

## AN ASSESSMENT OF THE NUTRIENT STATUS OF ALFALFA IN MASSACHUSETTS

Stephen J. Herbert, John H. Baker and Daniel H. Putnam  
Department of Plant and Soil Sciences  
University of Massachusetts

Alfalfa, the forage crop of choice for Massachusetts farmers where soil conditions permit, has been receiving more attention recently as researchers and extension faculty from several Departments have teamed together in an effort to introduce a program of Integrated Pest Management (IPM). As part of this effort we in the Department of Plant and Soil Sciences have surveyed many fields throughout the Commonwealth in an attempt to ascertain knowledge of farmer management practices and the nutritional status of alfalfa fields in Massachusetts. Other departments, as noted in the previous two writeups, have concentrated on disease and insect status.

Results of our survey, which commenced this spring, are still in their preliminary stages, but some things are apparent and seem worthy of mention. Of 36 fields where yield and stand composition measurements were taken, at four to five sites within each field, there was a tremendous variation in the amount of alfalfa (on a dry weight basis) present in the forage crop. There seemed no clear pattern with respect to yield of the amount of alfalfa present. The amounts of grasses, grassy weeds and broadleaf weeds present would influence forage quality but there was no trend as to how they influenced the forage yield.

To date soil phosphorus and potassium levels have been determined. All but three of 55 soils analyzed showed high to extremely high levels of phosphorus, indicating that farmers could probably afford to cut back some on future applications of phosphate fertilizers. The situation for potassium appears to be opposite. In about half of the fields analyzed potassium levels were on the medium to low side, which may indicate a lack of potassium could be limiting yields of alfalfa. Furthermore, since grasses compete more strongly for potassium than alfalfa, this apparent lack of potassium may be encouraging greater competition from grasses, with the subsequent suppression of the more desirable alfalfa. High application rates of potassium fertilizers have been closely linked with high alfalfa yields and greater winter hardiness and stand persistence. To give some idea of the importance of potassium, the alfalfa plant takes up about five times as much potash ( $K_2O$ ) as phosphate ( $P_2O_5$ ) and nearly three times as much  $K_2O$  as it does calcium. High applications of potash, about 60 lb/acre for every ton removed, would seem necessary if farmers expect to achieve higher forage yields.