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Proximate and Trace Element Contents of Some Samples of Cattle Feeds of Mehsana District

P. C. Shukla, H. B. Desai, M. B. Pande, L. P. Purohit and B. M. Patel

Animal Nutrition Research Department, Gujarat Agricultural University, Anand Campus, Anand-388 110

Mehsana is the home tract of famous Mehsana milch buffalo breed. Because of the importance of trace elements as well as proximate nutrients in the nutrition of animals, the present study was undertaken to screen the commonly available feeds and fodders of Mehsana district of Gujarat State.

Different types of feeds and fodder samples were collected for estimating their proximate and trace element composition. The proximate analysis was carried out following the methods described by A.O.A.C. (1970). Trace element viz. iron, copper, manganese and zinc were determined using wet digestion technique (atomic absorption spectrophotometer).

(i) Proximate composition:

The results of proximate composition of various feed samples are presented in Table 1.

From the table it is seen that cotton seed is a good source of ether extract though it has got higher amount of crude fibre. Great millet is a good source of carbohydrate and is fed to buffaloes.

Local green fodders, lucerne, pegion pea *gotar* (*gotar* is a byproduct of legume crops after taking out mature seeds and thick stems), castor leaves, *dodi* (*Leptadenia reticulata*) and mustard plants are good sources of protein and ether extract. Over and above cluster bean *gotar*, *rajagara* (*Polygnaceae polymorphum*) plant and mustard hulls, are sources of calcium. Castor leaves contain 3.77 per cent calcium. *Dodi* feeding even at 1.34 g/day in cows and buffaloes had increased 12 and 6 per cent milk production respectively (Anjaria and Gupta, 1967) during feeding period of 12 days. Somewhat similar composition of these types of feeds for cattle are also reported by Patel, Shah and Mistry (1958).

The cultivated fodders have usual range of composition. The present results of chemical composition of straws and *gotars* are in agreement with the findings of Patel and Shah (1957, 1959) and Patel, Shah and Mistry (1963).

Trace element contents:

The average results of iron, copper, manganese and zinc content of roughage samples collected during the survey in Mehsana district are presented in Table 2.

The results indicated that iron and manganese levels in fodders are adequate to meet the requirements of

TABLE 1

Proximate Composition of feeds and fodders of Mehsana district (% **on D.M. basis).**

