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Short Communication

JERUSALEM ARTICHOKE — A POTENTIAL EDIBLE TUBER YIELDING PLANT

Vandana Joshi, Bhag Mal and Ranvir Singh

National Bureau of Plant Genetic Resources
Pusa Campus, New Delhi-110 012

Jerusalem artichoke (*Helianthus tuberosus* L.) — a tuberous under shrub of family Compositae is a native of North America. The name Jerusalem Artichoke, is considered to be a correction of the italian Girasoli articoea, sunflower artichoke. According to Gray (1877), it originated in the valley of Mississipi from the species of sunflower, *H.doronicoides* Lam. This plant is cultivated in Europe, few parts of Asia in temperate regions of southern hemisphere. In India, it is found growing in W. Bengal, Assam, Maharashtra, Uttar Pradesh and Andhra Pradesh. It is well adapted to rich sandy or light loam and alluvial soils but does not thrive in wet and heavy soils, Although perennial in nature, it is treated as an annual under cultivation. This species is reported to have 13-18 per cent carbohydrate and 1.5-2.0 per cent protein (Anon, 1986) and is an economically useful species (Uphalf, 1959; Hedrick, 1981 and Singh *et al.*, 1983).

Tubers have multiple uses; as food, fodder, source of levulose and alcohol etc. Tubers can be eaten raw or boiled. They can be pickled, made into chips or ground into flour. Green tops and stems of young plants are used as feed for cattle. Tubers are used as feed for stock. Green stalks after treatment with soda chlorine process gives a pulp which is suitable for manufacture of certain type of papers. Tubers are rich in levulose which is used as a sweetening agent for diabetic patients. The carbohydrate portion of tuber is made up of insulin, hydrolysis of which will yield high fructose syrup which is good for diabetics. Tubers can be utilized for preparation of industrial alcohol through fermentation. Flowers of the plant are very beautiful, therefore it is grown as an ornamental also.

In order to assess the growth and tuber yield potential of exotic material, four exotic accessions of *Helianthus tuberosus* namely, EC 243070, EC 243071, EC 243073 and EC 243074 were introduced from France and

were evaluated for tuber yield and other growth characteristics during 1990 at the NBPGR Experimental Farm, Issapur. Healthy tubers were planted in two 4m long rows spaced 50 cm apart in the month of March. The distance between tubers was kept at 20 cm. The tubers were planted about 6 cm deep in well prepared beds. The tubers sprouted in 10-15 days. Two weeding were done in the early stages of growth. Irrigations were given as and when required. Earthing was done when the plants attained one foot height. The crop matured within six months and tubers were ready for harvesting when plants started drying up. It was observed that the tubers shrivelled up on exposure and cannot be kept out for more than a few weeks. Therefore, for storage it is advisable to leave tubers in soil until required.

The observations on various plant characters, namely plant height, stem thickness, branch number, leaf length, leaf width, tuber length, tuber width and tuber yield were recorded on ten randomly selected plants in each accession. The data revealed a good range of variability for most of the characters studies (Table 1). The range of variability for plant heights was 1.98-2.19 m, maximum being shown by EC 243071. Stem thickness ranged from 1.72-2.02 cm, the maximum being shown by EC 243071. Number of branches per plant varied from 11.0-12.2 maximum being shown by EC 243070. The leaf length and leaf width varied from 10 6-13.7 cm and 4.60-6.26cm respectively. The maximum being exhibited by EC 243074. The range variation in tuber length and tuber width was 8.0-20.5 cm and 2.6-7.5 cm respectively., the highest being recorded for EC 243073. Tuber yield per plot (4cm row) varied form 1.75-9.0 kg, the highest being recorded for EC 243073 followed by EC 243071.

Table 1. Variability for different characters in exotic accessions of Jerusalem artichoke

Accessions	Plant height (cm)	Stem thickness (cm)	Number of branches per plant (cm)	Leaf length (cm)	Leaf width (cm)	Tuber length (cm)	Tuber width (cm)	Tuber yield per 4 m row plot (kg)
EC 243070	219.0	1.99	12.2	11.7	6.12	8.0	2.6	1.75
EC 243071	208.2	2.02	12.0	10.8	5.00	14.2	4.4	4.75
EC 243073	226.2	1.94	11.4	10.6	4.60	20.5	7.5	9.00
EC 243074	198.0	1.72	11.0	13.7	6.26	11.3	3.8	2.50

The multiple uses, high tuber production potential and rapid propagation without much agricultural inputs qualify this species for economic use. Thus, it offers a good scope for cultivation in marginal areas and wastelands. Well planned efforts are required to be made to introduce more exotic germplasm and collect locally adapted tubers to build up the germplasm collection. This will enable extensive screening on the material so as to isolate promising desirable types for different eco-geographic situations. Efforts in this direction are going on in a phased manner.

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