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# THE NUTRITIVE VALUES OF INDIAN CATTLE FOODS AND THE FEEDING OF ANIMALS

BY

**K. C. SEN, D.Sc.**

*Officer-in-charge, Animal Nutrition Section, Imperial Veterinary Research  
Institute, Izatnagar*



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## Average percentage composition of Indian

Serial No.	Name	Place of origin	Total ash	Ash sol. in HCl.	Organic constituents			
					Crude protein	Carbohydrates		Ether extract
						Fibre	Nitrogen free extract	
<b>GREEN FEEDS</b>								
<i>Bajra (Pennisetum typ-hoideum).</i>								
1	„ just before flowering.	Punjab	14.70	10.90	16.25	28.23	38.79	2.03
2	„ maximum flowering	„	11.30	8.61	12.56	28.45	45.72	1.97
3	„ milk stage	„	9.21	6.28	10.56	27.96	50.15	2.12
4	„ dough stage	„	8.21	5.40	8.81	24.90	56.22	1.86
5	„ ripe stage	„	7.68	5.09	8.88	23.96	57.74	1.74
6	Barley ( <i>Hordeum vulgare</i> ).	„	11.37	9.19	11.47	31.85	43.45	1.86
7	Berseem ( <i>Trifolium alexandrinum</i> ).	Bihar	20.25	12.99	15.45	26.06	35.88	2.36
8	„ maximum	Punjab	18.96	14.43	23.10	30.87	46.94	2.78
9	„ minimum	„	8.49	7.07	13.99	19.47	33.24	1.39
10	„ average	„	14.16	12.00	17.35	25.91	40.69	1.89
11	Cowpea ( <i>Vigna catjang</i> ).	Bihar	10.86	6.80	17.38	33.10	36.16	2.50
<i>Grass—Anjan (Pennisetum cenchroides).</i>								
12	Ditto young	Bangalore	13.82	9.23	12.41	...	...	...
13	Ditto prime	„	11.57	6.61	9.97	...	...	...
14	Ditto ripe	„	10.26	4.93	7.25	...	...	...
15	Ditto young	Bihar	17.05	9.42	7.40	...	...	...
16	Ditto prime	„	13.45	7.06	8.18	...	...	...
17	Ditto ripe	„	13.71	6.00	5.54	...	...	...
18	Ditto maximum	Punjab	20.85	10.96	12.02	43.62	56.84	2.30
19	Ditto minimum	„	9.14	3.63	3.00	25.30	39.00	0.97
20	Ditto average	„	16.08	8.14	8.36	30.54	43.30	1.72
21	Ditto young	„	18.10	9.60	11.42	27.20	41.41	1.87
22	Ditto prime	„	13.31	6.45	6.24	34.43	44.55	1.47
23	Ditto ripe	„	15.85	8.73	9.10	29.16	44.29	1.60
24	Grass—Bur ripe stage	„	12.34	3.90	6.13	30.46	49.23	1.84
<i>(Andropogon laniger)</i>								
25	Grass—Chimbar ( <i>Elyusine flagellifera</i> )	„	12.55	6.87	11.42	33.88	40.57	1.58
26	Grass—Dedi ( <i>Gramineae ischaemum Rugosum</i> , Salisb.)	Bihar (Chalbas forest)	9.00	3.02	4.31	27.30	58.37	1.02
27	Grass—Dhub ( <i>Cynodon Dactylon</i> ).	Bangalore	11.74	6.82	12.72	31.00	42.42	2.12
28	Grass—Dhub young	„	13.54	7.84	14.75	...	...	...
29	Ditto prime	„	11.91	6.08	11.07	...	...	...
30	Ditto ripe	„	9.31	4.85	8.44	...	...	...
31	Ditto young	Bihar	15.07	9.94	7.61	...	...	...
32	Ditto prime	„	13.10	6.71	7.74	...	...	...
33	Ditto ripe	„	10.72	5.26	5.81	...	...	...
34	Ditto maximum	Punjab	13.97	7.38	21.94	39.74	55.40	2.71
35	Ditto minimum	„	7.79	2.27	4.90	18.63	41.97	1.21
36	Ditto average	„	11.75	5.60	10.47	28.17	47.81	1.80
37	Ditto young	„	12.58	6.20	21.94	18.63	44.14	2.71
38	Ditto prime	„	12.65	5.69	10.04	31.89	44.00	1.42
39	Ditto ripe	„	7.79	2.27	4.90	39.74	46.07	1.50
40	Grass—Dila or motha ( <i>Cyperus tria</i> ) ripe stage	„	8.61	3.63	6.04	32.77	51.69	0.89
41	Grass—Elephant ( <i>Pennisetum purpureum</i> ).	„	16.04	10.16	6.16	28.07	47.47	2.26
42	Grass—Forest ( <i>Amphiplohis glabrastaff</i> ).	Bihar (Ranchi)	8.48	2.51	5.66	22.80	60.86	2.20

DIX I

feeding stuffs on dry matter basis

No. of analyses	Mineral constituents						No. of analyses	Serial No.
	Ash sol. in HCL.	CaO	P <sub>2</sub> O <sub>5</sub>	MgO	Na <sub>2</sub> O	K <sub>2</sub> O		
1	10.90	1.06	0.42	0.63	0.46	6.24	1	1
1	8.61	0.84	0.48	0.48	0.06	4.80	1	2
1	6.28	0.73	0.50	0.41	0.19	3.38	1	3
1	5.40	0.60	0.39	0.34	0.24	2.96	1	4
1	5.09	0.55	0.44	0.33	0.13	2.96	1	5
...	9.19	0.72	0.59	0.29	0.94	3.98	...	6
2	12.09	2.33	0.75	0.77	...	4.78	1	7
...	14.43	4.05	0.92	0.72	2.58	5.09	...	8
...	7.07	2.20	0.32	0.38	0.96	1.44	...	9
14	12.00	2.69	0.64	0.61	1.67	3.40	13	10
1	6.80	1.96	0.78	1.44	...	1.85	1	11
2	9.23	0.41	0.65	0.35	1.33	4.14	2	12
2	6.61	0.49	0.47	0.39	1.20	2.49	2	13
2	4.93	0.43	0.39	0.40	0.89	1.67	2	14
4	9.42	0.75	0.64	0.38	1.14	4.32	4	15
4	7.06	0.72	0.50	0.38	0.95	3.13	4	16
3	6.00	0.63	0.69	0.33	1.10	1.68	3	17
...	10.96	1.90	1.05	0.51	1.91	4.53	...	18
...	3.63	0.43	0.41	0.19	0.10	1.26	...	19
22	8.14	0.77	0.72	0.36	1.14	3.33	22	20
4	9.60	0.70	0.85	0.36	1.48	4.11	4	21
7	6.45	0.67	0.61	0.35	0.83	3.04	7	22
5	8.73	0.60	0.65	0.36	1.18	2.73	5	23
1	3.90	1.04	0.34	0.38	0.07	1.65	1	24
6	6.87	0.95	0.59	0.37	0.92	1.40	6	25
1	3.02	0.32	0.32	0.22	...	0.80	1	26
1	...	...	...	...	...	...	...	27
2	7.84	0.81	0.58	0.39	0.47	3.17	2	28
2	6.08	0.70	0.51	0.32	0.43	2.33	2	29
2	4.85	0.41	0.28	0.34	0.83	2.00	2	30
2	9.94	1.07	0.41	0.44	0.52	5.16	2	31
2	6.71	0.90	0.44	0.36	0.79	2.76	2	32
2	5.26	0.72	0.45	0.31	0.86	1.95	2	33
...	7.38	0.98	0.52	0.30	0.57	3.85	...	34
...	2.27	0.50	0.23	0.19	0.06	0.84	...	35
15	5.60	0.77	0.59	0.34	0.23	2.08	15	36
1	8.20	0.81	0.82	0.44	0.15	2.36	1	37
5	5.69	0.81	0.63	0.42	0.28	0.25	5	38
1	2.27	0.50	0.23	0.19	0.13	0.84	1	39
1	3.63	1.15	0.27	0.35	0.41	0.95	1	40
4	10.16	0.70	0.61	0.30	0.68	2.99	4	41
1	2.51	0.31	0.29	0.22	...	0.56	1	42

Serial No.	Name	Place of origin	Total ash	Ash sol. in HCl.	Organic constituents			
					Crude protein	Carbohydrates		Ether extract
						Fibre	Nitrogen free extract	
43	Grass—Forest ( <i>Gramineae Hetropogon contortus</i> Roem.)	Bihar (Prohat Range).	7.98	2.78	3.94	31.30	55.65	1.13
44	Grass—Forest ( <i>Gramineae Imperata arundanacea</i> Cvrill).	"	4.88	3.52	3.56	33.90	50.26	1.40
45	Grass—Ghumur ( <i>Panicum antidotale</i> ) ripe stage.	Punjab	7.97	3.84	7.26	40.47	43.11	1.19
46	Grass—Guinea ( <i>Panicum maximum</i> ) maximum	Bangalore	16.07	10.09	13.96	41.76	49.96	2.66
47	Ditto minimum.	"	11.39	5.89	4.73	31.59	35.57	0.66
48	Ditto average.	"	13.87	7.25	7.69	37.33	39.44	1.67
49	Ditto young.	"	15.54	8.55	7.88	38.38	37.01	1.19
50	Ditto prime.	"	12.32	6.31	4.82	42.14	40.06	0.66
51	Ditto . . . . .	Bengal	13.94	5.88	7.97	32.36	43.99	1.73
52	Ditto . . . . .	Punjab	12.15	...	5.22	36.33	44.70	1.55
53	Ditto . . . . .	Central Provinces	...	...	...	...	...	...
54	Grass ( <i>Iactima Weightii</i> ) early.	Bombay	10.22	4.54	6.02	36.62	45.76	1.38
55	Ditto before flower.	"	10.31	3.61	4.21	38.87	45.59	1.02
56	Ditto in flower.	"	9.41	3.61	4.03	41.09	44.32	1.10
57	Ditto in seed.	"	10.55	2.87	3.21	37.39	47.73	1.12
58	Grass—Lampa ( <i>Aristida depressa</i> ).	Punjab Simla Hills.	4.95	1.45	2.31	42.25	41.99	1.50
59	Grass—Makra or Madhana ( <i>Flusina aegyptiaca</i> ) milk stage.	Punjab	12.46	8.65	7.25	33.74	45.32	1.23
60	Grass—Mixture ( <i>Pennisetum cenchroides</i> and <i>Andropogon contortus</i> ).	"	12.80	4.45	3.06	35.01	48.14	0.99
61	Grass—Mixture ( <i>Pennisetum cenchroides</i> and <i>Andropogon pertusus</i> ) milk stage.	"	9.66	4.31	5.33	34.30	49.08	1.63
62	Grass—Mushyal ( <i>Iscilima laxum</i> ) before flower	Bombay	11.64	4.03	5.06	34.24	47.70	1.36
63	Ditto in flower.	"	9.85	2.97	3.69	38.79	46.68	0.99
64	Ditto in seed.	"	11.80	2.51	2.79	34.52	49.79	1.10
65	Ditto . . . . .	Central Provinces	...	...	...	...	...	...
66	Grass—Napier ( <i>Pennisetum purpureum</i> ).	Bengal	16.70	10.07	5.35	31.90	44.16	1.89
67	Grass—Palwan ( <i>Andropogon pertusus</i> ).	Punjab	10.42	5.87	8.78	33.00	46.13	1.67
68	Ditto flowering stage	"	9.10	2.86	4.74	41.09	43.76	1.31
69	Ditto pre-milk stage	"	10.01	3.31	3.14	35.20	50.54	1.11
70	Ditto milk stage.	"	10.94	4.06	4.72	40.71	42.30	1.33
71	Ditto ripe stage.	"	9.82	3.08	4.81	36.27	48.31	0.79
72	Grass—Panni ripe stage ( <i>Andropogon muricatus</i> )	"	12.60	6.09	4.84	36.60	44.78	1.18
73	Grass—Sudan ( <i>Andropogon Sorghum</i> var. <i>Sudanensis</i> ).	"	14.39	7.49	5.68	27.03	51.01	1.89
	Grass Miscellaneous—Full maturity.	Central Provinces Nagpur Farm.						
74	<i>Andropogon annulatus</i>	Ditto	...	...	...	...	...	...
75	" <i>caricosus</i>	Ditto	...	...	...	...	...	...
76	" <i>contortus</i>	Ditto	...	...	...	...	...	...
77	" <i>monti kola</i>	Ditto	...	...	...	...	...	...
78	" <i>pertusus</i>	Ditto	...	...	...	...	...	...

