

Short Communication

Variability Studies in Foxtail Millet

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Foxtail millet (*Setaria italica* L.), locally known as 'kangni' is a short duration, quick growing and drought sustainable crop, mainly grown in low fertile soils. Information on genetic variability in foxtail millet is lacking, therefore, present investigation was undertaken to study the variability

in 30 genotypes under *kharif*, as well as, in summer seasons.

Thirty genetically diverse genotypes of foxtail millet were raised in randomized block design, with 3 replications, at Rajasthan College of

Table 1 Estimates of genetic parameters for 11 characters under two environments in foxtail millet

| Characters | Environment | Range | Mean±SEm | GCV (%) | PCV (%) | Heritability (%) | GA | GA as % of mean |
|--------------------------------|----------------|---------------|-------------|---------|---------|------------------|-------|-----------------|
| Days to flowering | E ₁ | 40.66-56.00 | 49.66±1.13 | 11.01 | 11.50 | 91.69 | 10.78 | 21.72 |
| | E ₂ | 52.66-74.66 | 63.94±1.31 | 8.73 | 9.08 | 92.38 | 11.05 | 17.28 |
| Days to maturity | E ₁ | 73.33-99.00 | 85.66±0.84 | 9.61 | 9.68 | 98.46 | 16.83 | 19.65 |
| | E ₂ | 86.00-104.00 | 95.17±2.13 | 5.15 | 5.83 | 77.90 | 8.91 | 9.36 |
| Plant height (cm) | E ₁ | 79.56-126.76 | 106.95±2.07 | 11.04 | 11.29 | 95.61 | 23.78 | 22.24 |
| | E ₂ | 100.19-145.05 | 122.62±1.80 | 11.63 | 11.77 | 97.65 | 29.04 | 23.68 |
| No. of effective tillers/plant | E ₁ | 1.66-2.83 | 1.61±0.17 | 32.47 | 34.58 | 87.09 | 0.99 | 62.04 |
| | E ₂ | 1.06-2.73 | 2.27±0.19 | 19.25 | 21.83 | 77.80 | 0.79 | 35.19 |
| Main spike weight (g) | E ₁ | 3.84-6.63 | 5.16±0.24 | 15.01 | 16.13 | 86.95 | 1.98 | 28.83 |
| | E ₂ | 3.46-7.10 | 5.19±8.26 | 20.02 | 20.98 | 91.52 | 2.04 | 39.46 |
| Spike length (cm) | E ₁ | 11.40-18.80 | 15.73±0.27 | 10.23 | 10.44 | 95.92 | 3.13 | 19.92 |
| | E ₂ | 12.28-19.27 | 15.75±0.85 | 13.37 | 14.93 | 80.28 | 3.88 | 24.69 |
| Peduncle length (cm) | E ₁ | 18.63-27.36 | 24.51±0.47 | 8.60 | 8.92 | 93.09 | 4.19 | 17.10 |
| | E ₂ | 23.71-29.33 | 25.75±1.25 | 4.34 | 7.36 | 34.72 | 1.35 | 5.27 |
| Test weight (g) | E ₁ | 1.29-4.25 | 2.84±0.12 | 19.44 | 20.16 | 98.55 | 1.09 | 38.69 |
| | E ₂ | 2.01-4.30 | 2.82±0.22 | 17.58 | 20.12 | 76.39 | 0.89 | 31.66 |
| Biological yield/plant | E ₁ | 6.46-12.20 | 9.23±0.15 | 17.90 | 18.03 | 98.55 | 3.37 | 36.60 |
| | E ₂ | 5.16-12.20 | 9.19±0.18 | 21.54 | 21.68 | 98.74 | 4.05 | 44.10 |
| Harvest Index (%) | E ₁ | 45.53-92.52 | 52.36±1.29 | 4.88 | 5.74 | 72.18 | 4.47 | 8.54 |
| | E ₂ | 45.06-56.91 | 48.78±1.49 | 3.26 | 4.96 | 43.17 | 2.15 | 4.41 |
| Grain yield (g/plant) | E ₁ | 3.53-6.30 | 4.75±0.10 | 16.11 | 16.26 | 98.32 | 1.55 | 32.74 |
| | E ₂ | 2.86-6.73 | 4.74±0.19 | 21.64 | 22.25 | 94.69 | 2.05 | 43.33 |

Agriculture, Udaipur, during *Kharif* 1985 (E₁) and summer 1986 (E₂). Each plot comprised two rows of 4m length, with a spacing of 22.5 x 7.5 cm between and within row. Observations on 5 random plants from each treatment were recorded for yield components and grain yield. Genotypic (GCV) and phenotypic coefficient of (PCV) variation (Burton 1951), heritability in broad sense (Johnson *et al.* 1955) and genetic advance (Lush 1949) were estimated.

Maximum genotypic coefficient of variation was recorded for effective tillers plant⁻¹, followed by biological yield plant⁻¹, test weight, grain yield plant⁻¹ and main spike weight, in both the seasons, suggesting existence of genetic variability for these traits (Table 1). High heritability estimates were observed for most of the characters, under both the seasons, except harvest index and peduncle length. These results are in conformity with those reported by Sandhu *et al.* (1978). Characters like harvest index and peduncle length had moderate to high values of heritability under *kharif* season, but exhibited low estimates of heritability in summer season. Large heritability estimates, together with high genetic advance, as percentage of mean, was noticed in biological yield plant⁻¹, grain yield plant⁻¹, plant height and days to flowering, over the seasons.

Effective tillers, biological yield, grain yield plant⁻¹ and main spike weight had high genetic advance, as percentage of mean. High GCV, PCV, heritability and genetic advance, as percentage of mean, was noticed in effective tillers, biological yield plant⁻¹, test weight, grain yield plant⁻¹ and main spike weight, suggesting direct selection for these attributes to be fruitful. Similar results were also reported by Nagarajan & Prasad (1980) and Rao *et al.* (1984).

References

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