Compensation for Lack of Lime through the Bio-Dynamic Preparations 500, 503 and 505

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This report deals with growth experiments following the classic scientific method, e.g. in a standard nutritive solution. The growth in such a solution is compared with the growth in another solution consisting of the same ingredients but without calcium. A compensation for calcium has been sought through the application of the bio-dynamic preparations 500, 503 and 505. These preparations strengthen the resistance of a plant against calcium deficiency. The following experiment was made in order to demonstrate the influence of a normal and a calcium-deficient solution as compared with the influence of the humus preparations upon germinating plants.

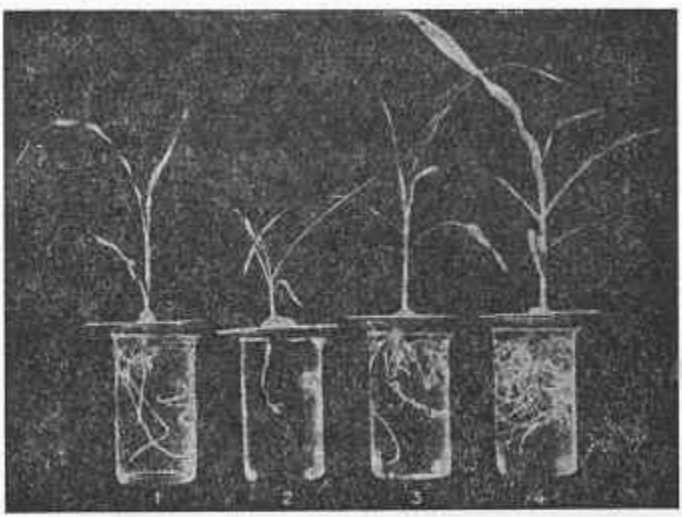
Experiment with corn. Seeds of corn were germinated and, when sprouts had developed 2-3 inches in length, they were placed in the nutritive solution.

The 1st group contained the so-called Knop Nutritive Solution. In 1000 cc of distilled water, 0.25 g of magnesium sulfate, 1 g calcium nitrate, 0.25 g potassium phosphate were dissolved, and 0.25 g potassium chloride and a trace of iron chloride were added.

The 2nd group: the same nutritive solution, without the calcium, but with the equivalent amount of nitrate nitrogen in the form of ammonium nitrate.

3d group: The nutritive solution as in 2, deficient in calcium but with the addition of 0.1 g to 1000 cc each of the bio-dynamic preparations 503 and 505.

4th group: the same as 3, with additional 1 g of preparation No. 500 to 1000 cc of the solution added.



The preparations 500, 503 and 505 contain humus matter, but their calcium content is extremely small. For instance in preparation 500 it is only a 7/1000 of a mg and in the preparations 503 and 505 it is only 0.0025 gm in the amounts used above. The photograph shows the plants after 17 days of growth in the solution. We see the marked stunting of the corn grown without calcium, while, especially in 4 — with the preparations 500, 503 and 505 — an extraordinary intensification of root formation follows, which indeed far surpasses that of the normal nutritive solution.*

Average weight of the plants after 17 days' growth:

	sprout	root
1. Normal Nutritive Solution	2.9 g	1.5 g
2. Nutritive Solution with Calcium Deficiency	1.1 g	0.6 g
3. Nutritive Solution with Calcium Deficiency, but with 503 and 505 added	2.6 g	2.2 g
4. Nutritive Solution with Calcium Deficiency, but with 503, 505 and 500 added	5.3 g	3.4 g

*Indication that humus matter, even in great dilution, can compensate for deficiencies, can, moreover, be found in the interesting reports by Niklewski, of the University of Poznan (Poland).

Niklewski, B.: "Ueber den Einfluss von Kolloidstoffen auf die Entwicklung einiger Kulturpflänzen," Jahrbuecher fuer wissenschaftliche Botanik, 1933, Vol. LXXVIII, Nr. 3.

Niklewski, B.: "Der Einfluss der Kompostduengung und Behaeufelung der Pflanzen auf Ernteproduktion," Streszczenie Wynikow, Warschau, 1929.

Niklewski, B.: "Zur Biologie der Stallmistkonservierung," Centralblatt fuer Bakteriologie, Parasitenkunde und Infektionskrankheiten, Vol. 75, 1928.