Caribbean Agricultural Research and Development Institute

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Factsheet

Improve YOUR pastures

A Sowing Guide For Grasses And Legumes

By
G.A. Proverbs & J.R. Williams

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The first and major aim of pasture establishment is to achieve the development and production of pastures which are both high yielding in terms of forage dry matter, and of relatively high nutritive value to animals. It is important to decide on the forage species to be used and the system of utilisation that will be practised. Some consideration must also be given to the species of animal that will be utilizing these pastures.

If establishing pastures from seed, it is absolutely necessary to obtain a source of high quality seed; that is, seed of high purity and with a high potential to germinate.

Many pasture legumes produce large quantities of viable seed, with a germination rating of 40 to 60 per cent and a purity of 98 per cent, while, on the other hand, most tropical grasses have a comparitively low germination rating, e.g. Guinea grass (***Panicum maximum***) 20 to 25 per cent, and a purity of between 40 and 60 per cent. This significant difference exists because grass seeds tend to be contaminated with other undesirable grass seeds (i.e. weeds) and therefore cannot be considered as being pure.

The sowing rates for each species listed in the table have been calculated with the standard parameter of per cent germination (rating) being taken into account. If establishing from seed, this may be done either by broadcasting or by drilling. Usually more seed is used in broadcasting than in drilling, in which the rate of seeding is more precisely metered and therefore better controlled. This bears obvious implications for seed costs.

The most important factor affecting the time of planting is the soil-moisture relationship. Three rainfall regimes can be differentiated:

Dry – 500 mm (20 in) or less per year.

Semi-dry – 500 to 1500 mm (20 to 60 in) per year.

Wet – Over 1500 mm (60 in) per year.

It is usually best to time the planting of pastures with the onset of the wet season, especially where irrigation is unavailable.

Another important factor to be considered in pasture establishment is that of soil. Not only in respect of the soil type (e.g. sandy vs. clay) but especially with regard to the level of soil fertility. In intensively managed pastures great demands are made on fertility as a result of the heavy removal of soil nutrients in the forage itself.

The level of soil fertility is mainly determined by:

i) the amount of available nutrients in the soil
ii) the rate at which these become available, and
iii) the extent of losses, particularly of applied nutrients (inorganic fertilizers and manure).

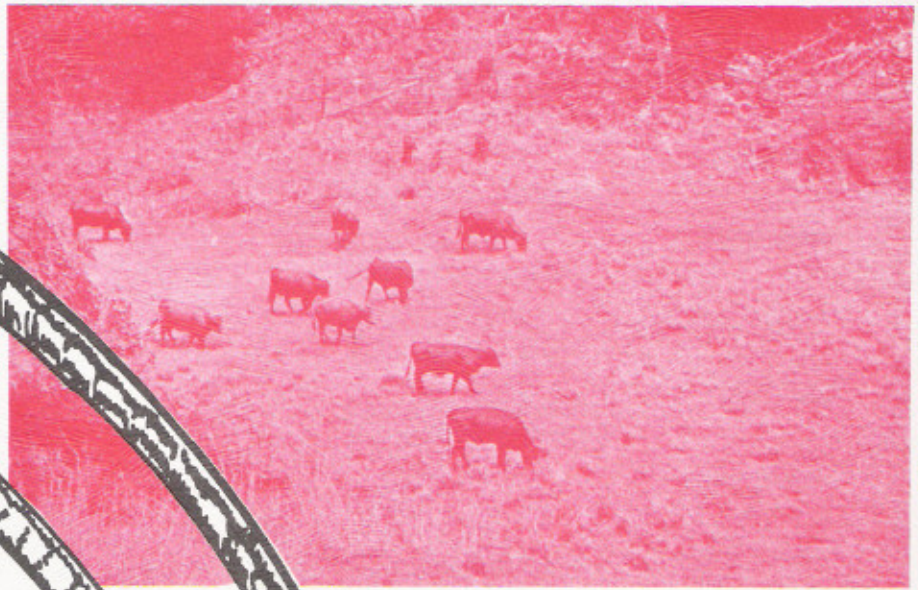
NAME	ANNUAL RAINFALL RANGE mm	in.
GRASS		
Bermuda-Coastcross 1 (*Cynodon dactylon*)	500 to 1200	20 to 50
Elephant (*Pennisetum purpureum*)	1000+	40+
Guinea (*Panicum maximum*)	1000+	40+
Bambatsi (*Panicum coloratum*)	500 to 875	20 to 35
Giant African Star (*Cynodon plectostachius*)	500 to 1250	20 to 50
Pangola (*Digitaria decumbens*)	1000+	40+
Para (*Brachiaria mutica*)	1000+	40+
LEGUME		
Blue Pea (*Clitoria ternatea*)	400 to 500	16 to 20
Centro (*Centrosema pubescens*)	1500+	60+
Desmanthus (*Desmanthus virgatus*)	1000 to 1500	40 to 60
Glycine (*Neonotonia wightii*)	750 to 1500	30 to 60
Leucaena "Cunningham" (*Leucaena leucocephala*)	750+	30+
Rabbit vine (*Teramnus labialis*)	750 to 1750	30 to 70
Siratro/Mexican Macro (*Macroptilium atropurpureum*)	750 to 1750	30 to 70

These three important factors are inter-related and are influenced by several soil-chemical properties, one of the most important being soil pH. The soils of Barbados are, for the most part, alkaline (high pH) in nature, and of fairly low fertility. The table shows the tolerance of the most common tropical grasses and

GRASSES AND LEGUMES

TOLERANCE TO			AVERAGE SEED COUNT		SOWING RATE	
DROUGHT	PERIODIC WATERLOGGING	Low Fertility Soils	'000/kg	'000/lb	kg/ha	lb/ac
Very good	Fair	Good	Vegetative Propagation only		Vegetative Propagation only	
Good	Good	Fair	Vegetative Propagation only		Vegetative Propagation only	
Good	Fair	Poor	2400	1100	2.5 to 7	2.5 to 7
Very good	Good	Fair	1600	725	2.5 to 4.5	2.5 to 45
Good	Good	Good	Vegetative Propagation only		Vegetative Propagation only	
Fair to poor	Good	Fair	Vegetative Propagation only		Vegetative Propagation only	
Fair to poor	Very good	Poor	935	425	1 to 2.5	1 to 2.5
Good	Poor	Very good	21	9	2 to 5	2 to 5
Fair	Good	Fair	40	18	1 to 2.5	1 to 2.5
Fair	Fair to good	Good	243	111	2 to 3	2 to 3
Good	Poor	Poor	154	70	3.5 to 4.5	3.5 to 4.5
Good	Poor	Good	24	11	2.5 to 4.5	2.5 to 4.5
Fair to good	Good	Good	145	66	2 to 5	2 to 5
Very good	Fair	Good	75	34	2.5 to 3.5	2.5 to 3.5

nes to such soil conditions.
choosing the best pasture species some considera-
must be given to the plants' ability to withstand
drought and periodic waterlogging. This is
ially true of dry tropical climates, characterized
stinct wet and dry seasons. In most tropical
situations avoidance of prolonged drought stress may prove difficult, while periodic waterlogging, on the other hand, is common in the rainy season and may be somewhat alleviated or avoided through some improvement to soil drainage.



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