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Technical Memorandum 28/66

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Detailed Descriptions and Analytical Data for Soils of the C.S.I.R.O. Pasture Research Station "Lansdown", Townsville, Queensland.

by

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This memorandum contains additional detailed analytical data and soil descriptions to those recorded in Divisional Report 1/66, "Soils of the C.S.I.R.O. Pasture Research Station "Lansdown", Townsville, Queensland".

ABBREVIATIONS USED IN TABLES

T.S.S.	=	Total soluble salts by conductivity of 1:5 suspension.
NaCl	=	Chloride calculated as sodium chloride.
$CaCO_3$	=	Carbonate calculated as calcium carbonate.
Org. C	=	Organic carbon by Walkley-Black.
N	=	Total nitrogen by Kjeldahl digestion.
P	=	Phosphorus. A.ppm. "Available phosphorus" by modified Truog acid extraction method. Tot. % "Total" phosphorus.
CS	=	Coarse sand.
FS	=	Fine sand.
Si	=	Silt.
C	=	Clay.
Exchangeable cations		
Total	=	Total exchange capacity.
Ca	=	Calcium.
Mg	=	Magnesium.
K	=	Potassium.
Na	=	Sodium.
H	=	Hydrogen.
m	=	moist.

Note: Unless otherwise specified all horizon boundaries in the morphological descriptions are gradational.

BJC/GGM/VHR
8/8/66

Soil Series : Stockyard Loam
Great Soil Group : Solodic
Principal Profile Form : Dy3.43

Sample No.	Horizon	Depth (Ins.)	Morphological Description			
T 18.1	A1	0-5	Dark grey-brown	(m.10 YR 4/2)	loam	massive, friable and porous
.2	A2	5-15	Brown	(m.10 YR 5/3)	sandy loam	massive, very porous, clear change to
.3	B21	15-24	Yellow-brown	(m.10 YR 5/4)	medium-heavy clay	moderate blocky (1-1½" units)
.4	B22	24-36	Mottled yellow-brown	(m.10 YR 5/4)	medium-heavy clay	very coarse prismatic grading to coarse blocky (1½-2" units) trace CO_3
.5		36-48	Mottled brown and reddish brown	(m.10 YR 4/3) (m. 5 YR 4/4)	medium-heavy clay	as above
.6		48-60	As above		medium-heavy clay	moderate blocky (1-2" units) low CO_3
.7		60-80	mottled reddish brown and dark grey-brown	(m. 5 YR 4/4) (m.10 YR 4/2)	sandy clay	moderate blocky (½-1½" units) low CO_3

Location: Homestead Paddock

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	5.9	.03	<.01	1.1		1.2	.103	8	.008	15	54	18	14	12.0	5.4	1.8	.60	.15	4.0	66
.2	6.2	.02	<.01	1.3				4												
.3	6.5	.02	<.01	3.2						19	35	11	34	14.4	6.6	3.6	.30	.10	3.8	74
.4	6.7	.01	<.01	2.6																
.5	7.3	.03	<.01	1.8																
.6	8.2	.02	<.01	2.8	.7				.005					14.0	7.4	4.7	.27	1.05	0.6	96
.7	8.6	.05	<.01	2.3					.006											

Soil Series : Woodstock Loam
Great Soil Group : Yellow Earth with clay D horizon
Principal Profile Form : Gn2.64

Sample No.	Horizon	Depth (Ins.)	Morphological Description			
T 19.1	A1	0-3	Dark grey-brown	(m.10 YR 4/2)	loam	massive, trace fine grit and gravel
.2	A2	3-8	Yellowish brown	(m.10 YR 5/6)	clay loam	massive, earthy, few 1/8" FeMn nodules
.3	B	8-14	Mottled yellowish brown and yellowish red	(m.10 YR 5/7)	clay loam-light clay	as above
.4	B	14-21	As above		light clay	mostly massive with few smooth ped faces
.5	D1	21-26	Mottled yellowish brown and pale brown	(m.10 YR 5/7) (m.10 YR 6/3)	medium clay	moderate polyhedral trace ½" gravel
.6	D2	26-36	As above		medium clay	strong coarse polyhedral trace CO_3
.7	D3	36-48	Yellowish brown	(m.10 YR 5/4)	heavy clay	strong coarse polyhedral low ½" CO_3 nodules
.8	DC	52-57	Yellowish brown		gritty clay	moderate fine gravel low CO_3

Location: Northern fence line Woodstock paddock

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total m.e./100g	Ca	Mg	K	Na	H	Sat. %
.1	6.0	.02	<.01	1.5		.88	.079	4	.019	18	53	13	18	9.4	2.2	1.6	.44	.10	5.1	46
.2	5.6	<.01	<.01	1.5				3												
.3	5.8	.01	<.01	3.0					.014	19	32	13	37							
.4	6.2	.01	<.01	2.6						17	27	11	44	10.9	2.6	2.5	.08	.60	5.1	53
.5	6.2	.02	<.01	3.2					.011	10	20	13	57	15.1	3.8	4.1	.10	1.6	5.5	64
.6	8.2	.12	.04	5.0	1.6					8	24	15	52	12.8	5.6	5.2	.10	1.9	0	100
.7	9.0	.20	.08	4.2																
.8	9.2	.18	.07	4.8																

