

EVALUATION OF SWEET POTATO VARIETIES IN UPLANDS OF CENTRAL KERALA

The sweet potato (*Ipomoea batatas* (L) Lam) is of great value throughout the tropics as a vegetable root crop.

Varietal development and research activities on sweet potato in Kerala got less attention. As such the state lacks an identified high yielding variety of sweet potato. Hence a screening trial was conducted by using promising varieties of sweet potato collected from different states of India, at College of Horticulture, Vellanikkara, Trichur. The primary objective of the experiment was to study the yield and quality characteristics of these varieties and to identify the most suitable variety for the rainfed uplands of middle Kerala.

Ten varieties of sweet potato were compared in a field trial for their yield and quality during 1980 and 1981 Kharif season. The varieties used for the trial and their sources are given below:

Co 1		Tamil Nadu Agricultural University, Coimbatore
C 71	}	
V 35	L	Tiruhut Agricultural College, Dholi, Bihar
Kalmegh	}	
75-OP-1	}	
75-OP-2	}	
75-OP-57	}	Central Tuber Crops Research Institute, Trivandrum
H 620	}	
H 633	}	
Chindamoni	}	
(Kanhangad local)		Local variety

The experiment was laid out in randomised block design with three replications in plots of size 3.6 m x 3.6 m. The soil of the experimental site was fairly fertile sandy clay loam with 0.10% nitrogen, 2 ppm available P and 185 ppm available K.

The vines were planted 20 cm apart on ridges spaced 60 cm. The crop was planted during June-July and harvested (105 days after planting) during September-October and was purely rainfed. At the time of harvest the weights of marketable tubers, fresh vine, weevil infested tubers and number of tubers per plant were recorded. The data on yield of tubers for the two years were pooled and analysed. The harvest index (dry weight of tuber dry weight of whole plant) and percentage of weevil damage were calculated. The sugar and starch contents of the tubers were estimated and expressed as percentage of dry matter (Pigman, 1970). The cooking quality of the tubers was assessed by a taste panel.

The average values on various parameters are presented in **Table 1**. The variety 75-OP-1 an open pollinated selection recorded the highest yield (24 t/ha). The varieties C 71, V 35, Kalmegh, 75-OP-2, 75-OP-57 and H 633 were on par with 75-OP-1. The performance of Co 1 was not promising. H 620 and Chindamoni (Kanhangad local) recorded very low yield.

It is evident that the higher yield obtained in C 71 and V 35 was mainly contributed by the tuber number per plant while in other varieties it was individual tuber size. The source sink relationship seems to be the best in 75-OP-1 with 72 per cent of the dry matter translocated and stored in tuber. The very low tuber yield obtained in H 620 and Kanhangad local was the result of low harvest index as was indicated by the data on fresh vine weight. The variety C 71 produced high yield of tuber and still maintained high level of vegetative growth showing 1:1 apportionment of the total dry matter. The highest per cent of weevil damage was recorded in the variety Kalmegh and the minimum was in Kanhangad local. The extent of weevil damage was comparatively less in H 620, Co 1 and C 71.

The sugar content was highest in 75-OP-2 and was comparatively low in 75-OP-57, C 71 and 75-OP-1. The starch content of these varieties varied significantly from 59.3 to 70.1 percent.

Eventhough the yields of Chindamoni and H 620 were low, they were less susceptible to weevil attack. This brings out scope for utilising these varieties for resistance breeding programmes.

The varieties C 71, 75-OP-2 and 75-OP-57 combine high yield and low weevil damage. C 71 showed the advantage of higher tuber number per plant and comparable sugar content. On the basis of different characters investigated, C 71 can be considered as a high yielding variety suited to the sandy clay loam upland soils of central Kerala.

It is seen from the Table 1 that all the varieties produced high quantity of fresh vine. Chindamoni produced 59.9 t/ha of fresh vine (equivalent to 15 t/ha dry matter) and probably the high investment of the plant on vegetative part might have resulted in very low yield of tuber. In all varieties except Chindamoni, 75-OP-1 and V 35, the fresh vine production was on par and as such the yield difference observed was mainly due to difference in partitioning the assimilates, and in this regard 75-OP-1 seems to be the most efficient. The variety C 71 produced high quantity of fresh vine (about 40 t/ha) and tuber (23 t/ha). This indicates the high photosynthetic efficiency of this variety. So this variety can also serve as a good source of fodder. At the average content of 27% protein, 8% starch, 4% sugar, 10% ash reported in sweet potato leaves (Onwueme, 1978), the 39.9 t/ha of fresh vine obtained is equivalent to 4 t of protein, 1.2 t of starch, 0.6 t of sugar and 1.5 t of minerals.

The results of this study revealed that the varieties 75-OP-1, C 71, 75-OP-2, Kalmegh, 75-OP-57 and V 35 are potentially high yielding varieties. But 75-OP-1 and C 71 appear to be the best considering the yield and the yield contributing characters.

Table 1
Yield and quality of sweet potato varieties (mean of 1980 & 81)

Varieties	Marketable tuber yield (t/ha)	Weight of vine (t/ha)	Harvest index (%)	No. of tubers plant	Weevil damaged tubers (%)	Starch (%)	Sugar (%)
Co 1	16.4	35.1	48	4	11.9	63.3	5.7
C 71	23.1	39.9	54	8	22.2	65.3	6.6
V 35	19.8	46.2	47	6	38.6	62.2	7.1
Kalmegh	21.1	34.9	69	3	49.3	62.3	7.1
75-0 P-1	24.0	22.1	72	4	31.9	67.9	5.8
75-OP-2	21.2	33.6	50	4	13.4	60.6	7.3
75-OP-57	21.1	36.9	64	3	21.5	67.5	5.6
H 620	5.7	39.6	32	3	2.7	59.3	7.1
H 633	19.2	34.1	63	5	34.7	70.1	6.2
Chindamoni	8.6	59.9	38	2	0.0	67.4	6.8
CD (0.05)	5.1	6.1	11.6	2.0	2.0	7.8	1.4
SEM±	1.7	2.2	3.9	0.7	0.7	2.6	0.5

സംഗ്രഹം

ഇന്ത്യയുടെ വിവിധ ഭാഗങ്ങളിൽ നിന്നും ശേഖരിച്ച മധുരക്കിഴങ്ങിനങ്ങൾ കർമ്മപ്രദേശങ്ങളിൽ പരീക്ഷിച്ചു നോക്കി. 75-OP-1, C 71 എന്നീ ഇനങ്ങൾ അധികോൽപാദന ശേഷിയുള്ളവയാണെന്ന് കണ്ടു.

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