

## *Hymenachne amplexicaulis* [(Rudge) Nees] genetic resources collection in México, a suitable grass for flood plains in tropical areas

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**Introduction** *Hymenachne amplexicaulis* [(Rudge) Nees;  $2n= 2x= 24$ ; Azuche, West Indian marsh grass] is a native Central and South America  $C_3$  grass that grows well under intermittent flooding conditions. It produces good seed set and stolons to thrive on new areas assuring its survival, combined with an efficient N metabolism to promote vigorous new growing leaves and tillers (Antel *et al.*, 1998). Azuche is a dual attribute species when introduced to new areas; it has valuable forage attributes but also is a potential weed (Hill, 2000). As Azuche is a native species, one must deal with in the best possible way within Tropical Latin America areas (Enriquez *et al.*, 2004). No report has been found to date on living genetic resources collection and evaluation for this species.

**Materials and methods** In 2002 and 2003, an expedition by staff of CP and INIFAP collected Azuche from 90 sites in its natural diversity in tropical México from Puerto Vallarta to Tapachula on the Pacific and from Palizada, Campeche to Veracruz on the Gulf of México, and also on sections through the Tehuantepec isthmus and through the Sierra Madre de Chiapas (Figure 1). On each collection site, 25 tillers were tagged and stored in a commercial soil mix until establishment in 6 l pots; no fertiliser was applied. Pots were watered regularly to mimic flooded conditions and plant material was cut every 30 days. Pots were clipped 3 times and a 90-days growth was evaluated for morphology: (1) number of shoots, (2) central leaf length, and (3) central leaf width.

**Results** There were more collection sites on the Gulf of México than on the Pacific shore and the sierra routes; 88/90 sites were <150m; 2/90 were at 619 and 853m above the sea level. Azuche was not found on lagoons or areas of salt concentrations. Small patches of Azuche may indicate disappearance of its ecological niche and a drastic reduction in the surface it permeates. Azuche is a good alternative for wildlife. Farmers in flooding areas preferred Azuche to other grasses, mainly  $C_4$ , for grazing. These morphological attributes had high variation (Table 1) for future selection and hybridization studies. There was a low negative correlation (-0.5) between shoot number and leaf length, and a positive correlation between length and width of leaf (0.7;  $p < 0.05$ ).



**Table 1** Basic statistics for three measured attributes on *Hymenachne amplexicaulis* [(Rudge) Nees] accessions collected within tropical Mexico

	Shoot Number	Central leaf width (cm)	Central leaf length (cm)
Coef	49.2	25	21.5
Variance	21.2	0.2	53.4
Mean	9.4	1.8	34.1
Highest	<sup>1</sup> 26	3.6	52.1
Lowest	<sup>2</sup> 2.4	1.1	17.1

1. Five highest registered values

2. Five lowest registered values

**Figure 1** *Hymenachne amplexicaulis* [(Rudge) Nees] collection route

**Conclusions** Most Azuche populations were <150 m above the sea level, and occurred in small isolated patches throughout tropical México. Farmers recognized Azuche as an important grass for flooded areas. There is a valuable morphological variation among the collected materials.

### References

- Antel, N. P. R., M. J. A. Werger & E. Medina (1998). Nitrogen distribution and leaf area indices in relation to photosynthetic nitrogen use efficiency in savanna grasses. *Plant Ecology*, 138: 63-75.
- Enriquez-Quiroz, J. F., A. R. Quero-Carrillo & A. Hernandez-Garay (2004). Pastos para zonas tropicales inundables. In: INIFAP-PRODUCE-Veracruz. (eds.) Memorias del día del ganadero 2004. C. Experimental Playa Vicente SAGARPA-INIFAP (in press). México.
- Hill, K. U. (2000). *Hymenachne amplexicaulis*: A review of literature and summary of work in Florida. <http://www.naples.net/~kuh/hymen.htm>