

## Co 6 COWPEA (*Vigna unguiculata* (L.) Walp.) A NEW HIGH YIELDING SHORT DURATION VARIETY FOR RAINFED CROPPING SYSTEM IN TAMIL NADU

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### ABSTRACT

Studies to develop a high yielding cowpea variety coupled with resistance to cowpea mosaic, resulted in the isolation of a superior culture 1-26 from the segregants of the cross Ms 9804 X C 152. The new variety matures in 65-70 days, 15 days earlier than Co 4 and C 152. The grain is light cream in colour with a potential yield of 1712 Kg/ha and tolerant to cowpea mosaic virus, root rot and stem fly. The variety is suitable for both pure and mixture crop under rainfed cropping system in Tamil Nadu to replace Co 4 and C 152.

Cowpea, (*Vigna unguiculata* (L.) Walp.) is one of the prominent traditional vegetable pulse crops raised in almost all parts of Tamil Nadu, in about 20,000 ha. It is mostly raised during *kharif*, *rabi* and summer both as pure and mixed crop in marginal lands. Cowpea comes up very well in marginal than other pulses under rainfed cultivation but mosaic, root rot and stem fly often limit the yield. The ruling varieties Co 4 and C 152 are highly susceptible to cowpea mosaic virus and chemical control is costly. With a view to improve resistance and thereby to improve yield, attempts were made to breed resistant varieties by infusing resistant genes from genetic resources into susceptible but agronomically good varieties through hybridisation.

### MATERIALS AND METHODS

Artificial cross pollination was effected between two cowpea types viz., Ms 9804 and C 152 during the year 1981 at the School of Genetics, Tamil Nadu Agricultural University, Coimbatore and subsequently the hybrid derivative was selected as culture 1-26 at F6 generation through pure line

selection. This culture was evaluated under various yield trials of the university centres and in adaptive research trial from 1984 onwards. This culture has been released as Co 6 during 1993.

### RESULTS AND DISCUSSION

Culture 1-26 was tested for its yield potential in farmers fields, station and national trials. In the station trials, it has recorded 681 kg/ha, an increase of 25.8 per cent and 56.9 per cent yield over Co 4 and C 152 respectively (Table 1). In multilocation trials, it has recorded 634 kg/ha which was 18.7 per cent more than that of C 152 (Table 2). In adaptive research trials, the culture was tested in 58 farmers holdings throughout the state and yielded grain yield of 1565 Kg/ha averaging 699 kg/ha which is 14 per cent more than Co 4. Thus the overall performance of the culture 1-26 was 671 kg/ha (Table 3).

This culture was also tested in All India Co-ordinated Trials during 1988-89 in eight locations. Culture 1-26 was found tolerant to root rot, cowpea mosaic virus, stem fly and pod borers. The organoleptic evaluation of culture 1-26

Table 1. Performance of culture 1-26 in Station Trials (*kharif*).

Type	1984-85	1985-86	1986-87	1987-88	Mean (kg/ha)
1-26	524	417	479	1303	681
Co 4	323	319	431	1125	541
C 152	245	280	511	701	434

% Increase over Co 4 = 25.8; % Increase over C 152 = 56.9

Table 2. Performance of culture 1-26 in MLT (1989 *kharif*).

Type	Coimbatore	Vamban	Bhavanisagar	Tindivanam	Vellore	Pattukottai	Mean (kg/ha)
1-26	587	710	680	480	580	765	634
Co 4	414	810	640	513	630	700	618
C 152	395	603	570	500	454	680	534

% Increase over Co 4 = 3.0; % Increase over C 152 = 18.7

MLT: Multilocation trials

**Table 3.** Overall performance of culture 1-26

Trials	No. of trials	Yield of grain (kg/ha)		
		1-26	Co 4	C 152
Station Trials	4	681	541	434
MLT	6	634	618	534
ART	58	699	615	640
Mean		671	591	536

Overall increase over Co 4 = 13.5%

Overall increase over C 152 = 25.2%

MLT : Multilocation trials

ART : Adaptive research trials

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## RESEARCH NOTES

### VELIMASAL: A NEW FORAGE LEGUME FOR TAMIL NADU

Forage legumes are important constituents of cattle feed as suppliers of protein and minerals which are required in optimum quantities for sustained milk and meat production. Thus the grass/cereal fodder supplemented with a legume becomes a wholesome feed for the cattle. Cultivation of the grass and the legume together will not only provide a balanced nutritious feed for the animal but also effect savings in space. From a search for a suitable legume with perenniality that can be cultivated with the perennial grass cumbu-napier hybrid, *Desmanthus virgatus* (Wild) commonly known as hedge lucerne has been identified as the most suitable one.

Four introductions of hedge lucerne *D. virgatus* viz., FD 111 from Thailand, FD 508 from Rahuri, FD 766 from Jhansi and FD 500 from Urlikanjan

**Table 1.** Mean yield and yield attributes of *Desmanthus virgatus* (Mean of 6 trials each with 3 replication)

Character	FD 111	FD 508	FD 766	FD 500
Plant height (cm)	2.01	1.92	1.69	1.78
Number of branches	10.00	9.0	8.00	10.0
Leaf length (cm)	10.6	9.70	10.1	10.40
Stem thickness (cm)	0.5	0.48	0.41	0.47
Leaf/Stem ratio	3.11	1.72	2.05	2.65
Pod length (cm)	10.16	8.76	9.68	10.24
No. of seeds/pod	30.00	29.00	27.00	32.00
1000 seed weight (g)	4.08	3.87	3.69	4.01
Green fodder yield	125.10	91.20	85.4	97.50

indicated a high overall rating of acceptability for appearance, flavour, taste and doneness.

Apart from yield advantage and short duration, the new culture is tolerant to cowpea mosaic virus with attractive grain colour. The state Varietal Release Committee has approved for its release as Co 6 during January 1993 for general cultivation throughout Tamil Nadu.

were evaluated by conducting replicated trials at the Department of Forage crops, Tamil Nadu Agricultural University, Coimbatore as well as multilocal trials in different centres under irrigated condition. Uniform spacing of 50 cm between rows was adopted for the pure crop of hedge lucerne and mixed cropping of hedge lucerne with cumbu-napier hybrid grass. *Leucaena* and cumbu-napier hybrid grass as a mixed crop, grown in the ratio of 3 rows of cumbu-napier hybrid grass (B.N<sub>2</sub>) and one row of hedge Lucerne. (FD 111) respectively. The spacing adopted for cumbu-napier hybrid grass was 50 cm within rows.

The first harvest on 90th day after sowing and subsequent harvests at intervals of 40 days for pure crop of hedge lucerne were taken up. When raised as a mixed crop with cumbu-napier hybrid grass, the first harvest was taken up on 60th day after planting/sowing and subsequent harvest once in 40-45 days.

In the third experiment, cumbu-napier hybrid grass var.co.I was raised with hedge Lucerne (FD 111) and *Leucaena leucocephala* Hawaiian giant var. Ivory coast in the ratio of 3:1. The spacing adopted for *Leucaena* is 10 cm between plants. The first harvest of grass was taken up 60 days after transplanting while the first harvest of the grass coincided three and half months after the sowing of leucaena. Thereafter, the harvest was done at 45