

44.17 in brinjal where as in fungus alone inoculated beds it was 39.03 in chilli and 39.12 in brinjal. All the three treatments differed significantly. The dry root weight was minimum in fungus and nematode inoculated beds. The per cent reduction over control in fungus and nematode inoculated beds was 49.07 in chilli and 44.22 in brinjal, whereas it was 28.12 in chilli and 26.59 in brinjal in fungus alone inoculated beds and it was 13.79 and 17.92 per cent in nematode alone inoculated beds. According to Hasan (1985) the root weight of chilli plant was found to be reduced when *Pythium* and *Meloidogyne* were inoculated simultaneously. This reduction in dry shoot weight and root weight was also observed in cowpea plants inoculated with *M.incognita* complex. (Lanjewar and Shukla, 1985) and in lettuce due to infection by *P.trachiphilum* - *M. hapla* complex (Gracia *et al.*, 1991). The reduction in the dry shoot and root weight of the plants infected with *Pythium* and *Meloidogyne* is an indication of reduced vigour of the plants, which would ultimately lead to their poor establishment in main field after transplanting and also poor yield.

The highest gall-index of 3.00 was observed in *Meloidogyne* alone inoculated beds of chilli and brinjal which was followed by simultaneous inoculation of *Meloidogyne* and *Pythium*. The root-knot nematode is an obligate parasite and cellular destruction by another pathogen would naturally result in suppression of nematode multiplication.

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TMV 6-A NEW HIGH YIELDING MEDIUM DURATION CASTOR FOR TRADITIONAL CASTOR GROWING AREAS OF TAMILNADU

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ABSTRACT

The new castor variety TMV 6 (TVC 31) is a hybrid derivative of VP 1 (a stable pistillate line) and RC 962 (a high yielding pollinator) with desirable characteristics viz., medium duration (155 to 165 days), non dehiscant spiny capsules borne on mostly pistillate racemes and high oil content of 51.9 per cent. It gives an average yield of 928 kg/ha under pure cropping and 568 kg/ha under intercropping situations.

KEYWORDS : Castor, TVC 31, medium duration

Castor is one of the most important oilseed crops grown during kharif season in Salem, Dharmapuri and Erode districts which form the traditional castor growing tract. Of late, castor is gaining importance owing to its wide utility in the industrial and pharmaceutical sectors. It is

normally grown as an intercrop in groundnut or pulses. In general, medium duration varieties are preferred by the farmers for intercropping. TMV 6 is one such high yielding medium duration variety which is suited for both pure and intercropping situations.

Table 1. Overall performance of TVC 31 in comparison with TMV 5

S. No.	Trial	No. of locations	Seed Yield (Kg/ha)		Oil Yield (Kg/ha)	
			TVC 31	TMV 5	TVC 31	TMV 5
PURE CROP						
1.	Station trial	3	1187	891	616	453
2.	MLT	8	732	618	380	314
3.	ART	27	866	790	449	401
	Total	38	-	-	-	-
	Mean	-	928	766	482	389
	% on TMV 5	-	122.0	100.0	123.9	100.0
INTERCROP						
1.	Station	2	6309	535	327	272
2.	ART	29	506	483	263	245
	Total	31	-	-	-	-
	Mean	-	568	509	295	259
	% on TMV 5	-	110.0	100.0	114.0	100.0

MATERIALS AND METHODS

Artificial cross pollination was effected between the pistillate line VP 1 and a pollinator RC 962 selected from the germplasm. The objective of the experiment was to combine the stable sex expression of VP 1 (pistillateness) and high yielding attribute of RC 962 and develop a medium duration variety suited to intercropping situations. The culture TVC 31 was fixed in F7 generation during 1988. Based on its consistent performance on PYT (Preliminary Yield Trial) and CYT (Comparative Yield Trial), it was proposed for MLT (Multilocation Trial) in 7 locations from 1991 to 1993. Later, it was proposed for Adaptive Research Trials in Salem, Dharmapuri and Periyar districts from 1992 to 1995.

