IV. FIELD OBSERVATIONS

An area was selected for study towards the centre of the strip of land with numerous saltpans extending S.S.E. from just west of Lascelles. This area has been cleared about 80 years previously, and remnants of timber indicated that mallee had predominated on all parts of the landscape.

On allotment 10, Parish of Nyallo (Fig. 1) two dune-salted flat-dune transects were examined, together with single sites on a particularly large saltpan, the margin of a saltpan, two flats with non-saline surfaces, the western slope of a N-S ridge and on a hummock (Fig. 2). Allotment 10 had been under pasture for several years, and most feed was provided by annual medics. There was an old-established stand of lucerne, but the plants were sparse and weak. The growth of pastures was weak on the crests of the dunes, and skeleton weed (*Chondrilla juncea* L) and stinkwort (*Inula graveolens* (L) Desf) were becoming established, particularly on the lower slopes.

Sites were also examined near Mittyack where a saltpan occurred on the lower slope of a dune and to the west of Rosebery where a saltpan had been partially reclaimed. In addition, the amount of moisture was measured near Lascelles in dunes under mallees, lucerne and wheat.

Deep auger borings were made at each site, and samples taken. All soil samples were analysed for pH, electrical conductivity and chloride, and selected results are shown in Appendix I. Selected profiles were examined for particle-size distribution (Appendix II), moisture characteristics as determined by suction tests on intact-structure samples (Appendix III), exchangeable sodium percentage (Table 4) and moisture content (Table 5). Methods of analysis are listed in Appendix IV.

When sampling was begun, water tables were found beneath both dunes and flats. The 6-inch auger holes from which soil samples had been taken were left as observation wells, and perforated downpiping wrapped in hessian was installed to cope with slumping. Changes in water levels were noted over a period of several months, and samples of water taken to be analysed for the composition and concentration of salts (Table 5).

Dune-salted flat-dune transect. Sites 13-17

This N-S transect crossed a saltpan which had a slight fall to the west.

Soils – Deep auger drillings revealed the same five genetic layers recognised by Churchward (1960) in a dune-swale landscape further east, with a similar nature and placement. The layers a, b, c, d, e in Fig. 3 correspond to Churchward's Piangil, Kylite, Speewa, Bymue and Toolebuc respectively, with the possible exceptions of designation of sandy horizons near the junctions of the three older layers on the dunes. These sandy zones represent a change from B to A or C horizons. The textures shown in Fig. 3 represent the bulk of each layer, pertinent features of which are as follows:

- *(a)* Reddish yellow sand – drift since settlement, thickest on southern slopes, low water-holding capacity, common Munsell notation 7.5 YR 6/8.
- *(b)* Reddish yellow sand to sandy loam – thickest on southern slopes, low water-holding capacity, permeable, 5 YR 6/8 to 7.5 YR 6/6.
- *(c)* Dull red clay to yellowish-red sandy clay loam – thickest on southern slopes, visibly porous, abundant lime, 5 YR 4/6 to 5 YR 5/8.
- *(d)* Red clay to sandy clay – moderate to low visible porosity, glossy clayskins, 2.5 YR 4/6 to 5/8.
- *(e)* Grey clay to sandy clay – low visible porosity, 5 YR 6/2.

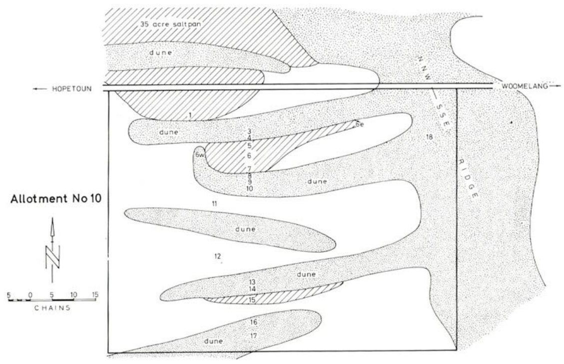


Fig. 2 - Location of observation sites on Allot. 10, Parish Nyallo. Saltpans hatchured.

In the three older layers the clay content increases from crest to swale.