DIX I—contd.

No. of analyses	Mineral constituents						No. of analyses	Serial No.
	Ash sol. in HCl.	CaO	P <sub>2</sub> O <sub>5</sub>	MgO	Na <sub>2</sub> O	K <sub>2</sub> O		
1	2.78	0.85	0.16	0.26	...	0.93	1	43
1	3.52	1.25	0.16	0.21	...	1.48	1	44
1	3.84	0.54	0.21	0.35	0.34	1.95	1	45
...	8.55	0.85	0.90	0.57	0.74	3.78	...	46
...	6.31	0.54	0.37	0.38	0.23	2.23	...	47
23	7.08	0.71	0.56	0.45	0.41	2.92	13	48
1	8.55	0.71	0.90	0.50	0.64	3.78	1	49
1	6.31	0.54	0.72	0.44	0.45	2.56	1	50
1	5.88	1.23	0.54	0.73	0.57	1.45	1	51
1	...	...	...	...	...	...	...	52
...	...	1.81	0.59	...	...	1.81	1	53
2	4.54	0.39	0.33	0.31	0.31	1.92	2	54
2	3.61	0.37	0.15	0.30	0.31	1.23	2	55
2	3.61	0.38	0.20	0.30	0.21	1.21	3	56
2	2.87	0.46	0.16	0.40	0.23	0.64	3	57
1	1.45	0.49	0.12	0.23	0.17	0.38	1	58
1	8.65	0.91	0.49	0.70	0.74	3.75	1	59
1	4.45	0.70	0.29	0.34	0.15	1.12	1	60
1	4.31	0.53	0.63	0.33	0.37	2.07	1	61
3	4.03	0.49	0.17	0.32	0.36	1.08	3	62
3	2.97	0.50	0.16	0.29	0.22	0.87	3	63
3	2.51	0.59	0.29	0.35	0.25	0.46	3	64
...	...	0.79	0.22	...	...	0.88	1	65
1	10.07	0.46	0.80	0.37	0.30	4.80	1	66
7	5.87	0.78	0.56	0.33	0.12	2.29	7	67
2	2.86	0.47	0.29	0.21	0.14	2.09	2	68
2	3.31	0.61	0.32	0.27	0.13	1.20	2	69
2	4.96	0.69	0.47	0.40	...	2.53	2	70
1	3.06	0.54	0.37	0.23	0.49	1.60	1	71
1	6.09	0.57	0.27	0.29	0.28	1.31	1	72
5	7.49	1.19	1.33	0.50	0.08	1.99	5	73
...	...	0.58	0.24	...	...	1.40	1	74
...	...	1.14	0.14	...	...	2.36	1	75
...	...	0.45	0.33	...	...	0.41	1	76
...	...	0.87	0.43	...	...	0.68	1	77
...	...	0.76	0.32	...	...	0.94	1	78

Serial No.	Name	Place of origin	Total ash	Ash sol. in HCl.	Organic constituents			
					Crude protein	Carbohydrates		Ether extract
						Fibre	Nitrogen free extract	
79	<i>Andropogon pumilus</i>	Central Provinces, Nagpur Farm.	...	...	...	...	...	...
80	" <i>purpureosariculus</i> .	Nagpur	...	...	...	...	...	...
81	<i>Apludavaria</i>	"	...	...	...	...	...	...
82	<i>Ischaemum laxum</i>	"	...	...	...	...	...	...
83	<i>Ischaemum sulcatum</i>	"	...	...	...	...	...	...
84	Grass from Adhartal Farm.	Central Provinces.	...	...	...	...	...	...
85	Do. from Betul Farm	"	...	...	...	...	...	...
86	Do. Bargaon Farm	"	...	...	...	...	...	...
87	Do. Buldana Farm	"	...	...	...	...	...	...
88	Do. Khandwa Farm	"	...	...	...	...	...	...
89	Do. Powar k h e d a Farm.	"	...	...	...	...	...	...
90	Do. Raipur Farm	"	...	...	...	...	...	...
91	Do. Seoni Farm	"	...	...	...	...	...	...
92	Do. Sindewahi Farm	"	...	...	...	...	...	...
93	Do. Tellankheri Farm	"	...	...	...	...	...	...
94	Do. Tharsa Farm	"	...	...	...	...	...	...
95	Do. Degnullah area	Punjab	9.12	4.97	7.21	32.29	50.01	1.37
96	Do. the adjoining Degnullah area.	"	9.76	7.25	3.35	34.83	51.15	0.91
97	Gram-green fodder ( <i>Cicer-arietinum</i> ).	"	9.07	7.48	10.88	33.06	44.91	2.09
98	Ditto whole plant	"	11.38	8.06	11.28	27.16	47.96	2.22
99	Guara ( <i>Cyamopsis Psoraloides</i> ).	"	12.72	10.74	8.56	29.99	47.00	1.73
100	Ditto	Central Provinces, Nagpur.	...	...	...	...	...	...
101	Juar ( <i>Andropogon Sorghum</i> ) young.	Bangalore	9.40	6.48	8.91	35.13	44.42	2.14
102	Ditto prime maximum	"	12.08	6.78	10.05	41.14	53.13	2.38
103	Ditto " minimum	"	5.91	3.53	3.42	27.23	43.10	1.06
104	Ditto " average	"	8.55	4.96	7.75	32.36	49.61	1.73
105	Ditto " ripe	"	8.06	4.85	4.63	38.66	47.49	1.16
106	Ditto age; 9-10½ weeks	Bihar	7.58	4.96	2.85	30.91	57.48	1.18
107	Ditto (18 weeks)	"	5.68	2.41	3.49	30.89	58.49	1.45
108	Ditto young	Punjab	8.08	4.78	5.21	38.87	45.59	1.37
109	Ditto prime	"	6.37	3.40	3.76	35.13	53.34	1.40
110	Ditto ripe	"	7.11	3.50	3.87	33.68	53.78	1.56
111	<i>Lobia (Dolichos lablab)</i>	"	14.80	...	...	28.08	...	3.50
112	Lucerne ( <i>Medicago sativa</i> ) maximum.	Bangalore	11.76	10.95	25.81	35.21	39.94	3.08
113	Ditto minimum	"	9.42	0.03	16.85	26.97	30.24	1.34
114	Ditto average	"	10.69	10.07	20.24	30.13	36.62	2.32
115	Ditto maximum	Punjab	17.66	15.44	26.60	43.66	46.23	2.68
116	Ditto minimum	"	9.27	8.19	13.31	21.02	21.16	1.03
117	Ditto average	"	14.10	11.73	19.90	29.51	34.68	1.81
118	Ditto	Bihar	14.49	12.32	22.71	21.54	38.39	2.87
119	Maize ( <i>Zea Mays</i> )	"	8.15	4.99	6.74	35.95	47.07	2.09
120	Ditto	Lyallpur	8.98	...	7.62	25.78	56.20	1.47
121	<i>Moth (Phaseolus acornifolius)</i> .	Punjab	15.53	12.42	12.12	30.70	39.95	1.70
122	<i>Methi (Trigonella foenum-graecum)</i> .	"	8.80	8.27	15.69	31.05	42.39	2.07
123	Oats ( <i>Avena sativa</i> )	"	13.91	10.81	14.63	32.88	36.44	2.14
124	" French milk stage	"	9.33	6.26	6.44	28.72	53.20	2.31
125	" ripe	"	9.36	7.30	9.24	34.82	44.78	1.80
126	Peas ( <i>Pisum Sativa</i> ) 11½ weeks.	"	3.89	3.05	16.69	22.60	54.42	2.40
127	<i>Senji (Melilotus parviflora)</i> .	"	9.50	6.10	15.46	31.62	41.95	1.47

DIX I—contd.

No. of analyses	Mineral constituents						No. of analyses	Serial No.
	Ash sol. in HCl.	CaO	P <sub>2</sub> O <sub>5</sub>	MgO	Na <sub>2</sub> O	K <sub>2</sub> O		
...	...	0.86	0.37	...	...	1.39	1	79
...	...	0.75	0.32	...	...	2.13	1	80
...	...	0.59	0.55	...	...	1.16	1	81
...	...	0.59	0.22	...	...	0.51	1	82
...	...	0.52	0.33	...	...	0.50	1	83
...	...	0.49	0.12	...	...	0.17	1	84
...	...	0.58	0.23	...	...	0.98	1	85
...	...	0.57	0.06	...	...	0.44	1	86
...	...	0.39	0.05	...	...	0.54	1	87
...	...	0.51	0.04	...	...	0.35	1	88
...	...	0.73	0.18	...	...	0.87	1	89
...	...	0.67	0.21	...	...	0.34	1	90
...	...	0.69	0.24	...	...	0.97	1	91
...	...	0.47	0.07	...	...	0.35	1	92
...	...	0.54	0.36	...	...	2.00	1	93
...	...	0.45	0.13	...	...	0.55	1	94
1	4.97	0.43	0.47	0.61	1.04	1.12	1	95
1	7.25	0.53	0.32	0.62	1.44	1.50	1	96
2	7.48	1.79	0.52	0.44	0.86	2.77	2	97
4	8.06	1.98	0.57	0.47	0.35	2.60	4	98
2	10.74	3.20	0.38	1.05	0.34	2.55	2	99
...	...	5.42	0.42	...	...	3.94	1	100
6	...	0.51	0.57	0.45	0.45	2.68	1	101
...	...	...	...	...	...	...	...	102
...	...	...	...	...	...	...	...	103
28	...	...	...	...	...	...	...	104
6	...	0.35	0.43	0.29	...	1.57	1	105
3	4.96	0.59	0.42	0.76	...	2.04	3	106
2	2.41	0.62	0.33	0.25	...	0.58	2	107
5	4.78	0.69	0.41	0.35	0.27	2.45	5	108
6	3.40	0.59	0.32	0.35	0.17	1.67	6	109
6	3.50	0.63	0.25	0.37	0.11	1.76	6	110
2	...	2.77	0.60	0.97	0.55	3.52	2	111
...	...	...	...	...	...	...	...	112
...	...	...	...	...	...	...	...	113
6	...	1.73	0.79	0.41	0.72	4.38	1	114
...	15.44	3.64	1.12	0.79	0.53	4.98	...	115
...	8.19	1.94	0.35	0.26	0.06	2.21	...	116
14	11.73	2.80	0.74	0.44	0.35	4.11	14	117
1	...	...	...	...	...	...	...	118
3	4.99	0.73	0.63	0.74	...	1.61	3	119
1	...	...	...	...	...	...	...	120
1	12.42	3.60	0.62	0.79	0.07	3.30	1	121
1	8.27	2.06	0.51	3.42	0.30	2.77	1	122
7	10.81	0.67	0.76	0.37	1.09	5.28	7	123
3	6.26	0.66	0.50	0.37	0.70	3.43	3	124
1	7.30	0.49	0.35	0.21	0.87	2.93	1	125
1	3.05	1.63	0.60	0.31	...	0.91	1	126
4	6.10	1.89	0.42	0.44	0.34	2.21	4	127

