

**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 UNPUBLISHED MASTER OF SCIENCE THESIS.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 biocolor*) 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 biocolor*) .

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Contents

1- INTRODUCTION	1
2- Review of Literature	3
3- Materials and Methods	26
3-1- Materials	26
3-1-1- Plant and Soil Samples	26
3-1-2- Organic manures	26
3-1-3 -- Inorganic fertilizers	26
3-1-4- <i>Grains</i>	27
3-1-5- Inocula	28
3-1-6- Media used	27
3-2- Methods	29
3-2-1- Isolation, purification and maintenance of phosphate dissolving bacteria , azotobacters and Azospirillum isolates	29
3-2-2- Preparation of PDB and N ₂ – fixing inocula	31
3-2- 3 - Composting process	31
3-2-4 – Lay out of experiment	31
3-2-5 Parameters measured	33
3-2-6 : Statistical analysis	36
4 – RESULTS	37
4-1 Physical and Chemical Characteristics of the Studied soil samples	37
4.2.- Origin of the collected isolates of Azotobacter , Azospirillum and PDB	40
4.2.1- Amount of fixed nitrogen by Azotobacter and Azospirillum isolates	40
4.2.2- Phosphate solubilization isolates	40
4.3- Influence of inoculation with Bacillus megatherium , Azotobacter chroococcum and Azospirillum lipoferum the effect of inoculated with these bacteria	42
4.3.1- Microbial densities	42
4-3-2- CO ₂ evolution	62
4-4 Effect of inoculation with B. megatherium, Azotobacter chroococcum and Azospirillum	63

lipoferum combined with organic manures and N-Supplementation on growth , Nitrogen , phosphorus chlorophyll contents and yield of corn (Zea mays) plants .	
4-4-1 Fresh and dry weight of shoots , roots and whole plants	63
4-4-2. Plant height , Stem diameter and leaf area	73
4-4-3 Total chlorophyll contents	82
4.4.4 Nitrogen Percentages and contents of shoots , roots and whole plants	96
4-4-5 Phosphate percentages and contents of shoots	104
4-4-6 Yield characteristics	96
4-5 Effect of inoculation with B. megatherium , Azotobacter chroococcum and Azospirillum lipoferum combined with organic manures and N-Supplementation on growth , nitrogen , phosphorus & chlorophyll contents and yield of Sweet sorghum	104
4-5-1 Fresh and dry weight of shoots , roots and whole plants	105
4-5-2. chlorophyll , Contents	115
4-5-3 Nitrogen percentages and contents of shoot , root and whole plants	118
4-5-4 Phosphate percentages and contents	124
4-5-5- Yield characteristics	129
5 – Discussion	134
6 – SUMMARY	139
7- REFERENCES	145
ARABIC SUMMARY	153

Contents of Tables

Table (1): Chemical analysis of organic manures .	26
Table (2): physical and chemical analysis of used soil	34
Table (3) : Standing plants their rhizospheres collected from 12 locations 6 Governorates and Physical analysis of soil samples	38
Table (4): Standing plants and their rhizospheres collected from 12 locations 6 Governorates and chemical analysis of soil samples	39
Table (5) : Origin of the collected isolates of Azotobacter , Azospirillum and PDB	41
Table (6) : Effect of inoculation with Bacillus megatherium , Azotobacter chroococcum and Azospirillum lipoferum combined with organic manures and N-supplementation on total microbial densities in the rhizosphere of corn plants (Zea mays).	44
Table (7) : Effect of inoculation with Bacillus megatherium , Azotobacter chroococcum and Azospirillum lipoferum combined with organic manures and N-supplementation on total microbial densities in the rhizosphere of Sweet sorghum .	46
Table (8) : Effect of inoculation with Bacillus megatherium , Azotobacter chroococcum and Azospirillum lipoferum combined with organic manures and N-supplementation on total phosphate dissolvers in the rhizosphere of corn plants (Zea mays).	48
Table (9) : Effect of inoculation with Bacillus megatherium , Azotobacter chroococcum and Azospirillum lipoferum combined with organic manures and N-supplementation on total phosphate dissolvers in the rhizosphere of Sweet sorghum .	50

