FODDER.

FODDER GRASS TRIALS AT PERADENIYA EXPERIMENT STATION, 1924-25.

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These trials have been in progress since August 1921. The year for this purpose is from August 1st to July 31st.

The factors taken into consideration are:—

1. Yield
2. Feeding value
3. Palatability

The grasses originally included in the trials were :—

1. Guinea grass "A," *Panicum maximum*
2. Guinea grass "B," *Panicum maximum*
3. Prostrate Paspalum, *Paspalum dilatatum* "A"
4. Upright Paspalum, *Paspalum dilatatum* "B"
5. Water grass, *Panicum muticum*
6. Rhodes grass, *Chloris gayana*

Water grass became so mixed with *Mimosa pudica* and other weeds that after the first year the grass was uprooted.

Kikuyu grass, *Pennisetum longistylum*, was introduced but abandoned for the same reason.

The yield of Rhodes grass was inferior from the start : it was moreover very mixed with another grass, *Tricholoena rosea*, which repeated attempts failed to eradicate. Rhodes grass was dropped out of the trials after 1923-24 and the plot is now being cleaned up for the reception of a new grass. Napier grass, *Pennisetum typhoidium*, was included in the trials from August 1924. The plots, which are situated along the banks of the river, are either one acre or half an acre in each case. They are single plots and the yields therefore are not scientifically strictly comparable. In the absence of other definite information in Ceylon however the individual performance of each grass over a known area is of interest.

The soil is sandy, especially towards the southern end. Analyses of the grasses were made by the Government Agricultural Chemist and the relative feeding value of the grasses determined.

The graph shows the yields of the grasses from the start of the trials

The rapid decline in yield in every case indicates the necessity for regular and liberal manuring. Cattle manure was applied in early 1924 to all the plots at the rate of 10 cart-loads per acre. Labour was not then available to fork in this manure so that possibly the full value was not obtained. The application, however, except in the case of Guinea grass "B," resulted in increased yields or an arrest in the decline in yield. In the table will be found the results of the analyses by the Government Agricultural Chemist, the average annual yields of the grasses, and the number of food units per acre, based on these average yields.

It will be seen that the highest feeding value per acre is given by the Prostrate Paspalum, while Guinea grass "B" comes second. The food unit figures are obtained from single analysis and it would be well when opportunity occurs to carry out a series of analyses for each grass at different stages of growth.

Another factor of some importance is the distance of planting. The planting distance was decided in accordance with the size and habit of the grass. The Prostrate Paspalum clumps were planted 9" x 18" and a continuous cover is now formed. All the other grasses were planted at greater distances—up to 3' x 3' in the case of Guinea grass "A." It is more than possible that in some cases closer planting would have resulted in heavier yields, and when space allows a "distance of planting" experiment with some representative grass might be interesting.

Another factor to be taken into consideration is that in every plot except the Prostrate Paspalum plot coconuts have been planted in varying numbers from 1922 onwards. The space taken up by these palms is in the aggregate considerable and as the palms grow they are likely to exert an increasingly depressing influence on the yield of grass. The Prostrate Paspalum plot thus enjoys advantage in this respect, but on the other hand the plot is steeper than the others.

Palatability.

Attempts have been made from time to time to determine the relative palatability of these grasses. The matter is a difficult one to determine with any degree of accuracy and it is sufficient to state that all the grasses at present included in the trials are readily eaten by cattle.

REMARKS ON GRASSES.

Guinea grass "A."

This is a coarse very vigorous grass found growing apparently wild on parts of the Experiment Station. It is a heavy yielder and if cut before it becomes too coarse makes a suitable fodder. If left too long cattle will reject a good deal of it. It is quite distinct in appearance from the ordinary Guinea grass, Guinea grass "B," though both have been botanically identified as *Panicum maximum*. Bulletin No. 416 of the Rhodesian Department of Agriculture mentions that there are four widely differing grasses identified under the botanical name of *Panicum maximum*.

