

A New Fodder Cowpea variety COFC 8 for Tamil Nadu

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Abstract : A fodder Cowpea variety COFC 8 (CO5 x N 331) was developed in order to meet the green fodder requirement in Tamil Nadu. The new variety is having a yield potential of 136 q ha⁻¹ of green fodder in 65 days. It is semi spreading, erect in early stage of growth, later on trailing/creeping, indeterminate type with luxurious growth. The leaf stem ratio was 0.95 with higher crude protein, calcium and phosphorus contents and less crude fibre than the existing fodder Cowpea variety CO 5.

Key words : Fodder Cowpea, Green fodder yield, Quality parameters.

Introduction

Cowpea is a multipurpose legume grown for seed as pulse, green pod as vegetable and whole plant as fodder. It can be grown round the year for fodder in tropics and subtropics. It can be grown in rainfed and irrigated conditions. It is rich in protein, calcium and phosphorus. It can be grown as pure crop or intercrop with cereal fodders like maize/sorghum/bajra. Cowpea as a fodder is much relished by cattle and will improve the animal

performance. From TNAU, Cowpea CO 5 was released during 1986 (Sukanya Subramanian *et al.*, 1987). With a view to increase the fodder yield, crosses were made between CO5 x N 331 and in segregating generations a high yielding culture TNFC 9901 was isolated and tested in various trials. Due to its higher performance, the culture TNFC 9901 was released as COFC 8 during 2004 for general cultivation.

Table 1. Green fodder yield of Fodder cowpea TNFC 9901 in Station Trials.

Sl.No.	Year	Kharif (q/ha)	
		TNFC 9901	CO 5
1.	1998	205.83	158.32
2.	1999	124.66	105.58
3.	2000	120.82	109.99
	Total	451.31	373.89
	Mean	150.43	124.63
	Percentage over check CO5	20.7	-

Table 2. Green fodder yield of Fodder cowpea TNFC 9901 in Multi Location Trial - 2000-2001.

Sl.No.	Year	Green fodder yield (q ha ⁻¹)	
		TNFC 9901	CO 5
1.	Aliyarnagar	153.8	135.0
2.	Bhavanisagar	117.0	104.0
3.	Virinjipuram	279.0	263.0
4.	Paiyur	45.0	50.8
5.	Arupukkotai	39.2	33.7
6.	Killikulam	96.5	50.0
7.	Virudachalam	201.9	190.4
8.	Coimbatore	94.2	77.5
	Total	1026.6	904.4
	Mean	128.32	113.05
	Percentage over check CO 5	13.5	-

Materials and Methods

The cowpea variety CO 5, an induced mutant from CO 1 was crossed with N 331. The F₁ and further segregating generations were evaluated in different seasons for fodder yield and quality attributes. In F₇ generation, three high yielding lines were identified and tested in station trials (three years). Two cultures viz., TNFC 9901 and TNFC 9902 were promoted to Multi location Trial (one year) and All India Co-ordinated Programme (15 locations throughout the country). Among them, the culture TNFC 9901 consistently recorded higher green fodder yield in Multi location Trial and also in Adaptive Research Trials (87 locations throughout Tamil Nadu). The fodder quality parameters were also estimated by standard procedures.

Results and Discussion

The results of the three year station trials are presented in Table 1. It is to be noted that the culture TNFC 9901 recorded the mean green fodder yield of 150.4 q/ha⁻¹ as against

CO 5 which recorded only 124.6 q ha⁻¹. The percentage increase over the control variety was 20.7.

The multilocal trials were conducted over eight locations during 2000-2001 (Table 2). In Virinjipuram, a maximum green fodder yield of 279 q ha⁻¹ was recorded with an yield advantage of 6.3 per cent over CO 5 (263 q ha⁻¹). In Killikulam, TNFC 9901 registered the green fodder yield of 96.5 q ha⁻¹ (93 percent increase over CO 5). At Coimbatore, it recorded 94.2 q ha⁻¹ with an yield advantage of 21.5 per cent over CO 5 (77.5 q ha⁻¹).

The Adaptive Research Trials (ART) were conducted during 2001-2002 (37 locations) and 2002-2003 (45 locations). The results of the best 15 locations are presented in Table 3. The mean calculated green fodder yield over all the 82 locations was worked out as 129.93 q ha⁻¹ in TNFC 9901 compared to 115.88 q ha⁻¹ in CO 5.

Table 3. Green fodder yield of Fodder cowpea TNFC 9901 in Adaptive Research Trials 2001-2003.