Serial No.	Name	Place of origin	Total ash	Ash sol. in HCl.	Organic constituents			
					Crude protein	Carbohydrates		Ether extract
						Fibre	Nitrogen free extract	
128	Shaftal ( <i>Trifolium repens</i> ).	Punjab .	17.66	18.95	21.51	16.90	42.02	1.91
129	Shisham leaves ( <i>Dalbergia Sissoo</i> ).	" .	13.48	...	2.71	26.71	54.68	2.42
130	Soya beans ( <i>Glycin hispida</i> ).	Bihar .	9.40	8.73	12.56	23.69	52.13	2.22
131	Sun flower ( <i>Helianthus annuus</i> ).	Punjab .	15.38	...	11.94	23.98	45.26	3.44
132	Teosinte ( <i>Euchlaena mexicana</i> ).	Bihar .	10.80	6.09	4.47	32.20	51.33	1.20
133	Velvet bean ( <i>Stizolobium decringeanum</i> ).	Punjab .	14.93	...	15.14	19.27	48.53	2.13
134	Water Hyacinth ( <i>Eichharnia speciosa</i> ).	Bengal .	16.47	16.06	6.54	24.70	50.59	1.70
135	Wheat ( <i>Triticum vulgare</i> ).	Punjab .	8.65	5.61	7.34	34.73	47.97	1.81
	<i>Silage.</i>							
136	Grass	" .	14.44	4.79	7.77	33.75	42.55	1.49
137	Guinea grass ( <i>Panicum maximum</i> )	Bangalore	9.90	4.69	5.23	38.73	44.61	1.53
	<i>Juar young</i>							
138	( <i>Andropogon Sorghum</i> ).	" .	14.58	8.04	7.17	39.24	37.22	1.79
139	Ditto prime maximum	" .	14.98	7.50	7.12	41.68	50.28	2.61
140	Ditto " minimum	" .	6.80	3.85	4.94	29.36	40.87	1.05
141	Ditto " average	" .	10.63	5.51	5.89	37.33	44.38	1.77
142	Ditto " ripe	" .	6.49	2.80	4.48	41.56	45.91	1.57
143	Malze ( <i>Zea Mays</i> )	Punjab .	11.33	...	7.92	24.57	55.08	1.10
144	Oat ( <i>Avena sativa</i> )	" .	9.54	...	7.73	40.29	40.15	2.29
145	Ragi straw ( <i>Eleusine coracana</i> ).	Bangalore	9.62	6.46	3.64	38.78	46.49	1.47
146	Rice straw ( <i>Oryza sativa</i> )	" .	11.40	6.17	5.92	30.01	47.47	1.66
147	Shisham leaves ( <i>Dalbergia Sissoo</i> )	Punjab .	14.41	...	3.18	27.58	51.60	3.28
148	Spear grass young ( <i>Andropogon contortus</i> ).	Hosur, Madras	12.22	5.30	6.62	36.85	43.05	1.26
149	Ditto prime	" .	15.53	5.39	6.59	32.60	43.63	1.65
150	Wheat straw ( <i>Triticum vulgare</i> ).	Punjab .	14.62	3.76	3.47	39.38	42.06	0.47
	<b>DRIED ROUGHAGES</b>							
	<i>Hays</i>							
151	Ajjampur hay young	Mysore .	12.47	6.36	7.77	36.85	41.90	1.06
152	Ditto prime	" .	11.60	5.63	5.44	39.22	42.80	0.95
153	Ditto ripe	" .	8.48	4.21	3.21	37.18	50.40	0.74
154	Ahmadnagar hay	Ahmadnagar.	16.31	2.30	3.85	36.91	41.95	0.98
155	Ambala hay	Punjab .	10.72	6.26	5.55	35.84	46.47	1.42
156	<i>Andropogon annulatus</i> early.	Bombay	13.58	5.55	9.70	33.03	42.51	1.18
157	Ditto just before flower	" .	10.81	3.40	5.20	38.50	44.47	1.02
158	Ditto in flower	" .	10.64	3.20	4.08	39.89	44.36	1.08
159	Ditto in seed	" .	11.46	2.33	2.68	39.07	45.63	1.16
160	Ditto early	P u s a (Bihar).	...	...	...	...	...	...
161	Ditto in flower	" .	...	...	...	...	...	...
162	Ditto ripe	" .	...	...	...	...	...	...
163	Anjan hay ( <i>Pennisetum cenchroides</i> ) early.	Bihar .	...	...	...	...	...	...
164	Ditto just before flower	" .	...	...	...	...	...	...
165	Ditto in flower	" .	...	...	...	...	...	...
166	Ditto dead ripe	" .	...	...	...	...	...	...
167	Ditto early	Bombay.	...	...	...	...	...	...
168	Ditto in flower	" .	...	...	...	...	...	...
169	Ditto in flower	Bangalore	...	...	...	...	...	...
170	Ditto dead ripe	" .	...	...	...	...	...	...
171	Ditto	Meerut .	10.18	4.60	4.87	32.91	51.21	0.83



DIX I—*contd.*

No. of analyses	Mineral constituents						No. of analyses	Serial No.
	Ash sol. in HCl	CaO	P <sub>2</sub> O <sub>5</sub>	MgO	Na <sub>2</sub> O	K <sub>2</sub> O		
4	13.95	2.79	0.76	0.56	0.67	4.87	4	128
3	...	...	...	...	...	...	...	129
1	8.73	1.87	0.57	1.39	...	2.35	1	130
1	...	...	...	...	...	...	...	131
1	6.09	1.07	0.37	0.49	...	2.24	1	132
1	...	...	...	...	...	...	...	133
1	...	...	...	...	...	...	...	134
2	5.61	0.41	0.36	0.31	0.11	3.29	2	135
2	...	...	...	...	...	...	...	136
2	...	...	...	...	...	...	...	137
3	...	...	...	...	...	...	...	138
...	...	...	...	...	...	...	...	139
...	...	...	...	...	...	...	...	140
21	...	0.64	0.42	0.42	...	2.48	1	141
1	...	...	...	...	...	...	...	142
1	...	...	...	...	...	...	...	143
2	...	...	...	...	...	...	...	144
1	...	...	...	...	...	...	...	145
3	...	...	...	...	...	...	...	146
2	...	...	...	...	...	...	...	147
1	...	...	...	...	...	...	...	148
4	...	...	...	...	...	...	...	149
2	...	...	...	...	...	...	...	150
1	6.36	0.84	0.44	0.41	0.07	2.90	1	151
1	5.63	0.56	0.44	0.39	0.18	2.18	1	152
1	4.21	0.51	0.15	0.49	0.13	0.82	1	153
1	...	...	...	...	...	...	...	154
1	6.26	0.57	0.67	0.24	0.87	2.53	1	155
4	5.55	0.64	0.56	0.35	0.44	2.15	4	156
7	...	0.66	0.33	0.34	0.43	1.26	4	157
8	...	0.58	0.24	0.29	0.27	1.08	4	158
8	...	0.58	0.11	0.30	0.35	0.50	4	159
...	...	1.00	0.52	0.26	0.62	2.50	2	160
...	...	0.63	0.44	0.21	0.15	0.81	1	161
...	...	1.15	0.46	0.21	0.13	0.44	1	162
...	...	0.75	0.64	0.38	1.14	4.07	4	163
...	...	0.70	0.57	0.38	1.27	4.13	3	164
...	...	0.63	0.42	0.38	1.17	3.99	1	165
...	...	0.63	0.69	0.33	1.10	2.02	3	166
...	...	0.50	0.23	0.61	1.13	0.66	1	167
...	...	0.60	0.21	0.72	1.02	0.61	1	168
...	...	0.45	0.56	0.37	1.27	3.30	4	169
...	...	0.42	0.39	0.39	0.89	1.67	2	170
2	4.26	0.36	0.72	0.31	1.36	1.61	1	171

