



A High Yielding New Guinea Grass Variety CO (GG) 3

G. Vijayakumar*, C. Babu and K. Velayudham

Department of Forage Crops, Centre for Plant Breeding and Genetics
Tamil Nadu Agricultural University, Coimbatore - 641 003

A high yielding and nutritious Guinea grass elite culture TNGG 062 was developed at the Department of Forage Crops, Centre for Plant Breeding and Genetics, Tamil Nadu Agricultural University, Coimbatore and released as CO (GG) 3 during 2009. It is a clonal selection from Mumbasa which is an exotic collection from Africa. It is ideotypically obsessed with ideal features. It has good seedling vigour with profuse tillering habit. It has larger, broader and long leaves with high leaf stem ratio than the existing variety CO 2. As the palatability is very high and also free from anti nutritional factors, the milch animals, sheep, goats, pigs and Emu birds relish the fodder without rejection. As it is tolerant to shade, it can be grown in the inter-space of coconut gardens and other trees. It registered a mean green fodder yield of 423 tonnes per hectare per year in research station trials and On Farm Trials which was 75 per cent increased green fodder yield over the check variety CO 2. The dry matter yield, crude protein and crude fibre contents are 79 t/ha/year, 6.35 per cent and 30 per cent respectively. It is suitable for preparation of hay and silage.

Key words: Guinea grass CO (GG) 3, green fodder, dry matter.

A native of Africa, Guinea grass was introduced to almost all tropical countries as a source of animal fodder. It is an ideal forage plant as it grows well on a wide variety of soils and even under light shade of trees and bushes (and thus can be grown with other crops). It also responds quickly to fertilizer and watering. The Guinea grass variety CO 2 was released during 2000 from the Department of Forage Crops. Besides being a perennial grass, it is tolerant to shade and adapts well under coconut plantations and other trees. This grass is ideal for feeding bovine population because of their long, broad and soft leaves and stems. Its exemplary performance attracted the fodder growing farmers of Tamil Nadu, Andhra Pradesh, Karnataka, Kerala and few other states.

In Tamil Nadu, land area utilized for growing fodder is only 2.07 lakh hectares (Season and Crop report, 2006). The demand and supply of green fodder in Tamil Nadu are 83.75 and 12.28 million tonnes respectively. Guinea grass is well adapted to the soil and climatic conditions of Tamil Nadu. It is widely cultivated in Coimbatore, Salem, Erode and Namakkal districts. A high yielding, nutritious green fodder with soft stem and high leaf stem ratio is the long felt need of the dairy farmers of Tamil Nadu so as to bridge the existing wide gap between the demand and supply of green fodder.

With these objectives, work was initiated and a new high yielding nutritious CO (GG) 3 variety was

developed to increase the production and productivity of green fodder in Tamil Nadu.

Materials and Methods

The new variety CO (GG) 3 is a clonal selection from Mumbasa which is an exotic collection from Africa. The exotic clone Mumbasa is characterized by robust growth with high green fodder yield. As the leaves and stems were having spines and hairs, which are not preferred by milch animals, clonal selection from the original Mumbasa was made and elite clones possessed with desirable characters which contribute towards high biomass, high leaf stem ratio, soft stem and more protein were selected. These plants were further evaluated for their sustained performance, homozygosity and the elite culture TNGG 062 was identified as the best one. The culture TNGG 062 was evaluated with check at Forage Research Farm, Coimbatore from 2006 to 2008, under research station trials during 2007 and 2008, and under On Farm trials during 2008 and 2009 at farmers' holdings of various districts of Tamil Nadu. Based on the standard procedures the fodder qualities and its acceptability were also analysed. Besides, the reaction of the farmers upon the performance of TNGG 062, its palatability and its influence on milk yield were also ascertained.

Results and Discussion

The culture TNGG 062 has consistently given higher fodder yield than CO2 in research station

*Corresponding author email: gvk_cbe@yahoo.co.in

trials and On Farm Trials. The evaluation trial data of the culture TNGG 062 obtained from the research station trials conducted during 2007 and 2008 and OFT (2008 and 2009) are presented in Table 1. It recorded a mean green fodder yield of 359.4 tonnes/ha, as against the check CO 2 (271.6) with a per cent increase of 32.32. On testing the culture in OFT for two years, it gave an average green fodder yield of 425.99 tonnes/ha/year which is 77.42 per cent increase over the check CO 2 which had recorded only 240.10 tonnes/ha/year.

