

Sustainable recultivation and land use on karst regions—pasture system

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Introduction Karst areas in Guangxi are distributed across the entire Province, including four district cities and 33 counties. Carbonate rock is distributed across 89,500 km² of area, and accounts for 40% of the entire district area, making up 17% of the area of China's southern karst. In southern China, the area of karst totals about 540,000 km². The karst area of Guangxi is the typical of other karst areas in China and also of tropical and subtropical karst of the world. The karst geography of this project implementation site is a peak clump depression type. Various grasses have been used to establish pasture system in the karst region. Grasses and legumes have been screened for this purpose. Combinations of grasses and legumes, cultivation, soil nutrients and improvement of high-quality pastures have been studied.

Material and methods Mixtures of pasture grasses and legumes were tested in 7.8 ha plots in total. Twelve varieties planted including *Trifolium repens* cv. haifa, *Dactylis glomerata*, *Panicum maxumam*, *Aeschynomene americana*, *Cajanus cajan*, *Paspalum spp.* et al. They were planted in plots with 5 combinations plus a control plot. In April, we choose the ones that performed better to plant two mixed combination pastures with 10 ha for each. These species were *P. wetsteini*, *P. maxumam*, *Setaria anceps*, *Stylosanthes guianenses*, *C. cajan*, Haifa, *P. dilitaton*, *P. notation* and *A. Americana*. Three measurements were made on the Jun 11-17, Aug 29-Sep 3 and Oct. 29-30 in 2006 for height, fresh and air dry yield.

Results The results have shown that some species tested exhibited good emergence and were suitable for the karst area. The highest grass yield was in plot 3, with the fresh yield up to 30t ha⁻¹ and the air dried matter field up to 7.7t ha⁻¹. Plot 2 came second with the fresh yield up to 30t ha⁻¹ and the air-dried matter yield up to 6t ha⁻¹. The third was plot 4 with the fresh yield up to 26.3t ha⁻¹ and the air-dried matter yield up to 5.6t ha⁻¹. The 4th gave to plot 5 with the fresh yield up to 23.3t ha⁻¹ and the air-dried matter yield up to 5.3t ha⁻¹. The better performing species were *P. wetsteini*, *P. maxumam*, *S. anceps*, *S. guianenses*, *C. cajan*, *A. americana*, *T. repens* cv. haifa, *P. dilitaton* and *P. notation*.

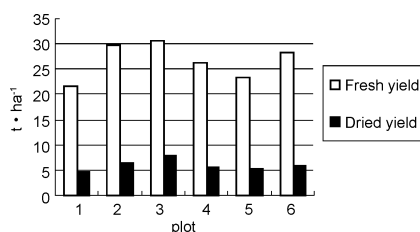


Figure 1 Total annual pasture yield (t · ha⁻¹)

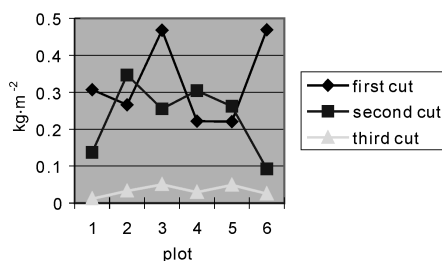


Figure 2 Distribution pattern of yield (kg · m⁻²)

Conclusions Based on the study, useful pasture cultivars and grass and legume combinations for establishment in the tropical and subtropical karst region have been identified and the pastures of the karst region are being improved.

Reference

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