

NOTE

**Studies on Nutritional Qualities of *Ipomoea pes-tigridis*
Linn: A Fodder Plant from Kunwari Ravineland
at Morena (M.P.), India**

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Ipomoea pes-tigridis Linn. is a spreading or twining herb, which appears during monsoon season in the ravineland of river Kunwari at Morena (M.P.), India. The plant is known as Ghiabati or Panchpatri by local people and is used as a feed of livestock in green state as well as hay. The plant is highly nutritive with peak of 4195.20.20 cal/g energy and 24.25% crude protein in October, 0.196% phosphorus content in September and 5.8% potassium in November.

Key Words: Nutritional qualities, *Ipomoea pes-tigridis* Linn. Fodder, Plant, Morena.

Ipomoea pes-tigridis is a herb of common occurrence during the monsoon season in the ravines of Kunwari river at Morena (M.P.), India. Here it is known as Ghiabati or Panchpatri. The plant is found in spreading form or twining with other plants, very often with Jowar and Bajara crops. The plant is used as a feed for livestock both in green form and hay. It is frequently grazed by cow and buffalo and highly liked by bullock. The plant is highly nutritive for protein and compares favourably with legumes. The plant is highly rich in phosphorous and potassium content. Plant is very often used for the treatment of boils and as an antidote to dog-bites by the local people.

This communication deals with the energy and nutritive value of *Ipomoea pes-tigridis* from Kunwari ravineland of Chambal command area.

Green aerial parts of the plants including mature and immature seeds were harvested for different months of the year 1999. These samples were washed several times with water, again with 0.2% detergent solution and finally with plenty of water. Samples were air dried and then over dried at 70°C for 48 h. The dried samples were ground to 0.5 mm sieve. Energy of the samples for different months was estimated using oxygen bomb calorimeter¹. Nitrogen was estimated by micro-Kjeldahl method². Crude protein (CP) was calculated by multiplying the % nitrogen content with 6.25. Organic carbon was estimated by oxidising the samples with chromic acid and the unconsumed potassium dichromate back titrated against ferrous ammonium sulphate, using diphenylamine indicator³.

Organic matter was calculated by multiplying 1.724 with organic carbon. Phosphorus was estimated by spectrometric method under 420 nm blue filter using molybdate-vanadate reagent and potassium was estimated by flame emission method⁴.

The energy of *Ipomoea pes-tigridis* ranges between 3556.8–4195.2 cal/g. Highest energy (4195.2 cal/g) was estimated for the month of October. Total organic matter 64.68% and crude protein 24.25% were also highest for the month of October. Flowering starts around mid-September and continues till October. Seeds are matured between late October and early November. After the fruit ripening crude protein is little lowered (23%) in December. Though, the lowest crude protein content (9.87%) was estimated for the month of August. The highest phosphorus content (0.196%) was observed for the month of September; thereafter it showed a declining trend (0.125%) in December. Plant is highly rich in potassium for all months, highest (5.8%) being in November.

TABLE-1
ENERGY (cal/g dry wt.) AND NUTRIENT CONTENT (% dry wt.) OF *IPOMOEA PES-TIGRIDIS* LINN, DURING THE YEAR 1999

Months	Energy	Crude protein	Organic matter	Phosphorus	Potassium
August	3568.20	9.87	54.85	0.193	2.60
September	3864.20	17.93	56.44	0.196	3.78
October	4195.20	24.25	64.68	0.139	5.14
November	3921.60	23.12	62.54	0.126	5.80
December	3556.80	23.00	52.18	0.125	5.50

Nutritional qualities of *Ipomoea pes-tigridis* were compared with some important Indian grasses, legumes and other forbs from different parts of the country. There were big differences in the calorific values of grasses and legumes. *Dichanthium annulatum* exhibited energy range from 3904.3 to 4345.7 cal/g (Table-2). *Digitaria adscendens* and *Sporobolus marginatus* comparatively yield low energy with peak of 3341.9 cal/g and 3412.9 cal/g respectively in the upper Gangetic plains. Among the legumes *Alysicarpus monolifer* had the peak of 4627.9 cal/g. In this regard *Ipomoea pes-tigridis* with energy range 3556.8 to 4195.2 cal/g is an energy-rich fodder plant.

The crude protein in *Panicum antidotale*, *Pennisetum typhoides* and *Alysicarpus monolifer* reached to the level of 17.7, 18.4 and 15% respectively (Table-2). In protein content *Ipomoea pes-tigridis* exhibits superiority (24.25%) over these grasses and legumes. Highest phosphorus content 0.42% was found in *Panicum antidotale* and 0.166% in *Setaria glauca* (Table-2). Peak value of phosphorus 0.196% was estimated in *Ipomoea pes-tigridis*. A good amount of potassium (highest 5.8% in November) was estimated in all months in *Ipomoea pes-tigridis*.

TABLE-2
ENERGY AND NUTRIENTS OF IMPORTANT INDIAN GRASSES, LEGUMES
AND OTHER FORBS COMPARED WITH *IPOMOEA PES-TIGRIDIS*

Sl. No.	Grasses, legumes and other forbs	Energy (cal/g)	Crude protein (%)	Phosphorus (%)
1.	Punjab grasses ⁵			—
	<i>Cenchrus ciliaris</i>	—	8.81–16.25	—
	<i>Pennisetum typhoides</i>	—	18.47	—
2.	Maharashtra grasses ⁶			
	<i>Setaria glauca</i>	—	7.94	0.166
3.	Bundelkhand grasses ⁷			
	<i>Panicum antidotale</i>	—	17.77	0.420
4.	Upper Gangetic Plains ⁸			
	<i>Alysicarpus monolifer</i>	4099.4–4212.03	7.0–12.81	—
	<i>Digitaria ascendens</i>	3205.5–4341.9	6.12–12.25	—
	<i>Sporobolus marginatus</i>	3115.0–3412.9	2.37–12.39	—
5.	Lower Gangetic plains ⁹			
	<i>Alysicarpus monolifer</i>	3725.7–4627.9	9.43–15.0	—
	<i>Dichanthium annulatum</i>	3904.2–4345.7	4.06–5.12	—
6.	Lower Chambal valley (present study)			
	<i>Ipomoea pes-tigridis</i>	3556.8–4195.2	23.00–24.25	0.125–0.196

It can be concluded that *Ipomoea pes-tigridis* is highly nutritive and energetic and a better feed for livestock in Chambal commanded area.

REFERENCES

1. H. Lieth, The measurement of calorific values of biological material and determination of ecological efficiency, Copenhagen Symposium, UNESCO (1966).
2. C.S. Piper, Soil and Plant Analysis, Hans Publisher, Bombay (1966).
3. A.J. Walkley and I.A. Black, *Soil. Sci.*, **37**, 29 (1934).
4. D. Singh, P.K. Chhonkar and R.N. Pandey, Soil Plant Water Analysis: A method manual, I.A.R.I., New Delhi, pp. 63–67 (1999).
5. K.C. Sen, *Agri Res. Bull. (Delhi)*, **25**, 46 (1957).
6. F.R. Bharucha and K.A. Shankarnarayan, *Ecol.*, **39**, 152 (1958).
7. G.S. Singh, *Agra University Jour. Sc. Res.*, **2**, 129 (1962).
8. D. Singh, Stand structure, herbage production and nutritional qualities of pasture plants of district Aligarh, Ph.D. Thesis, Agra University, Agra, (1983).
9. A.N. Maury, Ecology of Varanasi grasslands with reference to two common species. Ph. D. Thesis, B.H.U., Varanasi, India (1970).