The surface of the grey clay maintains the aeolian, longitudinal dune contours but with relatively gentle slopes, and being the last layer encountered, its thickness is unknown. On the flat at site 15 the grey clay began at a depth of 8.5 feet, and an attempt was made to determine the depth to Parilla Sand the weathered surface of which is frequently exposed in the banks of dams on plains in the district. However grey clay continued to the limit of practicable augering, that is 16 feet with the equipment being used. On Allotment 10 the weathered surface of the Parilla Sand was encountered only on the western slope of a N-S ridge, at a depth of 10 feet. (Site 18).

Recognition of genetic layers within the landscapes enables an understanding to be gained of variation in permeability within the numerous horizons. Although there is vertical variation within each layer at each site, data from suction tests (Appendix III) indicate progressive decrease in permeability of B horizons from layers (*a*) and (*b*) to (*e*), and within layer (*d*) from crest of dune to flat. Most of the samples from layer (e) could not be saturated in the laboratory, and in the four samples successfully analysed the proportion of soil drained at low tensions was negligible, indicating that the grey clay is almost impermeable beneath the whole landscape.

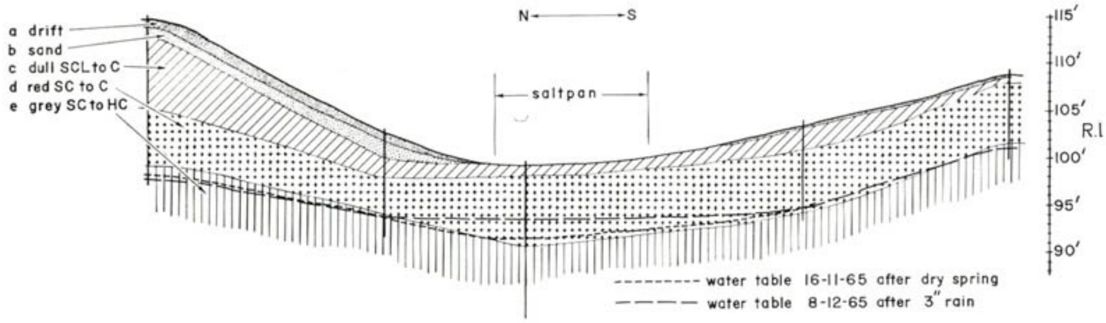
The water table lay just on or in the grey clay at all sites at the time of sampling, and was 7.5 feet from the surface of the saltpan at site 15. The fact that the grey clay controlled the position of the water table at site 15 indicates that there was no contribution from groundwaters beneath the saltpan. Direct evidence of seepage from dunes to flats, and of the influence of vegetation on the dunes, was obtained on 9th December, 1966 when the water table beneath the saltpan was found to have risen one foot without significant rain since the previous reading of the level. The dunes had been fallowed during the period between readings, and during this time water levels had fallen at other saltpans beneath vegetated slopes.

As mentioned in Chapter III, geomorphic evidence suggests that the casual factor of the occurrence of N.N.W-S.S.E oriented areas with numerous saltpans is likely to be some soil factor relating back to high salinity of ancient riverine deposits. Of relevance here is a comparison of soils on Allotment 10 with those in a similar landscape near Woorinen (Churchward 1960) where saltpans on dryland farms are rare. The most striking difference between the soils, and the one likely to be a casual factor in the variable incidence of saltpans is the nature of the oldest aeolian clay. Although of low visible porosity in each area, this clay was grey (2.5 Y 6/2) on Allotment 10 and predominantly red brown (2.5 YR 4/5) near Woorinen, indicating better through drainage at Woorinen because of slight higher permeability.

An additional feature noted was that the upper boundary to the oldest clay was gradational at Woorinen and sharp on Allotment 10. If, as seems likely, these pedological differences relate back to differential salinity of ancient streams, it follows that the marked incursion of salts to the south of Lascelles occurred during or before the period of soil formation on the Tooleybuc layer. Since that time the climate has been periodically humid, and most of the salts affecting the nature of the grey clay are likely to have found their way to groundwaters, because the clay is not absolutely impermeable. Thus the large amounts of salts in the landscapes on Allotment 10 (see next section) may not be higher than average.