Sample		*C. Protein*	*E. Extract*	*C. Fibre*	*N.F.E.*	*P*	*Ca*
Concentrate Mixture:							
Compounded cattle feeds	(6)	16.69 ±0.29	5.18 ±0.09	8.48 ±0.42	59.57 ±0.56	0.64 ±0.02	0.63 ±0.03
Grain and Seeds:							
Banti seeds (*Echinochola stagnina*)	(1)	7.99	5.91	7.39	74.43	0.41	0.35
Barley seeds	(2)	9.81	2.85	4.14	80.26	0.25	0.27
Cotton seeds	(3)	19.39 ±0.30	16.47 ±0.32	20.99 ±0.22	38.02 ±0.74	0.53 ±0.006	0.52 ±0.03
Isabgul seeds (*Plantago ovata* Forsk)	(4)	19.02 ±0.42	3.78 ±0.57	38.18 ±0.22	38.49 ±0.74	0.43 ±0.001	0.49 ±0.06
Jowar seeds (great millet)	(1)	16.17	5.48	1.02	75.20	0.48	0.27
Oil Cake and Chuni:							
Cotton seed cake	(5)	22.83 ±1.73	9.04 ±0.28	24.09 ±0.60	37.83 ±1.82	0.54 ±0.05	0.36 ±0.03
Pigeon pea *chuni*	(1)	14.86	1.63	22.67	55.10	0.22	0.81
Miscellaneous							
Scrap milk powder	(1)	27.60	21.82	0.00	42.55	0.96	1.85
Fodders							
Local green fodder	(4)	13.32	3.69	24.46	46.94	0.21	1.48
Shedha grasses mixed		±1.52	±0.34	±2.13	±2.74	±0.006	±0.22
Cultivated Fodders							
Lucerne	(5)	21.16 ±0.91	4.94 ±0.26	24.45 ±1.17	35.93 ±0.28	0.31 ±0.012	2.05 ±0.18
Wheat (green)	(1)	12.93	2.24	28.03	47.26	0.30	0.53
Gotars Cluster bean	(1)	12.99	1.85	16.43	55.47	0.17	2.61
Gram	(1)	4.82	2.05	37.15	49.03	0.05	0.96
Pigeon pea	(1)	14.98	7.71	16.54	48.93	0.19	2.18
Seed Hulls Watermelon (wild variety)	(2)	2.97	1.50	61.97	29.98	0.07	0.41
Castor	(2)	5.12	1.81	37.45	39.99	0.10	0.82
Mustard	(1)	11.61	3.12	20.34	42.96	0.10	1.66
Straws Pearl millet	(4)	4.29 ±1.88	1.83 ±0.35	39.96 ±4.10	46.04 ±1.88	0.12 ±0.034	0.65 ±0.10
Great millet	(10)	4.74 ±0.79	2.00 ±0.17	33.60 ±2.14	51.39 ±6.36	0.13 ±0.024	0.76 ±0.07
Wheat	(2)	4.52	1.81	3.79	46.19	0.10	0.48
Miscellaneous							
Castor leaves	(1)	15.65	5.31	13.41	54.32	0.25	3.77
Dodi (*Leptadenia reticulata*)	(1)	14.83	4.86	25.17	47.74	0.21	1.91
Cotton plant	(1)	7.59	1.23	32.25	49.56	0.09	1.32
Rajagara plant (*Polygnaceae polymerphum*)	(1)	7.66	2.91	26.05	51.36	0.29	1.97
Mustard plant	(1)	17.93	11.20	25.72	37.09	0.58	1.68

( ) Figure in the preanthesis indicates number of samples analysed.

TABLE 2

Trace element content (on D.M. basis) of fodders collected during survey (Average with standard error).

Samples		*Fe(mg%)*	*Cu(ppm)*	*Mn(ppm)*	*Zn(ppm)*
Gotars					
Cluster bean	(1)	90.08	10.87	106.64	32.56
Pigeon pea	(1)	122.78	22.79	140.91	40.46
Hulls and Husks					
Castor	(1)	23.32	13.47	31.09	4.57
Cheno	(1)	29.68	15.62	52.59	10.00
Rayda	(1)	50.03	12.77	38.56	22.15
Straws					
Jowar (great millet)	(3)	21.76	15.65	43.48	32.11
		±1.07	±1.91	±4.14	±6.13
Pearl millet	(4)	75.49	12.28	49.39	31.21
		±28.48	±2.93	±11.65	
Wheat	(2)	35.84	13.77	97.65	3.89
Miscellaneous					
Castor leaves	(1)	74.55	13.46	137.71	29.92
Rajagara plant	(1)	37.19	10.84	78.51	24.59

( ) Figure in the parenthesis indicates number of samples analysed.

cattle in Mehsana district. Underwood (1971) reported that minimum dietary iron requirement of the growing calves is not more than 40 ppm. He further stated that 25 ppm manganese in fodder is adequate to meet the requirements. Underwood (1971) reported 10 ppm level of copper in fodders to be sufficient to meet the requirement for cattle. In the present study almost all fodders have slightly higher copper content than 10 ppm.

Underwood (1971) reported deficiency symptoms in cattle fed pasture or fodder having zinc content in the range of 18-50 ppm. In the present study almost all fodders have less zinc content than the upper limit. Sawhney, Bedi and Khan (1977) reported 93 per cent samples of fodders of Jammu and Kashmir to be dificient in zinc. Thus zinc supplementation either through mineral supplement, salt or feeds higher in zinc is a must to safeguard health and production when compounded concentrates are not used.

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