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# Natural fodder species and analysis for diet pattern in breeding tract of Kathani cattle in Maharashtra

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**ABSTRACT :** Most commonly available fodder species of breeding tract of Kathani cattle in Maharashtra are collected and nutritionally analyzed and found to have protein ranging from 4.73 per cent to 13.39 per cent, fibre from 23.57 per cent to 34.44 per cent, oil from 0.21 per cent to 10.21 per cent. Almost all samples have silica less than 5 per cent. This shows the tremendous variation in locally available fodder species. This also indicate the facts of fodder species available locally which we need to tell the farmers to adjust the feeding quantities according to the nutritional analysis and the availability of the fodder. This small study also shows the importance of forest in raising the cattle population with low inputs at farmers conditions.

**KEY WORDS :** Fodder species, Kathani cattle, Nutritional analysis, Vidarbha region, Maharashtra

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## INTRODUCTION

India is a country of various cultures associated with the vegetation. Role of vegetation is quite vivid, specially in the tribal ecosystem. This role varies due to the heterogeneity in cultural patterns and varied ecological conditions. The practice of collecting leaves and grasses for feeding livestock has ben prevalent since time immemorial. Over one thousand plant species are utilized as animal feed it includes grasses, legumes and other tree species. The family Poaceae provides the maximum forage species followed by legumes. The other families like Asteraceae, Moraceae, Euphorbiaceae, Rosaceae, Rubiaceae, Chenopodiaceae, Polygonaceae and Salicaceae have important for providing fodder to the livestock.Tree species are much lopped which are *Ficus, Acacia, Grewia, Terminalia, Dalbergia, Cordia*, *Albizia* and *Ziziphus*, etc. The region wise preference of animal is changed. Some of the forage plant species utilized by the inhabitants have specific properties. It is believed that after eating grass *Ischaemum rugosum* Salisb. Milk gets an undesirable odor. Leaves of *Strychnos nux-vomica* L. feeding to cow, imparts a bitter taste to the milk, but the people attribute good digestibility and tonic properties to such milk. Some plants are also used to increase or decrease milk yield. A mixture of Kulthi (*Macrotyloma uniflorum* Verdc.), Bel (*Aegle marmelos* Corr.) and Kanta notice (*Amaranthus spinosus* L.) is used by Goalas in Bengal to stimulate the flow of milk. (Singh and Shankar, 1996). Kulkarni and Kumbhojkar (1995) reported palatable fodder grasses from Pachgaon Parvati area near Pune. In the survey 25 grass species have good fodder utility. Mahadeokoli tribal communities from western Maharashtra used shrubs and

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tree resources to feed their livestock (Kulkarni and Kumbhojkar, 1992). Some uncommon plant species traditionally used by livestock owners in tribal and semi-arid belt in north east and north of Gujarat. It includes large trees, medium size trees, creepers and part used as feed. Crude protein are rich in *Alangium salviifolium* (20-22), Dichrostachys cinerea (17.0), *Morinda tomentosa* (22.9) in their leaves (Ragnekar,1992). Patil *et al.* (2009) evaluated palatable tree leaves for nutritional point of view from dry zone of Karnataka. Osmanbad goats were feed on fresh leaves of *Leucaena leucocephala*, *Zizyphus* species, *Hardwickia binate*, *Acacia nilotica.* The results were encouraging in weight gain due to feeding of *Zizyphus* and *Harwickia* species while feeding of *Leucaena leucocephala* and *Vachellia nilotica* did not improve the weight gain in goats. This indicates that traditional fodder resources need to be analysed and evaluated for nutritional values. Different factors may be associated in higher values of chemical content due to soil and climatic conditions of the region.

