TABLE I

*Yield and Composition of Sulphate-Deficient Paddy after Various Treatments*

| Season | Treatments | Appearance of crop after treatment | Yield per plot of 180 sq. ft. | | Composition of crops at maturity (on dry matter) | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Straw lb. | Grain lb | Straw N% | Straw S% | Grain N% | Grain S% |
| A | Untreated-affected | Chlorotic | 6·5 | 5·3 | 0·85 | 0·062 | 1·22 | 0·094 |
| | Untreated-healthy | Green | 11·5 | 9·7 | 0·70 | 0·122 | 0·98 | 0·138 |
| | $MgCl_2$ .. .. | Chlorotic | 5·8 | 4·9 | 0·88 | 0·064 | 1·28 | 0·088 |
| | $MgSO_4$ .. .. | Green | 12·3 | 9·0 | 0·38 | 0·133 | 0·99 | 0·128 |
| B | Untreated-affected | Chlorotic | 6·0 | 4·6 | 0·82 | 0·057 | 1·32 | 0·084 |
| | Untreated-healthy | Green | 11·4 | 9·8 | 0·79 | 0·118 | 1·00 | 0·119 |
| | Gypsum ($CaSO_4$) | ,, | 12·6 | 10·2 | 0·38 | 0·138 | 0·95 | 0·135 |
| | Iron pyrites .. .. | ,, | 13·1 | 11·3 | 0·39 | 0·129 | 0·98 | 0·129 |
| | Sulphur .. .. | ,, | 13·5 | 11·6 | 0·87 | 0·127 | 0·97 | 0·125 |
| | $NH_4Cl$ .. .. | Chlorotic | 6·8 | 5·2 | 0·85 | 0·061 | 1·21 | 0·081 |
| | $(NH_4)_2SO_4$ .. .. | Green | 11·2 | 9·5 | 0·42 | 0·133 | 0·97 | 0·124 |
| | Urea .. .. | Chlorotic | 7·5 | 6·2 | 0·77 | 0·089 | 1·28 | 0·088 |
| | Urea + $CaSO_4$ .. .. | Green | 12·4 | 10·2 | 0·41 | 0·118 | 0·96 | 0·119 |
| | $Ca(H_2PO_4)_2$ .. .. | Chlorotic | 6·2 | 5·8 | 0·78 | 0·049 | 1·26 | 0·080 |
| | Superphosphate .. .. | Green | 12·0 | 9·9 | 0·40 | 0·124 | 1·01 | 0·115 |

plant. The test is, however, not specific because nitrogen accumulation has been found to occur also in certain other deficiencies studied by the author.[7] (2) The chlorotic plants contained much less total sulphur than the healthy plants. Microtests with benzidine hydrochloride showed the complete absence of sulphate in the chlorotic plants whereas the healthy plants always showed the presence of sulphate. (3) There was no difference between the chlorotic and the healthy plants in regard to their calcium, magnesium or phosphate contents. (4) The manganese contents of the healthy plants and the sulphate-treated plants were distinctly higher than those of the chlorotic plants. (5) The chlorotic plants contained higher percentages of soluble nitrogen and lower percentages of soluble sugars than the healthy plants.

Selected data are presented in the accompanying table to illustrate the salient features of the work. Only the percentages of nitrogen and sulphur are given as these represent the most important information. Full details will be published shortly.

From the experimental work summarized above it will be seen: (1) that the chlorotic plants contained much less sulphur than the healthy plants; (2) that these chlorotic plants responded to sulphate treatment which led to maximum yields and caused a large increase in sulphur content in the plant; and (3) that sulphate treatment corrected all the abnormalities in the chlorotic plants. It may, therefore, be concluded that the symptoms shown by the chlorotic plants are due to a deficiency of sulphate and that added sulphate acted as a direct nutrient to the plant.

It is necessary to point out that from the data in hand no conclusion can be drawn in regard to the minimum percentage of sulphur in the plant or in the soil which will prevent the chlorosis.

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1. "Annual Report of the Professor of Agriculture, Agricultural College, Mandalay, for 1931-32." 2. 'Annual Report of the Mycologist, Burma, for 1932–33." page 3. 3. "Report on the Operations of the Department of Agriculture, Burma, for 1933–34" page 14. 4 Aiyar, S. P. *Proc. Nat. Inst. Sciences, India*, 1937, 3, Part 2, 267. 5. —, *Science and Culture*, 1938, 10 148–51 6. "Report on the Operations of the Department of Agriculture, Burma, for 1937–38" p. 36. 7 "Annual Report of the Agricultural Chemist, Burma, for 1940–41."

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## NEW YEAR'S HONOURS

HIS MAJESTY THE KING has been pleased to confer the distinction of Knighthood on Dewan Bahadur A. Lakshmanaswami Mudaliar, Vice-Chancellor, University of Madras, Dr. C. W. B. Normand, Department of Meteorology, Mr. C. C. Inglis, Director, Indian Waterways Experiment Station, Poona, Mr. B. J. Wadia, Vice-Chancellor, Bombay University, and Mr. J. J. Gandhi, of the Tata Iron and Steel Company. Mr. F. C. Minett, Director, Imperial Veterinary Research Institute, Izatnagar, becomes a C.I.E. These distinguished personages are all familiar to readers of *Current Science*. Our heartiest felicitations to them!