Soil Series : Gilligan Clay
Great Soil Group : Grey Soil of Heavy Texture
Principal Profile Form : Ug5.29

Sample No. & Depth (Ins.)	Horizon	Depth (Ins.)	Morphological Description			
T 20.1 (0-3)	A1	0-3	Dark grey-brown	(m.2.5 Y 4/2)	medium clay	moderate blocky trace ½" CO_3 nodules (½-1" units)
.2 (3-10)	B21	3-10	Olive-brown	(m.2.5 Y 4/3)	heavy clay	moderate coarse high CO_3 nodules blocky
.3 (10-18)	B22	10-30	Olive-brown	(m.2.5 Y 4/4)	heavy clay	strong coarse moderate ½" CO_3 nodules blocky
.4 (18-30)						
.5 (30-48)	B22	30-48	Dark yellowish brown	(m. 1 Y 4/4)	heavy clay	coarse lenticular trace ½" CO_3 and FeMn nodules
.6 (48-66)		48-78	Dark yellowish brown	(m.10 YR 4/4)	heavy clay	coarse lenticular trace 1/8" nodules and some soft diffuse CO_3
.7 (66-78)			$\bar{c}$ some grey mottles at depth			

Location: Northern fence line Woodstock Paddock

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	7.1	.03	.01	4.7	.3	1.1	.103	5	.019	9	33	17	41	24	16.2	4.0	.57	.45	3.0	88
.2	8.3	.05	.01	5.3				3												
.3	8.6	.08	.01	3.6	8.1				.011	12	23	15	44	21	13.0	5.2	.15	2.3	0	100
.4	8.9	.19	.07	5.8																
.5	8.8	.36	.19	7.0	1.7															
.6	8.8	.37	.20	5.8					.013	5	25	20	49	23	8.0	7.6	.20	7.0	0	100
.7	8.7	.30	.18	6.1																

Soil Series : Woodstock Loam
Great Soil Group : Yellow Earth/Clay D horizon
Principal Profile Form : Gn2.61 - .64

Sample No. & Depth (Ins.)	Horizon	Depth (Ins.)	Morphological Description			
T 21.1 (0-3)	A1	0-3	Very dark grey-brown	(m.10 YR 3/2)	loam	massive, low 1/8" FeMn nodules
.2 (3-10)	B21	3-10	Yellowish brown $\bar{c}$ faint light grey mottle	(m.10 YR 5/4)	clay loam	massive, trace 1/8" FeMn nodules earthy
.3 (10-14)	B22	10-14	As above		light clay	massive, trace FeMn nodules earthy
.4 (14-17)	BD	14-17	Dark yellowish brown $\bar{c}$ faint grey-brown mottle	(m.10 YR 4.5/4)	heavy clay	massive, few FeMn nodules very weak earthy
.5 (17-24)	D	17-33	Olive-brown	(m.2.5 Y 4/3)	heavy clay	strong coarse trace soft CO_3 blocky
.6 (24-33)						
.7 (33-42)	D	33-42	Dark yellowish brown	(m. 1 Y 4/4)	heavy clay	strong moderate ½" CO_3 nodules lenticular

Location: Northern fence line Woodstock paddock

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	6.2	.01	<.01	3.1		1.0	.082	6	.021	14	46	17	25	14	5.4	3.2	.43	.25	4.7	32
.2	6.4	.01	<.01	3.1				4												
.3	6.5	<.01	<.01	3.6					.015	17	41	16	28	12	4.0	2.5	.08	.67	5.1	58
.4	7.1	.02	<.01	7.0						12	27	12	49	19	6.4	4.6	.12	1.8	5.7	70
.5	8.2	.09	.04	6.4	2.8				.014	11	25	16	47	21	9.8	7.3	.15	3.2	0.8	96
.6	8.9	.20	.11	4.4																
.7	8.8	.28	.16	5.0																

Soil Series : Woodstock Sandy Loam
Great Soil Group : Yellow Earth-Yellow Podzolic Intergrade/Clay D horizon
Principal Profile Form : Gn2.94

Sample No. & Depth (Ins.)	Horizon	Depth (Ins.)	Morphological Description			
T 22.1 (0-3)	A1	0-3	Very dark grey-brown	(m.10 YR 3/2)	sandy loam	massive, fine 1/8" FeMn nodules
.2 (3-9)	A2	3-9	Dark grey-brown	(m.10 YR 4/2)	sandy loam - loam	massive, earthy fine 1/8" FeMn nodules
.3 (9-17)	B1	9-17	Light yellowish brown	(m.10 YR 6/4)	sandy clay loam	earthy high 1/4" FeMn nodules
.4 (17-30)	B2	17-30	Pale brown $\bar{c}$ some red mottles	(m.10 YR 6/3) (m. 5 YR 4/6)	clay loam	massive to weak as above polyhedral
.5 (30-36)	D1	30-36	As above		light medium clay	strong polyhedral some fine FeMn nodules
.6 (36-48)	D2	36-57	Yellow brown $\bar{c}$ some light grey mottles	(m.10 YR 5/8)	medium clay	as above as above
.7 (48-57)			Some light grey mottles	(m.2.5 Y 7/2)		
.8 (57-66)	D3	57-66	As above $\bar{c}$ some red mottles	(m.2.5 YR 4/6)	medium clay	moderate fine polyhedral trace fine Qz grit