Guinea grass "B."

This is the grass ordinarily known as Guinea-grass. It has finer lighter coloured leaves than Guinea grass "A." The appearance of this plot has somewhat declined in the last few years and the need for manuring is indicated.

Upright Paspalum.

This grass was known as *Paspalum virgatum* until identified at Kew as *Paspalum dilatatum* after which it has been known as Paspalum dilatatum "B." It has an upright habit.

Prostrate Paspalum.

This is the grass usually known as "Paspalum" and now widely used as a wash-preventer on road-sides and ravines on up-country estates. Its exceptionally high feeding value on the analysis made has brought it into first place as regards food units per acre.

Napier grass.

This is a very popular grass in East Africa, Australia, Madras and elsewhere. When left uncut the stems attain a height of 8 to 10 ft. From these cuttings can be taken which may be planted in the same manner as sugar-cane. The yield promised to be heavy but for the first year has not come up to expectations. The clumps spread in an irregular fashion which renders weeding rather difficult. Propagation can also be effected by division of the clumps.

OTHER GRASSES NOT YET INCLUDED IN THE TRIALS.

Buffalo grass, Setaria sulcata.

Seed of this grass was obtained from the Rhodesian Department of Agriculture in November 1924. Exceptionally vigorous growth was made and the grass was planted out for multiplication in May 1925 in the former water-grass plot. So rapid was the growth that by the middle of July the grass was again ready to be divided out. The grass shows every prospect of being a heavy yielder and if the nutrient value is satisfactory should prove a valuable fodder plant.

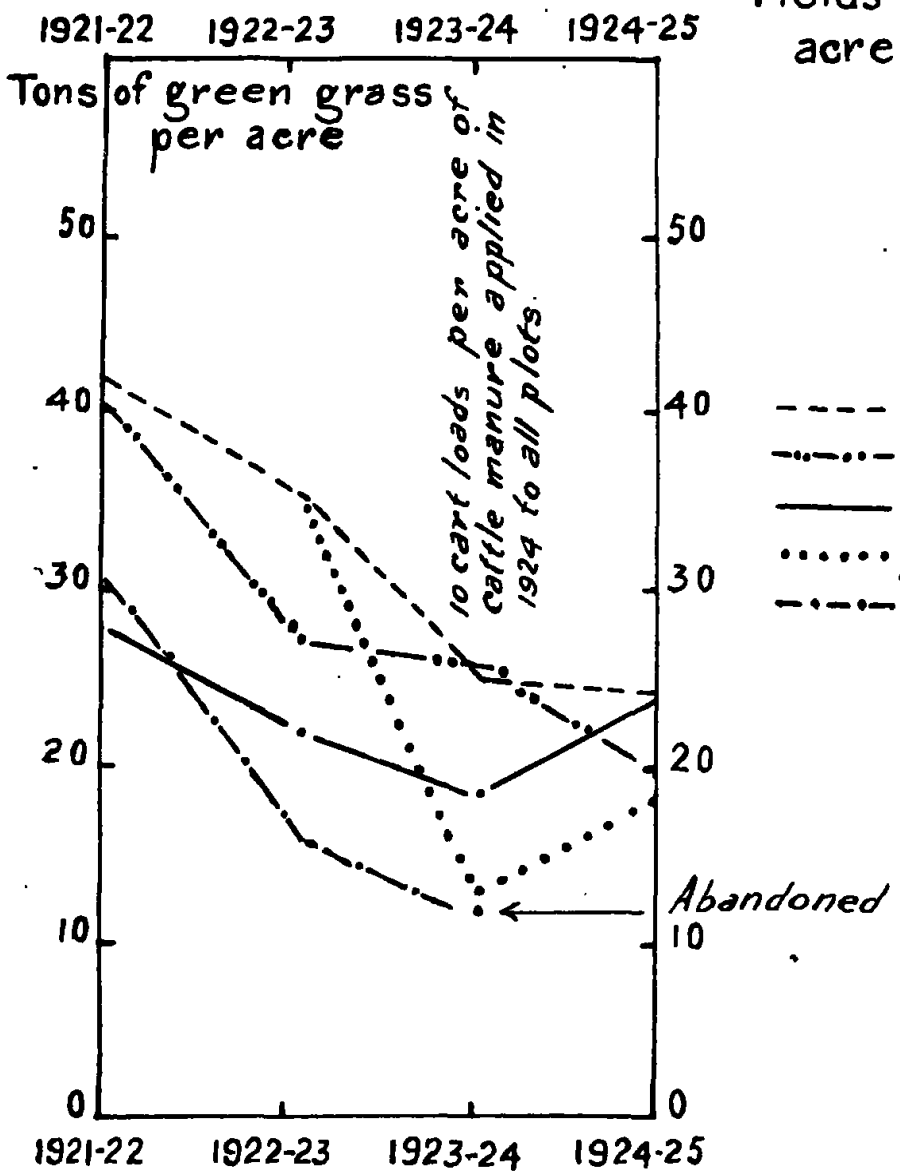
Paspalum scrobiculatum.

