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Studies on nutritional composition of little millet genotypes

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Abstract
The twelve genotypes of little millet (*Panicum miliare*. L) were studied for their nutritional composition and yield potential along with local check. Considerable variability was found for all the quality parameters assessed. Moisture content of seeds was found to be high in high yielding genotypes viz., TNAU-63 (11.58) OLM-20 (11.0) followed by CO-2 (10.95). Ash per cent also found to be high in high yielding genotypes such as TNAU-89 (1.21), TNAU-63 (1.15) and CO-2 (1.10) whereas, crude protein was found to be high in TNAU-89 (14.30) followed by TNAU-63 (12.99). The mean fat content, crude fibre content and carbohydrate contents were found to be higher in medium and low yielding genotypes. However, Co-2 from high yielding genotypes had recorded the highest fat content followed by OLM-23 (4.0) from medium and PRC-3 (3.90) from low yielding genotypes. Whereas, higher crude fibre content recorded in OLM-203 (5.90) from medium followed by DLM-322 (5.87) from low yielding genotypes. With respective carbohydrate content it was higher in low yielding genotypes OLM-37 (69.15) followed by DLM-322 (68.50) and Vartsukhadar (67.25).

Keywords: nutrition, little millet and grain yield

Introduction
Little millet (*Panicum miliare* L.) commonly known as 'same', is an important miner millet belonging to family *Poaceae* cultivated across India, Nepal and Western Burma and occupies prime position in tribal agriculture of eastern ghats of India. Nutritionally the grain are rich in proteins, minerals and vitamins, and even superior to major cereals in certain nutritional parameters.

In recent years, there has been a significant change in life style and dietary patterns with growing affluence. There are enough evidences linking dietary habits to metabolic disorders like diabetes and cardiovascular diseases. New research findings in this area indicate the potential value of small millets in prevention of such disorders (Torangatti, 1995) [6] as they contain higher proportion of non-starchy polysaccharides and have high sustaining power and lower glycogenic index as compared to cereals. Though, quite a few high yielding varieties of millets have been released, but the information in their nutrient composition are scanty. Screening of little millet varieties for quality attributes and identifying suitable variation for specific end use will help in deriving optimum utilization of their growth and also in preparation of value added products as millets are gaining importance for therapeutic use in the management of metabolic disorders.

Hence, the present studies were undertaken to screen little millet genotypes for variation in their nutrient composition to identify their fertility for particular end use.

Material and Methods
The better performed four genotypes from each high, medium and low yielding groups were selected based on the previous year (*kharif* 2000) [2] experimentation and indepth studies were carried out at Main Agricultural Station, University of Agricultural Sciences, Dharwad during *kharif* 2001. From each group four genotypes were sown in randomized block design in three replications with a spacining of 22.5 cm X 5.00 cm, all the agronomic practices were taken up periodically. Ten plants were harvested randomly in each individual plants for recording yield and yield components. The mean values for the characters for subjected to statistical analysis suggested by Panse and Sukhatme (1967) [5]. Correlation analysis was carried to study the nature and degree of relationship between nutritional parameters with the yield by following the method of Panse and Sukhatme (1967) [5].

To determine the nutritional composition selected samples were dehulled by traditional method of dehulling and dehulled grains were milled and analyzed according to standard procedure of AOAC (1990) [1].

Table 1: Genotypic differences for nutritional composition and yield in little millet (*Panicum miliare* L.)

Genotypes	Moisture (%)	Ash (%)	Crude protein (%)	Fat (%)	Crude fibre (%)	Carbohydrate (%)	Grain yield (q/ha)
High Yielding							
TNAU-63	11.58	1.15	12.99	3.54	5.73	65.25	27.05
OLM-20	11.00	1.05	10.80	3.41	4.91	64.50	25.41
TNAU-89	10.41	1.21	14.30	3.55	4.83	66.31	24.13
CO-2	10.95	1.10	11.26	4.20	4.97	63.20	23.70
Mean	10.98	1.13	12.33	3.68	5.11	64.81	25.07

Medium Yielding							
OLM-203	8.10	0.91	11.20	3.67	5.90	67.30	20.20
TNAU-98	8.30	0.96	10.60	3.71	5.10	66.00	19.60
DLM-23	9.37	0.76	11.69	3.80	4.99	67.90	18.70
OLM-23	7.64	0.93	9.96	4.00	5.21	64.50	19.05
Mean	8.35	0.89	10.86	3.80	5.30	66.42	19.38
Low Yielding							
DLM-322	9.51	0.84	9.17	3.57	5.87	68.50	16.13
Vari Sukhadar	9.16	0.90	10.07	3.69	5.40	67.25	15.79
OLM-37	8.84	0.74	10.40	3.71	5.30	69.15	15.14
PRC-3	9.40	0.79	9.60	3.90	5.50	67.00	14.24
Mean	9.20	0.82	9.81	3.71	5.51	68.00	15.32
Iv. Check(Local)	10.25	0.71	10.05	3.54	5.59	64.63	13.63
S.Em ±	0.40	0.11	0.74	0.18	0.15	0.23	0.55
CD (5%)	1.16	0.32	2.13	0.53	0.44	0.68	1.59

Table 2: Correlation coefficient (r) between yield and nutritional parameters in little millet genotypes

Sl. No.	Parameters	'r' values
1	Crude protein content	0.73**
2	Ash content	0.90**
3	Moisture content	0.54
4	Fat content	-0.12
5	Crude fibre content	-0.35
6	Carbohydrate content	-0.51

Results and Discussions

Grain quality in little millet is always measured in terms of grain protein content. Considerable variation was observed in the crude protein and ash contents in the grains among the genotypes. The high yielding genotypes, TNAU-89, TNAU-63 and CO-2, (14.30, 12.99 and 11.26 respectively) had higher crude protein content. Similarly, the ash content was found to be high in same genotypes TNAU-89 (1.21), TNAU-63 (1.15) and Co-2 (1.10) (Table 1). Further, these parameters were found to have significant positive association with grain yield. Similar relationship between protein content and kernel weight has been reported by Lorenz and Kulp (1991) [4] in wheat and Bhoite (2000) [2] in foxtail millet.

The moisture content also differed significantly among the genotypes with the yielding genotypes TNAU-63 (11.58) and OLM (11.00) having higher moisture content
(11.58 and 11.00 respectively) (Table 1). However, correlation studies indicated positive but non-significant association between moisture content and grain yield (Table 2). The fat content was higher in the medium yielding and low yielding genotypes. Correlation co-efficient also indicated negative non-significant association between fat content and grain yield. Similarly, the crude fibre and carbohydrate contents though differed significantly among the genotypes, their estimates were higher in low yielding genotypes. Further, the correlation studies also revealed negative non-significant association between these nutritional parameters and grain yield. Kulkarni *et al*. (1999) [3] in little millet and Bhoite (2000) [2] in foxtail millet got the similar results.

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