

Per se performance of hybrid chillies (*Capsicum annum* l.) TNAU Chilli Hybrid CO1 and Arka Meghana in Salem district of Tamil Nadu

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ABSTRACT

A field experiment was conducted as an on farm trial in five different locations of Salem district during Kharif season of 2014 in chilli using hybrids TNAU Chilli Hybrid CO 1 and IIHR chilli hybrid Arka Meghana with a private hybrid US611 as check hybrid. TNAU Chilli Hybrid CO 1 showed moderate resistance to fruit rot disease with more number of marketable fruits per plant. Regarding yield attributes, TNAU Chilli Hybrid CO1 recorded 4.25t/ha of green fresh fruit yield and 1.57 t/ha of red ripe dry fruit yield. Whereas the yield of the other hybrid Arka Meghana was 2.57t/ha of green fresh fruit yield and 0.74 t/ha of red ripe dry fruit yield. The private check hybrid US611 recorded green fresh fruit yield of 2.67t/ha and red ripe dry fruit yield of 0.89t/ha. Regarding BC ratio, the TNAU Chilli Hybrid CO 1 given the highest value of 3.96, whereas it was lesser in private hybrid US611 (2.92) and least in (2.65) in Arka Meghana under Kolathur conditions of Salem district. This might be due to the less incidence of fruit rot in TNAU Chilli Hybrid CO 1 (22%) when compared to the other two hybrids (28% to 88%), which resulted in more number of marketable fruits and marketable yield as well as lesser production cost in TNAU Chilli Hybrid CO 1. Hence, performance of TNAU Chilli Hybrid CO 1 was found to be better for the chilli growing areas of Salem district especially in Kolathur Block.

Keywords—Chilli, *Capsicum annum*, hybrids, TNAU Chilli Hybrid CO 1, Arka Meghana, performance, on farm trial

1. INTRODUCTION

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. Among 20 blocks of Salem district, Kolathur block is well known for chilli cultivation. Private hybrids are ruling in the market as well as among the farmers though these hybrids show less pungency. Hence, this investigation had been taken up to assess the performance of high pungent chilli hybrids in Salem district. Salem district was established during 1790 and it well is known for mangoes, silver ornament, textiles, sago industries, and steel production. Salem has got 20 blocks; Average temperature is 32⁰ 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.

Chilli is 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 1089 ha in the year 2013-14. 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. Hence, an investigation is needed to assess the performance of high pungent chilli hybrids in Salem district.

2. EXPERIMENTAL METHODS OR METHODOLOGY

Chilli is also known as hot pepper or pimento. 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)).

Hence, this investigation had been carried out to assess the *per se* performance of high pungent chilli hybrids in Salem district. Primary data was collected on various aspects of chilli cultivation in Salem District. A field experiment was conducted as an on farm trial in five different locations of Kolathur village in Salem district during Kharif season of 2014-15 in chilli using hybrids TNAU Chilli Hybrid CO 1 and IIHR chilli hybrid Arka Meghana with a private hybrid US611 (dual purpose hybrid used as both green and dry purpose with medium pungency) as check hybrid.

The special characteristics of TNAU Chilli Hybrid CO 1 are unripe fruits light green in colour, elongated, tapering towards the tip and 10.5 – 12.0 cm long, Capsaicin and oleoresin contents of 0.58 % and 14.0 % respectively, moderately resistant to fruit rot disease, yields about 6.74 t/ha of dry pod and 28.10 t/ha of green chilli in a crop duration of 195-205 days.

The special characteristics of Arka Meghana are high yielding chilli F1 hybrid developed by using MS line, plants medium tall (81.3 cm) & spreading 69.5 cm, Fruits long (10.6 cm) with width of 1.2 cm., very early, taking 24 days for 50% flowering, fresh yield of 33.5 t/ha and dry yield of 5 t/ha in 140-150 days, fruits are dark green and turn deep red, tolerant to powdery mildew and viruses.

The experiment was laid out in a Randomized Block Design with seven replications. The mean performance of different traits such as plant height, fruit length, fruit weight, number of fruits per plant, fresh green fruit yield per hectare, dry fruit yield per hectare, net returns per hectare and benefit cost ratio have been recorded and data was subjected to statistical analysis (Panse and Sukhatme, 1985).

3. RESULTS AND DISCUSSION

The results (Table 1.) showed that TNAU Chilli Hybrid CO 1 recorded moderate resistance to fruit rot disease with more number of marketable fruits per plant. Regarding yield attributes, TNAU Chilli Hybrid CO1 recorded 4.25t/ha of green fresh fruit yield and 1.57 t/ha of red ripe dry fruit yield. Whereas the yield of the other hybrid Arka Meghana was 2.57t/ha of green fresh fruit yield and 0.74 t/ha of red ripe dry fruit yield. The private check hybrid US611 recorded green fresh fruit yield of 2.67t/ha and red ripe dry fruit yield of 0.89t/ha. Regarding BC ratio, the TNAU Chilli Hybrid CO 1 given the highest value of 3.96, whereas it was lesser in private hybrid US611 (2.92) and least in (2.65) in Arka Meghana under Kolathur conditions of Salem district.

This might be due to the less incidence of fruit rot in TNAU Chilli Hybrid CO 1 (22%) when compared to the other two hybrids (28% to 88%), which resulted in more number of marketable fruits and marketable yield as well as lesser production cost in TNAU Chilli Hybrid CO 1. Hence, performance of TNAU Chilli Hybrid CO 1 was found to be better for the chilli growing tracts of Salem district especially in Kolathur Block.

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

Technology Option	Plant height (cm)	Fruit length (cm)	Fruit weight (g)	Number of fruits per plant	Yield (green chilli) (t/ha)	Yield (dry chilli) (t/ha)	Net Returns(Rs. in lakh./ha)	B:C ratio
TNAU Chilli hybrid CO1	60	11	5.2	95	4.25	1.57	138650	3.96
Arka Meghana	80	10	4.8	85	2.57	0.74	90350	2.65
US 611 hybrid	55	14	5.8	65	2.67	0.89	67350	2.92
Mean	64	11.7	5.26	82	3.14	1.06		
CD5%	2.31	0.59	0.18	1.84	0.051	0.01		
CD1%	3.24	0.82	0.25	2.59	0.070	0.02		
SEd	1.06	0.27	0.08	0.85	0.023	0.006		
CV(%)	3.10	4.30	2.85	1.93	1.39	1.07		

CONCLUSION

Among the hybrids assessed TNAU chilli hybrid CO1 recorded highest fresh yield and dry yield (4.25 and 1.57t/ha) than the local private hybrid and IIHR Hybrid Meghana. TNAU Chilli Hybrid CO 1 is moderately resistant to fruit rot disease and its performance was good. In Salem District of Tamil Nadu, both the chilli hybrids namely Arka Meghana and TNAU Chilli Hybrid CO1 are high pungent hybrids, TNAU Chilli Hybrid is suitable for Salem region to get higher yield in fresh green chilli yield and dry chilli yield as well as higher net income and benefit cost ratio.



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