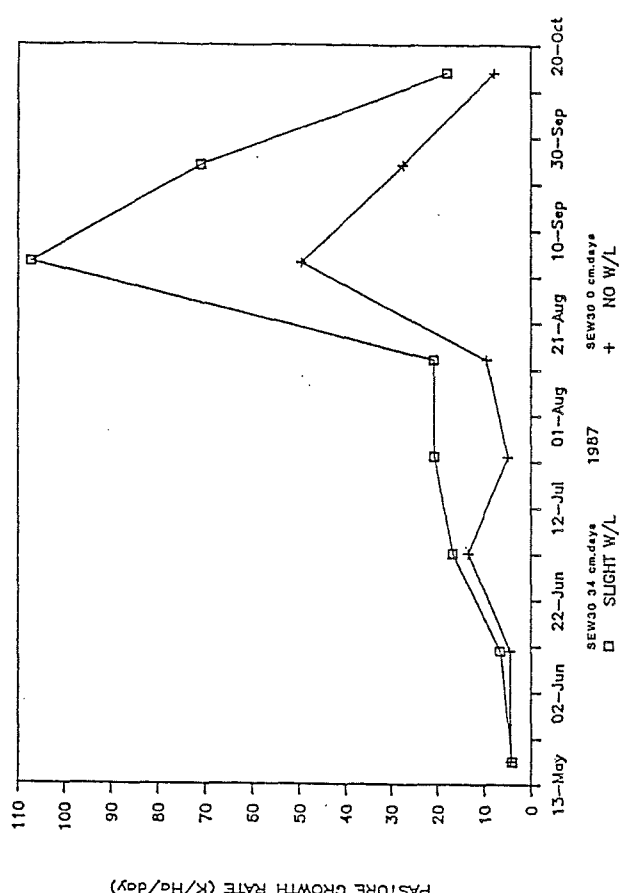


Figure 6 (d): Effect of watering on pasture growth, Tutanning (Noombing).

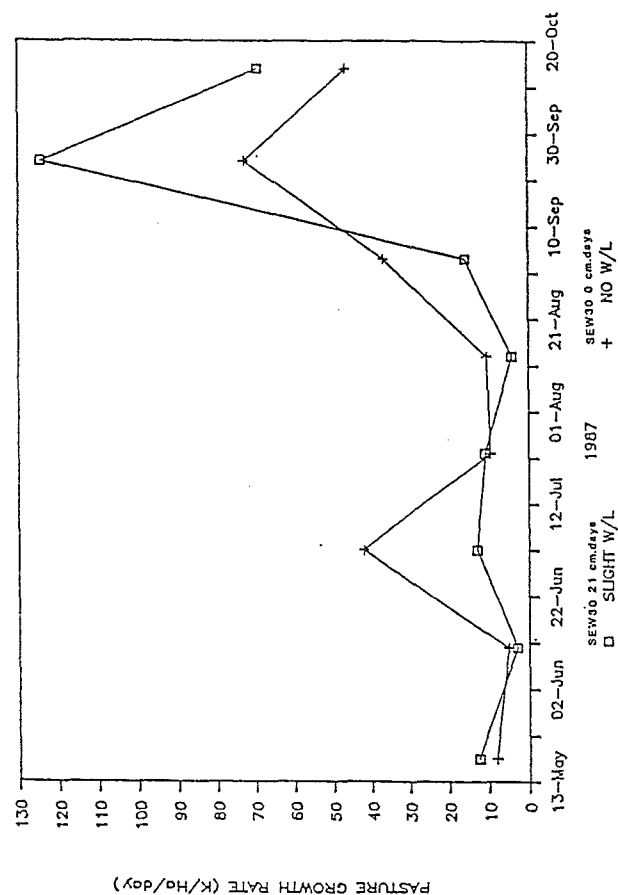


Figure 6 (a): Effect of watering on pasture growth, Dryandra (Bibberkine).

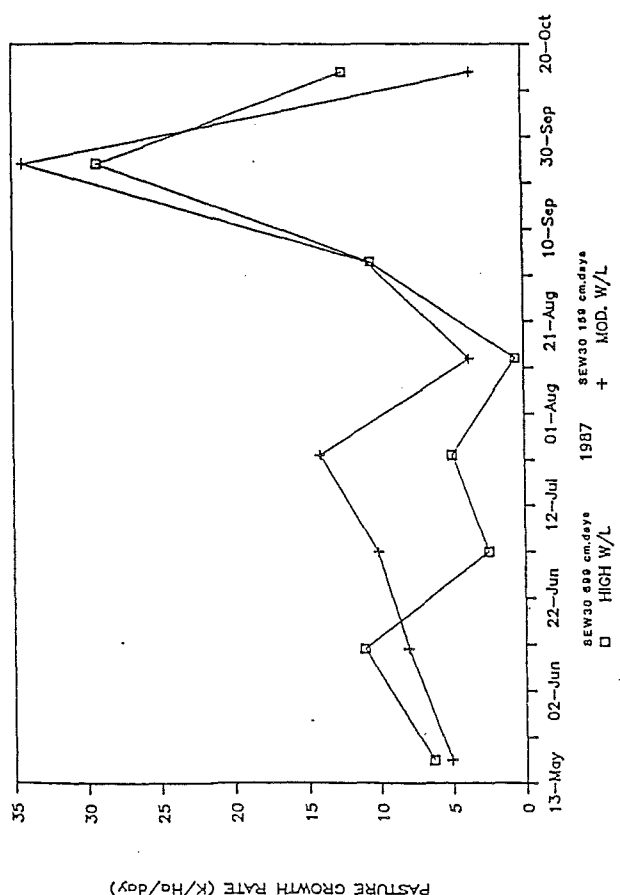


Figure 6 (c): Effect of watering on pasture growth, Yormaning (Popanyinning).