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DEENANATH C0-1: A NEW ANNUAL FODDER GRASS FOR TAMIL NADU

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ABSTRACT

In order to develop an annual fodder grass variety to fit into short gaps in the crop rotation, the Pusa-3 Deenanath grass was irradiated with 30 KR gamma rays and from the later generations, a high yielding mutant TNDN-1 was isolated. The culture was tested in different trials and it recorded an average green fodder yield of 44.32 t/ha under irrigated conditions and 23.41 t/ha under rainfed situations. It can be cut at 60-65 days and it has high crude protein (9.06%), crude fat (2.55%) and low crude fibre (28.95%). The variety was released as Co-1 for general cultivation in Tamil Nadu.

KEY WORDS : CO1, Deenanath Grass, Annual Fodder Grass, Tamil Nadu

Most of the grass species available at present for cultivation in Tamil Nadu are perennials and occupy the land for a number of years. The introduction of annual grass species with high green fodder yield to fit into the cropping system where a fodder crop can be raised and harvested in 55-60 days and release the field for other food or commercial crops will be very helpful in the context of the present shortage of fodder for our milch animals. Deenanath grass is an ideal crop under such situations. Under the All India Co-ordinated programme, the variety Pusa-3 was recommended and it has an yield potential of 30 t/ha of green fodder. Efforts were initiated in 1978 at The Tamil Nadu Agricultural University (TNAU), Coimbatore to evolve a superior Deenanath grass variety for Tamil Nadu better tha: Pusa-3.

MATERIALS AND METHODS

The variety Pusa-3 was subjected to gamma irradiation with a view to create more variability. From the M1,M2 and M3 generations studied during 1979 to 1981, 44 promising mutants were selected. On further selections among them, a gamma 30 KR mutant 10-1-44/10 was isolated as best one and it was redesignated as TNDN-1. The seed was multiplied and the culture was tested under station trials, multilocation trials (MLT) and adaptive research trials (ART) for its green fodder yield (GRY) potential under varied conditions. The quality parameters of the new variety were also assessed in comparison with Pusa-3.

Table 1. Mean green fodder yield recorded in the different types of trials under irrigated and rainfed conditions

Type of Trial	No. of Trials conducted	Green Fodder Yield t/ha		Percent on check
		TNDN-1	Pusa-3	
Irrigated				
Station Trials 1982 - 92	9	59.4	43.0	38.0
Multilocation Trials 1989 - 90	6	58.7	47.6	23.4
AICORF Trials at Coimbatore 1985 - 89	4	36.2	25.9	39.9
AICORF Trials (India) 1987 - 88	12	37.8	28.3	32.3
AICORF Trials (India) 1988 - 89	14	29.5	27.5	7.3
Mean	45	44.32	34.46	28.6
Rainfed				
Station Trials 1982 - 92	10	22.33	18.61	20.0
Multilocation Trials 1990 - 91	6	36.90	29.40	25.6
Adaptive Research Trials 1992 - 94	30	11.00	11.50	-
Mean	46	23.41	19.84	18.0

Table 2. Chemical quality characteristics of the new culture

Parameter	TNDN-1	Pusa-3
Dry matter content %	14.97	15.01
Crude protein %	9.06	8.74
Crude fat %	2.85	2.28
Crude fibre %	28.95	30.09
Total Ash %	14.86	13.90

RESULTS AND DISCUSSION

The culture TNDN-1 was tested for its GFY potential both under irrigated and rainfed conditions at TNAU, Coimbatore from 1982-83 onwards continuously for ten years. Under irrigated conditions, it recorded a mean GFY of 59.4 t/ha which was 38 per cent higher than that recorded by the check Pusa-3 (43.0 t/ha). Similarly under rainfed conditions at Coimbatore, the mean GFY of TNDN-1 was 22.33 t/ha which was 20 per cent higher than that of Pusa-3 (18.61 t/ha).

In MLT at six different Research Stations of the University both under irrigated and rainfed conditions, TNDN-1 recorded a mean yield of 58.68 t/ha compared to 47.57 t/ha by Pusa-3. Under rainfed conditions, TNDN-1 recorded a mean GFY of 36.89 t/ha as against 29.38 t/ha by Pusa-3.

The culture TNDN-1 was tested under AICORF at twelve Centres in 1987-88, at 14 locations during 1988-89, and under the AICORF programme at Coimbatore for four years from 1985-86. During 1987- 88, TNDN-1 recorded a All India mean of 37.75 t/ha and occupied the second rank while the national check Pusa-3 recorded only 28.33 t/ha. During 1988-89, TNDN-1 recorded a national mean yield of 29.46 t/ha and occupied fourth rank among the varieties tested. In the four AICORF trials at Coimbatore, TNDN-1 recorded a mean GFY of 36.24 t/ha as compared to 25.91 t/ha by Pusa-3.

During 1992-93 and 1993-94, the culture was tested in rainfed conditions under ART in 40 farmer's holdings throughout the State. The results were received from 30 locations. In these ART trials, TNDN-1 recorded a mean GFY of 11.01 t/ha under rainfed conditions and it was found to be on par with Pusa-3.

The fodder quality parameters of the culture were also chemically analysed and the results are given in Table 2. The culture TNDN-1 has almost the same dry matter content as Pusa-3, but is found to be superior in respect of crude protein, crude fat, crude fibre and total ash.

The morphological characters of the new variety is given in Table 3. It is 5-10 days longer in duration compared to Pusa-3, taller and produces more tillers. It has a creamy yellow panicle at flowering with light purple awns unlike Pusa-3 which has purple panicle with purple awns.

The new culture TNDN-1 recorded a overall mean GFY of 44.32 t/ha from all he trials under irrigated conditions which was 28.6 per cent higher than that of Pusa-3. Similarly under rainfed conditions, from the different trials, TNDN-1 recorded 23.41 t/ha which was 18.0 per cent higher than Pusa-3. In view of the above, it was released as Co-1 during January 1995 for general cultivation in the State.

Table 3. Morphological characters of the new culture in comparison with Pusa-3

Character	TNDN-1	Pusa-3
Culm colour	Purple at base greenish purple at the tip	Purple at base
Node colour	Purple	Purple
Leaf sheath	Green hairy	Green glabrous
Leaf Dorsal surface	Soft hairs	Glabrous
Earhead	Creamy yellow at bloom. light brown at maturity	Purple at bloom and maturity
Awns	Light purple	Purple
Plant height (Av)	190 cm	165 cm
No. of tillers per metre length	385	360
Leaf length and breadth	31.5 x 1.5 cm	22.3 x 1.5 cm
Leaf stem ratio	0.54	0.44
Days to green fodder harvest	60 - 65	60 - 65
Days to seed maturity	105 - 110	100 - 105

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