Table 1. Yield potential of Guinea Grass –TNGG 062

Name of the Trial	Year	No. of Trials	Average No. of cuts	Green fodder yield (t/ha)		% Increase over CO2
				TNGG 062	CO2	
Research Station Trials	2007-08	7	7	359.4	271.60	32.32
On Farm Trials	2008-09	53	7	425.99	240.10	77.42

Fodder Quality

The culture TNGG 062 is rich in nutrients compared to CO 2 (Table 2). It is having appreciable level of crude protein (6.35%). The dry matter yield of the culture TNGG 062 is 79.39 t/ha/yr as against the check CO 2 which had recorded only 49.72 t/ha/yr with a per cent increase of 60. It also has appreciable level of Phosphorus (0.19%) and Potassium (0.87%). It is considered highly palatable as crude fibre content is less in the new selection compared to CO 2. This culture is free

Table 2. Quality and nutritive values of Guinea Grass –TNGG 062

Sl.No	Characters	TNGG 062	CO 2
1	Crude protein (%)	6.35	6.12
2	Dry matter (%)	20.2	19.5
3	Dry matter yield (t/ha/yr)	79.39	49.72
4	Crude protein yield (t/ha/yr)	5.04	3.04
5	Crude fibre (%)*	30.3	32.8
6	Ether extract (%)**	1.79	1.67
7	Phosphorus (%)	0.19	0.15
8	Potassium (%)	0.87	0.51

* Reduced fibre content improves the digestibility

** Indicates easy and readily available nutrients to the animals

from anti nutritional factors and pests and diseases. As the palatability is very high, the milch animals, sheep, goats, pigs and Emu birds relish the fodder without rejection.

Morphological characters

Distinguishing morphological traits of the culture TNGG 062 are presented in the Table 3. The culture TNGG 062 yields seven cuttings per year. First cut can be made on 70 - 75 days after planting and

Table 3. Morphological characters and metric traits of Guinea Grass –TNGG 062

Sl. No	Characters	TNGG 062	CO 2
1	Leaf colour	Light green	Green
2	Leaf sheath	Light green, Hairy junction	Green, Hairy junction
3	Mid rib colour	Pale green	Pale green
4	Leaf margin	Serrated	Serrated
5	Dorsal Surface	Smooth	Smooth
6	Ventral surface	Serrated	Serrated
7	4 th leaf length (cm)	97-110	50-60
8	4 th leaf width (cm)	3.2 - 4.5	2.0 - 3.0
9	No. of leaves/clump	280 - 350	140 - 240
10	Leaf stem ratio	0.73	0.62
11	Plant height (cm)	210 - 240	170 - 180
12	Node colour	Purple wash	Purple wash
13	Inter node	Lower internodes with purple wash and upper internodes green	Lower internodes with purple wash and upper internodes green
14	Tillers per clump	40 - 60	20 - 30
15	Stem girth (cm)	2.70 - 3.00	1.41
16	Earhead	Lax, glossy large size spikelets,	Lax, glossy medium size spikelets,
17	Mid rib colour	Pale green	Pale green
18	Days to 50% flowering	60 - 70 days	35 - 40 days
19	Seed	Bold	Small
20	Seed Dormancy	One year	One year

subsequent cuttings at 45 days interval. It is robust in nature and attains the height of 210-240 cm at the time of flowering. It is non-lodging with profuse tillers (40-60 tillers/clump). The number of leaves per clump ranges from 280 to 350. It is characterized by long and broad leaves (97-110cm long and 3.2-4.5 cm width) with high leaf stem ratio (0.73). It regenerates rapidly after each harvest with luxurious vigour. In Tamil Nadu, coconut is grown in area of 3.75 lakh hectares (Season and Crop report, 2006). Guinea grass can be grown as inter crop in coconut plantations. By any conservative estimate, the potential outcome of green fodder production is estimated to be 15.85 million tones per year, if Guinea grass is grown in 1/10th of the coconut area.

Considering the supremacy of the culture TNGG 062 over the check variety CO 2, it was released as a new variety by name CO (GG) 3 for large scale cultivation in Tamil Nadu during 2009.

Reference

Season and Crop Report of Tamil Nadu, 2006. Department of Economics and Statistics, Chennai – 600 006.