Research Note

STEM PROPAGATION OF TWO GUINEA GRASS CULTIVARS AT SIX MATURITY STAGES AND TWO CUTTING HEIGHTS[1]

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The possible use of stem sections for the efficient propagation of guinea grass cultivars was studied at the Corozal Agricultural Experiment Station, (Ramos-Santana and Rodríguez, 1997). This study demonstrated the ability of some guinea grass cultivars to propagate efficiently by stem sections. In that study, only three levels of stem maturity were tested and no information was provided in relation to stem height cutting requirements. Because of limitations in the propagation of guinea grass (*Urochloa maxima*[4] jack, R. D. Webster) cultivars by apomictic seed, the use of stem sections for the establishment of this important tropical grass in pastures and grassland reserves deserves attention.

An experiment was conducted at the Corozal Experiment Station of the University of Puerto Rico from 30 January 1995 to 28 November 1995. Total precipitation for the period was 2,167 mm, and mean daily temperature was 24.8°C. For the evaluation, a Corozal clay soil (Aquic Haplohumults) was used with an average soil pH of 5.5 and average soil K and Ca of 0.26 and 11.41 $cmol_c/kg$, respectively. Average soil N and P was 0.12% and 0.03%, respectively, as measured by the microkjeldahl method (Technicon Industrial System)[5]. Two fully established plots of *Urochloa maxima* (common and PRPI 3637) were equally divided into six sections for stem cutting at different levels of maturity. After the first initial cut of the plots at 5 and 15 cm above soil level, stem sections were cut and harvested from the third to the eighth month. The harvested stem material (with the panicles removed) of each interval and cultivar was established in the field with the same quantity of vegetative material (3.2 kg/plot) for each accession at the two above mentioned heights. The vegetative material was established on each plot (8.8 m × 6.7 m) divided into two sections for the 5- and 15-cm cuts with three replications per harvest interval. During the first month of the establishment, 50 mm of irrigation was applied every week.

A factorial experiment in randomized blocks was used for the evaluation of the effects of cutting height, stem maturity (time of harvest) and cultivar on propagation. The two measured dependent variables were the number of plants per plot (cluster per plot) and the dry matter yield (DMY) following the establishment of each cultivar.

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[4]Recent taxonomical classification changed the previous species name of *Panicum maximum* to *Urochloa maxima*.

[5]Trade names in this publication are used only to provide specific information. Mention of a trade name does not constitute a warranty of equipment or materials by the Agricultural Experiment Station of the University of Puerto Rico, nor is this mention a statement of preference over other equipment or materials.

TABLE 1.—*Average monthly number of plants per plot of two* Urochloa maxima *accessions at six stages of stem maturity 60 days after the establishment.*

Month	Dates	Plants per plot
3	2 May 1995	14c[1]
4	31 May 1995	15bc
5	30 June 1995	18a
6	31 June 1995	17ab
7	30 August 1995	16ab
8	29 September 1995	14c

[1]Means in the same column followed by different letters differ ($P < 0.05$).

In relation to the number of plants per plot, significant differences were observed among harvest intervals and accessions but not between cutting heights (Tables 1, 2 and 3). In terms of DMY, significant differences were observed between the two cutting heights (Tables 2 and 3). However, no significant interaction effects were observed among the three factors under evaluation.

The study showed that summer stems harvested when five to seven months old were suitable for obtaining the best establishing efficiency of both *Urochloa* cultivars. It seems that stems harvested as young as three months or as old as eight months were less efficient in becoming established under the conditions of this study (Table 1).

Urochloa maxima PRPI 3637 gave a significantly higher DMY, producing twice the yield of the common genotype. Even though the common *Urochloa maxima* genotype had a better germination rate, PRPI 3637 was superior because of its higher DMY.

TABLE 2.—*Average dry matter yield (kg/plot) and plants per plot of two* Urochloa maxima *accessions.*[1]

Accession number	kg/plot	Plants per plot
3637	7.30a[2]	14b
common	3.33b	17a

[1]First uniformity cut 30 January 1995.

[2]Means in the same column followed by different letters differ ($P < 0.05$).

TABLE 3.—*Average dry matter yield and plants per plot of* Urochloa maxima *accessions cut at 5 and 15 cm height.*[1]

Height cut (cm)	kg/plot	Plants per plot
15	5.78a[2]	15a
5	4.85b	16a

[1]First uniformity cut 30 January 1995.

[2]Means in the same column followed by different letters differ ($P < 0.05$).

Although no significant differences in germination were observed between these cutting heights, cutting at 15 cm above the ground resulted in significantly higher DMY. This observation is in accordance with the studies of Vicente-Chandler et al. (1983) which suggested a minimum cutting height of 15 cm to obtain the best DMY in guinea grass.

From the experimental studied data it can be inferred that the best variety for establishment is PRPI 3637. The best cutting age of *Urochloa maxima* stems is between five and seven months, and the best time is summer if rainfall is not a limiting factor. In general, it is better to cut the stems at 15 cm above ground rather than at 5 cm.

LITERATURE CITED

Ramos-Santana, R. and J. E. Rodríguez, 1997. Propagación asexual de *Panicum maximum* (yerba guinea) en tres etapas de madurez. *J. Agric. Univ. P.R.* 81:237-238.

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