Serial No.	Name	Place of origin	Total ash	Ash sol. in HCl.	Organic constituents			
					Crude protein	Carbohydrates		Ether extract
						Fibre	Nitrogen free extract	
172	Anjan hay ( <i>Pennisetum Cenchroides</i> ).	Punjab	11.91	7.57	5.73	36.69	44.25	1.42
173	Aurangabad hay . . .	Aurangabad.	16.13	2.61	2.45	36.26	43.60	1.56
174	Ditto young . . .	"	14.48	2.23	4.16	40.65	39.56	1.15
175	Ditto prime . . .	"	15.40	2.47	2.53	37.78	42.81	1.43
176	Ditto ripe . . .	"	15.53	1.96	1.66	38.73	42.72	1.31
177	Babbar hay . . .	Murree Hills.	6.40	2.04	2.33	32.10	56.86	2.31
178	Bangalore hay . . .	Military Grass Farm.	10.02	2.45	2.47	35.41	50.84	1.26
179	Belgaum hay . . .	Belgaum	14.77	1.91	2.26	31.25	50.33	1.39
180	Bellary hay . . .	Bellary Madras.	14.04	2.66	2.44	36.90	45.36	1.23
181	Bir hay . . .	Hissar Farm.	11.24	6.47	5.51	29.67	52.56	1.02
182	Boda hay . . .	Cuddapah, Madras.	6.09	2.45	3.74	40.55	47.38	1.34
183	Bolarum hay . . .	Bolarum, Deccan.	13.30	2.96	2.81	37.00	45.45	1.44
184	Ditto young . . .	"	12.98	4.34	5.06	36.04	44.76	1.16
185	Ditto prime . . .	"	12.49	3.49	3.81	36.91	45.64	1.15
186	Ditto ripe . . .	"	9.44	1.75	1.98	33.28	49.44	0.86
187	Dalhousie hay . . .	Dalhousie	9.33	2.51	3.41	33.63	47.75	0.88
188	Dhub hay . . .	Bangalore	14.97	6.04	11.06	25.86	46.19	1.92
189	Ditto . . .	Bareilly	11.08	4.85	9.08	24.40	54.48	0.96
190	Ditto . . .	Fyzabad	12.10	5.98	7.68	23.23	53.66	3.33
191	Ditto . . .	Lucknow	10.07	4.56	7.51	20.77	61.14	0.51
192	Ditto . . .	Karnal	12.48	4.62	6.76	24.15	55.99	0.62
193	Ditto . . .	Lyallpur	12.54	...	11.10	18.38	56.60	1.38
194	Ferozepur hay . . .	Ferozepur	11.56	7.27	8.96	32.93	45.51	1.04
195	Guinea grass hay before flowering.	Bangalore	16.00	9.83	7.56	38.14	37.08	1.22
196	Ditto in flower . . .	"	12.30	6.10	4.76	42.10	39.69	1.15
197	Jarewah hay . . .	Lucknow	11.56	3.65	3.60	35.21	47.57	2.16
198	Jhelum hay . . .	Jhelum	9.63	5.25	5.15	29.93	54.08	1.21
199	Juar hay young ( <i>Andropogon Sorghum</i> ).	Bangalore	9.77	6.68	6.88	40.70	41.30	1.35
200	Ditto prime . . .	"	8.51	4.57	4.30	38.93	47.10	1.16
201	Ditto ripe . . .	"	7.62	4.57	4.41	42.07	44.82	1.08
202	Juar hay . . .	Punjab	10.23	4.75	5.42	37.76	44.06	1.63
203	Jubbulpore hay young . . .	Jubbulpore.	10.77	4.26	4.15	38.72	44.92	1.44
204	Ditto prime . . .	"	8.63	3.07	3.24	39.28	47.73	1.12
205	Ditto ripe . . .	"	11.96	2.45	2.58	39.55	44.88	1.03
206	Jullundur hay . . .	Jullundur	8.15	3.64	3.51	40.11	47.24	0.99
207	Jutogh . . .	Jutogh	7.33	3.11	3.74	39.37	48.16	1.40
208	Kasauli hay . . .	Kasauli	8.76	3.84	4.19	36.90	48.41	1.74
209	Kollukattas grass hay young.	Hosur, Madras.	12.70	8.88	16.89	28.49	40.78	1.14
210	Ditto prime . . .	"	10.90	7.01	10.01	35.33	42.60	1.16
211	Ditto ripe . . .	"	9.93	5.28	6.38	33.30	49.71	0.68
212	Lahore hay . . .	Lahore	9.76	4.61	4.38	33.76	45.70	1.40
213	Lunter hay ( <i>Anthistiria anathera</i> ).	Murree Hills.	7.20	1.76	1.66	39.79	49.64	1.81
214	Meerut Farm hay . . .	Meerut	10.98	2.87	2.92	38.63	46.56	0.91
215	Ditto young . . .	"	14.64	4.09	3.54	32.61	47.60	1.61
216	Ditto prime . . .	"	14.03	3.65	2.92	31.97	49.62	1.56
217	Ditto ripe . . .	"	12.71	3.15	2.87	37.20	46.17	1.05
218	Multan hay (Geneva) . . .	Multan	10.68	4.44	2.98	39.20	45.81	1.23
219	Ditto (Musel) . . .	"	11.22	4.46	3.15	36.37	48.29	0.97
220	Murree hay . . .	Murree	7.35	2.74	3.68	43.89	43.17	1.91
221	Natal grass hay ( <i>Tricholaena rosea</i> ).	Mysore	7.99	4.47	5.61	41.61	43.39	1.40

DIX I—contd.

No. of analyses	Mineral constituents						No. of analyses	Serial No.
	Ash sol. in HCl.	CaO	P <sub>2</sub> O <sub>5</sub>	MgO	Na <sub>2</sub> O	K <sub>2</sub> O		
1	...	0.43	0.42	0.28	0.10	2.09	1	172
3	2.47	0.73	0.11	0.31	0.20	0.69	2	173
1	2.23	0.57	0.19	0.34	0.23	0.67	1	174
1	2.47	0.51	0.13	0.28	0.29	0.59	1	175
1	1.96	0.55	0.05	0.26	0.39	0.23	1	176
1	2.04	0.65	0.05	0.24	0.31	0.26	1	177
8	...	...	...	...	...	...	...	178
2	1.91	0.55	0.05	0.36	0.18	0.30	2	179
5	2.66	0.79	0.07	0.42	0.31	0.57	5	180
2	6.47	0.48	0.42	0.36	0.79	2.50	2	181
1	2.45	0.40	0.14	0.29	0.21	0.82	1	182
19	...	0.72	0.08	0.44	0.28	0.58	12	183
1	4.34	0.73	0.24	0.37	0.44	1.43	1	184
1	3.49	0.75	0.22	0.32	0.35	0.90	1	185
1	1.75	0.50	0.09	0.27	0.34	0.17	1	186
1	2.51	0.76	0.15	0.19	0.15	0.44	1	187
4	...	...	...	...	...	...	...	188
1	4.85	0.70	0.44	0.31	0.40	1.53	1	189
1	5.98	0.72	0.52	0.46	0.28	1.51	1	190
1	4.56	0.55	0.59	0.24	0.44	2.52	1	191
1	4.62	0.49	0.60	0.28	0.99	2.03	1	192
1	...	...	...	...	...	...	...	193
1	7.27	0.71	0.56	0.32	0.82	2.28	1	194
1	...	...	...	...	...	...	...	195
1	...	...	...	...	...	...	...	196
1	3.65	0.41	0.36	0.20	0.28	1.48	1	197
1	5.25	0.67	0.35	0.38	0.46	1.63	1	198
6	...	0.38	0.54	0.45	0.28	8.39	1	199
15	...	0.38	0.33	0.33	0.26	1.67	13	200
6	...	0.32	0.56	0.31	0.32	1.90	2	201
8	4.75	0.68	0.62	0.45	0.17	2.49	8	202
1	4.26	0.68	0.32	0.34	0.23	1.55	1	203
1	3.07	0.48	0.15	0.33	0.36	1.12	1	204
1	2.45	0.50	0.28	0.26	0.08	0.90	1	205
1	3.64	0.57	0.41	0.22	0.30	1.55	1	206
1	3.11	0.80	0.42	0.35	0.22	1.30	1	207
1	3.11	1.01	0.21	0.29	0.26	0.69	1	208
1	3.84	...	...	...	...	...	...	209
1	...	...	...	...	...	...	...	210
1	...	...	...	...	...	...	...	211
1	4.81	0.67	0.35	0.20	0.48	1.81	1	212
1	1.76	0.60	0.03	0.10	0.10	0.37	1	213
4	2.71	0.59	0.33	0.28	0.41	0.82	2	214
2	4.26	0.38	0.53	0.22	0.18	2.00	1	215
2	3.92	0.39	0.42	0.26	0.27	1.74	1	216
3	...	...	...	...	...	...	...	217
1	4.44	0.60	0.20	0.17	0.27	1.07	1	218
1	4.46	0.83	0.22	0.18	0.18	1.09	1	219
1	2.74	0.91	0.11	0.26	0.49	0.81	1	220
1	4.47	0.48	0.25	0.49	0.25	1.96	1	221

Serial No.	Name	Place of origin	Total ash	Ash sol. in HCl.	Organic constituents				
					Crude protein	Carbohydrates		Ether extract	
						Fibre	Nitrogen free extract		
222	Oat hay ( <i>Avena sativa</i> ).	Lahore .	8.40	4.91	5.23	28.90	56.44	1.08	
223	Ditto	Punjab .	8.34	5.10	5.60	35.92	48.45	1.69	
224	Rawalpindi hay .	Rawalpindi.	8.21	2.62	4.08	38.37	47.73	1.61	
225	Rhodes grass hay ( <i>Chloris gayana</i> ).	Bangalore	12.14	7.92	12.33	27.28	45.84	2.41	
226	Ditto young .	H o s u r, Madras.	10.40	4.48	7.51	36.57	44.31	1.21	
227	Ditto prime .	"	11.08	5.43	9.36	36.16	42.14	1.26	
228	Ditto ripe .	"	9.08	3.88	6.36	39.31	44.09	1.16	
229	Roosa hay .	Murree Hills.	8.35	2.44	2.63	33.54	53.18	2.80	
230	Rukh hay .	Bolarum	8.04	2.20	2.34	41.18	47.18	1.26	
231	Ditto ripe .	"	13.10	2.80	2.74	31.40	51.80	0.96	
232	Rukh hay .	Jubbulpore.	9.94	1.78	2.33	28.87	57.95	0.91	
233	Ditto .	Kirkee Poona.	17.17	2.12	2.53	34.12	45.30	0.88	
234	Scented grass hay .	Cuddappah, Madras.	7.21	3.92	6.49	35.77	47.26	3.27	
235	Seguri hay .	Seguri .	9.92	1.90	5.84	38.44	44.80	1.00	
236	Slalkot hay .	Slalkot	10.09	3.57	4.83	38.65	45.46	0.97	
237	Spear grass hay ( <i>Andropogon contortus</i> ) early.	Bangalore	...	...	...	...	...	...	
238	Ditto just before flower .	"	...	...	...	...	...	...	
239	Ditto in flower .	"	8.76	3.46	5.61	38.21	46.00	1.42	
240	Ditto in seed .	"	9.74	2.07	3.18	37.39	48.22	1.47	
241	Ditto young .	H o s u r, Madras.	9.22	4.27	6.97	34.52	47.94	1.35	
242	Ditto prime .	"	9.73	3.50	5.30	36.89	46.89	1.10	
243	Ditto ripe .	"	9.03	3.30	2.97	38.32	48.75	0.96	
244	Ditto early .	Bombay	13.31	3.36	5.88	33.58	46.11	1.12	
245	Ditto before flower .	"	11.06	3.17	4.42	38.64	44.87	1.01	
246	Ditto in flower .	"	8.85	2.78	3.71	40.27	46.23	0.94	
247	Ditto in seed .	"	10.86	2.19	1.72	38.23	48.29	0.90	
248	Ditto early .	Bihar	...	...	...	...	...	...	
249	Ditto in flower .	"	...	...	...	...	...	...	
250	Ditto ripe .	"	...	...	...	...	...	...	
251	Spear grass hay .	United Provinces.	10.11	1.82	2.28	33.74	53.07	0.80	
252	Ditto .	Murree Hills.	6.58	3.38	5.35	36.84	49.63	1.00	
253	Sugar Cane leaves .	Bangalore	6.09	3.18	2.64	37.18	52.73	1.36	
254	Swank hay .	Sargodha	7.97	3.84	7.26	40.47	43.11	1.19	
255	Tatkira hay .	Murree Hills.	6.69	2.35	2.47	31.64	57.19	2.01	
256	Telegaon hay .	Telegaon	15.72	2.34	2.72	37.47	43.12	0.97	
257	Tornagalli hay .	Tornagallu.	11.60	2.47	2.22	37.52	47.45	1.21	
258	Wheat hay .	Punjab .	7.23	3.51	5.06	35.12	51.32	1.27	
	<i>Legume hays</i>								
259	Berseem hay .	Punjab .	12.13	10.89	14.70	30.56	40.09	1.62	
260	Cluster bean hay .	Mysore .	16.51	13.47	25.21	13.82	43.59	0.87	
261	Cowpea hay .	"	13.32	10.19	15.31	34.84	35.44	1.09	
262	Gram hay .	Punjab .	11.17	8.26	12.91	36.33	38.14	1.46	
263	Groundnut hay .	Mysore .	14.81	11.73	21.51	24.54	38.19	0.95	
264	Kalai ( <i>Dolichos biflorus</i> ).	Sabour	13.09	7.99	10.56	16.20	58.34	1.81	
265	Lobia hay ( <i>Dolichos lablab</i> ).	Sargodha	12.51	...	...	36.12	...	2.25	
266	Lucerne hay .	Bangalore	12.74	7.64	21.26	29.41	35.18	1.41	
267	Moth hay ( <i>Phaseolus acutifolius</i> )	Punjab .	13.75	10.07	10.59	26.75	47.06	1.85	
268	Pea hay ( <i>Pisum sativum</i> )	Sargodha	7.66	6.13	10.94	29.17	50.32	1.91	
269	Soya bean hay .	Mysore .	12.04	10.02	14.96	29.13	42.59	1.29	

DIX I—contd.

