

ABSTRACT: MAGNESIUM FOR CROPS

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THE position of magnesium as an essential plant nutrient has long been accepted. It is certainly not a trace or micro-nutrient for, like calcium, it has highly important structural duties in plant chemistry. Every molecule of chlorophyll, the green pigment of plants and the irreplaceable "middleman" of photo-synthesis, contains magnesium. Nevertheless, the supply of magnesium for crops has largely been left to chance. Magnesium deficiencies, ever-increasingly recognised in the past 20 years, have been regarded as special troubles in crop production, disorders to be cured as and when they occur. The case for including magnesium in fertilisers has not generally been accepted. Some twelve months ago in London, the discussion that followed Mr. Trefor Jones' paper on 'Magnesium as a Plant Nutrient' gave little support for the opinion that compound fertilisers should include this element.

Agricultural chemists in eastern Germany have expressed more positive views during 1951. They contend, not illogically, that many chlorotic troubles of crops hitherto ascribed to soil acidity are in fact caused by magnesium deficiency. Precept seems to have been swiftly followed by practice and the potash industry in Germany is now producing magnesium-containing fertilisers, e.g., EMGE potash with 33 to 37% K_2O and 15% magnesium sulphate. This is a development that will be closely watched by the industries in all other countries where fertiliser use is well established. The convention of calling a nitrogen-phosphate-potash (N.P.K.) mixture a 'complete fertiliser' has always been verbally misleading, but in practice calcium (from the superphosphate used) and sulphur (from sulphate of ammonia and superphosphate) have also been supplied as undeclared constituents. Of the short list of essential and major plant nutrients, it has been magnesium that has been ignored. Nor was this wholly true in the early days of the European industry, for the original Stassfurt kainit used to contain 27% of magnesium salts with its 20 to 21% of sulphate of potash; processes of refinement developed early in this century reduced the magnesium salts content to a matter of 3 or 4%. The steady advance of refinement has virtually removed magnesium as an accidental associate of potassium in modern potassic fertilisers. The new German development is in fact a reversal of history. Magnesium salts, once looked upon as an impurity to be removed, are being deliberately added to potash in controlled and stated quantities!

It remains to be seen whether the new German fertilisers will provide significant crop responses. Even if this is demonstrated on a large scale, it will have to be remembered that German farming soils are mainly light soils and magnesium shortages are more likely to occur under those conditions. Nevertheless, crops remove large quantities of magnesium from soils whether they are light or heavy—a ton of oat grain contains nearly 5 lbs. of magnesium; cropping rotations may remove as much as 60 to 90 lbs. of magnesium sulphate (equivalent) per year. The German venture is an experiment in what might be called positive crop health, supplying a requirement in diet regularly instead of waiting for shortage to be demonstrated and then applying emergency or disease treatment methods.

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See also "Ceylon Coconut Quarterly," Vol. 1, No. 1, page 19.