RESULTS AND DISCUSSION

TVC 31, as a pure crop, recorded an overall mean yield of 928 kg/ha with 22 percent increase over TMV 5. The oil yield worked out to be 482 kg/ha which is 24 per cent higher than that of TMV 5 (Table 1). The culture, as an intercrop recorded an overall mean yield of 586 kg/ha with 11 per cent increase over that of TMV 5. The oil yield was 295 kg/ha which is 14 percent higher than that of TMV 5.

Considering the overall performance of TVC 31 in comparison with TMV 2, it recorded a mean yield of 728 kg/ha with 8 percent increase over TMV 2 (Table 2). The oil yield (378 kg/ha) is 10

Table 2. Overall performance of TVC 31 in comparison with TMV 2

S. No.	Trial	No. of locations	Seed Yield (Kg/ha)		Oil Yield (Kg/ha)	
			TVC 31	TMV 5	TVC 31	TMV 5
PURE CROP						
1.	ART	21	728	675	378	343
	% on TMV-2		108	100	110.2	100
INTERCROP						
1.	ART	24	446	421	231	214
	% on TMV-2		106	100	107.9	100

Table 3. Performance of TVC 31 at Multilocation Trials

Centre	Seed Yield kg/ha				Mean for 2 years		% on TMV 5
	1991-92		1992-93		TVC 31	TMV 5	
	TVC 31	TMV 5	TVC 31	TMV 5			
D.R.S. Indivanam	1300	995	569	416	935	706	132.4
A.R.S. Aliyarnagar	226	168	263	153	245	161	152.2
A.R.S. Vellore	634	406	-	-	634	406	156.2
School of Genetics, Coimbatore	1162	1000	1080	964	1121	982	114.2
D.R.S. Baiyur	382	476	551	551	467	514	90.8
S.R.C. Trichy	498	469	-	-	498	469	106.2
Veterinary College, Namakkal	-	-	1223	1090	1223	1090	112.2
Mean	700	586	737	635	732	618	118.4

percent higher than TMV 2. Under intercropping, it gave an overall mean yield of 446/kg/ha with 6

per cent increase over TMV2. The oil yield (231 kg/ha) is 8 per cent higher than TMV2.

Table 4. Performance of TVC 31 in Adaptive Research Trials as a pure crop

Year	No. of Trials	Yield (kg/ha)		No. of Trials	Yield (kg/ha)	
		TVC 31	TMV 5		TVC 31	TMV 2
1991-92						
Salem	7	794	748	-	-	-
Erode	5	962	869	2	907	684
Dharmapuri	4	786	848	-	-	-
1993-94						
Salem	5	915	906	3	875	692
Erode	2	746	541	2	746	864
Dharmapuri	4	950	690	1	935	610
1994-95						
Salem	-	-	-	5	594	587
Erode	-	-	-	5	682	690
Dharmapuri	-	-	-	3	684	690
Overall Mean		866	790		728	675
% increase over		9.6				

Table 5. Performance of TVC 31 in Adaptive Research Trials as an intercrop

Year	No. of Trials	Yield (kg/ha)		No. of Trials	Yield (kg/ha)	
		TVC 31	TMV 5		TVC 31	TMV 2
1991-92						
Salem	10	419	438	-	-	-
Erode	5	993	867	2	822	664
Dharmapuri	2	451	969	1	437	402
1993-94						
Salem	5	204	253	5	204	269
Erode	2	818	678	2	818	692
Dharmapuri	2	397	354	3	286	263
1994-95						
Salem	-	-	-	3	286	406
Erode	-	-	-	5	527	429
Dharmapuri	-	-	-	3	311	273
Overall Mean		506	483		446	421
% increase over		4.8			5.9	

In the multilocation trials conducted during 1991-92 and 1992-93 at seven locations, TVC 31 registered a mean yield of 1187 kg/ha as a pure crop with 33 per cent increased yield over TMV 5 (Table 3)

The adaptive research trials conducted during 1991-92, 1993-94 and 1994-95, revealed that under pure cropping system, TVC 31 recorded a mean yield of 866 kg/ha with 9.6 per cent increase over TMV 5. Similarly in comparison with TMV 2, TVC 31 recorded a mean yield of 728 kg/ha with 7.9 per cent increase over TMV 2 (Table 4).

