# Evaluation of Residual Soil Phosphorus in Pastures and Alfalfa

By Angel Berardo and Fernando Grattone

Phosphorus (P) fertilization studies were initiated in 1994 in mixed pastures (grasses + legumes) and alfalfa. Both studies were established in an Argiudoll soil with Bray P of 9 parts per million (ppm), pH of 6.1, and organic matter content of 6.4 percent. A randomized complete block design with three replications was used for each experiment. Treatments included five rates (0, 25, 50, 100, and 200 kg/ha) of P applied only in the first year, and two rates (25 and 50 kg/ha) of P applied annually.

*Growth with no P (P-0) is very limited compared to plots with rates of 50 or 100 kg P/ha.*

The objective of these studies is to evaluate the long-term effects of P fertilization on pasture and alfalfa yields, and on soil P levels (Bray P-1). Parallel research includes the study of organic and inorganic P dynamics. The studies will be carried out for at least four years.

Figure 1 shows dry matter production for both studies. In the alfalfa study, dry matter production doubled with the application of 100 kg P/ha, indicating the potential for alfalfa production in Mollisolls of the Pampas with adequate P fertilization. In the pasture study, the lower P response has been explained by a shortage of nitrogen (N) that could be solved with periodical applications of fertilizer N. BCI

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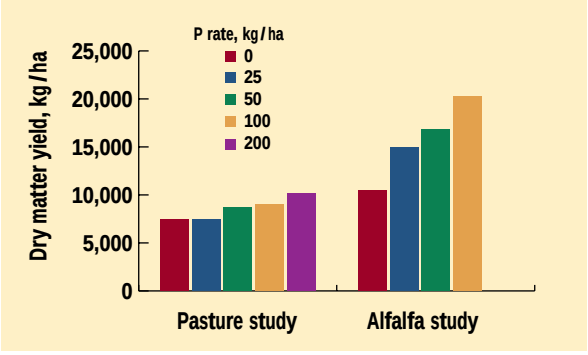


*Figure 1. Dry matter production in the first year of the pasture and alfalfa experiments. Balcarce 1995.*