Location: North west quarter of Woodstock paddock

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	5.8	.02	<.01	1.3		1.0	.069	4	.016	35	40	14	12	10	2.0	0.7	.45	.10	6.3	33
.2	5.9	<.01	<.01	1.0				4												
.3	6.3	<.01	<.01	2.0					.018	34	31	8	26	7	2.4	1.4	.07	.10	2.5	62
.4	6.5	<.01	<.01	2.6						26	29	6	38	9	2.2	2.2	.12	.25	4.3	52
.5	6.5	<.01	<.01	3.6						23	20	5	52	11	2.0	4.0	.11	.80	4.1	63
.6	6.5	<.01	<.01	3.6					.009											
.7	6.2	.03	.02	3.1																
.8	6.3	.04	.02	2.8																

Soil Series : Gilligan Clay
Great Soil Group : Grey Soil of Heavy Texture
Principal Profile Form : Ug5.29

Sample No. & Depth (Ins.)	Horizon	Depth (Ins.)	Morphological Description				
T 23.1 (0-4)	A	0-4	Dark grey-brown	(m.2.5 Y 4/2)	medium clay	strong fine blocky on surface grading to coarse blocky	
.2 (4-14)	B21	4-36	Dark grey-brown	(m.2.5 Y 4/2)	heavy clay	strong coarse blocky	moderate 1/4-½" CO_3 trace FeMn nodules and some fine gravel
.3 (14-24)							
.4 (24-36)							
.5 (36-48)	B22	36-48	Dark olive-brown	(m.2.5 Y 4/3)	heavy clay	coarse lenticular	as above
.6 (48-60)		48-72	Dark yellowish brown	(m.10 YR 5/4)	heavy clay	coarse lenticular	as above
.7 (60-72)							
.8 (72-90)		72-102	as above $\bar{c}$ fine grey mottles	(m.2.5 Y 5.1)	heavy clay	coarse lenticular	low 1/8" CO_3 nodules few fine 1/8" FeMn nodules
.9 (90-102)							

Location: Near eastern fence line Woodstock Paddock

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	7.1	.03	<.01	3.1	.7	1.0	.099	9	.018	24	32	15	30	26	18.0	4.8	.37	.65	2.4	91
.2	8.6	.05	<.01	5.8				6												
.3	8.9	.11	.03	6.4	3.0				.008	9	27	17	47	21	11.2	6.6	.08	3.3	0	100
.4	8.7	.27	.12	6.1																
.5	8.7	.37	.20	5.0	2.9									24	9.0	8.2	.15	6.5	0	100
.6	8.9	.32	.18	5.5																
.7	8.9	.30	.15	5.5																
.8	8.6	.29	.16	5.3																
.9	8.1	.25	.15	5.3					.012											

Soil Series : Manton Loam
Great Soil Group : Solodic
Principal Profile Form : Dy3.43

Sample No.	Horizon	Depth (Ins.)	Morphological Description			
T 24.1	A1	0-2½	Very dark grey-brown	(m.10 YR 3/2)	loam	massive low gravels to 2" size
.2	A2	2½-7	Dark grey-brown	(m.10 YR 4/2)	loam	massive sporadic bleach abrupt change to
.3	B21	7-12	Mottled dark grey-brown and yellowish brown	(m.10 YR 4/2) (m.10 YR 5/4)	heavy clay	moderate columnar (4" diam.) breaking to coarse blocky, few 1/8" FeMn nodules
.4	B22	12-20	Dark grey-brown	(m. 1 Y 4/2)	heavy clay	moderate blocky (1-2" units) few 1/8" FeMn nodules
.5	B	20-30	Dark grey-brown	(m.2.5 Y 4/2)	heavy clay	weak coarse blocky moderate 1/4-½" CO_3 nodules
.6		30-42	Dark greyish brown	(m. 1 Y 4/3)	heavy clay	as above

Location:

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	5.9	.01	<.01	1.5		1.1	.083	4	.016	18	39	24	19	13	4.4	2.6	.20	.45	5.3	59
.2	6.0	.02	<.01	1.0				3		20	43	20	16	8	2.5	1.5	.08	.40	3.0	60
.3	6.9	.04	.02	5.3					.011	12	25	16	49	21	8.2	6.9	.11	3.2	2.9	86
.4	7.3	.08	.05	5.0																
.5	8.4	.29	.18	5.8	.9					14	29	18	40	19	8.0	7.6	.08	3.4	0	100
.6	8.9	.29	.17						.013											

