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Yield and quality of whipgrass mixed with different levels of White Clover

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Key words : *Hemarthria compressa* ; *Trifolium repens L.* ; Overseeding ratio ; Yield ; Quality

Introduction Development of grass legume pastures is one of the recognized strategies in many countries for enhancing both the quantity and quality of feed resources. Forage quality and seasonal distribution of biomass of grass legume pastures have proved superior to those of grasses or legumes alone. Therefore, this study assessed the effect of different mixture of white clover (*Trifolium repens* cv. Chuanyin Ladino) levels on seasonal yield, crude protein (CP) and neutral detergent fiber (NDF) of whipgrass (*Hemarthria compressa* cv. Guangyi).

Materials and methods The forages were grown in the 2005 crop season in Agricultural Research Centre of Sichuan Agricultural University, Ya'an, Sichuan province, China. Whipgrass (WP) and white clover (WC) were selected and propagated using sprigs and seedlings, respectively. Treatments included three levels of white clover (25%, 50% and 75%) mixed with correspondent amount of whipgrass. Whipgrass and white clover alone were used as controls. The experiment was carried out in a randomized complete block design.

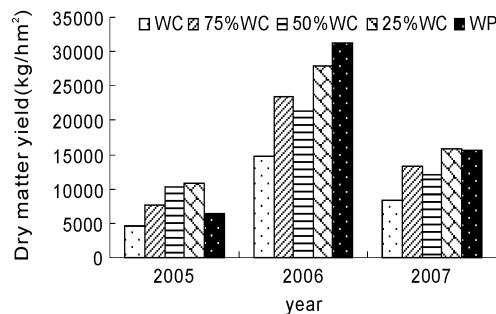


Figure 1 The average of dry matter yield in 2005-2007.

Results The average dry matter (DM) yields of three years harvests were higher in the treatment of 75% WP-25% WC (yield 18217 kg/hm² DM) than the other treatments (14554 kg/hm² for 50% WC + 50% WP, 14793 kg/hm² for 75% WC + 25% WP, 92 kg/hm² for WC only, 17813 kg/hm² for WP only). The CP contents of the mixture increased as the proportions of white clover increased. Comparing to WP only, the total CP contents of the treatment of 75% WP-25% WC, 50% WC-50% WP and 75% WC-25% WP increased 26.5%, 4.6% and 11.0%, respectively; whereas NDF content decreased 9.6%, 10.3% and 10.9%, respectively (Tab. 1, Figure 1). Perennial tropical whipgrass mixed with three levels of white clover contributed to high pasture quality through increased CP contents and reduce NDF contents of the mixture. The advantage of perennial legume white clover in the mixed whipgrass pasture is the higher protein value compared to whipgrass alone.

Table 1 The content of CP and NDF of different treatments in 2005~2007.

treatments	CP(%)				NDF(%)			
	2005	2006	2007	average	2005	2006	2007	average
100% WC	18.90	17.50	18.60	18.33	30.10	27.00	28.70	28.60
75% WC+25% WP	14.20	14.50	15.00	14.57	37.70	39.60	36.50	37.93
50% WC + 50% WP	13.90	13.90	14.20	14.00	38.80	40.00	36.90	38.57
25% WC+75% WP	13.60	13.30	13.80	13.57	39.70	40.70	37.50	39.30
100% WP	11.30	10.80	11.00	11.03	47.60	52.80	42.70	47.70

Conclusions The amount of white clover in the whipgrass-white clover mixture affected DM yield, CP and NDF characteristics. There was an increase in CP and reduction in NDF of whipgrass as the proportion of white clover in the mixture increased. All whipgrass-white clover mixture could supply the required nutrients for maintenance and production of livestock, 75% WC + 25% WP provided best potential in nutrient management of hay cropping systems.