Sl.No.	Name of the Districts	(Yield q ha ⁻¹)	
		TNFC 9901	CO 5
1.	Thiruvallur	323.40	235.20
		230.00	255.00
2.	Dharmapuri	138.25	135.25
		147.10	146.50
3.	Erode	187.66	165.33
		200.00	150.00
4.	Thiruchirapalli	260.00	205.00
		195.00	180.00
5.	Perembalur	-	-
		550.00	500.00
6.	Karur	262.50	215.00
		243.00	204.00
7.	Madurai	173.30	191.40
		181.25	202.50
8.	Dindigal	180.60	142.45
		214.50	186.55
9.	Tuticorin	152.50	123.75
		110.00	133.75
10.	Pudukottai	187.50	182.00
		210.00	155.00
11.	Thiruchirapalli	181.00	178.00
		243.75	213.75
		184.00	146.00
		172.50	150.00
12.	Coimbatore	196.00	162.50
		70.50	68.75
		102.00	98.00
		620.00	442.33
13.	Namakkal	22.50	105.00
		16.75	21.25
		577.50	355.00
		56.25	50.00
14.	Vellore	192.00	95.00
		179.50	178.75
		122.00	120.00
		120.30	123.95
15.	Tirunelveli	48.00	84.00
		113.00	132.00
		325.00	240.00
		265.00	205.00
	Mean	129.93	115.88
	Percentage over check CO 5	12.12	-

Table 4. Green fodder yield and Dry matter yield of fodder cowpea TNFC 9901 in All India Co-ordinated Trial - Kharif 2000 (q ha⁻¹)

Sl.No.	Name of Centres	Green Fodder Yield		Dry Matter Yield	
		TNFC 9901	Bandel Lobia-1 (NC)	TNFC 9901	Bandel Lobia-1 (NC)
1.	Kalyani	223.00	189.7	44.60	44.60
2.	Faizabad	201.30	161.9	42.80	40.2
3.	Bhubaneswar	245.70	226.3	47.90	54.3
4.	Ludhiana	263.90	317.1	38.0	48.1
5.	Bikaner	296.30	344.9	82.20	70.1
6.	Hisar	343.10	277.8	57.20	43.9
7.	Jabalpur	245.00	257.2	68.70	71.6
8.	Anand	83.00	110.00	-	-
9.	Jhansi	261.60	342.6	53.10	60.4
10.	Kanpur	280.60	237.0	-	-
11.	Rahuri	33.30	119.9	6.60	28.5
12.	Urulikanchan	355.30	293.0	62.50	53.3
13.	Vellayani	201.70	240.7	35.40	42.4
14.	Coimbatore	93.10	79.2	18.62	18.0
15.	Rajouri	107.50	122.3	-	-
	Mean	215.6	221.31	46.47	47.95

Table 5. Quality Parameters of fodder Cowpea TNFC 9901 as compared to local check Cowpea CO 5.

Sl.No.	Content	TNFC 9901	CO 5
1.	Crude protein (%)	20.67	19.17
2.	Crude fat (%)	2.72	2.60
3.	Crude fibre (%)	24.95	25.30
4.	Nitrogen free extract (%)	40.70	39.60
5.	Total ash (%)	10.96	10.30
6.	Calcium (%)	1.49	1.40
7.	Phosphorus (%)	0.37	0.34

Table 6. Reaction of the Fodder Cowpea TNFC 9901 for Pest and Disease Resistance in All India Co-ordinated Trial - Kharif 2000.

Sl.No.	Centre	No. of Leaf hoppers / plot		Beetle (% Damage)		Mosaic virus		Root rot (% infected plants)	
		TNFC 9901	Bandel Lobia-1 (NC)	TNFC 9901	Bandel Lobia-1 (NC)	TNFC 9901	Bandel Lobia-1 (NC)	TNFC 9901	Bandel Lobia-1 (NC)
1.	Jhansi	13.3	10.3	15.3	10.0	0.0	0.0	3.8	5.0
2.	Rahuri	11.9	11.9	17.2	14.0	-	-	-	-
3.	Hisar	-	-	-	-	1.0	1.0	4.9	7.4
4.	Urulikanchan	-	-	-	-	2.0	2.1	-	-
	Mean	12.6	11.1	16.25	12.00	1.5	1.52	3.8	6.2
		MR	-	MR	-	R	-	R	-

NC : National Check; MR : Moderately Resistance, R : Resistance

In the All India Co-ordinated trials, the culture TNFC 9901 was tested at 15 locations and compared with the national check Bandel Lobia -1 during *Kharif* 2000 (Table 4). The culture TNFC 9901 recorded the mean green fodder yield of 215.6 q ha⁻¹ compared to 221.31 q ha⁻¹ in Bandel Lobia-1. The Urulikanchan centre had registered the maximum green fodder yield of 355.3 q ha⁻¹ as against 293 q ha⁻¹ by Bandel Lobia-1.

With regard to dry fodder yield, the culture TNFC 9901 performed well in all the centres. It occupied the All India first rank in Bikaner centre by recording the maximum fodder yield of 82.2 q ha⁻¹ as against 70.1 q ha⁻¹ by Bandel Lobia-1.

The fodder quality parameters of the culture TNFC 9901 in comparison with the check CO 5 is given in Table 5. The culture TNFC 9901 was superior to CO 5 in respect of crude protein, crude fat, total ash, calcium and phosphorus content.

The culture TNFC 9901 was resistant to Cowpea yellow mosaic virus and root rot. It was moderately resistant to leaf hoppers, bacterial leaf blight and beetles (Table 6).

Hence in view of the superior yielding ability, quality parameters and increased tolerance towards pest and diseases, the culture TNFC 9901 was released for large scale general cultivation throughout Tamil Nadu as COFC 8 during 2004.

References

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