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A COMPARISON OF FOLIAR AND SOIL UPTAKE  
OF NUTRIENTS IN FRENCH BEAN  
(PHASEOLUS VULGARIS L.).

A THESIS PRESENTED IN PARTIAL FULFILMENT OF  
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Susan Elizabeth Jolly

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## ABSTRACT

An aspect of each of three factors relating to efficiency of fertilizer use were studied in glasshouse experiments using beans Phaseolus vulgaris var. Gallatin 50. These three factors were: the quantities that can be applied; physiological aspects of nutrient utilization following foliar uptake; and interactions with other sources of nutrient supply.

Distribution patterns of  $S^{35}$ ,  $P^{32}$  and  $Zn^{65}$  were examined following application to soil and foliage of beans. It was found that a greater proportion of  $P^{32}$  and  $Zn^{65}$  was present in the fruit following foliar uptake than was the case following root uptake. This difference was not evident for  $S^{35}$ .

Retention of a commercial nutrient spray on the foliage of bean plants was measured and found to correlate well with both leaf area and leaf fresh weight.

The effect of sprays on leaf chlorophyll was also examined. Environmental effects were found to have more influence on leaf chlorophyll than nutrient sprays.

Root uptake of  $P^{32}$  was increased by spraying the foliage with either nutrient solution or water. It was concluded that the effect was water related and not connected with nutrient application.

The implications of the above findings were discussed in the

context of efficiency of fertilizer use.

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