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The XX International Grassland Congress took place in Ireland and the UK in June-July 2005.

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## Adaptation, compatibility and acceptability of grass-legume pastures in the Andean region of Colombia

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**Keywords:** *Pennisetum clandestinum*, *Lotus corniculatus*, adaptation, acceptability

**Introduction** In Colombia, the specialised dairy production system is located in the high altitude Andean region. Its main feed resources are pure stands of *Pennisetum clandestinum* or/and *Lolium* spp. Nevertheless, the present market conditions require highly competitive and quality forages year round. These forages should be produced with low inputs (irrigation, fertilisers and agrochemicals) and be resistant to pests and diseases. The objective of this research was to evaluate the adaptation, compatibility and acceptability of introduced forage species for sustainable pasture management.

**Materials and methods** Ten grass species were planted mixed with *Lotus corniculatus*. *P. clandestinum* fertilised with 50 kg of N/ha after each cut was used as a control. All species were planted in 2.5x 5.0 m plots interspersing rows of legume and grass species. Treatments (grass-legume combinations) were arranged in a split plot design with three replicates. During establishment (6 months), vigour, ground cover, pests and diseases were measured. After establishment, plots were cut and the botanical composition, biomass production (kgDM/m<sup>2</sup>) and nutritional quality (CP, NDF, ADF and IVDDM) were determined for 45 and 70 d regrowths in the dry and rainy season. At the end of the trial, the relative acceptability index (RAI) was measured with heifers of 300 kg liveweight in 45 days old regrowth (Maass *et al.*, 1999).

**Results and conclusions** During establishment, the legume and the grasses showed good development and compatibility. The aerial biomass production was greater for the 70 d regrowth (Table 1) particularly in the rainy season. The highest production was obtained in mixtures of *L. corniculatus* with *Festuca arundinacea*, *Festuca rubra*, *Bromus catharticus* and *P. clandestinum*. The proportion of legume was similar between cuts. The legume took over in *Phleum pratense* and *Festuca pratense* plots (> 80% legume). The 45 d cut gave higher nutritional quality. The higher CP concentration in the grasses was observed for naturalised *P. clandestinum* (14%), *D. glomerata* (15.5%) and *F. arundinacea* (15.1%). Values for *L. corniculatus* at 45 d were CP 26.5 % and DIVMS of 68.6%. The mixture with the highest RAI was *F. arundinacea* and *P. clandestinum* (naturalised). It was concluded that the most promising mixtures were *F. arundinacea* and *P. clandestinum* (naturalised) with *L. corniculatus*.

**Table 1** Aerial biomass production, legume proportion and relative acceptability index

<i>Lotus corniculatus</i> +	Regrowth								RAI
	45 days				70 days				
	(gDM/m <sup>2</sup> )	Leg (%)			(gDM/m <sup>2</sup> )	Leg (%)			
<i>P. clandestinum</i> (without <i>Lotus</i> ) + Fert	62.4	abcd	-	-	183.4	abcd	-	-	1.46
<i>Bromus catharticus</i>	62.5	abcd	57.3	abc	186.1	abcd	50.9	cd	0.74
<i>Festuca rubra</i>	100.3	A	60.6	abc	257.6	a	50.1	cd	0.47
<i>Dactylis glomerata</i>	81.2	abc	22.1	d	215.6	abc	27.8	d	0.94
<i>Festuca arundinacea</i>	80.5	abc	64.1	abc	236.5	ab	48.9	cd	1.82
<i>Pheum. Pratense</i>	26.1	D	90.8	a	35.0	cd	83.7	ab	0.46
<i>Pennisetu clandestinum</i> (introduced)	60.5	abcd	62.8	abc	231.8	ab	57.3	bcd	1.42
<i>Anthoxanthum odoratum</i>	83.2	ab	62.2	abc	86.8	abcd	58.4	bcd	1.35
<i>Holcus lanatus</i>	82.2	abcd	48.9	bcd	199.2	abcd	45.8	cd	0.45
<i>Dactylis glomerata</i> (cv. Knaulgrass)	43.1	bcd	79.9	ab	47.5	bcd	67.8	abc	0.71
<i>Festuca pratense</i>	32.8	cd	81.2	ab	16.8	d	94.4	a	0.43
<i>Pennisetum clandestinum</i> (naturalised)	95.2	A	35.4	cd	75.3	abcd	53.0	bcd	1.76
Average	66.7***		60.8***		147.6***		58***		1.00

### References

Maass, L. B, E. C Lascano & E. A. Cárdenas (1999). La leguminosa arbustiva *Codariocalyx gyroides*. 2. Valor nutritivo y aceptabilidad en el piedemonte amazónico, Caquetá, Colombia. *Pasturas Tropicales*, 3, 12-18