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The XXI International Grassland Congress / VIII International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

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Potentialities evaluation and sylvo-pastoral improvement test in a semi arid zone in the southwest of Algeria

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Key words : coppice , production , pastoral load , improvement

Introduction The area of study (coppice of Holm oak of the South West of Algeria) has known a period of deep social mutations due to the intensification of agriculture and an uncontrollable flux of migrant populations . These latter combined with harsh ecological conditions (dryness , soil erosion and excessive pasturing) led to a swift degradation of the vegetation (Dahmani , 1988 ; Ghazi & Lahouati , 1997) spoiling its pastoral purposes . The aim of our study is on one hand the evaluation of the productive potentialities in woody and pastoral matter and on the other hand , a contribution to the preservation and improvement of the coppice that turns out to be a fundamental source of food for the herds .

Methods The studied samples for the assessment of the biomass and the woody production are determined by the allometric method (Gounot , 1969 ; Heim , 1977) connecting the surface of the top wood/crown with the biomass (Bouderber & Dahmani , 1990 , 1999) . The pastoral production is evaluated by an indirect method (linear sampling , specific contribution and specific quality index) (Daget & Poissonnet , 1972) . A test of improvement of the pastoral production is tempted in four plots (L1 , L2 , L3 , L4 : 25m x 25m) while combining three treatments : cut of the herbaceous and the woody low (C) , straw (P , Pf) and N . P . K . fertilization (F) . The effectiveness of these tests is appreciated by the determination of the fodder potential , expressed by the pastoral value , load and production , in comparison with the reference plot (T) .

Results This preliminary assessment of the potentialities of the holm oak coppice (Figure 1) shows a woody annual production of 0 .089t/ha/yr , a clear primary production of 0 .271t/ha/yr , a natural pastoral value ranging between 29 .3 and 38 and a pastoral load between 1 .40 and 1 .81 ha/sheep . This weak sylvo-pastoral potentiality excluded envisaging any current business concern and requires the implementation of appropriate model of management . The test of improvement tempted in this study shows that the profit of the most important pastoral value is obtained (Figure 2) , in the cut and fertilized plots (L4 and L3) .

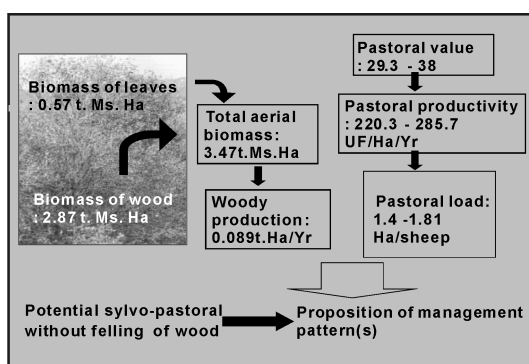


Figure 1 Woody and pastoral production in the holm oak coppice .

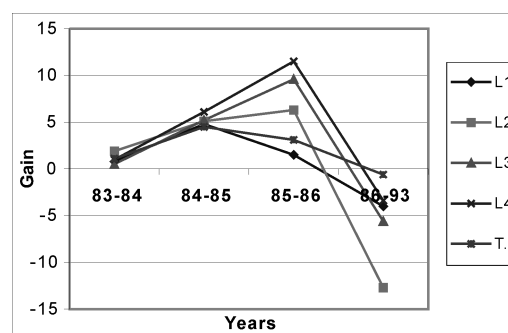


Figure 2 Fluctuations of winning of pastoral value . L1 : C+ P , L2 : C+ Pf , L3 : C+ P+ F , L4 : C+ F , T : reference , C : felling , P : straw , Pf : short straw , F : fertilizer

Conclusions This survey underlines the low natural productive potential of this coppice (Achhal , 1979 ; Lossaint & Rapp , 1978 , Quezel & Medail , 2003) . It also shows that chemical fertilization (N . P . K) associated or no , with biological fertilisation (straw) can improve the fodder value of the vegetation (Sabate & al . 1992) . This positive effect must be confirmed however by a long-term follow-up of the improvement tests . The possible introduction of palatable species could also give convincing results . A study of the food behaviour of the sheep (Cuartas & al . , 1992) in relation with the phenology of the introduced species would lead to more significant pastoral load results and the elaboration of a precise pastoral calendar . Otherwise , the improvement of the woody production could be carried out by some appropriate forestry operations (Bellon & al . , 1992 ; Ducrey 1996) .

Reference

Achhal A . (1979) . Le chêne vert dans le Haut Atlas central ; Etude phytoécologique . Problèmes posés par les aménagements de la chênaie . Thèse Doct . 3^{ème} cycle , Univ . Aix-Marseille . 116p .