No. of analyses	Mineral constituents						No. of analyses	Serial No.
	Ash sol. in HCl.	CaO	P <sub>2</sub> O <sub>5</sub>	MgO	Na <sub>2</sub> O	K <sub>2</sub> O		
1	...	...	...	...	...	...	...	222
14	5.19	0.46	0.38	0.22	0.70	2.44	14	223
2	2.63	0.82	0.13	0.19	0.34	0.77	2	224
2	...	...	...	...	...	...	...	225
1	4.48	0.59	0.45	0.31	1.08	3.08	1	226
1	5.43	0.42	0.23	0.17	0.97	1.30	1	227
1	...	...	...	...	...	...	...	228
1	2.44	0.79	0.07	0.28	0.27	0.32	1	229
9	1.98	0.42	0.17	0.31	0.45	0.60	2	230
1	...	...	...	...	...	...	...	231
2	1.78	0.51	0.14	0.27	0.24	0.42	2	232
2	2.12	0.50	0.06	0.31	0.45	0.38	2	233
1	3.92	0.52	0.19	0.35	0.39	1.70	1	234
1	...	...	...	...	...	...	...	235
1	3.57	0.54	0.43	0.19	0.33	1.84	1	236
...	...	0.55	0.42	0.34	0.23	2.33	3	237
...	...	0.56	0.43	0.42	0.27	3.21	1	238
1	...	0.43	0.21	0.26	0.24	1.22	3	239
1	...	0.39	0.18	0.26	0.22	1.04	2	240
1	...	...	...	...	...	...	...	241
5	...	...	...	...	...	...	...	242
6	...	...	...	...	...	...	...	243
4	...	0.47	0.30	0.39	0.25	1.41	5	244
6	...	0.47	0.29	0.30	0.39	1.23	6	245
6	...	0.42	0.23	0.25	0.30	0.96	7	246
6	...	0.48	0.17	0.21	0.33	0.60	8	247
5	...	0.59	0.36	0.27	0.24	1.74	3	248
...	...	0.47	0.25	0.24	0.31	1.21	3	249
...	...	0.84	0.23	0.25	0.38	0.74	1	250
3	1.82	0.41	0.19	0.20	0.41	0.38	3	251
1	3.38	0.63	0.20	0.28	0.15	1.10	1	252
1	3.18	0.55	0.14	0.37	0.46	1.00	1	253
1	3.84	0.34	0.21	0.35	0.34	1.95	1	254
1	2.35	0.89	0.07	0.17	0.11	0.33	1	255
1	...	...	...	...	...	...	...	256
3	2.47	0.63	0.06	0.37	0.45	0.53	3	257
1	3.51	0.30	0.50	0.39	0.05	1.79	1	258
1	10.89	2.07	0.65	0.61	0.58	3.89	1	259
1	13.47	3.39	0.61	1.51	0.20	3.29	1	260
2	10.19	2.27	0.40	0.70	0.25	2.89	2	261
2	8.26	2.14	0.46	0.48	0.33	2.99	2	262
2	...	2.65	0.58	1.25	0.18	3.26	1	263
1	7.99	2.54	0.42	1.00	...	1.20	1	264
1	...	3.78	0.36	1.03	0.75	2.14	1	265
1	...	...	...	...	...	...	...	266
1	10.07	3.27	0.42	0.96	0.88	2.16	1	267
1	6.13	1.58	0.48	0.33	0.19	2.02	1	268
1	10.02	2.86	0.60	1.20	0.30	2.02	1	269

Serial No.	Name	Place of origin	Total ash	Ash sol. in HCl.	Organic constituents			
					Crude protein	Carbohydrates		Ether extract
						Fibre	Nitrogen free extract	
<b>DRIED ROUGHAGES</b>								
<i>Straws</i>								
270	<i>Aphida aristata</i> Linn	Palamau Forest, Bihar.	8.13	6.83	6.90	28.27	...	...
271	Barley stalks	Sargodha, Punjab.	6.08	4.74	2.97	38.59	51.32	1.04
272	Barley straw	M o n a, Punjab.	8.05	5.40	2.21	47.39	41.43	0.92
273	<i>Batasa</i> ?	Golkera Forest, Bihar.	9.19	7.47	6.48	39.86	...	...
274	<i>Chrysopogon nonticola</i> Trin.	Palamau Forest, Bihar.	9.60	...	4.48	26.48	57.58	1.86
275	Gramineae <i>Alpuda varia Amutica</i> , L. Inc. <i>Aaristata</i> Willd.	P r o h a t R a n g e Forest, Bihar	10.23	8.77	5.88	26.42	...	...
276	Gram stalks	Punjab.	6.17	3.96	4.51	53.81	34.84	0.67
277	Gram straw	"	13.31	...	6.01	44.45	35.70	0.53
278	Jankai ( <i>Phragmites karka</i> ).	Golkera Forest, Bihar.	15.81	13.65	3.77	29.79	...	...
279	Juar straw	Bangalore	9.82	5.45	4.91	34.17	49.55	1.44
280	<i>Khorpo bumbee Chrysopogon lancearins</i> .	Golkera Forest, Bihar.	16.31	14.50	4.71	27.64	...	...
281	<i>Lupeed dumbu (Eulalia cumingii)</i> .	"	8.49	7.44	6.90	38.67	...	...
282	Millet straw	Bangalore	17.51	5.95	5.39	32.32	43.51	1.27
283	<i>Oplismenus burmannii</i> Beauv.	Palamau Forest, Bihar.	14.91	13.56	1.31	20.70	...	...
284	Ragi straw ( <i>Eleusine coracana</i> ).	Bangalore	8.10	5.35	3.67	35.93	51.38	0.92
285	Rice straw ( <i>Oryza sativa</i> )	"	17.28	4.41	2.92	33.36	45.58	0.86
286	Ditto (Aman)	Bengal	14.18	3.87	3.25	33.63	47.91	1.03
287	Ditto (Aus)	"	12.84	4.08	5.04	34.92	45.63	1.57
288	Ditto (Boro)	"	21.94	3.81	5.69	29.07	41.71	0.94
289	Ditto	K a n k e F a r m, Bihar.	15.20	2.50	3.75	30.70	49.40	0.95
290	Ditto	P u s a, Bihar.	17.28	4.41	2.92	33.36	45.58	0.86
291	Ditto	Kangrah Punjab.	16.49	7.46	2.40	36.49	43.75	0.87
292	Ditto	K a r n a l, Punjab.	20.39	6.05	3.75	30.61	43.67	1.55
293	<i>Rolega (Schima nervosum)</i> .	Golkera Forest, Bihar.	8.88	7.22	4.46	24.53	...	...
294	<i>Rottboelia exaltata</i>	Palamau Forest, Bihar.	10.80	...	5.25	31.13	52.02	0.80
295	<i>Schizachyrium brevifolium</i> Nees.	"	12.10	10.70	4.66	26.11	...	...
296	Tonto Jono	Golkera Forest, Bihar.	9.21	7.66	5.45	25.04	...	...
297	Wheat <i>bhoosa</i>	K a r n a l, Punjab.	14.07	3.13	2.39	39.55	42.97	1.02
298	Wheat straw	P u s a, Bihar.	11.30	6.39	3.28	42.14	41.66	1.62
299	Ditto	Karnal, Punjab.	11.83	3.91	3.26	38.51	45.24	1.16



Serial No.	Name	Place of origin	Total ash	Ash sol. in HCl.	Organic constituents			
					Crude protein	Carbohydrates		Ether extract
						Fibre	Nitrogen free extract	
<b>CONCENTRATES</b>								
<i>Grains and seeds</i>								
300	<i>Babul pods (Acacia beans).</i>	P u s a , Bihar.	5.47	5.30	15.77	12.44	65.52	0.80
301	Ditto ripe . . . . .	" . . . . .	6.24	6.09	14.91	16.50	59.56	2.79
302	<i>Babul seed (crushed)</i> . . . . .	Karnal . . . . .	7.43	5.73	14.64	14.80	59.87	3.26
303	Barley . . . . .	Bangalore . . . . .	4.53	2.68	9.48	5.23	79.09	1.67
304	Ditto . . . . .	M o n a , Punjab . . . . .	3.21	2.38	11.50	5.39	78.84	1.06
305	Barley heads . . . . .	Punjab . . . . .	4.79	2.56	9.89	20.21	64.00	1.11
306	Cotton seed . . . . .	" . . . . .	4.66	...	18.02	25.74	30.98	20.60
307	Gram . . . . .	Bangalore . . . . .	3.48	3.10	21.63	9.72	62.09	3.08
308	" . . . . .	Pusa . . . . .	3.59	3.43	20.19	9.81	62.19	4.22
309	" (grain) . . . . .	Punjab . . . . .	3.50	3.42	18.06	9.83	63.67	4.94
310	" (grain with pods) . . . . .	" . . . . .	9.08	8.38	16.18	23.79	48.18	2.77
311	Groundnut (kernel) . . . . .	" . . . . .	2.15	2.10	31.28	1.39	13.61	51.57
312	Horse gram . . . . .	" . . . . .	5.10	3.95	24.74	4.82	64.38	0.96
313	Matze . . . . .	" . . . . .	1.94	...	11.11	1.90	80.66	4.39
314	Oats . . . . .	" . . . . .	4.79	1.83	10.07	12.71	65.83	6.55
315	Rice . . . . .	Bangalore . . . . .	1.28	0.96	8.33	0.38	89.13	0.88
316	<i>Sengi pods</i> . . . . .	Punjab . . . . .	8.54	8.09	25.30	14.85	49.37	1.94
317	Wheat . . . . .	Karnal . . . . .	1.97	1.89	9.65	2.41	84.70	1.27
<i>Oil cakes and meals</i>								
318	Cocoonut cakes (country mill pressed).	Cochin . . . . .	8.37	6.14	23.44	12.91	42.28	13.00
319	Ditto (expeller) . . . . .	" . . . . .	8.34	6.48	25.34	13.20	44.92	8.20
320	Cotton seed cake . . . . .	Punjab . . . . .	6.50	...	22.84	24.11	37.40	9.15
321	Cotton seed meal . . . . .	Bangalore . . . . .	7.96	6.94	37.22	7.63	34.31	12.88
322	Groundnut cake . . . . .	" . . . . .	5.70	4.76	51.75	7.39	26.94	8.22
323	Linseed cake . . . . .	Bengal . . . . .	10.20	6.96	30.51	9.48	43.24	6.57
324	Linseed meal . . . . .	Karnal . . . . .	6.78	5.57	29.90	9.77	49.43	4.12
325	<i>Mohua cake</i> . . . . .	" . . . . .	9.03	5.11	17.90	5.62	50.22	17.23
326	Rape cake . . . . .	Pusa . . . . .	9.33	7.43	36.37	7.70	33.19	13.41
327	Safflower cake . . . . .	Bombay . . . . .	6.80	5.19	42.80	15.25	26.62	8.53
328	<i>Sarson cake</i> . . . . .	Punjab . . . . .	9.99	...	36.09	10.05	32.76	11.11
329	<i>Til cake</i> . . . . .	Bangalore . . . . .	11.02	6.85	46.30	4.92	27.85	9.91
330	<i>Toria cake</i> . . . . .	Lyallpur . . . . .	7.54	...	33.79	11.20	34.08	12.49
<i>By-products</i>								
331	<i>Arhar husk</i> . . . . .	Pusa . . . . .	5.67	4.76	7.04	44.10	42.79	0.40
332	Brewery grain . . . . .	Bangalore . . . . .	4.15	2.19	19.18	13.53	59.32	3.32
333	Gram dust . . . . .	Pusa . . . . .	5.55	4.61	17.48	27.01	47.45	2.51
334	Gram husk . . . . .	Bangalore . . . . .	5.99	4.05	5.75	48.40	38.95	0.91
335	Groundnut shell . . . . .	" . . . . .	14.25	10.20	8.16	59.74	14.83	3.02
336	Molasses (khandsari) . . . . .	" . . . . .	6.08	...	0.92	...	93.08	...
337	Rice bran . . . . .	H o s u r , Madras . . . . .	22.08	6.92	10.40	14.69	39.85	12.98
338	Ditto . . . . .	Bengal . . . . .	15.85	11.29	13.99	14.13	35.65	20.39
339	Wheat bran . . . . .	Bangalore . . . . .	5.59	4.64	15.41	10.76	64.70	3.45
340	Ditto . . . . .	Pusa . . . . .	9.90	7.32	11.30	16.62	60.36	1.73



