USING OF AGRICULTURAL WASTES FOR PRODUCTION OF BIOORGANIC FERTILIZERS TO IMPROVEMENT CEREALS PRODCTIVITY UNDER DESERT SOIL CONDITIONS.

BY

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ABSTRACT

GHADA AMIN ZAKI IBRAHIM, USING OF AGRICULTURAL WASTES FOR PRODUCTION OF BIOORGANIC FERTILIZERS TO IMPROVEMENT CEREALS PRODUCTIVITY UNDER DESERT SOIL CONDITIONS. UNPUBLISHED MASTER OF SCIENCE THESIS. DEPARTMENT OF AGRICULTURE SCIENCE , INSTITUTE OF ENVIRONMENTAL STUDIES & RESEARCH , AIN SHAMS UNIVERSITY , (2008) .

Twenty eight soil samples with different characteristics from 12 locations of 7 governorates in Egypt were collected to evaluate their physical and chemical characteristics and to be used for isolation of azotobacters , azospirilla and phosphate dissolving bacteria . The N_2 – fixing efficiency and phosphate solubilization of those isolates were evaluated .

Selected strains of *Azotobacter chroococcum* , *Azospirillum lipoferum* and *Bacillus megatherium* were used dually or mixture to inoculate corn (*Zea mays*) & sweet sorghum (*Sorghum biocolar*) in the presence of 3 organic manures (plant waste compost , rice straw compost and animal wastes) at the rate of 10 ton \ fed. and 2 doses of mineral N (50 & 100 kg \ fed.) . Cultivation was carried out in desert sandy soil at Ahmed Orabi area , Ismailia road , Al-Kalubiea , Egypt during (2004) . Plant and rhizospheric soil samples were periodically collected after 4 , 8 and 12 weeks of sowing for corn , and after 30 , 50 and 75 days of sowing for sweet sorghum to determine total microbial counts , densities of azotobacters, Azospirilla and phosphate dissolving bacteria and CO_2 evolution . Growth parameters , chlorophyll , nitrogen and phosphate contents

were determined periodically . At harvest time , straw and grain yield were determined as well as total nitrogen content of straw and grains . The obtained results showed that inoculation with mixture inoculants (*Azotobacter* , *Azospirillum* and *Bacillus megatherium* strains) combined with plant waste compost as organic manure in the presence of 100 unit of organic N – fertilizer gave the highest growth and yield of corn and sweet sorghum plants .

Key words :
Azotobacter chroococcum , *Azospirillum lipoferum* , *Bacillus megatherium* , biofertilizer , rhizosphere , plant waste compost , rice straw compost , animal wastes , corn (*Zea mays*) and sweet sorghum *(Sorghum biocolar*) .

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