The Mulberry as a Source of Forage for Ruminants: Effects of Stand Density and Cutting Frequency on Dry Matter Yield and Nutritive Value

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Key words : mulberry ,stand density ,cutting frequency

Introduction In the central zone of Chile , under Mediterranean climate , mulberry has been used as a decorative tree in parks and avenues . Previous results have shown large dry matter yields and high nutritive value , (Martin et al . , 2000 ; Boschini , 2000) . Preliminary results indicate that yield should be over 20 ton ha^{-1} with crude protein between 18 and 25% ; digestible energy about 14 .2 MJ k^{-1} . The objective of this study was to quantify the effects of stand density (SD) and cutting frequency (CF) on dry matter yield and its nutritive value .

Materials and methods Three SD were applied : high density (HD) ,(50 x 50 cm) ; medium density (MD) , 75 x 75 cm and low density (LD) 100 x 100 cm . For each density , two CF were applied : every 60 and 120 days . Leaves and stems were weighed and dried to 60℃ for dry matter determination . Samples for each density and frequency were collected for chemical analysis (crude protein (CP) , digestibility (DMD) , ash and digestible energy (DE) . A 3 x 2 random factorial design with 12 replications was used .

Results SD significantly affected ($P \leqslant 0.05$) dry matter yield . HD presented 39% more dry matter yield than MD and 55% more than LD when CF was of 60 days . When CF was every 120 days , HD showed 35% more yield than MD and 50% more than LD . CF significantly affected dry matter yield for all the densities having more production at 60 days than at 120 days , being 23% ; 18% and 15% for HD ,MD and LD respectively , showing that as SD and CF are increased , dry matter yield is also increased . Nutritive value was not affected by density but when CF was longer , nutritive value significantly decreased since nutrients were sent from leaves to storage tissues , although digestibility did not change .

Table 1 *Effects of SD and CF on dry mater yield and nutritive value of mulberry .*

	DM yield (t ha^{-1})		CP (%)		DMD (%)		DE (MJ kg^{-1})		Ash (%)	
CF	60 ds	120 ds	60 ds	120 ds	60 ds	120 ds	60 ds	120 ds	60 ds	120 ds
HD	5 .2B[1] a[2]	3 .96Aa	25 .6Ba	21 .8Ab	83 .3Aa	82 .9Aa	3 .73Ab	15 .6 Ab	15 .1Bb	14 .0Aa
MD	3 .13B* b	2 .56Ab	26 .4Ba	21 .7Ab	84 .3Ba	81 .3Aa	3 .69Ab	15 .1 Ab	14 .2Aa	14 .4Aa
LD	2 .32Bc	1 .98Ac	25 .4Ba	20 .7Aa	83 .3Ba	81 .7Aa	3 .56Aa	14 .6 Aa	15 .3Ab	14 .8Aa

[1] Different capital letters in columns indicate significant differences ($p \leqslant 0.05$) .
[2] Minor letters within the rows indicates significant differences ($p \leqslant 0.05$) .

Conclusions Dry matter production significantly increases as stand density of mulberry is higher and cutting frequency is longer . Nutritive value is not affected by stand density but crude protein content decreases when cutting frequency is enlarged while digestibility and digestible energy content are not affected .

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