

PACKAGE OF PRACTICES FOR FORAGE CROPS

Crop	Seed rate (kg/ha)	Spacing (cm)	Basal application				Top dressing (N kg/ha)	Harvest (days)	
			FYM (t/ha)	N (kg/ha)	P (kg/ha)	K (kg/ha)			
I. CEREAL FODDERS									
a. Fodder sorghum									
CO 27	Irrigated	40	30 x 15	12.5	30	40	20	30 DAS	65-70
	Rainfed	40	30 x 15	12.5	30	20	20	-	65-70
Multicut CO (FS) 29 & CO 31 (P)		5	30 x 15	25	90	40	40	45 H	70/50*
b. Fodder maize									
African tall	25	30 x 15	12.5	30	40	20	30 DAS	50-60	
c. Fodder pearl millet									
CO 8	10-12	30 x 10	12.5	25	20	12	25 DAS	40-45	
II. GRASSES									
CN hybrid CO (CN) 4 & CO (BN) 5 (P)	33,333 [⊙]	60 x 50	25	150	50	40	75 H	75/45	
Guinea CO (GG 3)(P)	40,000 [⊙]	50 x 50	50	100	50	40	50 H	75/45	
Cenchrus CO 1(P)	6-8 or 40000 [⊙]	50 x 30	5	25	40	20	25 H	70/40	
III. LEGUME FORAGES									
Lucerne CO 2 (P)	20	20 x CS	25	25	120	40	-	75/25	
Desmanthus (P)	20	50 x CS	25	25	40	20	-	90/40	
Cowpea CO (FC) 8	25	30 x 15	12.5	25	40	20	-	55-60	

P - Perennial H - After each harvest CS - Continuous sowing DAS - Days after sowing

⊙ Stem cuttings / rooted slips * First harvest @ 70 days and subsequent cuts @ 50 days intervals

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Napier grass germplasm



Cumbu Napier hybrid CO (BN) 5



Fodder sorghum CO 31



Lucerne CO 2



Modernized Laboratory



TAMIL NADU AGRICULTURAL UNIVERSITY



2015

DEPARTMENT OF FORAGE CROPS

Centre for Plant Breeding and Genetics

Tamil Nadu Agricultural University

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Tamil Nadu



DEPARTMENT OF FORAGE CROPS

ESTABLISHMENT AND DEVELOPMENT

Studies on fodder crops were begun as early as 1929 in the Botany section of the then Agricultural College, Coimbatore, Tamil Nadu. It was identified as one of the centres of All India Coordinated Research Project on Forage Crops by the Indian Council of Agricultural Research in 1971. A full fledged department, first of its kind in India came into existence in the year 1976 at Tamil Nadu Agricultural University, Coimbatore. It's a merit to mention that, this Department has so far released 22 high yielding fodder crop varieties/ hybrids including two national (All India) varieties for general cultivation. Among them, Cumbu Napier hybrid CO (CN) 4, Guinea grass CO (GG) 3, Multicut fodder sorghum CO (FS) 29 and Lucerne CO 1 are very popular among the farmers of Tamil Nadu and neighboring states.

OBJECTIVES

- ❖ Collection, evaluation and maintenance of genetic resources
- ❖ To evolve superior varieties of forage crops with high yield and quality
- ❖ To enhance the green and dry fodder production potential of important forage crops
- ❖ To identify suitable package of practices for the improved varieties so as to maximize productivity with minimum inputs
- ❖ To reduce anti-nutritional principles like Oxalates, HCN, Nitrate, Nitrite and Mimosine etc in forages through breeding efforts
- ❖ To evolve suitable methods of preservation of green fodder for use in lean seasons
- ❖ To enhance the seed productivity of important fodder crops
- ❖ To produce Breeder and TFL seeds in forage crops
- ❖ Collaborative research with other Institutions

RESEARCH PROGRAMME

- Breeding improved varieties of cereals, grasses, legumes and tree fodders
- Mutation studies in *Stylosanthes* and *Desmanthus* to evolve high biomass yielding genotypes
- All India Co-ordinated Research Project on Forage Crops and Utilization (AICRP on FC&U)
- Nutrient management studies in grasses, cereal and legume fodders
- Carbon sequestration studies in perennial grass based cropping systems.
- Food-fodder production systems both under irrigated and rainfed conditions.