Soluble salts. The distribution of soluble salts in the dune-flat landscape as indicated by the electrical conductivity of 1:5 soil-water suspensions is shown in Fig. 4. On the saltpan at site 15 the values in

November 1965 were highest at the surface (3,800 μ mho/cm but remained high to15 feet. Conductivities decreased towards the crests of the dunes, and were lower under the southern than the northern slopes. However, even beneath the crests values were considerable at depth, for example 400 to 500 μ mho/cm between 8 and 17 feet at site 13.



Site 13 ← 62 yds. → 14 ← 38 yds. → 15 ← 74 yds. → 16 ← 54 yds. → 17

Site	13					14					15					16					17				
	CS	FS	Si	C		CS	FS	Si	C		CS	FS	Si	C		CS	FS	Si	C		CS	FS	Si	C	
a.	76	20	1	3	*25*	48	46	1	4							59	30	3	7		51	32	2	15	*25*
b.	54 47	38 41	2 1	5 9	*20*	69	26	1	2	*26*															
c.	39 38	30 36	4 5	24 21	*12*	48	20	2	27	*7*	26 22	18 15	19 19	37 44	*11*	49	31	4	15	*14*	38	26	7	29	*12*
d.	33	40	2	23	*7*	41	19	2	38	*3*	14 18	14 20	29 9	43 53	*4*	45 37	32 23	3 6	19 34	*5*	38	28	6	28	*14*
e.	26	20	11	39		20 22	16 19	27 8	37 51	*3*	17 21	19 20	2 1	62 59	*0*	25	19	4	52		37	28	1	34	*n.s.*

Fig. 3 - Soil layers, water table levels, particle-size analyses and non-capillary porosity at Sites 13-17 – Italics indicate the average proportion by volume of soil drained at 100 cm tension after prior saturation (see Appendix III). n.s. Indicates that samples were too impermeable to be saturated. – Further details of particle-size analyses are given in Appendix II. – Levels shown are not heights above sea level.

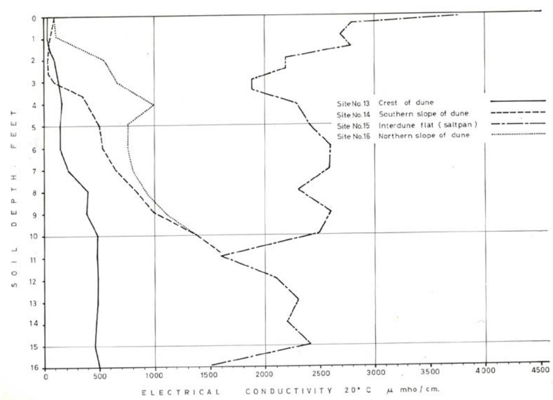


Fig. 4 - Electrical conductivity of 1:5 soil-water suspensions for a dune-flat transect.

Sodium chloride predominated in soil waters (Table 5), except where concentrations were low, that is on the crests and southern slopes. Here sodium bicarbonate predominated before the abovementioned heavy rains, and ionic ratios were similar to those in cyclic salts collected by Hutton and Leslie (1958). The biggest discrepancy lay in the lower calcium in soil waters, suggesting that calcium is precipitated as calcium carbonate upon entry to the soils.

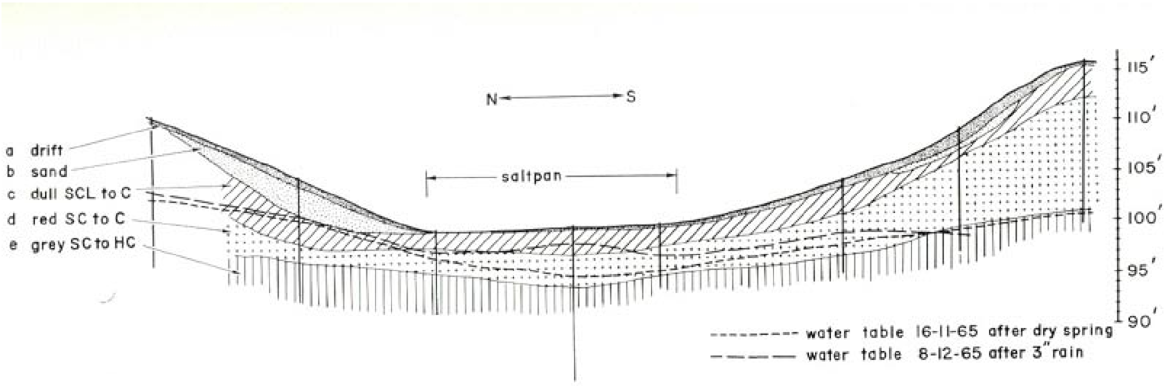
On the flats a reliable estimate of the concentration of soluble salts can be obtained from the chloride contents of soil samples as indicated by the predominance of sodium chloride in waters in these situations. It can be seen in Table 6 that the profile at site 15 had the lowest concentration of salts of any of the bare saltpans examined, and that the concentrations are related to the current levels of water tables.

