RESEARCH PAPER International Journal of Agricultural Sciences, January to June, 2010, Vol. 6 Issue 1 : 94-96

# Evaluation of optimum time of sowing of fingermillet (*Eleusine coracana* G.) varieties in Karaikal region

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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 2007 to evaluate the optimum time of sowing of fingermillet varieties in Karaikal region. The experiment was conducted in Factorial Randomized Block Design with three replications. The treatment combination consisted three varieties (TRY 1, CO 13 and CO 14) and six transplanting dates at weekly intervals (May 17th, May 24th, May 31st, June 14th and June 21st). The results revealed that plant height, dry matter production and length of finger were higher in CO13 when compared to other varieties. However, the other parameters such as number of ear hill$^{-1}$, thousand grain weight and harvest index were maximum with TRY 1. Among the three varieties, TRY 1 recorded the highest grain yield of 1579 kg ha$^{-1}$followed by CO 13 (1331 kg ha$^{-1}$). Among the dates of planting crop planted on May 17th produced highest grain yield of 1827 kg ha$^{-1}$. Hence, for achieving increasing yield in fingermillet choice of variety (TRY 1) and planting window (May 17th) played a key role.**

**Key words :** Fingermillet, time of sowing, Varieties, Growth, Yield

## INTRODUCTION

Fingermillet (*Eleusine Coracana* G.) is an important food crop of semiarid tropics of Asia and Africa and ranks fourth in importance among the millets next to sorghum, pearlmillet and foxtailmillet. Fingermillet is nutritionally comparable and even superior to other cereals especially with respect to protective nutrient. It has eight to ten times more calcium (344 mg /100 g) than wheat and rice and contains a good amount of iron, phosphorous, thiamine and other nutrient, besides high calorific value, the slowly digestible carbohydrates make it a food for long sustenance. Hence, fingermillet could play an important role to alleviate malnutrition and to enhance nutritional security that has turned fragile due to excessive dependence on few major food crops. It is stated that specified genotype does not exhibit the same phenotypic characteristics under all environments and different genotypes respond differently to specified environment and relative rankings usually differ (Eberhart and Rusell, 1966). Ultimately the deciding factor for selection of genotypes for a particular or different sowing time is the stability and higher yield. Hence, the present study was carried out to evaluate the optimum time of sowing of fingermillet varieties in Karaikal region.

## MATERIALS AND METHODS

Field experiment was conducted at Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal, Union territory of Puducherry during *Kharif* season (June to September) 2007 in a Factorial Randomized Block Design with six dates of sowing *viz.*, May 17th, May 24th, May31st, June 14th and June 21st and three varieties *viz.*, TRY1, CO13 and CO14. The soil of the experimental field was sandy loam. The crop was transplanted with a spacing of 15 cm x 15 cm. The fertilizer application was done with blanket recommendation of 60:30:30 NPK kg ha$^{-1}$. Half dose of N and full dose of P and K were applied as basal and remaining half dose of nitrogen was applied in two equal splits during 20 and 40 days after transplanting. Biometric observation on growth, yield attributes and grain yield were recorded.

## RESULTS AND DISCUSSION

The results obtained from the present investigation are summarized under following heads :

***Growth attributes:***

The plant height was found to vary due to varieties and dates of planting (Table1). In general, the variety CO 13 recorded higher plant height. Among the planting dates, the crop planted at May 24th registered the highest plant height at flowering stage. Very early planting and late planting resulted in shorter plant height. Leaf area index was higher for TRY 1 than other varieties at flowering stage. Among the dates of planting, crop planted on May 17th resulted in higher Leaf Area Index (LAI) followed by May 24th and May 31st planting. In general, LAI

