

Thin Napier Grass (*Pennisetum polystachyon* Schult.)

A useful fodder for semi-dry tracts

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(Received 22—6—1950.)

Introduction : In the South Arcot district where the summer heat often reaches 110° or 112° F., it is very difficult for any fodder grass to thrive during that part of the year. Consequently there is always a shortage of fodder in the tract during the summer months. The well-known fodder grasses viz., Guinea grass and Napier grass come up and yield well only under favourable conditions of water supply. These grasses are also not drought resistant. Therefore the need for a drought-resistant fodder grass which will be capable of yielding some fodder during summer was keenly felt. In 1940 a report appeared in Indian Farming (Vol. 1, No. 12, Dec. 1940) that a grass known by the name of **Pennisetum purpureum* and popularly called Thin Napier or Dry Napier grass was grown successfully in Mysore and that it proved to be a promising fodder grass for growing under rainfed conditions. The original home of this grass is said to be Tropical Africa. It was reported a crop of this grass raised by transplanting 40 to 60 days-old seedlings yielded green stuff of about seven tons per acre in three cuttings. Mention was also made that this grass, even after repeated cuttings, remained tender and did not become fibrous. The grass was said to give cuttings for nine months in the year. Curiously enough, though this grass had been collected by Dr. C. A. Barber as early as 1902, as revealed in the Madras Herbarium, Coimbatore, it was missed by the Department till it was published in Indian Farming. In order to study the performance of this grass at other places in South India, seeds were obtained from the Department of Agriculture, Mysore and the crop raised was under observation for a period of about four years. This note gives a brief summary of the observations recorded at the Agricultural Research Station, Tindivanam (South Arcot) where the average rainfall amounts to 42 inches distributed as follows :

Periods	Average rainfall for 9 years.
South-West monsoon	12·3"
North-East monsoon	21·7"
Hot Weather	8·0"
Total	42·0"

* The name has since been shown to be erroneous by Sri N. Krishnaswami and N. Hrishikeshan Nair. The correct name is given as *Pennisetum polystachyon* (vide Madras Agricultural Journal, Vol. XXXVII, No. 5, Page 207).

Preliminary observations: The seeds were broadcasted in August 1941 at the rate of 5 to 6 lb. per acre in a plot of land brought to a friable condition by two ploughings, two harrowings and clod crushing. Cattle manure was applied at the rate of 10 cartloads per acre. A transplanted crop was also raised in a plot adjacent to the broadcast area. The seedlings were raised in a nursery and then transplanted on ridges spaced 2 feet apart, giving a spacing of $1\frac{1}{2}$ feet in the row. The seed germinated in about 10 days and the seedling grew well. The first cutting from the transplanted area was taken three months after planting, and in about $3\frac{1}{2}$ months from the broadcast area. During rainy months it was found possible to take a cutting every alternate month but during the hot weather period only one or two cuttings could be taken. Though the crop showed diminished growth during the summer months it revived after the receipt of South-west monsoon rains and grew up satisfactorily. When there was a slight lull in the South-west monsoon rains the crop was given intercultivation every year by ploughing along the furrows and manured with cattle manure at the rate of 10 cartloads per acre. No further seeding was found necessary for the first few years. The yield of green fodder obtained for the period during which the crop was under observation is given separately for the broadcast and transplanted areas.

**Yield of Thin Napier Grass from the Observation Plots
During 1941—42 to 1945—45.**

	Transplanted Area (Planted on 7—10—1941)		Broadcast Area (sown on 24—10—1941)	
	No. of cuttings	Total acre yield of green stuff in lb.	No. of cuttings	Total acre yield of green stuff in lb.
1941—42	6	23,350	6	20,725
1942—43	7	21,780	7	24,375
1943—44	5	12,977	5	14,375
1944—45	5	10,020	5	11,745
Total	23	68,127	23	71,220

From the above statement it may be seen that the yields of green fodder from both the areas are almost similar and they get reduced with advance in age. However, raising the seedlings and transplanting them in ploughed fields in rows seems to be the better method of growing this fodder grass as it will lend itself to intercultivation and manuring. Also cuttings can be taken easily in plots when the grass is planted in rows. But broadcast planting yielded slightly more fodder in the five-year period.