TABLE 4 - Exchangeable sodium relative to total exchangeable cations in soils of varying salinities. E.S.P = exchangeable sodium percentage. N.B. Values only approximate where salinity is high because of difficulty in leaching.

Site	**Lab. No.**	**Depth ins.**	**Texture**	**Na m.e. %**	**C.E.C m.e. %**	**E.S.P %**	**E.C. µ mo/cm 20°C**
Bare saltpans on flats beside E-W dunes.							
5	1232	0-2	SC	2.5	7.7	32	8,900
15	1,436	0-3	C	9.6	22.6	42	3,800
15	1,450	118-120	HC	11.4	26.3	43	2,500
15	1,456	190-192	HC	8.1	23.6	34	1,500
21	1,551	0-3	C	4.9	12.8	38	4,800
Bare saltpan on lower slope of E-W dune.							
29	66/146	0-2	S	0.90	2.2	41	490
	153	58-60	C	14.0	22.3	63	840
	156	94-96	C	14.2	26.1	54	860
Pans with salt-tolerant species on flats beside E-W dunes.							
6	65/1241	0-2	SCL	0.69	9.2	7.5	560
	1,246	30-33	C	2.9	14.7	20	1,700
	1,257	118-120	HC	8.1	27.2	30	2,900
	1,262	178-180	HC	4.6	17.7	26	3,000
7	1,263	0-3	SCL	1.2	10.6	11.3	6,700
6 (e)	1,625	0-3	SL	2.3	10.5	23	320
Reclaimed area on flat beside E-W dune.							
27	1,611	0-3	SCL	0.46	10.7	4.3	270
Interdune flats with non-saline surfaces.							
11	1,351	0-3	SL	0.22	7.1	3.1	120
12	1,389	0-3	SCL	0.26	10.7	2.4	120

TABLE 5 - Salts in soil waters taken from top of water tables in dune-flat transects. *The catchment dam occurs on Allot. 28, Par. Chiprick.*

