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Forage yield of grass and legume entries in the establishing year in a dry tropical area

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Key words : weed invasion , annual yield , establishment

Introduction Years of overgrazing and clearing of land to grow crops in the dry tropical region of south-central Mexico promoted both the disappearance of native forage species and changes in soil and microenvironment that impede the restoration of grasslands with native species ; a technological alternative is the evaluation of introduced grasses and legumes (Castillo , 1998) . This region has a rainy season of four to five months characterized by brief , heavy and sporadic rains . The objective of the study was to evaluate fourteen introduced forage species in the first year .

Materials and methods Seven grasses and seven legumes were evaluated in a completely random design with three replications , experimental unit was a plot of 9 m² . Species were sown at the beginning of the rainy season in rows 60 cm apart , hoeing between rows was done three times to control weeds , no fertilizer or any soil amendment were used . First cut was 140 d after seeding (end of the rainy season) during the following dry season four cuts were done . At each cut the plant material was harvested above 5 or 10 cm from soil level in the grass and legume entries , respectively . Variables analyzed were forage and weed yields at first cut , and forage yield from the cuts done during the dry season , analyses of variance were done with SAS , PROC GLM (SAS , 2006) .

Results and discussion Three grasses (Mulato , Libertad and Tanzania) and one legume (Lablab) showed the highest amount of forage accumulated during the rainy season (Table 1) making them the more promising forage species for this type of region . Of these species only Mulato and Libertad were able to show some harvestable forage growth during the dry season . The importance of some growth during the dry season is that these species will show a rapid and strong response to the onset of the rainy season making them more competitive against weeds and quickly covering the soil to protect it from the heavy rains . The high yield of the legume Lablab during the rainy season with no growth in the dry season indicates that this species is suitable for hay production to help feeding the animals in the dry season . Weeds were not a problem in any of the entries evaluated .

Table 1 Forage yield at first cut and during the following dry season .

Species	Yield		
	First cut		Dry season
	Forage(t/ha)	Weeds(kg/ha)	Forage(t/ha)
<i>Brachiaria hibrido</i> Mulato	16.3 a	—	1.3 ab
<i>Lablab purpureus</i>	14.1 ab	115 a	—
<i>B. brizantha</i> Libertad	11.8 c	32 a	1.8 a
<i>Panicum maximum</i> Tanzania	8.5 dc	—	0.3 c
<i>B. brizantha</i> Marandu	5.4 de	25 a	0.4 c
<i>Calopogonium muconoides</i>	3.9 e	283 a	—
<i>Neonotonia wightii</i> Tinaro	3.2 e	134 a	0.03 c
<i>Chloris gayana</i> Katambora	2.7 e	48 a	0.5 bc
<i>Macroptilium atropurpureum</i> Azteca	2.6 e	38 a	0.5 bc
<i>Cenchrus ciliaris</i> Laredo	2.5 e	8 a	0.1 c
<i>N. wightii</i> Cooper	2.3 e	38 a	0.1 c
<i>C. gayana</i> Bell	2.1 e	7 a	0.1 c
<i>Pueraria phasoeloides</i>	1.7 e	75 a	—
<i>Stylosanthes hamata</i>	1.2 e	102 a	—

^a Means within column with at least one letter in common are not different (P>0.05)

Conclusions Introduced species showed different forage potential based on yields . Four entries are promising after producing the highest forage yields in the rainy season . Only Mulato and Libertad produced some growth in the dry season .

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