

## **Preliminary Evaluation of the Productivity of Some Summer Forage Legumes in U.A.E.**

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### **ABSTRACT :**

A preliminary field experiment was conducted at the U.A.E. University Farm to evaluate the general performance and productivity of five forage legumes. The crops were lablab beans (two cultivars), cowpea, pigeon pea and butterfly pea which showed acceptable levels of adaptation and productivity under the conditions of the U.A.E. Further research for a comprehensive crop management system is recommended.

**Key words :** Legumes, Forage productivity, U.A.E.

### **INTRODUCTION**

Animal production farms in the United Arab Emirates (UAE) are among the fastest growing agricultural enterprises. The country is steadily driving towards self-sufficiency in many of the animal products. In this respect, forage production is by far the most important attribute to a successful animal farm. However, variability in the forage species grown in the UAE is very much limited by the severe environmental conditions and the recent history of agriculture in the region. The need for research into screening, introduction and breeding genotypes to suit this environment cannot be

overemphasized. The objective of this preliminary experiment is to evaluate the general performance and productivity of five forage legumes.

## MATERIALS AND METHODS

A field experiment was carried out at the Faculty of Agricultural Sciences Farm, UAE University. The land was previously grown to the forage legume lablab bean. The experimental design was a completely randomized design with six replicates. The treatment comprised five forage legumes : two cultivars of lablab beans (Lablab purpureus L.) "Brazilian" and "Highworth". Both cultivars were reported to have a potential for high forage productivity and adaptation to a wide range of environmental conditions (Ibrahim et al 1990, Wildin 1974 and Wood 1983). In addition, the forage and seed legumes cowpea (Vigna unguiculata) and pigeon pea (Cajanus cajan (L.) Millsp.) which are grown by some animal farmers in the region were also included. Also butterfly pea (Clitoria ternata L.) was included in the trial for its reputation as a potential forage producer under severe water stress (Modawi et al 1985).

The crops were seeded on April 1, 1991 and harvested on June 8 and 9, 1991. The plots were single rows, 12 m long, 60 cm apart with 30 cm plant spacing along the rows. The land was supplied with superphosphate (200 kg/ha) and potassium sulphate. Doses of urea (46% N) were applied 3 and 5 weeks after sowing at the rate of 275 kg N/ha each.

Measurements of plant height, number of primary branches per plant and the above-ground plant fresh weight in g/plant were taken on the 8th and 9th of June 1991. Plants were sun-dried for one week for measurement of dry weight/plant. The plots were cut 10 cm above ground and allowed to regrow for a second crop. However, because of irrigation difficulties during the summer only butterfly pea survived to produce a second crop. The same data were taken on this second crop on Sept. 7, 1991. For each crop, dry yield in ton/ha was calculated based on the number of plants in each plot.

## RESULTS AND DISCUSSION

Table 1 summarizes the data obtained on plant height, the number of primary branches per plant, dry weight per plant and calculated dry yield in ton/ha.

The crops varied significantly in plant height with the two cultivars of lablab beans "Highworth" and "Brazillian" showing significantly greater tendency for producing primary branches than the other crops, while cowpea and pigeon pea were the lowest. The cultivars "Brazillian" and "Highworth" produced significantly greater dry matter than all the other crops. Ibrahim *et al* (1990) reported a similar high positive correlation between plant height and dry forage yield in lablab beans. Butterfly pea was the lowest yielder. However, butterfly pea seems to regrow better after the first cut reaching a height of 80 cm and producing a three-fold increase in dry forage yield (46 g/plant) despite the severe water stress during the crop establishment period after the

Table 1. Mean values of plant height (cm), number of primary branches per plant and dry yield g/plant and ton/ha for five forage legumes.

Crop	Plant height (cm)	No. of branches/plant	Dry weight/plant (g)	Calculated dry yield (ton/ha)
Lablab Cv. "Brazilian"	123 a*	6.4 b	103 a	5.73
Lablab Cv. "Highworth"	141 a	6.1 b	101.6 a	5.64
Cowpea	40 d	4.4 c	46.7 b	2.60
Pigeon pea	46 cd	4.2 c	26.6 c	1.48
Butterfly pea	52 c	13.5 a	13.5 d	0.74

\* Along columns values followed by the same letter are not significantly different according to DMR test.

first cut. Yield of the second crop of butterfly pea (2.5 ton/ha) was as good as cowpea's first crop which may be attributed to the perennial nature of the crop.

The crops under investigation have the potential for supplying animal producers with acceptable levels of forage yield during the summer months. Further genetic improvement for individual crops as well as characterization of the proper crop management practices may contribute to the establishment of a better animal production system.

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### ملخص

تقييم الكفاءة الإنتاجية لبعض محاصيل العلف البقولية

الصيفية في دولة الإمارات العربية المتحدة

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أجريت تجربة حقلية استطلاعية في مزرعة جامعة الإمارات العربية المتحدة بالعين لتقييم الكفاءة الإنتاجية لمحاصيل الأعلاف البقولية : لوبيا لبلاب ( صنفين ) لوبيا بيضاء عماني وكليبتوريا . أوضحت النتائج الأولية أن المحاصيل المختارة ذات مستوى مقبول من الإنتاجية والتأقلم للظروف الجوية لدولة الإمارات العربية المتحدة مع التوصية بإجراء مزيد من البحث نحو تجويد نظم الإنتاج .