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APPROVAL SHEET

KINETICS OF PHOSPHATE IN SOME DESERT SOILS OF EGYPT

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-II-

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Abstract

The aim of the present investigation is to evaluate both of phosphate status and kinetics of P in some desert soils of Egypt as well as to evaluate the effect of mud cake along with some common traditional P-sources on some crops



10. The use of mud cake as P-source was more suitable for P-fertilization.

This recommendation could be attributed to its suitable in P content and daily produce at abundant quantities as byproducts of sugar manufacturing which is caused an environmental pollution problem.

CONTENTS

	Page
1. INTRODUCTION.	1
2. REVIEW OF LITERATURE.	2
2.1. Soil phosphorus content and forms.	2
2.2. Factors affecting phosphorus forms and availability in soils.	9
2.3. A kinetic approach for description of phosphate release in soils.	21
2.4. Kinetics of isotopically exchangeable phosphate in soils.	24
2.5. Chemical and biological evaluation of soil phosphorus parameters.	25
2.6. Response of crops to phosphorus fertilizers. ..	30
3. MATERIALS AND METHODS.	33
3.1. Soil sampling.	33
3.2. Fractionation of soil phosphorus.	33
3.3. Available soil phosphorus.	36
3.4. Kinetic parameters of phosphate in the studied soils.	37
3.5. Green-house experiments.	40
3.6. Statistical analyses.	44
3.7. Methods of soil analyses.	45

	Page
4. RESULTS AND DISCUSSION.	47
4.1. Phosphorus status in soil.	47
4.2. Soil phosphorus fractionation.	50
4.2.1. Inorganic phosphorus fractionation.	50
4.2.2. Organic phosphorus fractionation.	54
4.2.2.1. Nature of soil organic phosphorus...	54
4.2.2.2. Organic phosphorus fractionation according to Bowman and Cole method.	61
4.2.2.3. Organic phosphorus hydrolyzed by alkali and hypobromite treatments...	65
4.3. Soil phosphorus parameters of kinetics and buffering capacity.	69
4.3.1. Several soil tests to assess phosphorus availability.	69
4.3.2. Phosphate intensity and capacity factors.	76
4.3.3. Maximum phosphorus release from soils....	63
4.3.4. Kinetics of soil phosphate reactions....	89
4.3.4.1. Isotopically phosphate exchange and labile P in soils.	89

	Page
4.3.4.2. Effect of contact time durations on rates of isotopically exchangeable phosphate and the percentage of ^{32}P in soil solution.....	93
4.4. Chemical, biological and environmental evaluation of soil phosphorus parameters. ...	96
4.5. Plant response and environmental concerns to application of phosphorus sources.	105
5. SUMMARY AND CONCLUSIONS.	111
6. REFERENCES.	119
7. APPENDIX.	137
8. ARABIC SUMMARY.	



LIST OF TABLES

	Page
1- Some physical and chemical characteristics of the studied soils.	35
2- Some phosphate characteristics of the investigated phosphorus sources.	43
3- Values of total, inorganic and organic phosphorus of the studied soils.	48
4- Values of inorganic phosphorus fractions of the studied soils.	51
5- Organic phosphorus fractions of the studied soils....	56
6- Organic phosphorus pools of the studied soils according to Bowman and Cole (1978).	62
7- Organic phosphorus fractions extracted by alkali potassium carbonate and hypobromite treatments of the studied soils.	66
8- The values of phosphorus extracted by different investigated methods.	71
9- Phosphate potential at $G=0$ (I_0), equilibrium phosphate potential (I_e) and differential potential buffering capacity (DPBC) of the studied soils.	78
10- Values of phosphorus released by repeating extractions of the studied soils with sodium bicarbonate solution.	86

	Page
11- Maximum phosphorus adsorption (b) and bonding energy (k) of the studied soils.	87
12- Values of the quantity of soil phosphorus had undergone isotopic exchange at various time (E_t). ..	91
13- Effect of some selected time periods on rates of isotopically exchangeable phosphate and the percentage of ^{32}P in soil solution.	94
14- Mean values of dry matter production (DMP) of barley and sorghum grown on the studied soils.	98
15- Mean values of phosphorus taken up by barley and sorghum plants grown on the studied soils.	100
16- Mean values of Olsen-P before and after cropping of the studied soils.	102
17- Response of dry matter content (g/pot) of barley and different cuts of sorghum plants to application of various P-sources.	107