Soil Series : Wyoming Sandy Loam
Great Soil Group : Red Earth
Principal Profile Form : Gn2.14

Sample No.	Horizon	Depth (Ins.)	Morphological Description			
T 25.1	A1	0-3	Dark brown	(m.7.5 YR 3/2)	sandy loam	massive, clear change to
.2	A2	3-10	Reddish brown	(m. 5 YR 4/4)	sandy loam	massive, earthy, low 1/8" FeMn nodules
.3	B1	10-18	Yellowish red	(m. 5 YR 4/6)	sandy clay loam	as above with low fine gravel
.4	B2	18-28	Yellowish red	(m. 5 YR 4/6)	light to medium clay	as above
.5		28-34	Yellowish red	(m. 5 YR 4/6)	gritty clay	massive, earthy, much waterworn gravel
		34 +	Unsorted waterworn gravels 1 to 6" size with gritty clay matrix			

Location:

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	6.5	.02	<.01	1.2		1.1	.079	63	.050	18	59	14	11	9	5.0	1.0	.42	.10	2.2	74
.2	6.4	.01	<.01	3.0				42	.041	44	34	13	8	6	3.8	.9	.21	.10	.5	91
.3	6.2	.02	<.01	1.0																
.4	6.4	<.01	<.01	2.6						31	28	11	30	9	3.8	1.1	.34	.10	3.5	61
.5	6.3	<.01	<.01	1.3																

Soil Series : Glenoming Sandy Loam
Great Soil Group : Red Podzolic
Principal Profile Form : Dr3.42

Sample No.	Horizon	Depth (Ins.)	Morphological Description			
T 26.1	A1	0-2½	Very dark grey-brown	(m.10 YR 3/2)	sandy loam	massive, clear change to
.2	A2	2½-9	Yellowish brown	(m.10 YR 5/4)	sandy loam	massive, fine 1/4" FeMn nodules
.3	A3	9-18	Yellowish brown	(m.10 YR 5/5)	sandy loam	massive, trace 1/4" gravel, conspicuous bleach
.4	B21	18-26	Mottled red and brown	(m.2.5 YR 4/5) (m.7.5 YR 5/6)	medium clay	weak coarse blocky, low 1" gravels
.5	B22	26-34	Mottled dark red and yellowish red	(m.2.5 YR 3/6) (m. 5 YR 5/6)	medium clay	moderate fine blocky (1/4-½" units) low waterworn gravel to 2" size
		34 +	Heavy waterworn gravels with a mottled red clay matrix			

Location: 15 chain west of windmill, Woodstock paddock

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	6.1	<.01	<.01	<1.0		.8	.059	10	.015	31	51	10	9	7	2.4	.8	.21	.15	3.6	50
.2	5.8	<.01	<.01	<1.0				7	.015	50	33	12	5	3	1.5	.4	.14	.10	.9	71
.3	6.0	<.01	<.01	<1.0																
.4	6.1	<.01	<.01	2.6					.016	21	31	11	38	9	4.4	1.5	.26	.15	2.5	72
.5	6.4	.01	<.01	2.8																

Soil Series : Lansdown Fine Sandy Loam
Great Soil Group : Solodized Solonetz
Principal Profile Form : Dy3.43

Sample No.	Horizon	Depth (Ins.)	Morphological Description			
T 27.1	A1	0-2½	Dark grey-brown	(m.10 YR 4/2)	fine sandy loam	massive, clear change to
.2	A2	2½-10	Light brownish grey	(m.10 YR 6/2)	fine sandy loam	massive, strong conspicuous bleach abrupt change to
.3	B2	10-17	Mottled grey-brown and yellowish brown	(m.10 YR 5/2) (m.10 YR 5/5)	heavy clay	strong columnar breaking to coarse blocky few 1/4" FeMn nodules
.4	B22	17-27	Mottled pale brown and yellowish brown	(m.10 YR 6/3)	heavy clay	moderate blocky (2-4" units) low ½" waterworn gravel and 1/4" FeMn nodules
.5	B2	27-37	Mottled yellowish brown and pale brown	(m.10 YR 5/6) (m.10 YR 6/3)	heavy clay	as above with low 1" CO_3 nodules
.6	BC	37-46	As above		medium-heavy clay	weak coarse blocky few FeMn nodules
.7		46-51	As above		sandy clay	massive, increasing amounts of 1-2" waterworn gravels

Location: Approximately 35 chains E.S.E. of mill, Lansdown Paddock

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	5.2	.01	<.01	<1.0		.9	.076	7	.013	36	48	11	7	5	1.3	.5	.28	.10	2.7	45
.2	5.2	<.01	<.01	<1.0				5		16	71	10	4	4	.9	.4	.08	.45	2.1	46
.3	6.7	.05	.03	3.2					.007	10	45	8	37	17	4.0	6.0	.10	3.5	3.3	80
.4	8.0	.16	.08	3.6						18	37	18	28	15	3.0	5.8	.08	4.6	1.3	91
.5	8.8	.22	.15	3.4																
.6	8.3	.25	.10	3.1	1.0				.010					11	2.4	4.1	.06	3.9	0	100
.7	8.5	.19	.10	3.1																