DIX I—concl.

No. of analyses	Mineral constituents						No. of analyses	Serial No.
	Ash sol. in HCl.	CaO	P <sub>2</sub> O <sub>5</sub>	MgO	Na <sub>2</sub> O	K <sub>2</sub> O		
2	...	...	...	...	...	...	...	300
1	...	...	...	...	...	...	...	301
1	...	...	...	...	...	...	...	302
1	...	...	...	...	...	...	...	303
1	2.38	0.25	0.85	0.21	0.05	0.56	1	304
3	2.56	0.40	0.42	0.26	0.14	1.07	3	305
6	...	...	...	...	...	...	...	306
2	...	...	...	...	...	...	...	307
1	...	...	...	...	...	...	...	308
1	3.42	0.33	0.93	0.27	0.22	0.72	1	309
5	8.38	1.94	0.56	0.50	0.16	2.15	5	310
4	...	...	...	...	...	...	...	311
4	...	...	...	...	...	...	...	312
1	...	(0.02)*	(0.94)*	...	...	...	...	313
5	...	(0.16)*	(0.93)*	...	...	...	...	314
4	...	0.22	0.48	0.18	...	0.32	1	315
1	3.09	1.87	0.80	0.41	...	2.78	1	316
1	1.89	0.32	0.94	0.17	0.68	0.47	1	317
1	...	...	...	...	...	...	...	318
1	...	(0.56)*	(1.69)*	...	...	...	...	319
1	...	...	...	...	...	...	...	320
8	...	(0.39)*	(2.96)*	...	...	...	...	321
81	...	0.28	1.28	0.54	0.32	1.43	46	322
2	6.96	0.52	2.20	0.98	0.47	0.92	2	323
4	...	...	...	...	...	...	...	324
2	...	...	...	...	...	...	...	325
16	...	...	...	...	...	...	...	326
11	...	...	...	...	...	...	...	327
1	...	...	...	...	...	...	...	328
3	...	...	...	...	...	...	...	329
1	...	...	...	...	...	...	...	330
1	...	...	...	...	...	...	...	331
11	...	...	...	...	...	...	...	332
1	...	...	...	...	...	...	...	333
8	...	...	...	...	...	...	...	334
...	...	...	...	...	...	...	...	335
...	...	...	...	...	...	...	...	336
6	...	...	...	...	...	...	...	337
2	11.29	0.22	6.23	0.26	0.38	0.19	2	338
26	...	0.25	1.98	0.75	0.35	1.46	6	339
1	...	...	...	...	...	...	...	340

\* (Foreign data)

## APPENDIX II

## Average digestibility co-efficients of Indian feeding stuffs

Serial No.	Name of feed	Place of origin	Organic matter	Crude protein	Ether extract	Fibre	Nitrogen free extract	Total carbo-hydrates	Number of tests
<i>Green feeds</i>									
1	Bajra . . . . .	Lyallpur . . . . .	..	62	67	60	69	..	3
2	Berseem . . . . .	" . . . . .	..	81	50	60	80	..	3
3	Elephant grass . . . . .	" . . . . .	..	62	59	63	65	..	3
4	Guara . . . . .	" . . . . .	..	77	39	26	70	..	3
5	Guinea grass (young) . . . . .	Bangalore . . . . .	77	74	47	78	75	77	3
6	Guinea grass . . . . .	" . . . . .	59	58	43	61	52	59	3
7	Ditto . . . . .	Lyallpur . . . . .	..	59	42	58	60	..	3
8	Juar (young) . . . . .	Bangalore . . . . .	62	47	42	66	60	63	3
9	Do. (prime) . . . . .	" . . . . .	58	44	44	59	60	60	9
10	Do. (ripe) . . . . .	" . . . . .	58	25	38	62	58	59	6
11	Do. . . . .	Punjab . . . . .	..	34	37	58	62	..	11
12	Lucerne . . . . .	Bangalore . . . . .	67	80	46	50	72	62	3
13	Maize . . . . .	Lyallpur . . . . .	..	61	65	70	76	..	4
14	Oats . . . . .	" . . . . .	..	72	50	76	79	..	4
15	Serji . . . . .	" . . . . .	..	82	43	58	76	..	3
16	Sudan grass . . . . .	" . . . . .	..	28	32	58	51	..	3
17	Sunflower . . . . .	" . . . . .	..	72	44	20	79	..	2
18	Velvet beans . . . . .	" . . . . .	..	70	64	59	79	..	4
<i>Silage</i>									
19	Juar . . . . .	Bangalore . . . . .	56	40	47	63	53	57	4
20	Maize . . . . .	Lyallpur . . . . .	..	43	53	69	72	..	4
21	Oats . . . . .	" . . . . .	..	52	48	77	61	..	8
22	Ragi straw . . . . .	Bangalore . . . . .	57	8	44	69	52	60	2
23	Spear grass . . . . .	Hosur, Madras . . . . .	59	26	40	69	..	62	12
24	Wheat straw . . . . .	Bangalore . . . . .	57	25	24	65	52	58	2
<i>Hays</i>									
25	Ahmadnagar hay . . . . .	Ahmadnagar . . . . .	51	31	46	..	..	51	2
26	Ajjampur hay (young) . . . . .	Mysore . . . . .	67	49	29	79	61	70	2

27	Ditto (prime)	"	64	36	45	75	58	66	2
28	Ditto (ripe)	"	64	4	40	72	61	66	2
29	Ambala hay	Ambala	..	44	38	57	50	..	2
30	Anjan hay	Meerut	57	35	30	..	..	59	2
31	Aurangabad hay	Aurangabad	52	13	45	57	50	53	6
32	Ditto (young)	"	51	34	45	60	45	52	2
33	Ditto (prime)	"	50	12	42	57	46	51	2
34	Ditto (ripe)	"	47	..	57	53	43	48	2
35	Bangalore hay	Military Grass Farm, Bangalore	54	2	39	63	50	55	9
36	Bellary hay	Bellary	54	11	43	60	52	56	6
37	Boda hay	Cuddapah	44	14	34	51	41	45	2
38	Bolarum hay	Bolarum	52	..	47	59	48	53	34
39	Ditto (young)	"	59	45	28	..	..	61	3
40	Ditto (prime)	"	59	32	38	..	..	61	3
41	Ditto (ripe)	"	52	..	33	..	..	54	3
42	Dalhousie hay	Dalhousie	..	11	30	64	49	..	3
43	Dhub hay	Bangalore	63	73	51	63	54	61	3
44	Ditto	Lyallpur	..	54	27	54	46	..	3
45	Ferozepur hay	Ferozepur	..	58	37	58	50	..	3
46	Guinea grass hay (before flower)	Bangalore	56	54	33	64	49	56	3
47	Ditto (in flower)	"	53	44	28	60	47	54	3
48	Jhelum hay	Jhelum	..	34	35	64	61	..	3
49	Juar hay (young)	Bangalore	57	41	31	67	50	58	6
50	Ditto (prime)	"	56	41	28	60	44	57	12
51	Ditto (ripe)	"	56	14	40	58	57	58	14
52	Jubbulpore hay (young)	Jubbulpore	58	23	29	64	57	60	3
53	Ditto (prime)	"	57	12	39	63	56	59	3
54	Ditto (ripe)	"	52	..	31	59	51	54	3
55	Jullundur hay	Jullundur	..	25	34	65	44	..	2
56	Jutogh hay	Jutogh	..	17	27	58	49	..	4
57	Kasauli hay	Kasauli	..	19	40	60	46	..	3
58	Kollukattai grass hay (young)	Hosur, Madras	68	66	28	..	..	69	3
59	Ditto (prime)	"	63	55	41	..	..	64	3
60	Ditto (ripe)	"	59	47	23	..	..	60	3
61	Lahore hay	Lahore	..	36	26	64	52	..	2
62	Meerut Farm hay	Meerut	48	8	34	..	..	49	18
63	Ditto (young)	"	55	28	25	54	57	56	3
64	Ditto (prime)	"	52	14	31	54	55	54	3
65	Ditto (ripe)	"	51	10	30	51	54	52	3
66	Multan hay (Geneva)	Multan	..	..	21	60	48	..	3

APPENDIX II—contd.

