



Short communication

## Assessment of *per se* performance of chilli (*Capsicum annum* L.) hybrids TNAU Chilli Hybrid CO 1 and Arka Saanvi in Salem District of Tamil Nadu

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### ABSTRACT

Chilli is an important spice cum vegetable crop which is grown throughout India. India is the world's largest producer, consumer and exporter of chillies in the world. The important states of chilli production are Andhra Pradesh, Orissa, Maharashtra, West Bengal, Karnataka, Rajasthan and Tamil Nadu. In Salem district, area under chilli cultivation is around 1100 ha in the year 2019-20. Among 20 blocks of Salem district, Kolathur block is well known for chilli cultivation in Salem District. Most of the farmers rely upon only the private chilli hybrids, for which they have to spend much more towards seed cost. An investigation was needed to assess the performance of high pungent chilli hybrids in Salem district. Hence, this investigation had been carried out to assess the *per se* performance of high pungent chilli hybrids in Salem district in the year 2021. An experiment was conducted as an on farm trial in five different locations of Salem district during Kharif season of 2021 in chilli using hybrids Arka Saanvi and TNAU Chilli Hybrid CO 1 with Sierra Hybrid of Mahyco, which (drought and powdery mildew tolerant hybrid with medium pungency fruits) as check hybrid. Regarding yield attribute, TNAU Chilli hybrid CO1 recorded highest yield per hectare (24t/ha) followed by Arka Saanvi (21t/ha) which might be due to the more number of fruits per plant in TNAU Chilli hybrid CO1 hybrid. Farmers preference as well as market preference in Salem District is more for TNAU Chilli Hybrid than Arka Saanvi because of its bigger size fruits with more number of fruits of high pungency. Regarding BC ratio, Arka Saanvi and Sierra recorded 2.50 and 1.79, respectively as against highest BC ratio of 2.71 in TNAU Chilli hybrid CO 1.

**Key Words:**Chilli, Hybrids, Arka Saanvi, TNAU chilli hybrid CO 1, Performance.

### INTRODUCTION

Salem district is geologist paradise, surrounded by hills and the landscape dotted with hillocks. It is known for mangoes, silver ornament, textiles, sago industries, and steel production. Salem has got 20 blocks; Average temperature is 32<sup>o</sup> C, maximum and 19.6 degree minimum with humidity ranging from 39 to 85%. During SW monsoon, a rainfall of 545 mm and during NE monsoon 564.2 mm was recorded. Net sown area is 22,33,70 ha and area sown more than once 81670 ha. Area under

horticultural crops is 39765 ha and area under chilli cultivation is around 520 ha in Salem district.

Chilli is an important spice cum vegetable crop which is grown throughout India. The important states of chilli production are Andhra Pradesh, Orissa, Maharashtra, West Bengal, Karnataka, Rajasthan and Tamil Nadu. Chillies are used as an ingredient to add flavour, pungency and colour to most dishes. In Salem district, the area under horticultural crops is 39765 ha and area under chilli cultivation is around 1100 ha in the year 2019-20.

Among 20 blocks of Salem district, Kolathur block is well known for chilli cultivation in Salem District. Private hybrids are ruling in the market as well as among the farmers though these hybrids show less pungency. But the cost of private hybrid seeds is so high which accounts more proportion of the farmers expenditure towards cost of cultivation. Hence, an investigation is needed to assess the performance of high pungent chilli hybrids Arka Saanvi and TNAU chilli hybrid CO 1 in the farmers fields of Salem district.

## MATERIALS AND METHODS

Chilli is also known as hot pepper or pimento. It is a self-pollinated crop and chasmogamous in nature in which flower opens only after pollination. However 2 to 96% out crossing was observed under open pollination by means of insects (Hasanuzzaman *et al*, 2012). Chasmogamy is a plant reproductive mechanism in which pollination occurs in chasmogamous flowers (cross-pollinated have the advantage of sexual reproduction between two different parents, resulting in sexual recombination and genetically distinct seeds). Apart from its traditional use, it found its place in pharmaceutical industries (due to the presence of Capsaicin) for therapeutic and prophylactic and ayurvedic medicine and processed food industries as source of natural colour extractant (due to the presence of the biochemical Capsanthin) in the food items. It is considered as a vitamin capsule as they are excellent source of vitamin A, C and E (Durust *et al*, 1997). To meet the high demand of chilli due to increase in population, for increasing the productivity of the crop, hybrids should be considered for cultivation. The hybrid chilli plant yields 61% higher as compared to open pollinated varieties (Prasad *et al*, 2019 and Malathi and Veeraragavathatham, 2004)). Primary data were collected on various aspects of chilli cultivation. A field experiment was conducted as an on farm trial in five different locations of Kolathur village and Veerapandy blocks in Salem district during *kharif* season of 2021 in chilli using hybrids Arka Saanvi

and TNAU Chilli Hybrid CO 1 with Sierra Hybrid of Mahyco (drought and powdery mildew tolerant hybrid with medium pungency fruits of more than 10 cm long and diameter of 1.1 to 1.3 cm) as check hybrid.

