

1941

## Effects of "Over Liming" an Iowa Soil with Gypsum (Abstract)

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### Recommended Citation

Loomis, W. E. (1941) "Effects of "Over Liming" an Iowa Soil with Gypsum (Abstract)," *Proceedings of the Iowa Academy of Science*, 48(1), 194-194.

Available at: <https://scholarworks.uni.edu/pias/vol48/iss1/28>

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WATER AND SALT BALANCE IN THE GROWTH OF  
ANNUAL PLANTS (ABSTRACT)

WALTER F. LOEWING

The report deals with the far-reaching and critical shifts in water and salt content which occur during the flowering phase of development in such annuals as hemp, beans, corn and wheat. This phase is marked by a sudden increase in transpirational water loss and the coincident diminution in the rate of water and salt absorption by the roots. Though the progressive tissue dehydration results in the increase of the osmotic solutes in the cell sap, the resultant rise in osmotic pressure does not serve to prevent continued water loss. This stage is also marked by appreciable hydrolysis of the insoluble carbohydrates and proteins in the leaves, as well as by a profound redistribution of mineral elements within the entire plant.

The data suggest that some of these changes are concerned with the inception of flower primordia and to some extent determine the number of flowers developed and fruits which set. The flowering phase, though of brief duration, is the most significant in determining the subsequent development of the entire plant. The nutritional physiology of the flowering phase is distinctly different from that of the preceding vegetative and the subsequent fruiting physiology.

DEPARTMENT OF BOTANY,  
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EFFECTS OF "OVER LIMING" AN IOWA SOIL  
WITH GYPSUM (ABSTRACT)

W. E. LOOMIS

A sample of Clarion loam soil taken near the U. S. Gypsum Co. plant at Fort Dodge, for which the owner claimed accumulated injury from dust deposits, showed no symptoms of high—Ca injury. Potted crop plants growing in the soil showed marked response to nitrogen and phosphorus added together, little or no response to potassium added alone to balance excess calcium ions, and responded positively to additional applications of gypsum at the rate of 100,000 pounds an acre.

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