ABSTRACT

Three experiments were conducted on a typical dry patana native sward to determine its productivity and floristic composition. The results of Experiment 1 showed that the dry matter productivity of the native sward during the second year was reduced by 105% of the first year dry matter productivity when the sward was clipped continuously over a period of two years, without any manurial treatment. Maximum dry matter yields of approximately 2,100 kg/ha/yr were recorded when the sward was clipped at trimonthly interval, during the first year. In vitro percent digestible organic matter of the sward was estimated at 21%. It was evident from the results of Experiment 2 that lowest dry matter yields of approximately 405 kg/ha/yr were obtained when the sward was clipped at yearly interval. The clipping frequency regimes had no general trend on the floristic composition. A variation in the percent digestible organic matter between different grass species was also evident. It was found from Experiment 3 that nitrogen application increased dry matter yields and the response to nitrogen was in the range of 6-7 kg of dry matter per kg of applied nitrogen. Close cutting increased dry matter production than lax cutting. Four grass species, Arundinella villosa (Arn.), Chrysopogon zelanicus (Steud.), Ischaemum imbricatum (Hack.), and Apocopis courtallumensis (Steud.), were identified as the major contributors to the total dry matter production. Nitrogen, cutting frequency and cutting height had no effect on the floristic composition which remained consistent at every cut.

The low productivity and poor quality of the native pastures necessitated the replacement of them with improved pasture following a soil fertility rebuilding pioneer cropping phase. In this context, Experiment 4 was carried out on a virgin dry patana land to assess the performance of different pioneer crop combinations in terms of direct economic returns during the pioneer cropping phase and in terms of dry matter and digestible organic matter production of the subsequently established Paspalum dilatatum (Poir.). The results of this experiment confirmed the possibility of obtaining direct economic returns from maize, horse gram, kurakkan and lemon grass crops. During the pioneer cropping phase (Maha, 1975/76 and Yala, 1976), highest gross economic returns were obtained from maize-horse gram combination and the lowest returns were recorded from lemon grass. Grain sorghum did not produce grains during Maha, 1975/76 season. The benefits of pioneer cropping the land to increase the productivity of subsequently established pasture was also confirmed.

Since special emphasis is placed on livestock development based on permanant improved pasture management, Experiments 5 and 6 were conducted to evaluate one year old purestand of Paspalum dilatatum (Poir.) under cutting and grazing managements respectively. The results of Experiment 5 suggested the possibility of obtaining higher annual yields of dry matter and digestible organic matter at higher levels of nitrogen application in combination with longest clipping interval. The response to nitrogen was in the range of 20-25 kg of dry matter per kg of applied nitrogen.

A sharp drop in the percent digestible organic matter occurred with increasing the length between clippings. In Experiment 6, the possibility of obtaining liveweight-gains in the range of 220-302 kg/ha in 196 days with the application of 50 kg of nitrogen when 20 Southdown sheep were pastured, was evident. Increasing the stocking intensity from 12.5 to 20 sheep/ha increased the liveweight-gain/ha by 46%. Stocking intensity and nitrogen level had no general trend on the mean daily individual liveweight-gain of sheep and the mean individual liveweight-gain ranged from 61-80 g/day.