Comparative yield trials: As the results of the preliminary observations were encouraging it was considered worthwhile to compare the

performance of this grass with that of [the other two grasses that are usually raised for fodder. The three grasses were raised in a randomised block replicated layout and yields obtained from the different plots during a period of two years were recorded. The acre yield (average of two years) of green fodder obtained is furnished below :

Name of grass	Average annual yield per acre in pounds
Thin Napier grass (Tn)	16,632
Napier grass (N)	21,582
Guinea grass (G)	12,500
Standard error	410
Critical difference (P=0.05)	2129.0
Conclusion—N > Tn > G	

Of the three grasses Napier grass proved to be the best yielder with an annual tonnage of about 9 tons, followed by Thin Napier grass which yielded about 7 tons of green stuff per annum. The yield of Guinea grass averaged only about 5 tons per annum. In these trials the drought resistant nature of the Thin Napier grass was clearly in evidence. It gave a better tonnage of fodder than ordinary Napier or Guinea grass during the summer months (February—May) as can be seen from the following statement :

Name of Fodder	Acre yield (in pounds) obtained during summer (Average of two years)
1. Thin Napier grass	12,735
2. Napier grass	9,780
3. Guinea grass	8,340

Trials carried out at the Coconut Research Stations on the West Coast have also shown that the Thin Napier grass can be successfully grown under rainfed conditions.

Palatability : The utility of a fodder grass depends among others on the nutritive value of the grass and its palatability. The following statement gives the results of analysis of the three fodder grasses, done by the Government Agricultural Chemist, Coimbatore.

	Thin Napier grass	Napier grass	Guinea grass
Moisture	7.40	7.81	8.21
Ash	7.64	7.49	7.81
C. protein	7.35	8.80	9.23
C. Fibre	31.20	29.02	28.00
E. Extractives	1.63	2.42	2.40
Carbohydrates	44.78	44.46	44.35
Nitrogen	1.18	1.41	1.48
Lime (Ca O)	.56	0.80	.93
Ph. acid (P ₂ O ₅)	.26	.23	.23
Insolubles	4.18	1.77	2.92

It may be seen that from the nutritive point of view Thin Napier grass is closely similar to the other two Napier and Guinea grasses.

If the cattle relish the fodder the rejected materials in the feeding trough will naturally be very little. In order to determine the palatability of the above three fodder grasses, weighed quantities of green stuff were fed to cattle and the rejection in each was noted. The results are as follows:

Name of fodder	Quantity fed to cattle over a period of 8 days	Qty. rejected by the animals (equivalent to its original wet weight)	Percentage of rejection
	lb.	lb.	
Thin Napier grass	320	40	12.5
Ordinary Napier grass	320	16	5.0
Guinea grass	320	100	31.2

It is seen that the quantity of rejection is least in ordinary Napier grass and maximum in Guinea grass, the Thin Napier grass occupying an intermediate place. It, is thus evident that cattle relish the Thin Napier grass much better than the Guinea grass, at the Agricultural Research Station, Tindivanam.

Conclusions: The results of the trials discussed above go to substantiate to a certain extent the claims made for Thin Napier grass regarding its yield, drought resistant nature and general suitability for raising under rainfed conditions and in situations where irrigation facilities are lacking. There appears to be a good scope for popularising the cultivation of this grass for fodder purposes in drylands as it will go a long way in mitigating the scarcity for fodder grasses which invariably occurs during summer months in dry districts.

REFERENCES.

Madras Agricultural Station Reports for the years 1941-42 to 1945-46.