Serial No.	Name of feed	Place of origin	Organic matter	Crude protein	Ether extract	Fibre	Nitrogen free extract	Total carbohydrates	Number of tests
<i>Hays—contd.</i>									
67	Multan hay (Musel)	Multan	..	12	17	62	50	..	3
68	Murree hay	Murree	..	16	37	61	45	..	2
69	Natal grass hay	Mysore	57	43	29	63	54	59	2
70	Oat hay	Lahore	69	46	72	..	..	70	2
71	Ditto	Lyallpur	..	47	74	65	64	..	10
72	Rawalpindi hay	Rawalpindi	..	21	48	65	40	..	2
73	Rhodes grass hay	Bangalore	63	60	33	69	54	63	3
74	Do. (young)	Hosur, Madras.	64	50	33	..	..	68	2
75	Do. (prime)	"	65	55	39	..	..	67	2
76	Do. (ripe)	"	59	49	38	..	..	59	2
77	Rukh hay (ripe)	Bolarum	53	14	48	..	..	55	4
78	Scented grass hay	Cuddappah	56	47	33	64	53	58	3
79	Seguri hay	Seguri	48	52	49	..	..	48	3
80	Sialkot hay	Sialkot	..	40	29	55	50	..	2
81	Spear grass hay (young)	Hosur, Madras	58	42	42	63	50	59	18
82	Do. (prime)	"	50	16	43	57	47	51	18
83	Do. (ripe)	"	55	..	36	..	..	57	18
84	Sugarcane leaves	Bangalore	49	..	26	56	47	51	3
85	Telegaon hay	Telegaon	39	2	40	..	..	40	4
86	Tornagallu hay	Tornagallu	52	2	43	57	50	53	6
<i>Legume hays</i>									
87	Berseem hay	Lyallpur	..	70	29	49	77	..	4
88	Cowpea hay	Mysore	62	68	..	51	62	57	4
89	Groundnut hay	"	61	69	..	39	64	54	5
90	Lucerne hay	Bangalore	63	77	30	51	68	60	6
<i>Straws</i>									
91	Gram bhoosa or straw	Lyallpur	..	40	..	40	47	..	3
92	Ragi straw	Bangalore	60	6	41	69	58	62	40
93	Rice straw	"	60	..	35	72	53	62	24

94	Rice straw (Bengal)	Dacca	51	9	43	62	46	..	(graphic method)
95	Do.	Kangra, Punjab.	49	..	47	61	42	51	3
96	Do.	Pusa	58	..	56	72	43	61	18
97	Wheat straw	Lyallpur	..	..	36	61	53	..	3
	<i>Concentrates : Grain and seed</i>								
98	Cotton seed	"	..	69	90	63	59	..	18
	<i>Concentrates : Cakes and meals</i>								
99	Cotton seed cake	"	..	85	98	74	59	..	..
100	Groundnut cake	Bangalore	75	90	97	10	51	..	24
101	Linseed cake	Bengal	72	85	96	27	67	..	18
102	Sarson cake	Lyallpur	..	85	93	44	74	..	..
103	Toria cake	"	..	84	91	38	61	..	..
	<i>By-products</i>								
104	Gram husk	Bangalore	..	..	85	66	71	70	7
105	Wheat bran	"	76	77	66	20	84	77	10

APPENDIX III

Nutritive value of Indian feeding stuffs

Serial No.	Name	Place of origin	Digestible nutrients per 100 lbs. dry material					Digestible nutrients per 100 lbs. raw material †		
			Crude protein	Carbohydrates	Ether extract	Total	Nutritive ratio	Starch equivalent	Digestible crude protein	Starch equivalent
			Lbs.	Lbs.	Lbs.	Lbs.		Lbs.	Lbs.	
	<i>Green feeds</i>									
1	Bajra	Lyallpur	4.31	52.63	1.02	59.24	12.9	47.6	1.08	11.9
2	Berseem	Bihar	12.56	44.47	1.18	59.68	3.8	43.4	2.51	8.7
3	"	Punjab	14.10	48.23	0.94	64.46	3.6	48.3	2.82	9.7
4	Elephant grass	"	3.85	48.54	1.33	55.39	13.4	38.4	0.96	9.6
5	Guara	"	6.63	40.73	0.67	48.88	6.4	30.9	1.33	6.2
6	Guinea grass (young)	Bangalore	5.83	58.00	0.56	65.09	10.2	42.3	1.46	10.6
7	Ditto	"	4.44	45.23	0.72	51.28	10.6	29.1	1.11	7.3
8	Ditto	Bengal	4.60	44.93	0.74	51.20	10.1	31.9	1.15	8.0
9	Ditto	Lyallpur	3.10	47.72	0.65	52.28	15.9	30.8	0.78	7.7
10	Juar (young)	Bangalore	4.20	50.07	0.91	56.27	12.4	35.8	0.84	7.2
11	" prime	"	3.44	48.86	0.77	54.03	14.7	35.2	1.03	10.6
12	" ripe	"	1.16	51.24	0.45	53.40	45.0	30.8	0.46	12.3
13	" (9 to 10½ weeks)	Bihar	1.26	52.68	0.52	55.12	42.6	36.9	0.25	7.4
14	" (18 weeks)	"	0.88	53.16	0.56	55.29	62.1	37.1	0.26	11.1
15	" (young)	Punjab	2.46	53.16	0.58	56.93	22.2	34.0	0.49	6.8
16	" prime	"	1.67	52.73	0.62	55.80	32.5	35.1	0.50	10.5
17	" ripe	"	0.97	52.02	0.60	54.34	54.9	34.6	0.39	13.8
18	Lucerne	Bangalore	16.19	41.59	1.06	60.17	2.7	41.4	3.24	8.3
19	"	Bihar	18.17	37.34	1.31	58.47	2.2	44.4	3.63	8.9
20	"	Punjab	15.92	40.00	0.83	57.79	2.6	39.7	3.18	7.9
21	Maize	Lyallpur	4.68	60.94	0.96	67.77	13.5	52.3	1.17	13.1
22	"	Bihar	4.14	61.08	1.36	68.28	15.5	46.7	1.04	11.7
23	Oats	Punjab	10.50	53.79	1.07	66.70	5.4	46.6	2.63	11.7
24	Senji	"	12.61	50.01	0.63	64.04	4.1	44.7	2.52	8.9
25	Sudan grass	"	1.57	41.47	0.61	44.41	27.2	28.4	0.39	7.1

26	Sunflower	"	8.55	40.56	1.51	52.50	5.1	37.6	2.14	9.4
27	Velvet beans	"	10.66	49.64	1.37	63.38	4.9	51.1	2.13	10.2
<i>ilage</i>										
28	Juar	Bangalore	2.35	46.93	0.82	51.13	20.8	29.1	0.71	8.7
29	Maize	Punjab	3.41	56.70	0.59	61.48	17.0	46.8	1.02	14.0
30	Oats	"	4.06	55.67	1.09	62.18	14.3	38.2	1.22	11.5
31	Ragi straw	Bangalore	0.30	51.04	0.64	52.78	175.0	30.1	0.09	9.0
32	Speargrass	Hosur, Madras	1.74	47.00	0.66	50.22	27.8	31.0	0.52	9.3
33	Wheat straw	Bangalore	0.86	47.37	0.11	48.48	55.5	25.6	0.26	7.7
<i>Hay.</i>										
34	Ahmadnagar hay	Ahmadnagar	1.20	39.83	0.45	42.05	34.1	20.4	1.08	18.4
35	Ajjampur hay young	Mysore	3.85	54.88	0.30	59.41	14.5	37.7	3.47	38.9
36	Do. prime	"	1.96	54.11	0.43	57.03	28.0	34.0	1.76	30.6
37	Do. ripe	"	0.13	57.72	0.29	58.51	466.3	36.8	0.12	33.1
38	Ambala hay	Ambala	2.45	43.55	0.54	47.22	18.3	26.1	2.21	28.5
39	Anjan hay	Meerut	1.71	49.41	0.25	51.68	29.3	32.4	1.54	29.2
40	Do.	Punjab	2.01	47.54	0.43	50.51	24.2	29.0	1.81	26.1
41	Aurangabad hay	Aurangabad	0.31	42.57	0.70	44.45	144.0	23.2	0.28	20.9
42	Do. young	"	1.43	41.80	0.52	44.40	30.0	23.2	1.29	20.9
43	Do. prime	"	0.30	42.22	0.61	43.89	146.5	21.8	0.27	19.6
44	Do. ripe	"	0.00	39.02	0.75	40.70	..	18.0	0.00	16.2
45	Bangalore hay	Military Grass Farm, Bangalore.	0.05	47.55	0.49	48.71	1048.0	28.0	0.05	25.2
46	Bellary hay	Bellary, Madras	0.27	43.49	0.56	45.01	162.8	23.4	0.24	21.1
47	Boda hay	Cuddappah	0.52	39.89	0.46	41.44	79.1	17.7	0.47	15.9
48	Bolarum hay	Bolarum	0.00	43.72	0.68	45.25	..	23.6	0.00	21.2
49	Do. young	"	2.27	49.05	0.32	52.04	22.0	30.9	2.04	27.8
50	Do. prime	"	1.21	50.03	0.43	52.21	42.2	30.6	1.09	27.5
51	Do. ripe	"	0.00	46.96	0.28	47.59	..	25.3	0.00	22.8
52	Dalhousie hay	Dalhousie	0.38	47.90	0.27	48.88	126.8	26.4	0.34	23.8
53	Dhub hay	Bangalore	8.09	44.21	0.98	54.52	5.7	38.7	7.28	34.8
54	Do.	Bareilly	4.94	38.41	0.26	43.94	7.9	29.4	4.45	26.5
55	Do.	Fyzabad	4.18	37.40	0.91	43.62	9.4	29.6	3.76	26.6
56	Do.	Lucknow	4.09	39.56	1.39	46.78	10.5	34.0	3.68	30.6
57	Do.	Karnal	3.68	38.98	0.17	43.04	10.7	28.8	3.31	25.9
58	Do.	Lyallpur	6.04	36.16	0.38	43.05	6.1	31.9	5.44	28.7
59	Ferozepur hay	Ferozepur	5.23	41.95	0.38	48.04	8.2	28.5	4.71	25.7
60	Guinea grass hay (before flower).	Bangalore	4.09	42.33	0.40	47.33	10.6	24.8	3.68	22.3

APPENDIX III—contd.

