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UTILIZATION OF PHOSPHORUS AND SULPHUR BY MAIZE FROM VARIOUS ORGANIC AND INORGANIC SOURCES.

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ABSTRACT

For optimum growth, plant requirement of sulphur are as high as of phosphorus. Due to peculiar soil and climate conditions, addition of phosphorus to Pakistan soils is inevitable. Similarly, availability of sulphur to crops is regulated by soil organic matter which is very low (<0.05) in most soils of the country. Such situation calls for proper management of P and S in soil. In a green-house experiment on maize three organic sources of nutrients were studied alone and in combination with inorganic sources of P and S. Vegetative growth of maize was found to be significantly influenced by various treatments to different degrees. Acquisition of both P and S by maize plants were highly variable from different nutrient sources. The dry matter accumulation by maize plants was significantly correlated with their uptake of P and S.

INTRODUCTION

Soil organic matter influences plant growth through its effects on the physical, chemical and biological properties of soils (Stevenson, 1982). It refers to the sum total of all organic carbon containing substances in soil and in an agricultural soil, it may vary from < 1.0 to 5.0 %. Due to various climatic conditions and soil factors, the organic matter in most Pakistani soils is <1.0%. Due to low content of organic matter a number of application of phosphatic fertilizers. The combined use of organic manures and inorganic P fertilizers has been noted to improve the availability of P to growing plants in arid and semi-arid calcareous soils (RAPA Bulletin 1991). A green-house study was conducted on maize (*Zea mays* L.) supplied with various organic and inorganic sources of sulphur and phosphorus either alone or in various combinations. The results on plant growth and phosphorus and sulphur utilization by maize plants are reported and discussed in this publication.

MATERIAL AND METHOD

A bulk sample of Balkasar soil series (udic Haplustaef) was collected, air dried, ground, passed through 2mm sieve and homogenized. Important physical and chemical properties were determined. (Table 1).

Table 1. Physio-chemical properties of the soil

pH (1:2)		7.56
Electrical conductivity	dSm^{-1}	0.24
HCO_3	$meql^{-1}$	1.40
Cl^-	$meql^{-1}$	1.47
P(ABDTPA) (1:2)	μgg^{-1}	1.16
Ca	μgg^{-1}	459.7
Mg	μgg^{-1}	70.0
Na	μgg^{-1}	2.88