Nitrogen Dioxide for Direct Application Fertilizer?

Possible availability by Wisconsin process and successful preliminary soil tests may make nitrogen dioxide a prime fertilizer material

ST. PAUL, MINN.—Soil losses of nitrogen injected as nitrogen dioxide appear to be quite low, suggesting its possible use as a new nitrogen fertilizer.

D. G. Aldrich, University of California, Riverside, has found nitrogen dioxide losses in soil to be negligible

Oxidation to nitrate is rapid in acid, neutral, or unbuffered alkaline soils so that there is no accumulation of nitrites, according to D. G. Aldrich, University of California, Riverside, who reported this work at the 46th annual meeting of the American Society of Agronomy here Nov. 8 to 12. Highly buffered alkaline soils, however, do retard the oxidation of nitrites formed so that 25 to 32% of the injected nitrogen is found in this form at the end of 24 hours. Since nitrite toxicity is lower in high-pH soils, it is hoped that plant growth may not be inhibited in alkaline calcareous soils. Greenhouse experiments are now under way to determine whether there is inhibition or not.

Nitrogen dioxide is an intermediate in the Wisconsin (Daniels) process for direct fixation of atmospheric nitrogen. A demonstration plant using this process has recently been closed down (AG AND FOOD, Nov. 19, page 1152) because it is commercially unfeasible in an integrated nitrogen fertilizer plant. This process produces nitrogen dioxide by oxidizing air at a high temperature. The dioxide is then dissolved in water to give nitric acid, which is not used for fertilizer as such, but is used for making a nitrate—usually ammonium nitrate. Thus a Wisconsin process installation would need to be located near an ammonia plant. Ammonium nitrate plants get their nitric acid by oxidizing part of their ammonia, so it is only with this phase of the operation that the Wisconsin process competes under present conditions, and half of the nitrogen in the ammonium nitrate would still have to be fixed via ammonia synthesis.

If nitrogen dioxide could be applied directly to the soil, however, the process would then compete with the ammonia synthesis and the competitive picture might be different.

New Type of Selective Herbicide May Emerge from British Work

Action is based on production of active growth hormone by enzymatic breakdown of chemical structure within tissues of susceptible plants

HARROGATE, ENGLAND.—Recent experiments carried out at Wye College here in England have opened up new possibilities in the field of selective weed control. British investigators have shown that various derivatives of γ-phenoxybutyric acid will destroy certain plant species owing to breakdown of the chemical within the tissues to the hormone active acetic derivative. Results of the work, which at this stage must be considered preliminary, were presented by R. L. Wain before the British Weed Control Conference, held here Nov. 2 to 4.

Most of the compounds studied at Wye have been related to established growth promotors, such as 2,4-D, MCPA, and 2,4,5-T, but have differed structurally in having more than one methylene group in the side chain. The homologous series of acids, starting with the acetic derivative with one methylene group up to the octanoic derivative with 7 methylene groups, has been prepared; each of the acids has been examined, at

Nutrition Foundation Elects New Board Chairman

Oliver C. Carmichael (left), president of the University of Alabama, who was elected chairman of the board of the Nutrition Foundation in New York on Nov. 11 to succeed the late Karl T. Compton. To the right are Charles G. King, scientific director, and George A. Sloan, president. Research supported by the foundation during the past year has brought out new knowledge in connection with plant, animal, and human growth. Grants to 75 colleges, under conditions of "complete freedom," since 1942 now total more than $3.2 million