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PARTICIPATORY
DEMONSTRATIONS
ON IMPROVED
TECHNOLOGIES OF
CHINESE POTATO
FOR ENHANCING FARM
INCOME: A SUCCESS STORY

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Introduction

Chinese potato (*Plectranthus rotundifolius*) is one of the important tropical tuber crops grown in India, Sri Lanka, South East Asia and parts of Africa mainly for edible purpose. The tubers resemble potato in appearance and is consumed as vegetable after cooking. It has an aromatic flavour and delicious taste. It is a bushy herbaceous annual with succulent stems and aromatic leaves. It grows well under tropical and sub tropical conditions. The plant produces a cluster of dark brown aromatic tubers at the base and lower parts of the stem. The tubers contain dry matter (31-33%) and starch (18-20%) with a characteristic flavour due to essential oils (0.05 to 0.12%) which is preferred by the

consumers. In India, it is mainly cultivated in Kerala (Thrissur, Palakkad, Kasaragod and Kannur), Tamil Nadu (Tirunelveli, Tenkasi, Tuticorin, Virudhunagar and Kanyakumari) and in tribal settlements throughout the country.

Improved technologies of Chinese potato

Through the systematic research conducted at ICAR-CTCRI during the last fifty seven years, many technologies viz., improved variety (Fig.1) and package of practices (Table 1) were developed for enhancing the productivity and profitability of Chinese potato. Various programmes are implemented by research and development departments to disseminate the research results among the farmers. The extent of adoption

of improved technologies of Chinese potato by the farmers is comparatively low due to various constraints including technological, management, marketing and socio-economic factors. Hence, participatory demonstrations have been attempted through action research in farmers' fields of Alvan Thulukapatti and in nearby villages of Tirunelveli district of Tamil Nadu for enhancing technology adoption by farmers.

Technological interventions

Tuber crops growers, scientists/staff of ICAR-CTCRI, officials of state department of horticulture and media were the partners in participatory demonstrations. A total of five farmers who had interest in taking up scientific interventions were selected with the help of



Sree Dhara (Yield: 25 t/ha; Starch: 16-20 %)

Fig.1. Improved variety of Chinese potato released by ICAR-CTCRI



Fig. 2. View of demonstration plots on Chinese potato (Sree Dhara)

Table 1. Recommended package of practices for Chinese potato

Season	July-October
Seed rate and planting materials	Whole tuber (40-50 kg) is required to raise nursery to plant one hectare of land; vine cuttings (10-15 cm long) which are free from pests and diseases and nematodes
Land preparation	Mound; Ridge & Furrow
Method of planting	Horizontal/Vertical planting
Suitability	Rainfed both under upland and low land conditions, fertile soil with good drainage facilities
Spacing and plant population (ha)	45 x 30 cm; 74000 plants
Farm yard manure (t/ha)	10
N: P ₂ O ₅ : K ₂ O (kg/ha)	50: 25: 75
Intercultural operations	Weeding and earthing up at first and second months after planting
Duration (months)	4-5
Harvesting, grading and packing	Manually
Average yield (t/ha)	20-25

State Department of Horticulture by following the principles of participatory demonstration. Improved variety of Chinese potato 'Sree Dhara' was demonstrated for proving its technical feasibility and economic viability to the farmers. Demonstrations were conducted

by multidisciplinary team from ICAR-CTCRI comprising scientists, technical and skilled support staff. Quality planting materials and critical inputs were supplied to the farmers for establishing demonstration plots. Farmers were trained on improved technologies and

frequent farm advisory visits were also conducted by the scientists to monitor the growth and yield performance. Five demonstrations on improved variety of Chinese potato viz., Sree Dhara were conducted at Alvan Thulukapatti in Tirunelveli district of Tamil Nadu during

Table 2. Economic impact of improved variety of Chinese potato (Sree Dhara)

Variety	Yield (t ha-1)	Gross Income (₹ ha-1)	Total Cost (₹ ha-1)	Net Income (₹ ha-1)	B: C ratio
Sree Dhara	26.7	2,80,350	1,01,290	1,79,060	2.77
Local varieties	22.9	2,40,450	97,660	1,42,790	2.46



Fig.3. Grading, packing and marketing of Chinese potato in Tirunelveli, Tamil Nadu

September 2018 - January 2019 (Fig. 2).

Economic impact: Yield of the improved variety 'Sree Dhara' was found to be 26.7 t ha-1 which was 16.6 % higher than the yield of local varieties (22.9 t ha-1). Gross income realized from Sree Dhara was ₹ 2.80 lakhs while for local varieties it was ₹ 2.40 lakhs (Table 2). The productivity and profitability of

Chinese potato significantly increased with the improved variety as it is evident from the benefit cost ratio of 2.77 for Sree Dhara. The harvesting, grading and packing of the tubers were done manually for transporting to different markets in Tamil Nadu and other states of India which fetches good price in the range of ₹ 30-50 per kg of tubers (Fig. 3). Tubers are also

exported to different countries viz., UAE, USA and Australia by the traders.

Field Day cum Agripreneur Meet: 'Field day cum agripreneur meet on Chinese potato' was organized at Alvan Tulukkapatti, Tirunelveli district on 11 January 2019 to celebrate the success of demonstrations on improved variety of Chinese potato (Fig. 4). The farmers were



Fig. 5. Harvesting and distribution of tubers of Chinese potato (Sree Dhara)

imparted training on scientific cultivation and were explained about the superiority of Sree Dhara over local varieties. About 100 farmers and entrepreneurs participated in the event.

Feedback from farmers: The improved variety is high yielding with good shape and size, more number of tubers/plant, good keeping quality, high demand among traders/consumers, fetches remunerative price, nutrient efficient and drought tolerant and short duration (4 months).

Challenges: Lack of availability of good quality planting materials of improved varieties, incidence of nematode, pests and diseases, price fluctuation, lack of pre and post harvest machineries, absence of organized marketing system and wild animals attack.

Scaling Up: Harvested

tubers were distributed to the neighbouring farmers for establishing seed villages for meeting the demands of good quality planting materials of improved variety 'Sree Dhara' (Fig. 5) in the village. Realizing the advantages of improved technologies of Chinese potato, farmers have demanded for technological interventions in other villages. Accordingly, fifteen demonstrations were established in the villages of Pellakal Pudhukudi and Kuthapanchan (Fig. 6) in Tirunelveli district during August 2019 under SCSP plan for improving the livelihood of the poor farmers through technological interventions. Large areas are expected to be covered under the improved variety 'Sree Dhara' in the coming years for enhancing farm income and also to sustain

the production of Chinese potato with limited resources.

Conclusion

Participatory demonstrations on improved variety and technologies of Chinese potato have shown that productivity and profitability could be increased by technological interventions with active participation of farmers and other stakeholders. Hence, concerted efforts by various research and developmental organizations are to be directed towards farmer participatory demonstrations for enhancing the farm income as envisaged in 'Doubling Farmers Income', the goal set by Government of India. The success story clearly proved that participatory demonstrations are the need of the hour to make farming more profitable and sustainable.