

Performance of finger millet varieties in coastal region of Karaikal

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ABSTRACT

A field experiment was carried out at Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal during June to September 2004 to study performance of seven finger millet varieties under irrigated condition. The experiment was conducted in Randomized Block Design with three replications. The treatments consisted of seven varieties GPU 26, GPU 28, GPU 45, PR 202, L 5, Indaf 8 and CO 13. The results revealed that higher growth attributes like plant height and dry matter production were recorded by the varieties CO 13, Indaf 8 and GPU 26. The varieties GPU 26 were also found superior with higher yield attributes like number of ear head m², Length of panicle, number of grains ear head⁻¹ and weight of grains. Among the seven varieties CO 13 recorded the highest grain yield of 2008 kg ha⁻¹ followed by Indaf 8 (1940 kg ha⁻¹) and GPU 26 (1933 kg ha⁻¹) and these varieties yielded statistically similar yield and significantly higher than other four varieties. The next best varieties in order were GPU 28 and GPU 45 which registered the grain yield of 1753 kg ha⁻¹ and 1685 kg ha⁻¹, respectively.

Key words : Finger millet, Varieties, Growth, Yield.

INTRODUCTION

Small millets are the traditional crops and they are agronomically more adopted to impoverished soil and climatic conditions. They can be cultivated where no other food crops can be profitably grown. Among them, finger millet is the most important one and ranks third with an area of 2.0 M ha producing 2.6 M t in India. It is the richest source of P, Fe, Ca, S and minerals. Though there has been a declining trend in area, scope exists to improve the yield by 30 to 50 per cent through technology adoption (Seetharam, 1997). Standardisation of suitable varieties for a particular location is paramount importance to realize the yield potential of finger millet. Therefore, an attempt was made to study the performance of different finger millet varieties in the coastal region of Karaikal, Union Territory of Puducherry.

MATERIALS AND METHODS

Field experiment was carried out at Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal during June to September 2004 to study performance of finger millet varieties under irrigated condition. The experiment was conducted in Randomized Block Design with three replications. The treatments consisted of seven varieties GPU 26, GPU 28, GPU 45, PR 202, L 5, Indaf 8 and CO 13. The soil of the experimental field was sandy loam with the available NPK status of low, high and low, respectively. The crop was transplanted with a spacing of 22.5 x 15 cm. The fertilizer

application was done with a blanket recommendation of 90:45:45 kg NPK ha⁻¹. Half the dose of N and Full dose of P and K were applied as basal and remaining half dose of nitrogen was applied in to two equal splits during 20 and 40 days after transplanting (DAT). Biometric observation on growth, yield attributes and grain yield were recorded.

RESULTS AND DISCUSSION

Growth attributes:

Different varieties exerted significant influence on growth attributes of finger millet (Table 1). Among hem CO 13 produced taller plants than other varieties and this

Table 1 : Effect of finger millet varieties on growth attributes

Varieties	Plant height (cm)		Leaf area index		Dry matter production (kg ha ⁻¹)	
	30	60	30	60	30	60
	DAP	DAP	DAP	DAP	DAP	DAP
GPU 26	54.1	77.3	1.94	2.73	1101	2562
GPU 28	53.0	74.1	1.81	2.64	1032	2495
GPU 45	48.2	68.3	1.78	2.59	962	2408
PR 202	51.3	63.8	1.76	2.41	803	2102
L 5	51.7	61.4	1.78	2.55	908	2319
Indaf 8	54.5	75.2	2.03	2.85	1114	2624
CO 13	55.3	81.7	2.15	3.03	1281	2818
S.E. _±	2.19	3.24	0.10	0.18	41.9	110.4
C.D. (P=0.05)	4.77	7.05	0.21	0.39	91.3	239.8

DAP – Days After Planting

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Table 2 : Effect of finger millet varieties on yield attributes and grain yield