Lab. No. 65/ R = repeat after 3° rain	Site No. and relation to E-W dunes and flats.	Depth to water table ft.	Elec. Cond. 20°C mmho/cm	Milliequivalents/litre								
				Anions				Cations				
				Cl	HCO_3	SO_4	Total	Na	Ca	Mg	K	Total
1374	10 crest	15.0	2.3	2.0	25	1.0	28	26	0.3	1.0	0.3	28
1723 R	10 "	14.9	9.0	55	26	28	108	93	2.3	8.7	1.3	105
1514	13 "	16.5	3.1	6.3	27	1.6	35	31	0.6	2.3	0.6	34
1375	3 upper S	8.0	1.5	4.1	14	0.6	19	17	0.2	1.2	0.2	19
1717 R	3 " "	7.5	2.9	18	11	1.9	30	24	0.9	4.1	0.3	30
66/196	29 (*b*) "	3.8	1.8	2.0	17	1.5	20	20	0.3	0.6	0.3	21
1373	9 upper N	10.2	11	81	24	41	146	120	2.0	12	1.5	136
1377	4 lower S	4.0	2.5	5.4	16	0.9	22	21	0.4	1.6	0.3	23
1718 R	4 "	4.0	2.6	14	15	2.0	31	27	0.7	3.0	0.5	31
1515	14 "	10	24	285	15	25	325	235	9.9	59	2.0	306
66/195	29 "	1.1	3.5	9.6	31	1.0	42	43	0.2	0.8	0.3	44
66/200	32a "	7.5	1.6	2.0	17	0.04	19	0.5	18	0.7	1.0	20
1372	8 lower N	6.2	17	82	16	48	146	95	4.2	27	1.0	127
1722 R	8 "	4.9	16	146	16	39	201	173	4.0	24	1.5	202
1517	16 "	9.2	20	210	9.6	39	259	200	5.8	44	1.5	251
1173	1 salted flat	1.5	46	600	7.0	42	649	490	22	134	3.3	649
1726a R	1 " "	0.1	46	631	7.4	26	664	480	24	164	4.0	672
1376	5 " "	2.5	33	430	7.5	29	467	320	7.0	118	3.0	448
1719 R	5 " "	1.9	26	322	7.9	22	352	255	7.0	79	3.0	344
1370	6 " "	4.9	38	510	4.9	30	545	360	11	157	2.5	531
1720 R	6 " "	1.5	19	212	3.0	11	226	160	9.9	56	1.5	228
1371	7 " "	4.3	36	470	6.1	34	510	385	12	94	3.0	494
1721 R	7 " "	2.7	4.6	37	5.2	5.0	48	45	2.0	4.3	1.0	52
1516	15 " "	9.0	39	530	3.3	43	576	430	8.2	134	2.5	575
1725 R	15 " "	5.5	26	319	6.0	20	345	280	7.3	67	2.0	356
1716	6e " "	7.0	18	191	7.8	16	215	180	3.0	26	1.7	211
1649	21 " "	N.D.	36	390	30	55	575	435	8.2	88	5.0	536
1520	11 flat	8.2	34	450	4.6	18	473	265	29	169	1.5	465
1513	12 "	7.0	37	470	7.8	38	516	365	13	112	4.5	495
1724 R	12 "	6.6	8.5	78	5.2	6.8	90	73	5.4	14	1.0	93
1650	27 "	N.D.	35	420	9.4	57	486	310	14	100	6.5	431
1519	catchment dam		83	1,200	4.0	48	1,252	1,100	42	154	3.0	1,299



Site	3		4		5		6		7		8		9		10
Horiz. distance yds.		36		34		35		20		45		29		31	
Ground level ft.	112.1		105.8		100.0		100.3		100.3		10.34		109.6		115.9
Gradient of ground %		5.8		5.7		0.3		0		3.0		6.1		6.8	
Depth to water table 16/11/65 ft.	8.0		4.2		2.5		4.8		4.3		6.2		10.2		15.0
Depth to water table 8/12/65 ft.	7.6		3.9		1.9		1.5		2.7		4.9		10.8		dry
Rise 16/11/65—8/12/65 ft.	0.4		0.3		0.6		3.3		1.6		1.3		—0.6		fall
Level water table 16/11/65 ft.	104.1		101.6		97.5		95.5		96.0		98.1		99.4		100.9
Level water table 8/12/65	104.5		101.9		98.1		98.8		97.6		99.4		98.8		
Gradient water table 16/11/65 %		2.3		4.0		1.9		0.8		1.6		1.5		1.6	
Fall 8/12/65—27/4/66 ft.	1.5		2.1		1.3		2.1		1.0		2.0		0.8		
Depth to moisture front Nov. '65 ins.	10		17		0		3		3/4		7		27		45

Fig. 5 - Soil layers and water table levels at Sites 3-10.

Dune-salted flat-dune transect. Sites 3-10.

This N-S transect crossed the lower part of a saltpan towards the western end where further expansion was prevented by a low rise (site 6 w). The same five genetic layers were found as in the previous transect, but the depth to impending grey clay was shallower beneath the saltpan, varying from 4 to 6 feet from the surface, and the water regime was more active (Fig. 5).

The water table beneath the saltpan at site 5 was only 2.5 feet from the surface at the time of sampling. At site 4 on the lower southern slope, 4.5 feet of soil above the impeding grey clay were saturated, and remained so over the ensuing dry summer beneath a stand of skeleton weed and stinkwort.