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**Table 1 : Effect of sowing dates and varieties on growth attributes of fingermillet**

| Treatments | Plant height at Flowering Stage (cm) | LAI | DMP at Flowering Stage (kg ha$^{-1}$) | No. of tillers hill$^{-1}$ |
|---|---|---|---|---|
| Varieties (V) | | | | |
| TRY1 | 108.3 | 9.00 | 5080 | 5.31 |
| CO13 | 115.5 | 8.50 | 5524 | 4.35 |
| CO14 | 113.3 | 8.56 | 4125 | 6.06 |
| S.E. ± | 3.16 | 0.206 | 306.3 | 0.273 |
| C.D. (P=0.05) | 6.43 | 0.419 | 622.7 | 0.555 |
| Date of sowing (D) | | | | |
| May 17th | 99.1 | 9.48 | 5541 | 5.82 |
| May 24th | 119.8 | 9.32 | 5335 | 5.22 |
| May 31st | 118.6 | 9.05 | 4769 | 4.80 |
| June 7th | 118.5 | 8.38 | 4728 | 4.75 |
| June 14th | 109.3 | 8.44 | 4625 | 5.63 |
| June 21st | 109.0 | 7.46 | 4460 | 5.24 |
| S.E. ± | 4.47 | 0.291 | 433.1 | 0.386 |
| C.D. (P=0.05) | 9.09 | 0.592 | 880.6 | 0.785 |
| V X D | | | | |
| S.E. ± | 7.74 | 0.505 | 750.2 | 0.668 |
| C.D. (P=0.05) | 15.7 | 1.026 | 1525.1 | 1.359 |

gradually decreased with the delay in planting. Fingermillet variety CO13 registered higher dry matter production. Among the dates of planting, the crop planted on May 17th recorded the higher DMP. The variety CO 14 had recorded more number of tillers hill$^{-1}$ than other varieties. Among the planting dates the crop planted on May 17th recorded maximum number of tillers hill$^{-1}$. Radhakrishna (1979) noticed significant genotypic differences in growth attribute of fingermillet under Bangalore condition. Lingegowda *et al.* (1986) reported that fingermillet sowing in July is ideal for late and mid late varieties, but early variety may be sown upto August 15th for higher growth. Veeraputhiran *et al.* (2009) revealed that higher growth attributes like height and dry matter production were recorded by the varieties CO 13, Indaf 8 and GPU 26, at Karaikal.

***Yield attributes :***

The fingermillet varieties TRY 1 produced higher number of ear hill$^{-1}$(3.48) followed by CO 14 (3.25) and CO 13 (3.10) (Table 2). The crop planted on June 14th produced higher number of ear hill$^{-1}$(3.66). The fingermillet variety CO14 produced highest fingers ear$^{-1}$(8.78) than other varieties. Among dates of planting there was no significant difference for the fingermillet varieties. Length of finger was higher for CO13 than other varieties. The length of finger was not significantly influenced by dates of planting. The fingermillet varieties TRY 1 had significantly the highest test weight followed by CO 13 and CO 14 at May 31st and May 17th. Veeraputhiran *et.al* (2009) reported that variety GPU 26 was found superior with higher yield attributes like number of ear head m$^{-2}$, length of panicle, number of grains ear head$^{-1}$and weight of grains. Chandrappa (1993) found higher yield attributes of fingermillet sown during second fortnight of July.

***Grain yield :***

The grain yield of all fingermillet varieties under different dates of sowing and their interaction were found significant (Table 2). Among the varieties, TRY 1 outyielded (1579 kg ha$^{-1}$) than the other varieties (CO 13: 1331 kg ha$^{-1}$ and CO 14: 1236 kg ha$^{-1}$). The per sent increase in grain yield by TRY 1 than CO 13 and CO 14 was 18.6 and 27.8 per cent, respectively. Regarding the planting dates earlier planting such as May 17th and May 24th outyielded all the other planting windows. The later planting windows like June 7th to June 21st resulted in poor yield for all the varieties. The best planting window for TRY 1, CO13 and CO14 was May 17th. The favourable parameters such as better LAI, higher dry matter production, more number of tillers hill$^{-1}$, more number of ear hill$^{-1}$, higher thousand grain weight and efficient harvest