Soil Series : Woodstock Sandy Loam sloping phase
Great Soil Group : Yellow Earth - Yellow Podzolic Intergrade
Principal Profile Form : Gn2.92

Sample No.	Horizon	Depth (Ins.)	Morphological Description			
T 28.1	A1	0-2½	Dark grey-brown	(m.10 YR 3.5/2)	sandy loam	massive, low 1/4" gravel, clear change to
.2	A2	2½-10	Yellowish brown	(m.10 YR 5/4)	sandy loam	massive, earthy, fine 1/4" FeMn nodules
.3	B1	10-17	Mottled yellowish brown and yellowish red	(m.10 YR 5/5) (m. 5 YR 4/6)	sandy clay loam	massive, earthy, low 1/4" FeMn nodules
.4	B21	17-26	As above		sandy clay	as above with trace 1/4" gravel
.5	B22	26-36	Mottled pale brown and yellowish red	(m.10 YR 6/3) (m. 5 YR 4/6)	sandy clay	very weak fine blocky moderate 1/4-½" FeMn nodules
.6		36-42	As above		sandy clay	high amounts 1/4-½" FeMn nodules
.7	D	46-51	Mottled yellowish brown and grey	(m.10 YR 5/6) (m.2.5 Y 6/1)	heavy clay	strong fine polyhedral low 1" gravel

Location: Calcium paddock

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	6.0	<.01	<.01	1.1		.8	.062	4	.016	38	43	10	9	8	2.4	1.0	.18	.15	4.3	46
.2	5.8	<.01	<.01	1.0				4												
.3	6.1	<.01	<.01	1.6						39	31	7	22	10	2.2	1.2	.03	.10	6.0	37
.4	6.4	.01	<.01	2.0					.015					11	3.2	2.6	.03	.15	5.0	55
.5	6.5	.01	<.01	3.1						31	25	8	36	11	2.8	2.6	.03	.20	5.1	52
.6	6.6	.02	<.01	2.0					.022											
.7	6.5	.02	<.01	3.4																

Soil Series : Stockyard Sandy Loam
Great Soil Group : Solodic - Solodized Solonetz
Principal Profile Form : Dy3.43

Sample No. & Depth (Ins.)	Horizon	Depth (Ins.)	Morphological Description			
T 29.1	A1	0-2½	Very dark grey-brown	(m.10 YR 3/2)	sandy loam	massive, clear change to
.2 (2½-8)	A2	2½-21	Yellowish brown	(m.10 YR 5/4)	sandy loam	massive, porous, few 1/4" FeMn nodules, very strong conspicuous bleach. Very abrupt change to
.3 (8-15)						
.4 (15-21)						
.5 (21-27)	B21	21-27	Mottled grey-brown and yellowish brown	(m.10 YR 5/2) (m.10 YR 5/6)	sandy medium clay	moderate prismatic 2-4" diam. breaking to coarse blocky, trace ½" gravel, fine FeMn nodules
.6 (27-33)	B22	27-33	Mottled yellowish brown and grey brown	(m.10 YR 5/6) (m.10 YR 5/2)	sandy medium clay	weak coarse blocky, few FeMn nodules
.7 (33-40)	B	33-40	As above		sandy medium clay	low CO_3 nodules
.8 (40-46)	C	40-46	Dark grey-brown	(m.10 YR 4/2)	gritty clay	low CO_3 nodules, clear change to
.9 (46-52)	D	46-52	Very dark grey-brown	(m.10 YR 3/1.5)	medium clay	moderate fine polyhedral, low soft CO_3

Location: 5 chains N.E. of yards, Manton Paddock

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	5.6	.01	<.01	1.0		.9	.078	7	.015	40	41	10	7	7	2.0	.7	.23	.05	4.2	41
.2	5.7	.01	<.01	1.1				4		39	41	14	7	5	1.6	.7	.12	.10	2.3	52
.3	6.1	.01	<.01	1.0																
.4	6.6	.01	<.01	1.4						36	40	12	13	6	2.2	1.5	.06	.30	2.0	66
.5	7.2	.03	<.01	3.6					.012	25	34	12	30	13	5.8	4.1	.13	1.7	1.6	88
.6	7.6	.04	<.01	2.6																
.7	8.3	.05	.01	2.6																
.8	8.5	.07	.03	2.6	.5									14	6.5	3.8	.10	3.3	0	100
.9	8.8	.11	.03																	

Soil Series : Lansdown Sandy Loam
Great Soil Group : Solodized Solonetz
Principal Profile Form : Dy2.43