Three sites were examined across the saltpan. The lowest (site 5) lay beside the northern dune and was bare. Elsewhere on the flat there was 2 to 3 inches of drift, with a cover of mixed salt-tolerant and conventional pastures towards the centre (site 6), and a sparse stand of salt-tolerant weeds beside the southern dune (site 7). The contrasting salinities of the profiles at sites 6 and 7 illustrate how vegetation restricts evaporation from shallow water tables (Table 6). Soil type and salinity of waters were similar at each site, and depth to the water table remained similar over the 18-month period of observation of the wells, varying between 2.5 and 8 feet.

TABLE 6 – Percentage chloride in soils on farmed interdune flats. Sampled October, 1965 at depths of 0-2 or 3", 9 or 10-12", 22-24", 34-36", and so on. Water table depths are those at time of sampling. ST = Salt-tolerant. N = normal pasture, i.e. barrel medic, Wimmera ryegrass.

Site Pasture	11 N	12 N	27 N+ST	6(e) N+ST	6 N+ST	15 bare	7 ST	5 bare	1 bare
Depth to water table ft.	8.2	7.0			4.8	7.5	4.3	2.5	1.5
Surface	0.01	0.01	0.02	0.02	0.06	0.68	1.10	1.45	1.76
1'	0.01	0.02	0.02	0.30	0.07	0.44	0.42	0.35	0.46
2'	0.27	0.20	0.18	0.27	0.14	0.34	0.32	0.35	0.52
3'	0.34	0.22	0.24	0.21	0.20	0.29	0.13	0.32	0.54
4'	0.20		0.20	0.16	0.19	0.36	0.19	0.35	0.55
5'	0.19		0.21	0.15	0.27	0.35	0.59	0.41	0.52
6'	0.19		0.20	0.15	0.34	0.39	0.38	0.51	0.58
9'	0.27	0.47	0.19	0.17	0.39	0.43			
12'	0.30				0.45	0.34			
15'					0.45	0.35			
Av. 2-6'	0.24		0.21	0.19	0.23	0.35	0.32	0.39	0.54

Margin of a saltpan. Site 6 (*e*). Allotment 10.

Site 6 (*e*) was located about 300 yards to the east of the previous transect where salt-tolerant species merged with conventional pastures. The grey clay lay at a depth of 8 feet, that is twice as deep as in the equivalent position further west, and the water table was correspondingly deeper.

This was the only site on interdune flats at which the chloride content in deep subsoils was appreciably less than 0.2 per cent. (Table 6) and in 1966, yields of wheat were markedly boosted by seepage.

Plate 7 - Saltpan on cropped interdune flat. This flat includes Sites 5, 6 and 7, Allot. 10, Parish Nyallo. Foreground and background wheat on E-W dunes. Site 6 is on the vegetated strip in the centre of the saltpan.

Plate 8 - Saltpan on cropped interdune flat which includes Sites 5, 6 and 7, Allot. 10, Parish Nyallo. Foreground – stunted wheat, curly ryegrass and Mediterranean barley grass. Left – surviving wheat at Site 6.

Flats with non-saline surfaces. Sites 11 and 12. Allotment 10.

Two of the four interdune flats on allotment 10 were free of saltpans, and had a good cover of barrel medic and Wimmera ryegrass. The soils were similar to those of the saltpans except that the grey clay lay deeper, for example at 10 feet at site 11. It was not encountered within 9 feet at site 12.

On each flat the surfaces were non-saline (Table 6), but below 1 foot most samples contained approximately 0.2 per cent chloride, indicating that salinity was at the accepted limit of tolerance for conventional crops and pastures. Furthermore, the chloride contents at 9 to 12 feet indicate that the limit of tolerance was being maintained, and that excess salts were percolating to great depth. The highest salinities occurred at 2 and 3 feet, most likely caused by leaching of salts previously drawn towards the surface by transpiration.

The soils were quite moist beyond a depth of 1.5 feet and there were saline water tables which rose to 6.5 feet at each site after 3 inches of rain in December 1965. However the low exchangeable sodium percentages at the surface (Table 4) indicate that the surfaces have never been saline.

Large saltpan. Site 1.