ACHIEVEMENTS

A. DETAILS OF VARIETIES RELEASED

Crop / Variety	Year of release	Green fodder yield (t/ha)	Special features
I. CEREAL FODDERS			
Sorghum CO 27 (60-65 days) (<i>Sorghum bicolor</i>)	1986	35-40	Thin stem, drought tolerant
Multi cut fodder sorghum CO (FS) 29	2001	170 (6-7 cuts)	More tillers, Ratoonable, moderately tolerant to drought.
Multi cut fodder sorghum CO 31	2014	190 (6-7 cuts)	Ratoonable, more seed yield, moderately tolerant to drought.
Pearl millet CO 8 (50-55 days) (<i>Pennisetum glaucum</i>)	1992	30	Soft stem, high LS ratio, short duration, highly palatable
II. GRASSES			
Cumbu Napier hybrid CO 1	1992	300	Drought tolerant
CN hybrid CO 2	1991	350	High yielding
CN hybrid CO 3	1996	375	High yielding, high LS ratio, highly palatable
CN hybrid CO (CN) 4	2008	375-400 (6-7 cuts)	Profuse tillering, more LS ratio, soft succulent stems, high palatability
CN hybrid CO (BN) 5 [All India release]	2012	360 (6-7 cuts)	Profuse tillering, more LS ratio, high dry matter yield
Guinea grass CO 1 (<i>Panicum maximum</i>)	1993	200-250	Shade tolerant, thin stem
Guinea grass CO 2	2000	270	Shade tolerant
Guinea grass CO (GG)3 [State and All India release]	2009	320 (6-7 cuts)	High green fodder yield, Profuse tillering shade tolerant, highly palatable
Kolukkattai grass CO 1 (<i>Cenchrus glaucus</i>)	1989	40 (4-6 cuts)	Highly suitable for rainfed conditions
Deenanath grass COD 1 (60-65 days) (<i>Pennisetum pedicellatum</i>)	1995	40-45 (2 cuts)	High tillering, thin stem, drought resistant

III. LEGUME FORAGES

Lucerne CO 1 (<i>Medicago sativa</i>)	1980	90-100 (12 cuts)	High yielding and palatable
Lucerne CO 2	2013	130 (14 cuts)	Protein rich (23.5%), high palatability, more seed yield
Cowpea CO 5 (55-60 days) (<i>Vigna unguiculata</i>)	1986	25	Early maturity, high yield
Cowpea CO (FC) 8 (55-60 days)	2004	30	High green fodder, Indeterminate type, Resistant to YMV and root rot
IV. TREE FODDERS			
Subabul CO 1 (<i>Leucaena leucocephala</i>)	1984	80-100	High yielding, protein rich, drought tolerant
INTRODUCTIONS			
Velimasal (<i>Desmanthus virgatus</i>)	1976	125 (4-6 cuts)	High yielding, drought tolerant, suited for sheep and goats
Muyal masal (<i>Stylosanthes scabra</i>)	1976	30-35	Rainfed pasture legume
Pudia Soundal (<i>Leucaena diversifolia</i>)	1999	80-110	Highly suitable for rainfed condition, Psyllid tolerant

B. GERmplasm MAINTENANCE

CROP	Number
Napier grass (<i>Pennisetum purpureum</i>)	57
Guinea grass (<i>Panicum maximum</i>)	104
<i>Cenchrus</i> spp.	210
Fodder pearl millet (<i>Pennisetum glaucum</i>)	189
Fodder cowpea (<i>Vigna unguiculata</i>)	110

C. TECHNOLOGIES FOR ADOPTION

- ❖ Cumbu Napier hybrid (CO 3) + *Desmanthus* at 3:1 ratio is the best intercropping system for higher fodder yield and quality under irrigated condition.
- ❖ *Cenchrus* + *Desmanthus* or Stylo at 3:1 ratio is the best intercropping system under rainfed condition.
- ❖ Vertical planting of two budded Cumbu Napier stem cuttings is more economical and high yielding.
- ❖ Subabul and *Desmanthus* seeds should be soaked in hot water at 80°C for 4-5 minutes for better germination.
- ❖ Lucerne: Spraying Borax + ZnSO₄ at 0.3% each at first flowering and 10 days later improves seed set by 20-30%.
- ❖ TNAU Vermi compost @ 5 t/ha + 75 % recommended NPK for intercropping of maize and cowpea (105 t/ha/yr), which is sufficient to maintain 7 cows and 3 calves. The dung can be used to produce 20 tonnes of vermi compost per year.