Serial No.	Name	Place of origin	Digestible nutrients per 100 lbs. dry material					Digestible nutrients per 100 lbs. raw material †		
			Crude protein	Carbohydrates	Ether extract	Total	Nutritive ratio	Starch equivalent	Digestible crude protein	Starch equivalent
	<i>Hays—contd.</i>		Lbs.	Lbs.	Lbs.	Lbs.		Lbs.	Lbs.	
61	Guinea grass hay (in flower).	Bangalore	2.09	43.89	0.32	46.69	21.3	22.1	1.88	19.9
62	Jhelum hay	Jhelum	1.76	52.14	0.42	54.85	30.1	37.2	1.58	33.5
63	Juar hay young	Bangalore	2.81	47.65	0.42	51.39	17.3	27.5	2.53	24.8
64	Do. prime	"	1.78	48.66	0.32	51.17	27.7	28.4	1.60	25.6
65	Do. ripe	"	0.64	49.99	0.43	51.59	79.8	27.0	0.58	24.3
66	Do.	Punjab	2.25	46.79	0.46	50.07	21.3	27.9	2.03	25.1
67	Jubbulpore hay (young)	Jubbulpore	0.94	50.26	0.42	52.13	54.2	29.5	0.85	26.6
68	Do. prime	"	0.40	51.41	0.44	52.79	130.6	29.8	0.36	26.8
69	Do. ripe	"	0.00	45.94	0.31	46.65	..	23.6	0.00	21.2
70	Jullundur hay	Jullundur	0.88	46.54	0.33	48.17	53.9	24.7	0.79	22.2
71	Jutogh hay	Jutogh	0.64	46.31	0.38	47.81	71.5	24.8	0.58	22.3
72	Kasauli hay	Kasauli	0.81	44.06	0.70	46.44	56.5	24.8	0.73	22.3
73	Kollukkattai grass hay young.	Hosur, Madras	11.17	47.56	0.32	59.44	4.3	42.1	10.05	37.9
74	Do. prime	"	5.49	49.56	0.48	56.13	9.2	35.2	4.94	31.7
75	Do. ripe	"	2.97	49.46	0.16	52.78	16.8	33.2	2.67	29.9
76	Lahore hay	Lahore	1.60	48.36	0.37	50.78	30.8	28.1	1.44	25.3
77	Meerut Farm hay	Meerut	0.25	41.94	0.31	42.89	172.4	20.4	0.23	18.4
78	Do. young.	"	0.99	44.99	0.40	46.88	46.3	27.8	0.89	25.0
79	Do. prime.	"	0.39	44.12	0.48	45.59	114.7	26.9	0.35	24.2
80	Do. ripe	"	0.27	43.76	0.31	44.73	163.1	23.0	0.24	20.7
81	Multan hay (Geneva)	Multan	0.00	45.28	0.26	45.87	..	23.0	0.00	20.7
82	Do. (Musel)	"	0.38	46.53	0.16	47.27	123.9	26.1	0.34	23.5
83	Murree hay	Murree	0.57	46.13	0.70	48.28	81.9	22.6	0.51	20.3
84	Natal grass hay	Mysore	2.42	49.79	0.41	53.12	21.0	28.7	2.18	25.8
85	Oat hay	Lahore	2.40	60.02	0.74	64.09	25.7	46.9	2.16	42.2
86	Do.	Lyallpur	2.62	54.61	1.26	60.06	22.0	38.6	2.36	34.7



87	Rawalpindi hay	Rawalpindi	0.86	44.07	0.77	46.66	53.4	24.1	0.77	21.7
88	Rhodes grass hay	Bangalore	7.38	45.95	0.80	55.13	6.5	38.6	6.64	34.7
89	Do. young.	Hosur, Madras	3.72	53.17	0.39	57.78	14.5	36.2	3.35	32.6
90	Do. prime.	"	5.13	52.20	0.49	58.43	10.4	37.0	4.62	33.3
91	Do. ripe	"	3.11	49.91	0.45	53.02	16.1	29.9	2.80	26.9
92	Rukh hay	Bolarum	0.34	48.23	0.60	49.92	147.9	25.8	0.31	23.2
93	Do. ripe	"	0.39	45.41	0.46	46.83	118.3	28.5	0.35	25.7
94	Do.	Jubbulpore	0.33	47.39	0.43	48.70	144.9	31.8	0.30	28.6
95	Do.	Kirkee, Poona	0.36	43.35	0.42	44.65	122.2	24.7	0.32	22.2
96	Scented grass hay	Cuddappah	3.03	47.99	1.07	53.43	16.6	32.1	2.73	28.9
97	Seguri hay	Seguri	3.02	39.62	0.49	43.74	13.5	21.1	2.72	19.0
98	Sialkot hay	Sialkot	1.94	43.94	0.28	46.52	23.0	23.9	1.75	21.5
99	Spear grass hay (in flower).	Bangalor	0.89	43.00	0.61	45.27	50.0	22.8	0.80	20.5
100	Do. (in seed)	"	0.00	49.09	0.53	50.29	..	28.4	0.00	25.6
101	Do. (young)	Hosur, Madras	2.93	48.76	0.57	52.97	17.1	32.6	2.64	29.3
102	Do. prime	"	0.84	42.78	0.51	44.77	52.4	23.2	0.76	20.9
103	Do. ripe	"	0.00	49.93	0.35	50.71	..	28.4	0.00	25.6
104	Do. early	Bombay	2.47	47.12	0.47	50.65	19.5	30.9	2.22	27.8
105	Do. before flower	"	1.86	49.38	0.42	52.19	27.1	29.5	1.67	26.6
106	Do. in flower	"	0.59	44.17	0.41	45.67	76.9	22.2	0.53	20.0
107	Do. in seed	"	0.00	49.61	0.33	50.34	..	28.1	0.00	25.3
108	Do.	United Provinces.	0.00	49.78	0.29	50.43	..	30.8	0.00	27.7
109	Do.	Murree Hills	2.25	51.13	0.67	54.89	23.4	33.2	2.03	29.9
110	Sugarcane leaves	Bangalore	0.00	45.50	0.36	46.30	..	24.6	0.00	22.1
111	Telegaon hay	Telegaon	0.05	32.60	0.39	33.53	647.8	11.7	0.05	10.5
112	Tornagallu hay	Tornagallu	0.05	45.38	0.52	46.60	1028.0	24.7	0.05	22.2
<i>Legume hays</i>										
113	Berseem hay	Lyalpur	10.29	54.44	0.47	65.79	5.4	47.3	9.26	42.6
114	Cowpea hay	Mysore	10.33	40.13	0.00	50.46	3.9	29.6	9.30	26.6
115	Groundnut hay	"	14.93	34.00	0.00	48.93	2.3	33.8	13.44	30.4
116	Lucerne hay	Bangalore	16.37	38.59	0.42	55.90	2.4	37.7	14.73	33.9
<i>Straws</i>										
117	Gram bhoosa or straw.	Lyalpur	2.41	34.67	0.00	37.08	14.4	11.2	2.17	10.1
118	Ragi straw	Bangalore	0.23	54.55	0.38	55.63	243.5	34.7	0.21	31.2
119	Rice straw	"	0.00	48.86	0.30	49.54	..	30.1	0.00	27.1
120	Do. (Aman)	Bengal	0.28	42.85	0.44	44.13	154.4	24.5	0.25	22.1
121	Do. (Aus)	"	0.44	42.60	0.68	44.57	100.2	24.1	0.40	21.7
122	Do. (Boro)	"	0.50	37.18	0.41	38.59	76.6	21.6	0.45	19.4

APPENDIX III—concl'd.

Serial No.	Name	Place of origin	Digestible nutrients per 100 lbs. dry material						Digestible nutrients per 100 lbs. raw material †	
			Crude protein	Carbohydrates	Ether extract	Total	Nutritive ratio	Starch equivalent	Digestible crude protein	Starch equivalent
	<i>Straws—contd.</i>		Lbs.	Lbs.	Lbs.	Lbs.		Lbs.	Lbs.	Lbs.
123	Rice straw . . . .	Kanke Farm, Bihar.	0·00	49·04	0·53	50·23	..	32·2	0·00	29·0
124	Do. . . . .	Pusa, Bihar . . . .	0·00	48·33	0·48	49·41	..	29·9	0·00	26·9
125	Do. . . . .	Kangra, Punjab.	0·00	40·71	0·41	41·62	..	20·3	0·00	18·3
126	Do. . . . .	Karnal, Punjab.	0·00	37·11	0·72	38·74	..	20·7	0·00	18·6
127	Wheat straw . . . .	Pusa, Bihar . . . .	0·00	47·65	0·58	48·95	..	24·3	0·00	21·9
128	Do. . . . .	Karnal, Punjab.	0·00	47·31	0·41	48·24	..	25·8	0·00	23·2
129	Wheat bhoosa . . . .	„ . . . .	0·00	46·75	0·36	47·57	..	24·5	0·00	22·1
	<i>Concentrates : Grains and seeds</i>									
130	Barley* . . . . .	Bangalore . . . . .	7·39	75·69	1·30	86·01	10·6	84·6	6·65	76·1
131	Do.* . . . . .	Mona, Punjab . . . .	8·97	75·55	0·83	86·38	8·6	84·9	8·07	76·4
132	Cotton-seed . . . . .	Lyallpur . . . . .	12·49	34·65	18·50	88·77	6·1	85·5	11·24	77·0
133	Gram* . . . . .	Bangalore . . . . .	14·33	83·27	1·96	82·01	4·7	78·5	12·90	70·7
134	Do.* . . . . .	Pusa . . . . .	13·37	63·42	2·69	82·83	5·2	79·2	12·03	71·3
135	Do.* . . . . .	Punjab . . . . .	11·96	64·80	3·14	83·83	6·0	80·2	10·76	72·2
136	Oats . . . . .	„ . . . . .	7·85	57·81	5·70	78·48	9·0	73·4	7·07	66·1
137	Maize* . . . . .	„ . . . . .	8·22	76·90	4·08	94·31	10·5	93·3	7·40	84·0
	<i>Concentrates : Cakes and meals</i>									
138	Cocoanuts' cake* (country mill pressed).	Cochin . . . . .	21·10	39·75	13·00	90·10	3·3	90·0	18·99	81·8

139	Do.* (expeller)	..	..	22.81	42.12	8.20	83.81	2.7	83.8	20.53	75.4
140	Cotton seed cake	..	Lyallpur	19.42	39.96	8.97	79.56	3.1	67.1	17.48	60.4
141	Cotton seed meal	..	Bangalore	31.65	25.99	12.62	86.04	1.7	83.6	28.49	75.2
142	Groundnut cake	..	..	46.39	14.59	7.97	78.92	0.7	75.9	41.75	68.3
143	Linseed cake	..	Bengal	25.86	31.69	6.33	71.79	1.8	69.1	23.27	62.2
144	Rape cake	..	Pusa	30.92	27.76	12.43	86.77	1.8	82.6	27.83	74.3
145	Sarson cake	..	Lyallpur	30.68	28.46	10.34	82.41	1.7	78.1	27.61	70.3
146	Til cake*	..	Bangalore	42.60	23.36	9.32	86.92	1.0	83.3	38.34	75.0
147	Toria cake	..	Lyallpur	28.51	24.97	11.35	79.01	1.8	75.2	25.66	67.7
<i>By-products</i>											
148	Gram husk	..	Bangalore	0.00	59.59	0.77	61.33	..	47.0	0.00	42.3
149	Rice bran*	..	Hosur, Madras	6.76	35.15	10.00	64.40	8.5	48.3	6.08	43.5
150	Do.*	..	Bengal	9.09	31.69	15.70	76.11	7.4	56.6	8.18	50.9
151	Wheat bran	..	Bangalore	11.80	58.00	2.28	74.93	5.4	56.9	10.62	51.2
152	Do.	..	Pusa, Bihar	8.72	59.10	1.14	70.39	7.1	53.7	7.85	48.3

\* In these cases, foreign digestibility co-efficients have been used for calculation.

† In calculating these values, the dry matter content has been assumed as follows:—

	Per cent.
(a) All air-dry materials, such as dry roughage, cake, grain, etc.	90
(b) Succulent silage	30
(c) Green pasture, green maize, etc.	25
(d) Juar, prime	30
"    ripe	40
(e) Green legumes like berseem and lucerne	20

The nutritive values given in these columns are therefore approximate.