Under intercropping situations, TVC 31 recorded a mean yield of 506 kg/ha with 4.8 per cent increase over TMV 5. In comparison with TMV 2 as an intercrop, TVC 31 recorded a mean yield of 446 kg/ha with 5.9 per cent increase over TMV 2 (Table 5).

The culture TVC 31 recorded low incidence of jassids, semilooper and capsule borer. It is moderately resistant to wilt, rust and *Alternaria* leaf spot. (Table 6).

The morphological description of TVC 31 is furnished below

Plant height	:	100-180 cm
Stem colour	:	Red
Bloom	:	Double
Branching	:	Divergent
Nodes to primary spike	:	16-19
Leaf	:	Green, flat, midrib brownish tinge
Length of main raceme	:	57.5 cm
Length of pistillate region	:	57.5 cm
No. of effective spikes per plant	:	15
Capsule no. in primary spike	:	95
100 seed weight	:	28 gm
Oil content (%)	:	51.9
Seed	:	Medium bold, light chocolate with onspicuous mottling

Table 6. Reaction of TVC 31 to important pest and disease at Oilseeds Research Station, Tindivanam (Mean for 3 years)

Culture/Check	Pest Score			Disease Score		
	Jassids Pop / 3 leaves	Semilooper larvae/plant	Capsule borer (% damage)	Wilt (%)	Rust (1-9 scale)	Alternaria leaf blight
TVC 31	3.5	3.5	25.6	5.3	3.1	3.0
TMV 5	5.2	4.6	51.7	5.8	3.2	3.6

Days to 50% flowering : 45-80

Days to maturity : 155 - 165

Maturity group : Medium

Because of its superior performance in yield and high oil content, the culture TVC 31 was released as TMV 6 castor during 1997 for pure and mixed/intercropping conditions during June-

September in Salem, Dharmapuri and Erode districts of Tamil Nadu.

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DIALLEL CROSS ANALYSIS FOR COMBINING ABILITY IN UPLAND COTTON (*G. hirsutum* L.)

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ABSTRACT

A diallel set of 10 parents of upland cotton was evaluated under artificial American bollworm infestation for seed cotton yield per plant, boll number and bollworm damage. A significant role of both additive and dominance components of gene action was observed for all the characters studied. Epistasis influenced the performance of seed cotton yield per plant, number of bolls and eggs of *H. armigera*. The net directional dominance was operative towards high mean performance for egg and larval count, green boll damage, open boll damage open locule damage and seed cotton yield per plant. A greater frequency of dominant alleles for all the traits studied except seed cotton yield per plant where equal proportion of dominance and recessive alleles were observed. In general the parents AET 5, Okra and JK 276-4 were the best parents and in particular the pigmented line 9-1487 for bollworm damage in desired direction. Okra x 9-1487 and Frego x 9-1487 were good sources of desirable selections in further generations. In view of the selections for favourable recessive alleles any form of recurrent selection which allow intermating among selects may be more effective as the potentiality of recessive alleles remains hidden in the heterozygous condition.

KEY WORDS: Upland cotton, tolerant donor, American bollworm

Cotton is one of the important commercial crops of Andhra Pradesh. In recent times, cotton cultivation in Andhra Pradesh has become risk prone particularly due to whitefly initially and later

Helicoverpa armigera outbreaks. Host plant resistance is considered as one of the most important ecofriendly approaches to contain the pest attack. Combining ability studies help in