This grass was introduced from Rhodesia at the same time as Buffalo grass under the name of "Native Paspalum." In habit it appears intermediate between the Upright and the Prostrate Paspalums but promises possibly heavier yield than either. It has been planted out for multiplication and will be transplanted again in the North-East monsoon.

Efwatakala grass—Melius minutiflora.

Seed of this grass was obtained through Kew in 1923. It is a hairy grass much resembling water-grass in habit. A portion of Plot 167 is planted up with this grass. It has a pungent smell discernible from a considerable distance.

Several palatability trials have shown that most cattle do not take readily to it and many refuse it altogether. When this grass alone was given to the Experiment Station cattle the native cows and calves finally ate what was given them, but the Coast bulls left it untouched although given no other fodder. The grass is said to grow wild over certain areas in Brazil and cattle and horses are there said to be very fond of it. It also covers considerable areas of country in West Africa. The yield is certainly heavy and such a close mat is formed as to effectively smother out weeds. Unless however some outstanding merit is discovered there would appear to be no advantage in growing this grass when several good grasses which are relished by cattle are available. It is however worthy of trial where other grasses which thrive at Peradeniya do not succeed.



Yields of fodder grasses in tons per acre at Peradeniya Experiment Station 1921-25.

---- Guinea grass A, Panicum maximum.
-·-·- Guinea grass B, do do
——— Upright Paspalum, Paspalum dilatatum B.
····· Prostrate Paspalum, do do A.
-·-·- Rhodes grass, Chloris gayana.

ANALYSES AND AVERAGE ANNUAL YIELDS OF GRASSES.

Analyses.

Variety	Size of Plot	Moisture	Ash	Ether extract	Woody fibre	Carbohydrates	Proteids	Nitrogen	Food units	Albuminoid ratio	Average annual yield Tons per acre	Food units per acre on average yield
		%	%	%	%	%	%	%	%	%		
Guinea grass "A" Panicum maximum - -	1 acre	80·60	4·85	1·02	4·80	6·78	1·95	0·31	14·20	1:4·2	31·2	4·43
Guinea grass "B" Panicum maximum - -	1 acre	77·26	3·30	0·60	6·53	8·90	3·47	0·55	19·07	1:6	27·5	5·24
Upright Paspalum Paspalum dilatatum "B" - -	½ acre	76·30	4·00	0·50	7·20	9·60	2·4	0·40	16·9	1:42	22·8	3·38
Prostrate Paspalum Paspalum dilatatum "A" - -	½ acre	64·40	3·18	1·03	10·00	18·36	3·03	0·48	28·51	1:13	21·8 (3 years only)	6·22
Napier grass Pennisetum typhoidium - -	1 acre	78·19	3·21	0·42	5·67	10·16	2·35	0·38	17·08	1:4·8	21·3 (1 year only)	3·64