

Yield components in a Signal grass-Clitoria mixture grazed at different herbage allowance

R. Jiménez-Guillen¹, S. Rojas-Hernández, J. Olivares-Pérez, A. Martínez-Hernández and J. Pérez-Pérez
¹Campo Experimental Chilpancingo, Col. Burócratas s/n, Chilpancingo, Guerrero, México,
 rjguillen@hotmail.com

Keywords: mixed pasture, grazing intensity, leaf and stem yield

Introduction A Signal grass-Clitoria mixture provides good quality forage in the dry tropic of southern Mexico. However, its response in leaf and stem yields to grazing at different daily herbage allowances is not well documented. The objective of this study was to determine available and residual leaf and stem yields in a Signal grass (*Brachiaria decumbens*)-Clitoria (*Clitoria ternatea*) mixture grazed at different daily herbage allowance.

Materials and methods Field work was undertaken at the Coastal Experimental Station of the University of Guerrero (17° 20'N, 100°02'W). The experimental design was a randomized complete-block with four replications in an experimental unit of 400 m² of pasture. Grazing was rotational consisting of 1 and 35 days of occupation and rest, respectively. Four grazing cycles were completed within the rainy season. Seeding was carried out the previous year consisting of three rows of Signal grass (SG) and two of Clitoria (C). At the onset of the rainy season a cut was taken and grazing commenced 35 days later. Heifers were used as grazers and daily herbage allowances were: 2.5, 4.0, 5.5 and 7.0 kg dry matter (DM) /100 kg living weight (LW). For available and residual herbage 8 sampling units (0.5X3 m) on a transect were located at fixed intervals and perpendicular to rows allowing for two rows of each species to be inside the sampling unit and cuts were taken to ground level. Weights of leaf and stem DM for both SG and C were measured.

Results Covariate, herbage allowance x grazing cycle interaction and grazing cycle were not significant (P>0.05) so main effects of herbage allowance were compared averaged over grazing cycles (Tables 1 and 2). Herbage allowance determined (P<0.05) on-offer leaf and stem yields in SG but not (P>0.05) in C, the 2.5 kg DM/100 kg LW allowance gave the lowest on-offer yields in SG. In both species, the 2.5 kg DM/100 kg LW allowance had the lowest residual yields; however, in C, residual leaf yield was different only between 2.5 and 7 kg DM/100 kg LW allowance, and in SG the 2.5 kg DM/100 kg LW allowance had lower yields than the 5.5 kg DM/100 kg LW allowance. Favorable moisture, temperature and photoperiod conditions prevented an effect of grazing cycle. The higher sensitivity of SG to herbage allowance in both on-offer and residual leaf and stem yields compared to C could be explained on the higher biomass of the former.

Table 1 Available leaf and stem yields in a Signal grass-Clitoria pasture grazed at four herbage allowances

Herbage allowance (%)	Signal grass		Clitoria	
	leaf + stem	leaf	leaf	stem
	Kg ha ⁻¹			
2.5	514 ^{b δ}	477 ^b	295	383
4.0	750 ^{ab}	940 ^a	401	546
5.5	860 ^a	1192 ^a	447	616
7.0	867 ^a	1230 ^a	455	685

+ Mean of three grazing cycles

δ Means within columns with one letter in common different ($\alpha = 0.05$; Tukey)

Table 2 Residual leaf and stem yields in a Signal grass-Clitoria pasture grazed at four herbage allowances

Herbage allowance (%)	Signal grass		Clitoria	
	leaf + stem	leaf	leaf	stem
	Kg ha ⁻¹			
2.5	111 ^{b δ}	260 ^b	43 ^b	314
4.0	198 ^{ab}	549 ^{ab}	87 ^{ab}	392
5.5	275 ^a	756 ^a	94 ^{ab}	446
7.0	294 ^a	766 ^a	144 ^a	523

+ Mean of three grazing cycles

δ Means within columns with one letter in common are not are not different ($\alpha = 0.05$; Tukey)

Conclusions Available leaf and stem yields decreased when grazing at 2.5 kg DM/100 kg LW allowance because of the lower amount of residual leaf as the grazing intensity increased. SG was more sensitive to herbage allowance than C.

References

Steel, R.G.D. & J. H. Torrie (1998). Principles and procedures of statistics. McGraw-Hill, New York, U.S.A.