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Management as factor of quali-quantitative changes in rangeland communities north western Santa Fe province , Argentina

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Key words : rangeland , communities , management

Introduction The area where the experiences were held is located in the North West region of Santa Fe province , Argentina . It is part of the Chaqueña sub-region . It presents predominance of savanna type vegetation . Individuals or islands of *Prosopis alba* and *P . nigra* surrounded by herbaceous vegetation . They are considered good fields for livestock because of the quality of their grasses . As part of the Rural Extension work , it was detected that the ranchers used the continuous grazing system , with relative low stocking rates per area unit , due to ignorance of other management strategies . In order to demonstrate the validity of alternative strategies , several tests were conducted in a 200 hectare field 12 kilometres of San Cristóbal (Santa Fe , Argentina) .

Materials and methods The implemented strategies were : Field subdivision . The number of paddocks was increased . Instead of two paddocks 100 hectare each , ten paddocks were used . Stocking rate adjustment from 0 .50 cow equivalent per hectare (cE/he) to 0 .80 cE/he using the Huss method , 86 . Rotational grazing system with variable loads and rates , according to grass availability .

The following observations were made : Meat production per hectare per year . Plant community identification : Bush pasture ; grasslands surrounded by brush (*Paspalum urvillei* or *P . quadrifarium*) ; Pajonal of *Leptochloa chloridiformis* ; Gramillar of *Cynodon dactylon* ; halophyte pasture ; Wetland vegetation type (Canutillar de Estero) and Cord vegetation type (*Espartillar*) (*Spartina argentinensis*) . Systematic community census were conducted by the Daubenmire Method . A grid was made in the field and each sampling point was located in the intersections , with a total of 220 points (Oct 92) . The sampling was repeated in October 2002 . The communities evolution and their condition were determined .

The establishment was divided in 10 paddocks . Each paddock was grazed with all the animals according to the grass availability . More than 12 days of grazing were never allowed . Several management strategies were implemented afterwards : 1 . To increase the presence of *Paspalum urvillei* and *P . dilatatum* in the paspaletum dominated by *Cyperus* , they were grazed intensely during September-October and they were closed until January-February . 2 . To increase the presence of *Bromus* sp , *Stipa* spp and *Poa* sp in the brush grasslands , intense grazing and closings until March were made . 3 . Simultaneously , in the bush grasslands where bushes were predominant , they were eliminated preserving only *Prosopis alba* and *P . nigra* . 4 . From 1998 *Chloris gayana* was added on gramillares and halophyte grasslands .

Results and discussion It was possible to increase the stocking rate as forage offer and productivity increased . This was a decision that the producer agreed to make as he visualized forage excess in the paddocks that were closed for 90 days . The 10-paddock subdivision and the rotational grazing allowed increasing the stocking rate and a better forage harvest .

Conclusions The stocking rate was increased from 0 .51 cE/he/year on 1992 to a rate oscillating around 0 .80 cE/he/year between 1996 and 2000 . The meat production was increased from 135 kg/he/year on 1992 to an average of 190 kg/he/year between 1996 and 2000 .

There was a small increase in the number of plant communities , especially under bushes . The grazing condition was remarkably improved in all the plant communities , with a significant increase of species of high forage value . This fact is especially visible in those communities originally classified as of excellent condition , increasing from 11% to 23% , and in those originally classified as of good condition that had increases of valuable species from 15% to 18% .

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