

Table 1.

Descriptors	Mean	Range of variation	Phenotypic CV (%)	Promising accessions
Days to 50% flowering	94.7	80.0-110.0	7.5	EC 499690 (80.0), EC 499705 and EC 499720 (80.0)
Days to mean maturity	129.5	119.0-136.0	2.4	EC 499708 (122.0), EC 499718 (122.0), EC 499699 (125.0), EC 499725 (126.0), EC 499741 (126.0)
Plant height	98.6	73.0-128.8	19.1	EC 499675 (124.0), EC 499741 (122.2), EC 499704 (118.6)
No. of primary branches	33.1	4.4-52.0	28.9	EC 499680 (52.0), EC 499676 (47.0), EC 400057 (45.6), EC 499678 (45.5)
Length of primary branch	85.0	24.0-117.2	21.1	EC 499741 (113.4), EC 499740 (104.6), EC 499675 (102.2), EC 499699 (102.0)
No. of fruits/primary branch	271.3	95.5-568.0	41.4	EC 499679 (568.0), EC 499677 (560.0), EC 499678 (540.5)
Length of main fruiting branch	161.1	7.2-44.3	58.0	EC 499684 (44.3), EC 499699 (42.8), EC 499705 (41.0)
No. of fruits/main fruit branch	20.7	8.2-57.2	45.3	EC 499684 (45.0), EC 499705 (45.0), EC 499690 (37.6), EC 499677 (35.0), EC 499678 (33.0)

The 72 exotic germplasm of *Crambe abyssinica* obtained from United States Department of Agriculture (USDA), Plant Introduction Centre, Ames, USA were grown during *rabi* season of 2003 at IARI, New Delhi in randomized block design with the spacing between the rows and within the rows of 45 cm and 10-15 cm respectively and 3 m row length. Ten plants were selected at random and observations on plant height, number of branches per plant, number of fruits per branch, length of primary branch and length of main fruiting branch were taken. The extent of variability were determined in 72 germplasm lines of *Crambe abyssinica*.

Wide range of variability was observed in plant height (73.0-128.8 cm), number of branches per plant (4.4-52.0), length of primary branch (24.0-117.2 cm), number of fruits per primary branch (95.5-568.0), length of main fruiting branch (7.2-44.3 cm) and number of

fruits per main branch (8.2-57.2). Promising accessions have been identified in each descriptor (Table 1). The accessions found promising in the present study may be utilized for developing varieties through direct selection or through breeding programmes.

References

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ABSTRACTS

Evaluation of Sunflower Germplasm

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Sunflower (*Helianthus annuus* L.) the oilseed crop native to North America was introduced in India during 1960s and has emerged as one of the major edible oilseed crops in the world. Sunflower cultivation is highly concentrated in Europe and among European countries, the erstwhile USSR is the largest producer of sunflower, followed by Romania, France and Yugoslavia. Sunflower is grown over an area of 21.21 m ha with a production

of 24.94 mt and 1174 kg/ ha average productivity. Till recently, the sunflower production was confined largely to the southern and central peninsula comprising Karnataka, Andhra Pradesh, Maharashtra and Tamil Nadu. Of late, its cultivation is getting extended to agriculturally advanced states in North India – Punjab, Haryana and Western Uttar Pradesh. Karnataka, Maharashtra and Andhra Pradesh are the major producers

and together contribute 87 per cent in area and 72 per cent in production. There are over 29,500 accessions of sunflower available worldwide (FAO, 1996); 3 per cent of these are of wild species, 4 per cent land races or old cultivars, 54 per cent are advanced cultivars or breeding lines and 39 per cent are others. USDA has maintained over 3608 accessions of *H. annuus* which consist of 1445 cultivated *H. annuus*, 2092 accessions of wild annual species and 71 accessions of perennial *Helianthus* species. There are 750 accessions of sunflower germplasm conserved at -20° C in National Genebank at NBPGR, New Delhi. Cultivated sunflower is an annual and conspicuously different from the wild and weedy forms in having a single unbranched stem, large capitulum and medium to large seeds. The cultivated forms vary greatly from one another in height, stem girth, leaf number and size, duration of maturity, test weight and oil content. The stem may show different degrees of branching, ranging from mono stem nature with single head to highly branched forms with several heads. The stem is supported by a strong, deep central root system with well developed lateral roots reaching a soil depth of 1.5 m to 2.0 m. The leaves vary in number and are produced in opposite pairs at the lower portion of the stem and in alternate phyllotaxy in whorled form at the above. Sunflower germplasm, which includes, wild species, land races, local and improved varieties, CMS lines, Maintainer and Restorer lines, inbreds,

hybrids and breeding lines have been introduced from over 33 countries during 1948 to 2000.

A total of 205 accessions of *Helianthus annuus* were grown during *rabi* season of 2003 at NBPGR Experimental Farm, Issapur, New Delhi. The accessions were sown in an augmented block design at spacing of 50 x 15 cm and 3 m row length with five checks. The recommended agronomic practices were followed to raise a good crop. The observations were recorded on days to 50 percent flowering, days to mean maturity, plant height, stem thickness, number of leaves, leaf length, leaf width, head diameter and oil content.

Wide range of variability was observed in plant height (44.6-318.4 cm), stem thickness (0.8-4.3 cm), number of leaves (8.0-40.0) and leaf length (6.4-30.4 cm), leaf width (4.9-22.4), head diameter (4.0-22.4 cm) and oil content (32.51-51.38 percent). Promising accessions identified for short plant height were EC 512703, EC 512727, EC 512732, EC 512733, EC 512735, EC 512770, EC 512771 and EC 512772; for broad head size and short plant height were EC 494422; EC 494380 for early flowering and EC 512679, EC 494385, EC 494400, EC 494415, EC 494422, EC 494444, EC 512750, EC 512751 for broad head size. The accessions found promising in the present study may be utilized for developing varieties through direct selection or through breeding programmes.

Risk of Seed-transmitted Viruses Associated with Exchange of Soybean Germplasm and the South Asian Scenario

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Soybean (*Glycine max* (L.) Merr.) is an important legume and oilseed crop of immense commercial value to South Asia. Given its nutritional and health related benefits, soybean has been gaining more prominence the world over with the advent of transgenic crops. South Asia accounts for 4 percent of soybean production in the world, of which, within the region, India's share was 99.52 percent during 2003. Soybean diseases, especially of viral origin, severely affect the yield. The crop is infected by 44 viruses, out of which 24 are seed-

transmitted. The yield-loss due to seed-transmitted soybean viruses ranges from 10 to 100 percent. The seed-transmitted viruses reported to be present worldwide include *Alfalfa mosaic virus* (AMV), *Arabis mosaic virus*, *Bean common mosaic virus* (BCMV)-*Black eye cowpea mosaic virus* strain, *Bean pod mottle virus*, *Cowpea aphid-borne mosaic virus* (CABMV), *Cacao necrosis virus*, *Cherry leaf roll virus*, *Cowpea mild mottle virus*, *Cucumber mosaic virus* (CMV), *Grapevine fanleaf virus*, *Mulberry ringspot virus*, *Peanut stripe virus*,