Varieties	No. of ear heads m ⁻²	Length of ear head (cm)	No. of grains ear heads ⁻¹	Weight of ear heads m ⁻²	1000 grain weight (g)	Crop duration (days)	grain yield (kg ha ⁻¹)
GPU 26	70.2	9.37	2393	4.76	2.48	137	1933
GPU 28	74.2	9.26	1947	4.54	2.37	137	1753
GPU 45	67.8	9.19	1688	4.19	2.36	137	1685
PR 202	66.4	7.36	1549	3.98	2.40	137	1539
L 5	65.8	6.49	1716	4.45	2.43	141	1660
Indaf 8	73.4	10.63	2097	4.70	2.51	141	1940
CO 13	75.6	9.54	2316	4.82	2.46	132	2008
S.E.±	3.05	0.49	92.3	0.22	0.13	-	77.1
C.D. (P=0.05)	8.16	1.07	201.3	0.48	NS	-	168.7

DAP – Days after planting

NS-Non significant

was at par with GPU 26, GPU 28, PR 202, L 5, Indaf 8 and significantly higher than GPU 45. in 30 DAT. However, during 60 DAT, the varieties CO 13, GPU 26, GPU 28 and Indaf 8 produced similar height of the crop. Highest Leaf Area Index (LAI) was observed with CO 13 followed by Indaf 8 and GPU 26 and these were at par during both the stages of observation. The varieties CO 13 and Indaf 8 recorded significantly higher LAI than GPU 45, PR 202 and L5 during both 30 DAT and 60 DAT. With respect to Dry Matter Production (DMP), highest DMP of 1281 and 2818 kg ha⁻¹ during 30 DAT and 60 DAT, respectively by CO 13 and this was significantly higher than all the other varieties. The next best variety recording high DMP was Indaf 8 followed by GPU 26. Long and medium finger millet varieties were evaluated for higher growth and yield attributes by Rangasamy and Kumarasamy (1974) in Coimbatore region. The DMP was higher in the finger millet variety A404 than IAT 23 (Pandey *et al.*, 1999).

Yield attributes:

All the yield attributes except 1000 grain weight had significantly influenced by different varieties of finger millet (Table 2). Among the varieties, CO 13 recorded significantly more number of earhead m⁻² which were significantly superior than GPU 45 and PR 202. The effect of the varieties CO 13, GPU 26, GPU 28, Indaf 8 and GPU 45 were almost similar in producing ear heads. The variety Indaf 8 produced lengthier panicle of 10.63 cm which was significantly higher than all the varieties and followed by CO 13, GPU 26 and GPU 28 which were at par. Higher number of grains per ear head was associated with the varieties CO 13 and GPU 26 and both were at par and significantly superior than other varieties. Higher weight of grains per ear head was observed by the varieties CO 13, GPU 26, Indaf 8, GPU 28 and L5, all

these varieties registered comparable values. Among the four ragi varieties tested in Berhanpur, Orissa, the variety VR 708 recorded higher yield attributes and yield followed by KM 225.(Jena *et al.*, 1997). Mahapatra (1998) found significant variation among the eleven varieties tested being maximum with Dibyasingh followed by AKP 7 in Orissa.

Crop duration:

The crop duration of different ragi varieties varied by about 10 days period (Table 2). Among the seven varieties, CO 13 recorded the shortest duration of 132 days followed by GPU 26, GPU 28, GPU 45 and PR 202 which were ready for harvest on 137 DAS. The varieties L 5 and Indaf 8 had a crop duration of 141 days.

Grain yield:

The grain yield were greatly influenced by different varieties of finger millet (Table 2). Among them CO 13 recorded the highest grain yield of 2008 kg ha⁻¹ followed by Indaf 8 (1940 kg ha⁻¹) and GPU 26 (1933 kg ha⁻¹) and these varieties yielded statistically similar yield and significantly higher than other four varieties. The next best varieties in order were GPU 28 and GPU 45 which registered the grain yield of 1753 kg ha⁻¹ and 1685 kg ha⁻¹ respectively. Higher grain yields under CO 13, Indaf 8 and GPU 26 was due to the production of better growth and yield parameters by these varieties. Among the response of three varieties under integrated nitrogen management in coastal region of Annamalai Nagar, Tamil Nadu, CO 13 and CO 14 performed well by recording higher grain yield (Raman, 2004). Similarly the use of improved variety CL 149 produced significantly higher yield than the local varieties. (Singh and Arya, 1998).

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