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## Cultivating the surface soil to renovate a Grama Rhodes (*Chloris gayana* K .cv .Callide) pasture in northwest Argentine (NOA) 2 Effect of nitrogen fertilization

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**Key words** : Grama Rhodes ,nitrogen fertilization ,forage production ,weeds ,Northwest Argentine region .

**Introduction** Grama Rhodes is a pasture employed in several regions of NOA .Its production is strongly to associate to availability of nitrogen in soils (Berti 2006) .Methods to improve the supply of nitrogen to grass on NOA are being sought .

**Material and Methods** At Cerrillos ,Salta (24°54'S ;65°29'W ;1250 m .) ,Argentina ,on a grama Rhodes pasture seeded in 1994 a trial was carried out in November 2000 ,which was related in another paper (Berti 2008) .Total rainfall for 2000/01 ; 01/02 ; 02/03 ; 03/04 and 04/05 ,covering the experimental period (May-November) were 844 .7 ; 566 .3 ; 548 .2 ; 562 .4 and 356 mm . The historical annual average for the site was 643 mm .A split-split plot design ,with three replications were employed .Two levels of nitrogen fertilization ,(0) Control ,no fertilizer and (1) ,100 kg N ha<sup>-1</sup> were used .Nitrogen was applied annually ,with broadcasting urea after cultivation in the end of November ,before the first rain .Seven harvest of plant material were done between Nov 2000 and Mar 2005 .The plant samples were dried ,weighed ,grounded and Nitrogen (N) and Dry Matter (DM) content was determined (A .O .A .C .,1980) .In the last period samples were taken from 0 to 20 cm layers of soil ,with a 2 .5 cm coring tube at fifteen random position in each plot at the end of the growing season .These samples were dried and N-NO<sub>3</sub> determined (Bremner et al ,1966) .

**Results and Discussion** The fertilization increased aerial biomass of Grama ,weeds ,and nitrogen content of forage (Table 1) .At the end of trial the content in soil of N-Nitrate (N-NO<sub>3</sub>) in treatment fertilized was significantly higher .The mean response obtained (20 kg DM by unit of N) in grama is similar to the one previously reported (Berti 2006) .During the periods 03/04 and mainly in 04/05 ,lack of rains occurred after cultivation resulting in increased of weeds in treatments with N .

**Table 1** Effect of fertilization treatments on the total yields and N content of grama ,weeds ,and N-nitrate in soil .

Fertilization	Grama D .M . ,kg ha <sup>-1</sup>	Grama N . ,kg ha <sup>-1</sup>	Weeds D .M . ,kg ha <sup>-1</sup>	Soil N-NO <sub>3</sub> ,ppm
0 ,No fertilizer	12411a	122a	174a	12 .5a
1 ,100 kg N year ha <sup>-1</sup>	22441b	261b	789b	17 .4b
MSE <sup>z</sup>	2633 .5	36 .2	548	3 .9

a ,b : Values on the same column with different letters are different ,P<0 .05 ,Duncan Test .

z : Standard error of the mean .

**Conclusion** Nitrogen fertilization significantly increased aerial biomass of Grama and weeds .

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