APPENDIX:

1- Values of linear correlation coefficients (r) among different soil P parameters and some soil physical properties.	137
11- Values of linear correlation coefficients (r) representing the relationship between soil OP-compounds and each of organic matter TP and TOP. ...	138

4

III-	Values of linear correlation coefficients (r) representing the relationship between soil OP-compounds and each of organic matter, TP and TOP...	139
IV-	Values of linear correlation coefficients (r) representing the relationship between organic-P hydrolyzed fractions and each of organic matter, TP and TOP of the studies soils.	140
V-	Values of linear correlation coefficients (r) between P-extracted by different methods and each of organic matter, total-P, Organic-P and calcium carbonate of the studied soils.	141
VI-	Values of linear correlation coefficients (r) between I_0 , I_e and DPBC and some soil physical properties.	142
VII-	Values of linear correlation coefficients (r) between extracted-P and b-values.	143
VIII-	Values of linear correlation coefficients (r) among soil phosphorus parameters and P uptake by barley and sorghum plants.	144
IX-	Values of linear correlation coefficients (r) between E_t - values at different times and various of P-paramters in the studies soils.	145

LIST OF FIGURES

	Page
1- Location map of the studied soils representing the different soils environments of Egypt.	34
2- Phosphate potential buffering capacity curves of the studied soils.	81
3- Maximum phosphorus release of the studied soils.	88
4- Kinetics of isotopic phosphate exchange curves of the studied soils.	92
5- Dry matter production of barley and sorghum plants as affected by two rates of P-application of various P - sources	108

INTRODUCTION

1. INTRODUCTION

Deserts account for roughly 96% of Egypt's land surface, and the remaining arable land is inadequate to support its population. In Egypt, the need to increase the productivity of arid lands is a priority.

The desert soils are generally poor in the plant nutrients and often are in shortage of phosphorus (P). So, P-fertilizers must be added in available form to these soils to improve the supply of P to the plant. In this respect, several mechanisms have been proposed through which P may be retained by soils such as kinetics, physical adsorption, surface precipitation, and precipitation of separate solid phases.

On the other hand, the manufacturing of organic byproducts (mud cake) has taken a great attention by many investigators all over the world as an environmental problem. Mud cake is daily discarded at a rate about 300 ton being rich in P-content as byproducts of sugar manufacturing at Edfu company in Aswan Governorate.

Therefore, the aim of the present investigation is to evaluate the P-status and their fractions, P-kinetics using different chemical methods and biological studies involving continuous cropping in some Egyptian soils representing the most common types, i.e., alluvial, calcareous and sandy soils. Besides, another objective of this study has been accomplished to evaluate the effect of mud cake along with some common sources of P on some crops.

**REVIEW
OF
LITERATURE**

2. REVIEW OF LITERATURE

2.1. Soil phosphorus content and forms :

Phosphates present in the soil can be divided into three groups : (1) phosphates present in the soil solution. This is always negligible compared with the other forms, (2) phosphates present in the soil organic matter, and (3) inorganic phosphates including both definite phosphate compounds and surface films of phosphate held on inorganic particles [Russell, 1978]. Mengel (1985) reported that soil phosphorus (P) occurs in the solid phase in many inorganic and organic forms. The principal phosphorus forms in soils are Ca-phosphates, adsorbed phosphates, occluded phosphates, and organic phosphates. The proportions of these fractions on total soil phosphate differ greatly from soil to another according to their characteristics.

Jackson (1976) mentioned that the total soil phosphorus (TP) content varies widely from one soil to another. The P content of most mineral soils falls between 0.02 and 0.5 percent of P. Mengel and Kirkby (1978) reported that values of IP ranged between 200 and 1500 ppm in top layers of the soils, in this respect, Lindsay (1979) mentioned that total phosphorus content of different soils ranged from 200 to 500 ppm, with an average of 600 ppm.

Concerning, the distribution of TP in the surface layer (0-30 cm) of different Egyptian soils varies between 50 and 1496 ppm according to Abou-El-Roos