**Area under study :**

*Geographical distribution and native environment of the Kathanibreed* :

The geographical data indicated thriftiness of these animals in varied range of temperature and rainfall ranging from 45°C and 1308 mm (Gondia district) to 5°C and 1428 mm (Gadchiroli district), respectively. Having deepand thick forests in these districts (locally known as Zadipattidistricts – an area of forests and trees), 72 per cent area being under Southern Tropical Dry Deciduous Forests, including treevarieties like Sag, Halda, Tinsa, Shisham, Mahua, bamboo and teak and soil derived from Deccan Trap is Regur or black cotton containing high alumina and carbonate of calcium and magnesium with variable amount of potash, low nitrogen and phosphorus. The soil is generally porous and swells considerably on addition of water and dry up with cracks on losing the moisture. The rocks of the Archaean age on weathering give rise to Red soil which is most common in the area, where those rocks are present. Major rivers are Wainganga, Wardha, Gadhvi and Kathani flowing through these districts. The cereal crops like rice, sorghum, wheat, maize and kodo (millets) are cultivated and used as staple food cash crops like cotton and soya bean are also found cultivated (Kulkarni *et al.*, 2013). The survey of fodder species was carried out in year 2010–2011 in Chandrapur, Gadchiroli and Gondia districts. Samples of fodder species collected in bulk quantity, identified and analysed for their nutritional principles.

## MATERIAL AND METHODS

The impact of forest on animal husbandry is large; cattle population is depended on forest for grazing for majority of time. So it was felt that nutritional analysis of naturally grown fodder plants and grasses was carried out in nutrition lab of BAIF, CRS Urulikanchan for various nutrition parameters such as dry matter (DM%), crude protein (CP%), crude fibre (CF%), oil /Ether extract (EE%), ash and acid insoluble ash (Silica%) *i.e.* were subjected for proximate analysis (AOAC, 1995).

Fodder samples were collected with the help of herdsman and identified with the help of senior botanist and further nutritional analysis was carried out to know the nutritionalvalues of naturally grazed grasses and fodder resources. General characterization analysis is done to gate a fair idea of the nutrient contents of the natural fodder resources in studied area.

The analysis was carried out for 16 fodder species which includes grasses and trees. Following table content all details of analysis. Please note that the samples were pre-dried at field for easy transportation to lab and so the moisture content is not giving the real picture of actual moisture of the species mentioned.

## RESULTS AND DISCUSSION

Fodder trees and fodder shrubs have always played a significant role in feeding domestic animals. In fact, trees and shrubs are increasingly recognized as important components of animal feeding, particularly as suppliers of protein and especially in harsh environmental conditions. In such situations, the available grazing is not generally sufficient to meet the maintenance requirements of animals, at least for some part of the year. In some mountainous regions and in the dry tropics grazing is also sometimes degraded. However, the available fodder species and their palatability are more important.

In the present analysis study of fodder species, 9 are grasses, 2 are legumes one is tree and one is herb, one species of Asteraceae, Amaranthaceae, Cyperaceae, Aracaceae, Sapotaceae having potential as fodder. Higher percentage of crude protein and ash in *Alternanthera sessilis* (13.39 and 15.11%) herb found near marshy place (Table 1). Crude fibre is 33.43 per cent in *Themeda*

