

HD Upadhyaya*, A Bharathi, CLL Gowda, RK Varshney and SL Dwivedi

*International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, 502 324, India
e-mail: h.upadhyaya@cgiar.org

About the foxtail millet crop

- Belongs to family *Poaceae* and subfamily *Panicoideae*
- A self-pollinating diploid crop with $2n=18$
- Domesticated in highlands of central China, possibly about 4000 years ago
- Cultivated in 26 countries with annual production of 2.9 million metric tons from the area of 3.5 m ha
- Two *Setaria* species are *S. glauca* and *S. italica* with the latter having two subsp. *viridis* and *italica*
- *S. italica* consists of three races (Moharia, Maxima and Indica) and ten subraces (Aristata, Fusiformis, Glabra, Compacta, Spongiosa, Assamense, Erecta, Nana, Glabra and Profusa)
- ICRISAT gene bank contains the largest collection of 1535 accessions

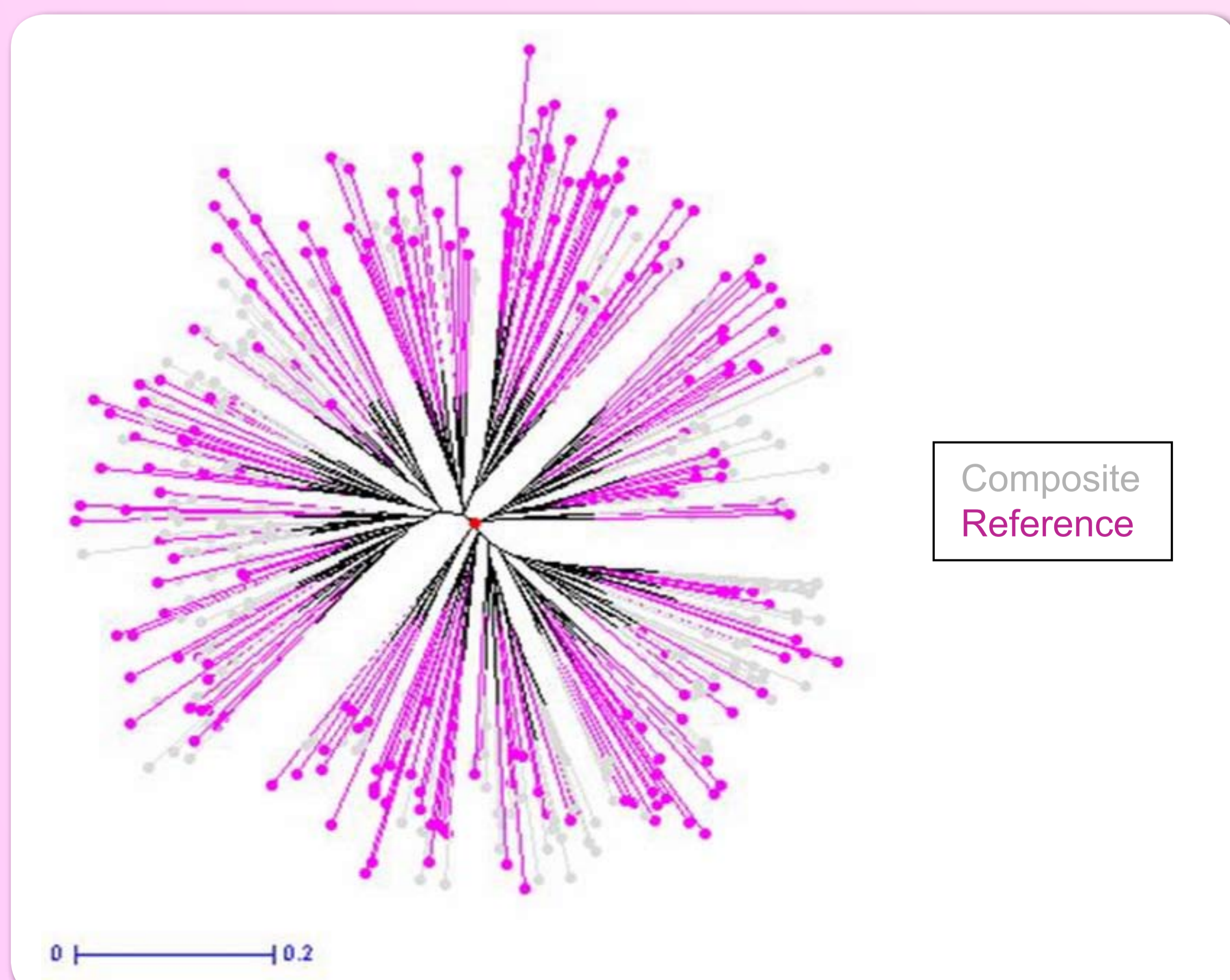
Landraces – 1470
Improved cultivars - 11
Wild accessions -54



Variation in inflorescence size, shape and seed color.

Developing reference set

ICRISAT developed and molecularly profiled a composite collection of foxtail millet consisting of 500 accessions using 19 SSR markers. A reference set of 200 diverse accessions representing 87% (316 of the 362 alleles) allelic diversity of the composite collection was established (<http://www.generationcp.org>). Both racial and geographical diversity were represented in this reference set.



Representation of reference set accessions in composite collection.

Evaluating reference set

Two hundred accessions along with four controls (ISe 375, 376, 1468 and 1541) were evaluated for 20 morpho-agronomic traits during the two rainy seasons at Patancheru, India. Accessions with desirable traits have been identified.



Field evaluation of reference set.



A high yielding accession with large panicle.

Trait specific accessions identified from reference set

Accessions with high yield ($>1.7 \pm 67.54 \text{ t ha}^{-1}$)	ISe 69, 792, 821, 1059, 1067, 1258, 1291, 1377, 1474, 1541, 1575, 1581, 1593 and 1647
Accession with early flowering ($<23 \pm 1.23$ days)	ISe 593, 1575, 158 and 1647
Accessions with high inflorescence length ($>250 \pm 10.01$ mm)	ISe 968, 1668, 1789 and 1851
Accessions with high inflorescence width ($>45 \pm 7.85$ mm)	ISe 968, 1668, 1789 and 1851
Accessions with high panicle weight ($>280 \pm 12.5$ g)	ISe 792, 1067, 1377 and 1474

¹ SP1 Project 2006-30: Genotyping of composite collection of foxtail millet