

INTRODUCTION.

The improvement of native livestock and the introduction among natives of a more settled system of agriculture, is one of the primary problems confronting the scientific agriculturist in the tropics today. It is generally recognised that if any improvement in livestock is to become permanent, the provision of adequate quantities of good quality forage is essential (1). The cultivation of fodder grasses provides one solution to this problem.

The term fodder grass, as opposed to pasture grass, refers to grasses which are generally used for green soiling to stock; it may be pointed out, however, that some of the common fodder grasses may also be utilised in other ways.

The objects of this thesis are; (1) to assess the value of Guatemala Grass as a fodder grass; (2) to obtain an estimate of the cost of fodder produced by Guatemala Grass growing on the college farm; (3) to determine from experiments the most suitable methods of cultivation.

In assessing the value of a fodder grass a number of factors must be taken into consideration, including yield and nutritive value and the factors affecting them, and the ease and cost of cultivation. For purposes of comparison, Guatemala Grass will be compared with some of the other fodder grasses also commonly grown in Trinidad, and in particular with Elephant Grass which in its Uganda variety is now tending to supplant Guatemala Grass and is generally regarded as superior.

Guatemala Grass (*Tripsacum laxum* Nash) is a large perennial grass from 4 to 8 feet high with dark green leaves up to 4 feet long and 3 inches wide. It spreads slowly by means of short rhizomes, forming dense clumps. As the clumps get older the centre parts die out and the plants become more widely spread and lose the clumped habit.

The root system consists of large numbers of cord like adventitious roots spreading out in a mat very close to the surface of the soil. Observations by the writer on the college farm showed that at no point did the roots penetrate more than 6 inches below the surface (c.f. Kincaid). In spite of the shallow root system Guatemala Grass stands drought well, the leaves becoming tightly curled in dry weather. Kincaid found that the growth rate of Guatemala Grass "fluctuates very violently" and depends on rainfall and the moisture content of the soil. The rapid fluctuations in growth rate are probably correlated with the shallow rooting habit.

In cultivation, tillering depends largely on the height of cutting. Removal of the terminal bud causes development of large numbers of axillaries in the nodes of the cut stump; new tillers may grow from the rhizomes. After cutting, leaves which are produced from previously dormant buds are short and narrow; leaves produced from the undamaged terminal bud are long and broad.

In its native habitat numerous flowering spikes are produced, these are flexuous and slender up to 18 inches long; in Trinidad however flowers are very seldom produced.

Guatemala Grass is a native of Central America from Southern Mexico to British Honduras. It has been successfully introduced into cultivation throughout the islands of the Caribbean, also in British Guiana, Ceylon, the islands of the Pacific and the Southern United States.

Among the other common Trinidad fodder grasses, Elephant Grass and Guinea Grass are of somewhat similar habit ^{to} Guatemala Grass. Elephant Grass is a much deeper rooted grass than Guatemala Grass, it also shows a much greater tendency to send up woody flowering stems or 'canes'. The variety of Elephant Grass now cultivated in Trinidad is the Uganda variety, so that Elephant Grass is sometimes spoken of as Uganda Grass; another alternative name is Napier Grass or Napier fodder. Merkers Grass is also to be regarded as variety of Elephant Grass. Para Grass is of an entirely different habit; it is comparatively slender and spreads by means of stolons which may be up to 30 feet long, and which root at the nodes. Although a valuable fodder grass it is a troublesome weed in cane fields. It must not be imagined that the grasses mentioned are the only ones suitable for fodder production. There are a large number of promising grasses which have not, as yet, been sufficiently investigated.

Most of the more precise experimental work on fodder grasses has been carried out in Trinidad; observations of a more qualitative nature are however available from nearly all the places where these fodder grasses are cultivated, and reference will be made to these also.