The features of this large (12-acre) saltpan occupying the greater part of an interdune flat crossed by the Woomelang-Hopetoun road suggest that groundwaters contribute to the water table. At site 1, beside the southern dune, the grey clay lay 6 feet from the surface, but the depth to the water table was only 1.5 feet at the time of sampling. Elevation of the ground surface was less than any other examined, for example 2 feet lower than at site 5 on the adjacent active saltpan. The water table was the shallowest, usually varying between 1.5 and 2.5 feet from the surface. It is also significant that the next flat to the north is occupied by a 35-acre saltpan, and direct seepage from the dunes is unlikely to be the sole source of the water table.

Partially reclaimed saltpan. Site 27. Allot. 27. Par. Carori.

In 1955 a bare saltpan to the west of Rosebery was fenced to exclude grazing, scarified, sown to Wimmera ryegrass, lucerne and barrel medic, topdressed with superphosphate and covered with straw. The adjacent dune was sown to lucerne. The pastures remained until 1965 when the whole paddock was sown to barley. At the time of sampling (24th November, 1965), the barley stubble was uneven on the former saltpan, and beneath weak patches there were salt-indicator species such as curly ryegrass.

Samples were taken beneath relatively strong stubble, and the profile was found to be similar to those on interdune flats on Allotment 10. By analogy with other bare saltpans (Table 6), it can be seen that the treatment outlined above had reduced the salinity to 9 feet, but only in the top 2 feet had there been a reduction below the limit of tolerance of conventional crops and pastures. At the surface, salinity and exchangeable sodium percentage (Table 4) were only slightly higher than those on flats not visibly affected by salinity.

Dune-flat transect with saltpan above the break in slope - Sites 29, 29*a*, 29*b* (Fig. 6). Allot. 12. Par. Woornack.

As mentioned earlier, some saltpans develop not on flats but on the dunes above the break in slope. This transect near Mittyack was done to observe conditions at such sites. The dune had been badly eroded, but was being stabilised at the time of sampling (17th January, 1966). There was a 50 per cent cover on the upper slopes of ryecorn stubble, lucerne, skeleton weed and onion weed (*Asphodelus fistulosus* L). Salt-tolerant species surrounded the saltpan. The most prominent one, annual beard grass (*Polypogon monspeliensis* L. Desf.) was not found beside saltpans on flats. The saltpan occurred on the southern slope of the dune, above the break in slope. It was bare except for some plots of *Puccinellia* sp. and *Agropyron elongatum* (Host.) Beauv. Which formed a dense stand some 2 feet high.

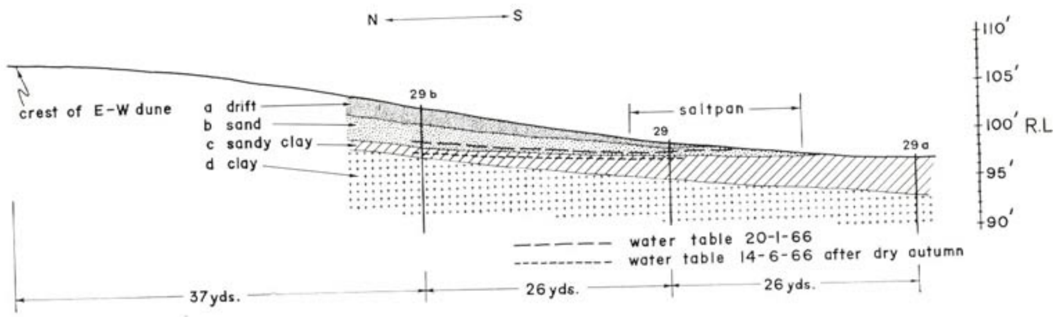


Fig. 6 - Soil layers and water table levels for Sites 29, 29a, 29b.

Plate 9 - Saltpan on lower S. slope of E-W dune, Site 29, Allot. 12, Parish Woornack.

On the southern slope the three younger soil layers had similar characteristics and arrangement to those in the previously-described transects. Beneath layer (c) was an older yellowish-red (5 YR 5/6) clay within which separate genetic layers could not be recognised, and which had a very low visible porosity. The water table was only 1.1 feet from the surface of the saltpan on 20th January, 1966. As on other southern slopes bicarbonate exceeded chloride in soil water, and this is reflected in the high pH of 10.1 at the surface of the saltpan.