**Table 2 : Effect of sowing dates and varieties on yield attributes and yield of fingermillet**

| Treatments | No. of ear hill$^{-1}$ | No. of finger ear$^{-1}$ | Length of finger (cm) | Test weight (g) | Grain yield (kg ha$^{-1}$) |
|---|---|---|---|---|---|
| Varieties (V) | | | | | |
| TRY1 | 3.48 | 6.71 | 6.04 | 2.92 | 1579 |
| CO13 | 3.10 | 8.22 | 6.96 | 2.59 | 1331 |
| CO14 | 3.25 | 8.78 | 6.95 | 2.63 | 1236 |
| S.E. ± | 0.167 | 0.233 | 0.234 | 0.087 | 101.6 |
| C.D. (P=0.05) | 0.341 | 0.473 | 0.476 | 0.178 | 206.6 |
| Date of sowing (D) | | | | | |
| May 17th | 3.42 | 8.28 | 7.01 | 2.75 | 1827 |
| May 24th | 3.40 | 7.82 | 6.61 | 2.58 | 1569 |
| May 31st | 2.84 | 7.88 | 6.58 | 3.00 | 1352 |
| June 7th | 3.00 | 7.93 | 6.42 | 2.58 | 883 |
| June 14th | 3.66 | 7.80 | 6.40 | 2.70 | 1472 |
| June 21st | 3.35 | 7.71 | 6.91 | 2.68 | 1188 |
| S.E. ± | 0.237 | 0.329 | 0.331 | 0.124 | 143.7 |
| C.D. (P=0.05) | 0.482 | NS | NS | 0.252 | 292.2 |
| V X D | | | | | |
| S.E. ± | 0.411 | 0.570 | 0.573 | 0.214 | 248.9 |
| C.D. (P=0.05) | 0.836 | 1.160 | 1.166 | 0.437 | 506.1 |

NS-Non significant

index are the probable reasons for obtaining higher yield. Dhagat *et al*. (1972) in an experiment at Jabalpur found that grain yield was positively correlated with thousand grain weight which is inline with above finding. Rao *et al*. (1991) and Chandrappa (1993) also confirmed that the grain yield of fingermillet decreased with delay in sowing. Radhakrishna (1979) opined that higher leaf area index and dry matter production are the main reasons for getting maximum yield in fingermillet which corroborates with the above findings.

## REFERENCES

**Chandrappa, C. (1993).** Studies on comparative performance of small millet in different dates of sowing under rainfed condition. M.Sc.(Ag.) Thesis, University of Agriculture Scicences, Bangalore (Karnataka).

**Dhagat, N. K., Patidar, G. L., Shrivastava, P. S. and Joshi, R. C. (1972).** Correlation and genetic variability study in ragi. *JNKVV Res. J*., **6** (2): 121-124.

**Eberhart, S.A. and Russell, W. A. (1966).** Stability parameters for comparing varieties. *Crop Sci*., **6**: 36-40.

**Lingegowda, B.K., Ashok, E.G. and Chandrappa, M.(1986).** Agronomic investigation on small millet in Karnataka. Souvenir, Intl. workshop on small millet, ICAR-UAS, Banglore, India, pp.19-26.

**Radhakrishna, K. (1979).** Pattern of post flowering dry matter accumulation in genotypes of fingermillet (*Eleusine coracana* G.). M.Sc.(Ag.) Thesis, University of Agricultural Sciences, Bangalore (Karnataka).

**Rao, K.L., Raja, D.V., Vand, D. and Rao, C.P. (1991).** Effect of planting time and plant population on growth and yield of fingermillet (*Eleusine Coracana* Gaertn.) varieties. *Ann. agric. Res.*, **12** (1): 14-19.

**Rashmia, A.S. and Seetharam, A.A. (2004).** Fingermillet- The Wonder Grain. *Food & Nutrition World*, : 36-38.

**Veeraputhiran, R., Chellamuthu, V. and Karthikeyan, R. (2009).** Performance of fingermillet varieties in coastal region of Karaikal. *Internat.J. agric. Sci.*, **5**(1):190-192.

*Received : June, 2009; Accepted : August, 2009*