Sample No. & Depth (Ins.)	Horizon	Depth (Ins.)	Morphological Description			
T 30.1 (0-1½)	A1	0-1½	Greyish brown	(m.10 YR 5/2)	sandy loam	massive, sporadic bleach
.2 (1½-8)	A2	1½-8	Pale brown	(m.10 YR 6/3)	sandy loam	massive, strong conspicuous bleach, abrupt change to
.3 (8-13)	B21	8-13	Olive-brown	(m. 1 Y 5/4)	heavy clay	columnar breaking to strong coarse blocky
.4 (13-24)	B22	13-24	Yellowish brown	(m.10 YR 5/5)	medium clay (sandy)	moderate blocky (1-1½" units) few 1/8" FeMn nodules
.5 (24-35)	B	24-35	Mottled brownish yellow and light brownish grey	(m.10 YR 6/5) (m.10 YR 6/2)	medium clay (sandy)	weak coarse blocky, low 1" CO_3 nodules, few 1/4" FeMn nodules
.6 (35-48)	BC	35-56	Mottled light brownish grey	(m.10 YR 6/2)	medium clay (sandy)	massive, low ½" CO_3 nodules, low ½" gravel and few ½" FeMn nodules
.7 (48-56)			and yellowish brown	(m.10 YR 5/6)		
.8 (56-66)	C	56-78	Mottled yellowish brown	(m.10 YR 5/8)	sandy clay	moderate fine polyhedral, low 1" CO_3 nodules
.9 (66-78)			and light brownish grey	(m.10 YR 6/3)		

Location: Homestead 2

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	5.4	.02	<.01	1.5		1.6	.126	8	.012	26	50	14	9	8	1.6	.8	.23	.20	4.7	37
.2	5.8	.01	<.01	<1.0		.3	.028	6	.006	27	52	17	4	3	.8	.5	.03	.15	1.9	42
.3	7.9	.22	.14	4.7					.010	15	29	12	44	19	2.4	6.0	.12	7.7	2.6	86
.4	8.6	.45	.31	5.8																
.5	8.7	.45	.28	4.7	1.5					22	30	13	36	11	1.6	4.6	.08	4.5	0	100
.6	8.6	.31	.20	3.4					.007											
.7	9.3	.25	.11	3.1																
.8	8.7	.22	.11	3.6	1.0				.006											
.9	8.9	.25	.11	3.4																

Soil Series : Sandalwood Sandy Loam
Great Soil Group : Solodic - Solodized Solonetz
Principal Profile Form : Dy2.43

Sample No. & Depth (Ins.)	Horizon	Depth (Ins.)	Morphological Description			
T 31.1 (0-1)	A1-A2	0-1	Dark grey-brown	(m.10 YR 4/2)	sandy loam	platy grading to massive, very abrupt change to
.2 (1-6)	B21	1-6	Dark brown	(m.10 YR 4/3)	medium clay (sandy)	weak columnar breaking to coarse blocky, low ½" gravel
.3 (6-15)	B22	6-15	Brown	(m.10 YR 5/3)	medium clay (sandy)	moderate blocky (½-1" units) low 1/8" FeMn nodules
.4 (15-24)	B	15-24	Brown	(m.10 YR 5/3.5)	medium clay (sandy)	moderate blocky (1-1½" units) low ½" CO_3 nodules
.5 (24-36)		24-44	Light yellowish brown	(m.10 YR 6/3.5)	medium clay (sandy)	weak blocky, low CO_3 nodules and low 1/4" gravel
.6 (36-44)			some faint red brown mottles			

Location: Sandalwood Paddock

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	6.3	.12	.08	0.9		1.5	.090	10	.018	22	44	21	13	9	3.0	2.2	.28	.20	3.3	62
.2	6.7	.22	.15	2.0		.4		4	.011	19	36	23	22	12	2.6	3.0	.09	3.8	2.9	77
.3	8.0	.61	.45	4.2	.3					15	35	21	30	13	2.8	4.0	.06	5.9	.7	95
.4	8.6	.84	.69	3.6																
.5	9.2	.65	.48	4.2	4.0					15	34	19	32	14	2.2	3.8	.15	8.0	0	100
.6	9.3	.65	.46	4.4					.009											

Soil Series : Sandalwood Sandy Loam
Great Soil Group : Solodic - Solodized Solonetz
Principal Profile Form : Dy2.43

Sample No.	Horizon	Depth (Ins.)	Morphological Description			
T 32.1	A1-A2	0-3	Light brownish grey	(m.10 YR 6/2)	sandy loam	massive, very thin organic A1 strong bleach, abrupt change to
.2	B21	3-7	Dark grey-brown	(m.10 YR 4/2)	medium clay (sandy)	weak columnar breaking to coarse blocky, low ½" gravel
.3	B22	7-17	Mottled brown and reddish brown	(m. 1 Y 5/3) (m. 5 YR 4/4)	medium clay (sandy)	moderate coarse blocky, low 1/4" CO_3 nodules and 1/8" FeMn nodules
.4		17-28	Mottled reddish brown and brown	(m. 5 YR 4/5) (m.10 YR 4/3)	light medium clay	moderate blocky (½-3/4" units) low ½-3" CO_3 nodules low ½" gravel
.5		28-40	Yellowish red	(m. 5 YR 4/6)	light medium clay	as above with moderate 1-3" CO_3 nodules
.6		40-46	Yellowish red	(m. 5 YR 5/6)	sandy clay	as above