**Table 1 :** Chemical composition (% DM basis) for fodder species in breeding tract of Kathani cattle in Maharashtra

| Sr. No. | Local Name | Botanical Name | DM % | CP% | CF% | EE% | ASH% | Silica% |
|---|---|---|---|---|---|---|---|---|
| 1. | Sheda | *Ischaemum laxum* Br. | 89.99 | 5.04 | 29.93 | 2.21 | 5.91 | 4.41 |
| 2. | Kusalidgavat | *Heteropogon contortus* (L.) P. Beauv. | 90.87 | 4.74 | 33.40 | 2.27 | 4.64 | 2.56 |
| 3. | Mundi | *Sphaeranthus indicus* L. | 90.92 | 7.49 | 29.59 | 1.80 | 7.04 | 3.19 |
| 4. | Kanpatti | *Alternanthera sessilis* (L.) R. Br. ex DC. | 87.95 | 13.39 | 23.57 | 2.18 | 15.11 | 1.84 |
| 5. | Kachpat Kanda | *Fimbristylis* sp. | 85.14 | 6.05 | 25.57 | 2.22 | 10.46 | 1.24 |
| 6. | Paryabati | *Glyphochloadivergens* (Hack.) Clayton. | 88.32 | 7.58 | 28.62 | 2.34 | 9.51 | 5.82 |
| 7. | Huglajali | *Themeda triandra* Forssk. | 91.07 | 4.78 | 33.43 | 1.25 | 3.74 | 1.75 |
| 8. | Dugalijali | *Eragrostis tenella* (L.) P. Beauv. | 89.46 | 4.73 | 34.44 | 0.69 | 5.01 | 2.65 |
| 9. | Kusal | *Heteropogon contortus* (L.) P. Beauv. | 91.98 | 8.27 | 32.86 | 0.98 | 7.36 | 3.18 |
| 10. | Durva | *Cynodon dactylon* (L.) Pers | 91.33 | 8.86 | 33.26 | 0.21 | 6.74 | 3.11 |
| 11. | Ranmethi | *Desmodium triflorum* (L.) DC. | 90.73 | 4.92 | 26.35 | 1.02 | 11.64 | 6.32 |
| 12. | Bambu (Kapkurdi) | *Dimeria hohenackeri* Hochst. | 91.34 | 13.08 | 23.92 | 2.31 | 9.11 | 4.01 |
| 13. | Aain (Devdhan) | *Oryza rufipogon* Grift | 80.53 | 8.07 | 26.36 | 8.46 | 12.88 | 0.82 |
| 14. | Shindi | *Phoenix sylvestris* (L.) Roxb. | 90.72 | 7.98 | 23.75 | 7.51 | 8.46 | 3.25 |
| 15. | Bibala | *Pterocarpus marsupium* Roxb. | 88.97 | 12.40 | 18.77 | 10.21 | 7.51 | 2.01 |
| 16. | Moha | *Madhuca longifolia* Mac br. | 96.72 | 12.38 | 29.24 | 0.69 | 10.21 | 2.12 |

Type of samples: Locally used fodder samples

*triandra* grass found in shad in forest areas. E.E. is higher in leaves of *Pterocarpus marsupium* (10.21 %) uncommon tree in the area. Silica is higher in *Desmodium triflorum* (6.31 %). Two samples of one grass species *Heteropogon contortus* collected from different locations has 4.74- 8.27 per cent crude protein, 33.40-32.86 per cent crude fibre, EE 0.98- 2.27 per cent, ash 4.64-7.36 per cent, silica 2.56-3.18 per cent. This indicates that soil and climatic or water conditions in the same region differ in nutritional values.

On the other hand lowest values in crude protein 4.73 in *Eragrostis tenella* crude fibre 23.57 in *Alternanthera sessilis*, EE 0.21 in *Cynodon dactylon*, ash is 3.74 in *Themeda triandra*, silica 0.82 ub *Oryza rufipogon* wild rice grown in marshy place.

The traditional feeding systems, particularly in tribal areas, make maximum use of local resources like crop residues, tree leaves, pods, seeds, etc. (Pradhan *et al.*, 1991). Milking animals are provided with some what better quality feeds. Feed mixtures are usually offered after soaking or cooking. Feeding of animals is invariably by women and they are well aware of the habits of each animal (Rangnekar *et al.*, 1991a and b). The farmers have identified feed materials which are claimed to be beneficial for improving the quantity and quality of milk. Farmers classify feed as very good, average or bad, on the basis of its palatability and visible effects on quality and quantity of milk, unlike researchers who look mainly at chemical analysis (Rangnekar, 1991).

So for concluding we can say that this type of work needs to be done in various pockets of country so as to understand the actual fodder variation and their richness to the quality for better production and maintenance of livestock.

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