

Potash and Phosphate Institute of Canada
Progress Report

Project Title: Preliminary evaluation of point-injection for application of P and K to forage grasses in southern Alberta.

Objective: to determine the potential benefits of point-injection for the enhancement of fertilizer P and K use by forage grasses

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Date: January 30, 1991

Summary of Progress:

A greenhouse experiment was established to compare various methods of application for the alleviation of P deficiency in perennial forages. Because of difficulty encountered in obtaining uniform cores from established forage stands, grass was established from seed in 10 cm diameter X 40 cm cylinders. Orchardgrass (*Dactylis glomerata*) was selected as the test crop because of its high productivity and nutrient requirement. The experimental design includes the following 5 treatments in each of two soils: 1. sufficient control (P applied prior to seeding), 2. deficient control (no P), 3. top-dressed granular P, 4. top-dressed (dribble-banded) solution P, and 5. point-injected P.

Anticipated Progress:

The grass in the P experiment will be harvested at ~ 4 week intervals (The first harvest is scheduled for Feb. 1, 1991). The various P treatments will be applied to the soil after the onset of severe P deficiency, as determined by appearance of foliar symptoms and yield declines (relative to

sufficient control). After application of the P treatments, several successive harvests will be removed and analyzed for dry matter and P accumulation to compare amount and timing of P availability in the various treatments.

A suitable, K-deficient soil has been located for the experiment evaluating the potential of point-injection for improvement of K uptake by forages. An experiment similar to that described for P will be established in the greenhouse.

If results warrant further trials, additional greenhouse experiments will be established to evaluate other forage species, soil types, environmental conditions, or other related variables.

The information derived from these greenhouse experiments will be used to determine the justification and design of future large-scale field experiments.

Additional Funding: The Alberta Agricultural Research Institute has awarded \$2750 to this project (pending adequate progress) from its matching grant program. This funding will provide additional technical assistance for the project.