## RESULTS AND DISCUSSION

The results (Table 1.) showed that TNAU chilli hybrid CO 1 recorded highest individual fruit weight of 27 g followed by Arka Saanvi (25g). TNAU chilli hybrid CO 1 recorded an individual fruit weight of 27g but higher individual fruit weight (28g) was recorded by Sierra hybrid. Arka Saanvi recorded lesser fruit weight of 25g. The plants of TNAU chilli hybrid CO 1 were medium tall and less spreading (83 cm plant height), fruits pendent with length of 11 cm and fruit girth of 1.15 cm. The unripe fully matured fruits of TNAU chilli hybrid CO 1 were light green in colour, elongated, tapering towards the tip and 11 cm long with more pungency. The fruits were moderately resistant to fruit rot disease throughout the crop duration of around 210 days.

The special characters of Arka Saanvi were a high yielding chilli F1 hybrid suitable for green and dry chilli market. The plants were medium tall and spreading (80 cm plant height), fruits pendent with length of 8.2 cm and fruit girth of 1.2 cm. The fruits were firm, medium pungent, green colour and turned red on maturity, surface was smooth turn to medium wrinkled on maturity and tolerant to chilli leaf curl virus. Regarding yield attribute, TNAU Chilli hybrid CO1 recorded highest yield per hectare (24t/ha) followed by Arka Saanvi (21t/ha) which might be due to the more number of fruits per plant in TNAU Chilli hybrid CO1 hybrid. Farmers preference as well as market preference in Salem District is more for TNAU Chilli Hybrid than Arka Saanvi because of its bigger size fruits with more number of fruits of high pungency. Regarding BC ratio, Arka Saanvi and Sierra recorded 2.50 and 1.79 respectively as against highest BC ratio of 2.71 in TNAU Chilli hybrid CO 1.

## Assessment of *per se* performance of chilli

**Table 1. *Per se* performance of different hybrids of chilli in Salem Districts.**

Technology Option	Plant height (cm)	Fruit length (cm)	Fruit girth (cm)	Fruit weight (g)	Number of fruits/plant	Yield (green chilli) (t/ha)	Net Returns(Rs. in lakh./ha)	B:C ratio
Technology 1 Arka Saanvi	80	8.2	1.20	25.0	210	21.0	2.50	2.19
Technology 2 TNAU Chilli hybrid CO1	83	11.0	1.15	27.0	235	24.0	3.50	2.71
Farmers practice Sierra hybrid	93	11.2	1.25	28.0	175	17	1.90	1.79
Mean	85.33	10.13	1.19	26.67	206.67	20.67		
CD5%	2.23	0.25	0.06	1.81	4.5	0.64		
CD1%	3.24	0.36	0.08	2.64	6.54	0.93		
SEd	0.97	0.11	0.03	0.79	1.95	0.28		
CV(%)	1.79	1.66	3.34	4.66	1.49	2.13		

The plants of TNAU Chilli Hybrid CO 1 showed profuse flowering and continuous fruit setting characters with moderately resistance to fruit rot disease. Arka Saanvi showed medium pungency with tolerance to chilli leaf curl virus. But both are high yielding hybrids suitable for green chilli fruits in Salem District.

### CONCLUSION

In Salem District of Tamil Nadu the chilli hybrid namely TNAU chilli hybrid CO 1 and Arka Saanvi recorded higher fresh green fruit yield of 24.0 t/ha and 21.0 t/ha, respectively and also highest number of fresh fruits per plant (235) whereas the private hybrid recorded highest individual fruit weight (28g) with lesser number of fruits (175) and lesser marketable fruit yield (17t/ha). TNAU chilli hybrid CO 1 was suitable for chilli growing farmers of Salem district to get higher yield as well as higher net income and benefit cost ratio in chilli crop.

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