The seepage evaporated before reaching the adjacent flat where there was no water table within 9 feet. The lack of waters percolating to the flat is reflected by the unusually low chloride contents (0.02 per cent in the upper 4 feet of clay).

Moisture in dunes. Allot. 26. Par. Minapre.

The moisture contents beneath the crests of dunes growing wheat, mallees and a 6-year-old stand of lucerne were examined near Lascelles on 17th September, 1966 (Table 7).

TABLE 7 - Moisture in dunes under lucerne, wheat and mallees.

Lucerne

Depth	Site *a*				Site *b*			
	Text	Moisture			Text	Moisture		
		Field	Wilt. pt	Est. field cap.		Field	Wilt. pt.	Est. field cap.
feet		%	%	%		%	%	%
1	SCL	10.2	7.1	18	LS	6.3	3.3	7
2	SC	8.0	7.8	20	SL	4.5	4.3	17
3	SCL	6.7	6.9	18	SL	4.4	4.7	17
4	SC	11.9	14.8	20	SCL	7.1	8.5	18
5	SC	9.9	12.7	20	SC	9.8	10.6	20
6	SCL	6.8	8.5	18	SCL	9.0	8.7	18
7	GrSC	12.5	15.6	18	SC	11.3	12.9	20
8	SC	11.8	14.6	20	SCL	8.6	10.1	18
Means to 5 ft.	…	9.3	9.9	…	…	6.4	6.3	…
Means to 8 ft.	…	9.7	11.0	…	…	7.6	7.9	…
Avail. Moist. to 8 ft. (ins.)	0.6				0.6			

Wheat

Depth	Site *a*				Site *b*			
	Text	Moisture			Text	Moisture		
		Field	Wilt. pt	Est. field cap.		Field	Wilt. pt.	Est. field cap.
feet		%	%	%		%	%	%
1	SC	16.0	12.0	20	SC	19.4	14.1	20
2	SC	16.3	10.5	20	SCL	11.3	9.4	18
3	SC	12.4	10.2	20	GrSC	14.1	13.5	18
4	SCL	10.4	9.7	18	SC	14.7	13.6	20
5	SC	16.1	14.0	20	GrSC	14.1	12.5	18
6	SC	16.6	15.7	20	SC	12.7	11.2	20
7	SC	17.6	14.8	20	SC	16.7	14.9	20
8	SC	19.8	17.6	20	SC	18.3	14.8	20
Means to 5 ft.	…	14.2	11.3	…	…	14.7	12.6	…
Means to 8 ft.	…	15.6	13.1	…	…	15.3	13.0	…
Avail. Moist. to 8 ft. (ins.)	4.0				3.3			

Mallees

Depth	Site *a*			Site *b*		
	Text	Moisture		Text	Moisture	
		Field	Wilt. pt		Field	Wilt. pt.
feet		%	%		%	%
1	LS	3.4	3.9	SL	5.6	6.1
2	GrSCL	6.8	8.6	GrSCL	9.4	10.2
3	GrC	10.0	12.9	GrC	8.9	11.3
4	GrC	10.3	12.9	GrC	10.2	12.8
5	SC	10.2	13.9	SC	10.3	12.9
Means to 5 ft.	…	8.1	10.4	…	8.9	10.7
Avail. Moist.	0			0		

N.B. – Samples taken over depth of 2 ins. E.g. the 1 ft depth represents 11-13 ins. Percentages shown are on a weight basis. Lucerne and mallees reduce percentages below that at 15 atm. equivalent tension.

The moisture content was below that at conventional wilting point at all depths examined under mallees, and at a depth of more than 2 feet under lucerne. Values were above wilting point at all depths under wheat, with a minimum at 3 to 4 feet indicating the depth to which moisture had been stored in the previous fallow. The soils under wheat reached field capacity at 8 feet, marking the depth to which moisture had been tapped under the cropping rotation.

Under lucerne and mallees any available moisture in the upper 2 feet represented the residues of rains received during the preceding July-August-September during which approximately 4 inches had fallen. It can be seen in Table 7 that the rate of evapotranspiration had been greater under mallees.

Plate 10 - Stinkwort indicating presence of seepage from E-W dunes. East of Ouyen.