Location: North west corner of Spring Creek Paddock

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	5.8	.08	.04	1.0		.6	.051	5	.011	23	46	23	9	6	1.7	1.0	.30	.50	2.6	57
.2	7.7	.14	.09	3.1				4	.012	20	35	20	26	15	4.8	4.7	.21	4.8	0.8	95
.3	8.5	.37	.20	3.1	.3					13	47	10	31	15	3.6	5.0	.06	5.9	0	100
.4	8.7	.38	.24	4.2																
.5	9.3	.40	.22	3.9	2.5															
.6	9.4	.34	.19	3.1																

Soil Series : Double Barrel Loam
Great Soil Group : Red Podzolic
Principal Profile Form : Gn3.15

Sample No.	Horizon	Depth (Ins.)	Morphological Description			
T 33.1	A1	0-5	Very dark brown	(m.10 YR 2/2)	loam	weak blocky ($\frac{1}{2}$" units) vesicular, clear change to
.2	A2	5-12	Dark brown	(m.10 YR 3/3)	fine sandy clay loam	weak blocky ($1\frac{1}{2}$" units), clear change to
.3	B1	12-18	Dark brown	(m.7.5 YR 4/4)	light clay	moderate blocky ($1\frac{1}{2}$-2" units), vesicular
.4	B2	18-28	Reddish brown	(m. 5 YR 4/4)	medium clay (sandy)	as above
.5	B2	28-36	Mottled reddish brown and brown	(m. 5 YR 4/4) (m.10 YR 4/3)	medium clay (sandy)	moderate blocky (1-$1\frac{1}{2}$" units) low waterworn gravels to 3" few soft FeMn segregations
.6	BC	36-45	Yellowish red	(m. 5 YR 4/6)	sandy clay	as above
.7	C	45-54	Yellowish red	(m. 5 YR 4/6)	sandy clay loam grading to clayey sand	massive, low increasing 1-3" waterworn gravels

Location: Southern corner of Brolga and Mango Paddocks

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	6.3	.03	<.01	2.3		1.6	.118	100	.045	16	42	24	19	17	9.6	2.0	.70	.35	4.5	74
.2	6.3	.01	<.01	1.8		.7	.051	52												
.3	6.5	.01	<.01	1.6						18	36	23	23	12	6.4	2.0	.33	.42	2.6	78
.4	6.4	.01	<.01	3.1					.025	21	32	20	28	12	6.4	2.0	.30	.25	3.3	73
.5	6.5	.01	<.01	4.4																
.6	6.6	.01	<.01	2.8					.023											
.7	6.6	.01	<.01	1.8																

Soil Series : Woodstock Loam
Great Soil Group : Yellow Earth/Clay D horizon
Principal Profile Form : Gn2.64

Sample No. & Depth (Ins.)	Horizon	Depth (Ins.)	Morphological Description			
T 34.1 (0-2)	A1	0-2	Dark grey-brown	(m.10 YR 3.5/2)	sandy loam	massive, trace 1/4" gravel, clear change to
.2 (2-7)	A2	2-7	Yellowish brown	(m.10 YR 5/5)	sandy clay loam	massive earthy, trace 1/4" gravel, very vesicular
.3 (7-15)	B1	7-15	Mottled yellowish brown and yellowish red	(m.10 YR 5/5) (m. 5 YR 5/6)	sandy clay loam	as above with low 1/8" FeMn nodules
.4 (15-22)	B2	15-22	As above		light clay	as above, clear change to
.5 (22-30)	D	22-36	Mottled yellowish brown and	(m.10 YR 5/8)	medium clay	moderate blocky (1-2" units) trace 1/8" FeMn nodules
.6 (30-36)			pale brown	(m.10 YR 6/3)		

Location: North west Double Barrel Paddock

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	5.7	.01	<.01	1.1		1.1	.096	5	.016	39	42	7	12	7	1.8	0.7	.18	.18	4.1	41
.2	5.7	<.01	<.01	1.0				4												
.3	5.7	<.01	<.01	1.3																
.4	6.3	<.01	<.01	3.2					.006	18	32	11	41	9	1.4	2.7	.04	.70	4.1	53
.5	6.5	.01	<.01	3.1					.005	21	18	10	51	12	2.6	3.6	.05	1.4	4.0	66
.6	6.6	.01	<.01	2.6																

Soil Series : Calman Clay
Great Soil Group : Black Earth - G.S.H.T. Intergrade
Principal Profile Form : Ug5.4

Morphological Description

Sample No. & Depth (Ins.)	Horizon	Depth (Ins.)				
T 35.1 (0-4)	A1	0-4	Very dark grey	(m.10 YR 3/1)	light - medium clay	strong blocky (½-1" units) low 1/8" CO_3 nodules
.2 (4-12)	B	4-22	Very dark grey	(m.10 YR 3/1)	heavy clay	moderate blocky (1-2" units) grading to coarse lenticular low 1/8" CO_3 nodules
.3 (12-22) .4 (22-28)	B	22-28	Grey-brown	(m.10 YR 5/2)	heavy clay	weak very coarse blocky, moderate-high soft CO_3
.5 (28-37) .6 (37-45)	B	28-45	Light grey with some faint brown mottles	(m.2.5 Y 6/1)	heavy clay grading to medium clay (sandy)	as above
.7 (45-53)		45-53	Mottled light grey and yellowish brown	(m.2.5 Y 6/1) (m.10 YR 5/8)	light clay (sandy)	weak coarse blocky, moderate to high 1" CO_3 - nodules

