



A High Yielding Cumbu Napier Hybrid Grass CO (CN) 4

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A high yielding and nutritious Cumbu Napier hybrid, TNCN 014 was developed at the Department of Forage Crops, Centre for Plant Breeding and Genetics, Tamil Nadu Agricultural University, Coimbatore and released as CO (CN) 4. It is an interspecific hybrid between Fodder Cumbu, CO 8 and Napier grass, FD 461. As the hybrid is a triploid, it displays complete sterility and luxurious vegetative growth. Being an asexually reproducible crop, the hybrid vigour can be maintained permanently without any deterioration. TNCN 014 is ideotypically possessed with ideal features. It is well adapted to the soil and climatic conditions of Tamil Nadu. It is highly palatable, much preferred by milch animals, goat and sheep. It registered a mean green fodder yield of 382 t/ha/year, which was 33 per cent yield increase over the check variety CO 3.

Key words: CO (CN) 4, Cumbu Napier hybrid grass, green fodder yield, triploid

Cumbu Napier hybrid grass is a cross between Cumbu (*Pennisetum glaucum*) and Napier grass (*P. purpureum* Schumach.), widely cultivated across India, Africa, Sri Lanka and South East Asian countries. As the hybrid is a triploid, it displays complete sterility and high vegetative growth. In Tamil Nadu, land area utilized for growing fodder is very negligible, accounting only 1.6 per cent of the total cultivated area (Season and Crop Report, 2007-08).

In Tamil Nadu, 65 lakh litres of milk are produced every day. Every year 4 per cent growth in milk production is witnessed. During the eleventh plan period, 7-8 per cent growth in milk production is desired (The Hindu, 2007). The average milk yield in India is 987 kg/lactation, whereas it is 9291 kg in Israel, 7038 kg in U.S.A. and 6273 kg in Denmark. In order to enhance the milk production and meet the demand, cross bred cows should be fed with nutritious green fodder throughout the year (Hegde, 2007). The annual demand of green fodder to feed the animal population of 2,46,21,161 is 83.75 million tones. But at present the supply of green fodder is 12.68 million tones only, leaving a deficit of 71 per cent (DAHUS, 2004).

Presently, Cumbu Napier Hybrid grass is grown throughout India, barring some hilly areas where frost is a common phenomenon. The major area in the states of Tamil Nadu, Karnataka, Kerala, Andhra Pradesh, Orissa, Maharashtra and Gujarat. It is well adapted to the soil and climatic conditions of Tamil Nadu. In Tamil Nadu, it is extensively grown in Coimbatore, Salem, Erode and Namakkal Districts. A high yielding, nutritious green fodder with soft stem and high leaf stem ratio Cumbu Napier hybrid is the long felt need of dairy farmers of Tamil Nadu, where

it is grown predominantly under irrigated situation. With this objective a new high yielding nutritious CO(CN)4 variety was developed to increase the production and productivity of green fodder in Tamil Nadu.

Materials and Methods

The Cumbu Napier hybrid grass, TNCN 014 was evolved at the Department of Forage Crops, Centre for Plant Breeding and Genetics, Tamil Nadu Agricultural University, Coimbatore and released as CO (CN) 4. The cross was made between Fodder Cumbu CO 8 and Napier grass FD 461 during the year 2001. Elite plants possessing desirable characters which contribute towards high biomass, high leaf stem ratio, soft stem and more protein were selected from F1 generation. These plants were evaluated for their sustained performance, homogeneity and the elite clone TNCN 014 was identified. The clone TNCN 014 was evaluated with check at Forage Research Farm, Coimbatore from 2003 to 2007, under research station trials during 2004-2005, under multi location trials from 2004 to 2007 and under on farm trials during 2007 and 2008 at farmers' holdings of various districts of Tamil Nadu. Thus, a total of 56 trials were conducted. Based on the standard procedures the fodder qualities and its acceptability were also analysed. Besides, the reaction of the farmers upon the performance, palatability and milk yield was ascertained.

Results and Discussion

The fodder yield evaluation of the clone TNCN 014 is presented in Table 1. It was tested in research station during 2004-05 and recorded a green fodder

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yield of 396.75 tonnes/ha as against the check CO 3 producing 325.50 tonnes/ha). The per cent increased green fodder yield over the check was 21.88%. In 12 multi location trials, the clone TNCN 014 recorded a green fodder yield of 259.7 tonnes/

ha/year which was 19.6 per cent increased fodder yield over the check CO 3. On testing the culture in OFT for two years (2007 and 2008), it gave an average green fodder yield of 487.48 tonnes/ha/year which is 52.7 per cent increase over the check CO 3

Table 1. Yield potential of Cumbu Napier Hybrid Grass TNCN 014

Name of the Trial	Year	No. of Trials	Average No. of cuts	Green fodder yield		% Increase over CO 3
				TNCN 014	CO 3	
Research Station Trials	2004-05	7	7	396.75	325.5	21.88
Multi Location Trials	2006-07	11	7	259.70	217.21	19.6
On Farm Trials	2007-08	42	7	487.48	319.20	52.7

(Table 1).

Fodder quality

The quality and nutritive values of the clone TNCN 014 is presented in the Table 2. It is highly palatable for the milch animals. The dry matter yield of the clone TNCN 014 was estimated to be 81.4 tonnes/ha/yr as against the check CO 3 (62.1 tonnes/ha/yr). The stalks are succulent and juicy possessing Brix

Table 2. Quality and Nutritive values of Cumbu Napier Hybrid Grass - TNCN 014

Characters	TNCN 014	CO 3
Dry matter (%)	21.3	19.10
Dry matter yield (t/ha/yr)	81.4	62.1
Crude protein (%)	10.71	10.50
Crude protein yield (t/ha/yr)	8.71	6.52
Crude fibre (%)	28.11	30.5
Oxalic acid (%)	2.48	2.51
Brix (%)	3.40	2.44
Total ash (%)	17.52	16.17

value of 3.4 % compared to 2.44% in CO 3. It is free from pests and diseases.

Morphological characters

The Cumbu Napier elite clone TNCN 014 offers seven cuttings per year. First cut on 75-80 days after planting and subsequent cuttings at 45 days interval. It has an erect plant habit with 400-500 cm plant height at flowering. It is non-lodging with profuse tillers (30-40 tillers/clump). The leaf stem ratio is 0.71. A uniform and visible white powdery coating on the stem act as a distinguishing feature (Table 3). Green, conspicuous aerial roots encircling each node provide quick regeneration ability.

Table 3. Morphological Characters and Metric Traits of Cumbu Napier Hybrid Grass - TNCN 014

Characters	TNCN 014	CO 3
Leaf colour	Dark green	light green
Leaf sheath colour	Green	Pale green
Mid rib colour	Bright white	White
Leaf margin	Serrated	Serrated
Dorsal Surface	Sparsely hairy	Densely hairy
Ventral surface	Sparsely hairy	Densely hairy
4th leaf length (cm)	110-115	80-95
4th leaf width (cm)	4.0 -5.0	3.0 -4.2
No. of leaves/clump	400-450	300-400
Leaf stem ratio	0.71	0.60
Plant height (cm)	400-500 at flowering	300-360 at flowering
Culm colour	Green	Green
Node colour	Green	Green
Waxy coating on stem	Present	Absent
Tillers per clump	30-40	25-30
Stem girth (cm)	5.6	5.0
Earhead	Bristled, Greenish, yellow	Bristled, Greenish, yellow

Considering the superior performance, the clone TNCN 014 it was released as a new variety by name CO (CN) 4 for large scale cultivation in Tamil Nadu during 2008.

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