Location: On stock route 2 chain north of Cemetery reserve

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	6.9	.03	.01	3.6		1.2	.088	7	.010	23	33	14	31	22	14.2	4.6	.27	.90	2.1	90
.2	7.3	.03	<.01	5.3	.2			6		20	31	13	35	23	15.6	5.2	.12	1.0	1.1	95
.3	8.6	.10	.03	4.7					.012											
.4	9.4	.16	.06	4.2																
.5	9.3	.25	.14	3.4	14.4									19	6.2	7.0	.12	5.8	0	100
.6	9.1	.39	.23	4.4																
.7	9.0	.43	.24	4.7																

Soil Series : Wyoming Sandy Loam
Great Soil Group : Red Earth - Red Podzolic
Principal Profile Form : Gn2.14

Sample No.	Horizon	Depth (Ins.)	Morphological Description			
T 36.1	A1	0-2½	Dark brown	(m.7.5 YR 3/2)	sandy loam	massive, clear change to
.2	A2	2½-7	Dark reddish brown	(m. 5 YR 3/4)	sandy loam	massive, earthy, trace 1/8" nodules
.3	B1	7-13	Yellowish red	(m. 5 YR 4/6)	sandy clay loam	as above
.4	B2	13-21	Red	(m.2.5 YR 4/6)	light clay	as above
.5		21-28	Mottled red and grey	(m.2.5 Y 4/6)	light clay	strong blocky (½-3/4" units) low 1/4-2" gravel
.6		28-40	Dark red	(m.10 YR 3/6)	light clay	moderate blocky (1½-2" units) trace ½" gravel
		40-44	Heavy waterworn gravels with reddish brown gritty clay matrix			

Location: 4 chains east of T.26 Woodstock Paddock

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	6.4	.02	<.01	1.3		.060	.9	15	.028	34	43	12	12	8	3.6	0.9	.41	.19	2.4	70
.2	6.3	.01	<.01	1.0				7												
.3	6.1	<.01	<.01	1.1					.012	31	42	11	17	6	2.0	0.7	.23	.15	2.7	55
.4	6.1	.01	<.01	1.5																
.5	6.3	.01	<.01	2.1					.013	18	31	12	40	10	3.8	1.9	.35	.25	3.2	68
.6	6.4	.01	<.01	3.4																

Soil Series : Flagstone Sandy Loam
Great Soil Group : Yellow earth - Yellow Podzolic Intergrade
Principal Profile Form : Dy4.41

Sample No.	Horizon	Depth (Ins.)	Morphological Description			
T 37.1	A1	0-2½	Dark grey-brown	(m.10 YR 4/2)	sandy loam	apedal, very friable and porous
.2	A21	2½-9	Brown	(m.10 YR 4/3)	sandy loam	massive, friable and porous conspicuous bleach
.3	A22	9-20	Yellowish brown	(m.10 YR 5/4)	sandy loam	massive, very porous, few fine FeMn nodules conspicuous bleach
.4	B21	20-26	Yellowish brown	(m.10 YR 5/6)	sandy clay loam	weak blocky (1/4-½" units) light 1/4-½" FeMn nodules
.5	B22	26-36	Mottled yellowish brown and yellowish red	(m.10 YR 5/6) (m. 5 YR 4/5)	sandy clay loam	as above
.6	B3	36-45	Mottled yellowish brown and grey-brown	(m.10 YR 5/6) (m.10 YR 5/2)	sandy clay loam	massive, very porous, low 1/4-½" FeMn nodules
.7	C	45-54	Pale brown	(m.10 YR 6/3)	clayey grit	as above

Location: 5 mile north of Lansdowne Creek, Lansdown Paddock

No.	pH	T.S.S. %	NaCl %	H_2O %	$CaCO_3$ %	Org. C %	N %	P A.ppm.	P Tot. %	Particle Size CS %	FS %	Si %	C %	Exchangeable Cations Total	Ca	Mg	K	Na	H	Sat. %
														m.e./100g						
.1	5.5	.04	<.01	<1.0		.6	.046	4	.005	20	71	2	7	3	1.2	0.3	.20	.15	1.0	66
.2	5.2	.04	<.01	<1.0																
.3	5.1	<.01	<.01	<1.0					.008	46	44	5	6	2	0.2	0.2	.09	.14	1.7	25
.4	5.1	<.01	<.01	<1.0																
.5	4.9	<.01	<.01	3.6						36	27	8	30	5	1.0	0.9	.30	.20	2.5	50
.6	4.8	<.01	<.01	1.0					.008											
.7	4.9	<.01	<.01	1.0																