Table (10) : Effect of inoculation with <i>Bacillus megatherium</i> , <i>Azotobacter chroococcum</i> and <i>Azospirillum lipoferum</i> combined with organic manures and N-supplementation on the densities of <i>Azotobacters</i> in the rhizosphere of corn plants (<i>Zea mays</i>) .	53
Table (11) : Effect of inoculation with <i>Bacillus megatherium</i> , <i>Azotobacter chroococcum</i> and <i>Azospirillum lipoferum</i> combined with organic manures and N-supplementation on the densities of <i>azotobacters</i> in the rhizosphere of Sweet sorghum .	55
Table (12) : Effect of inoculation with <i>Bacillus megatherium</i> , <i>Azotobacter chroococcum</i> and <i>Azospirillum lipoferum</i> combined with organic manures and N-supplementation on the densities of <i>Azospirilla</i> in the rhizosphere of corn plants (<i>Zea mays</i>) .	58
Table (13) : Effect of inoculation with <i>Bacillus megatherium</i> , <i>Azotobacter</i> , <i>chroococcum</i> and <i>Azospirillum lipoferum</i> combined with organic manures and N-supplementation on the densities of <i>Azospirilla</i> in the rhizosphere of sweet sorghum .	60
Table (14) :Effect of inoculation with <i>Bacillus megatherium</i> , <i>Azotobacter chroococcum</i> and <i>Azospirillum lipoferum</i> combined with organic manures and N-supplementation on the rates of CO ₂ evolution in the rhizosphere of corn plants (<i>Zea mays</i>).	64
Table (15) : Effect of inoculation with <i>Bacillus megatherium</i> , <i>Azotobacter chroococcum</i> and <i>Azospirillum lipoferum</i> combined with organic manures and N-supplementation on the rates of CO ₂ evolution in the rhizosphere of Sweet sorghum plants.	65

Table(16): Statistical main effect of biofertilizer , organic manures and N – fertilizer on fresh weight of shoot in corn (<i>Zea mays</i>) .	66
Table(17): Statistical main effect of biofertilizer , organic manures and N – fertilizer on dry weight of shoot in corn (<i>Zea mays</i>).	67
Table (18): Statistical main effect of biofertilizer , organic manures and N–fertilizer on fresh weight of Root in corn (<i>Zea mays</i>) .	68
Table (19): Statistical main effect of biofertilizer , organic manures and N – fertilizer on dry weight of Root in corn (<i>Zea mays</i>) .	69
Table (20): Statistical main effect of biofertilizer , organic manures and N – Fertilizer on frish weight of whole plant in corn (<i>Zea mays</i>) .	70
Table (21): Statistical main effect of biofertilizer , organic manures and N –fertilizer on dry weight of whole plants in corn (<i>Zea mays</i>) .	71
Table(22): Effect of inoculation with PDB , Azotobacter sp. and Azospirillum sp. combined with organic manures and 2 levels of N-supplementation on fresh & dry weight of whole plant of Corn (<i>Zea mays</i>).	74
Table (23): Effect of inoculation with PDB , Azotobacter sp. and Azospirillum sp. combined with organic manures and 2 levels of N-supplementation on fresh & dry weight of root of corn (<i>Zea mays</i>).	75
Table (24): Effect of inoculation with PDB , Azotobacter sp. and Azospirillum sp. combined with organic manures and 2 levels of N-supplementation on fresh & dry weight of shoot of corn (<i>Zea mays</i>).	76
Table (25): Statistical main effect of biofertilizer , organic manures and N – fertilizer on plant height in corn (<i>Zea mays</i>) .	77

Table(26): Statistical main effect of biofertilizer , organic manures and N – Fertilizer on stem diameter in corn (Zea mays)	78
Table (27): Statistical main effect of biofertilizer , organic manures and N – Fertilizer on Leaf area in corn (Zea mays)	79
Table (28): Effect of inoculation with PDB , Azotobacter sp. and Azospirillum sp. combined with organic manures and 2 levels of N-supplementation on plant height & stem diameter of corn (Zea mays).	80
Table (29) : Effect of inoculation with PDB , Azotobacter and Azospirillum combined with organic manures and 2 Levels of N-supplementation leaf area (Cm ²) of corn (Zea mays).	83
Table (30) : Statistical main effect of biofertilizer , organic manures and N– Fertilizer on chlorophyll content in corn(Zea mays) .	83
Table(31): Effect of inoculation with PDB , Azotobacter and Azospirillum combined with organic manures and 2 Levels of N-supplementation on chlorophyll content (SPAD)* of corn (Zea mays).	84
Table (32): Statistical main effect of biofertilizer , organic manures and N – Fertilizer on N % shoot of corn (Zea mays) .	86
Table (33): Statistical main effect of biofertilizer , organic manures and N – Fertilizer on N % Root of corn (Zea mays) .	87
Table(34): Statistical main effect of biofertilizer , organic manures and N – Fertilizer on N – content of Shoot in corn (Zea mays) .	88
Table (35): Statistical main effect of biofertilizer , organic manures and N – Fertilizer on N – content of Root in corn (Zea mays) .	89

Table (36): Statistical main effect of biofertilizer , organic manures and N – Fertilizer on N – content of Whole plant of corn (Zea mays) .	90
Table (37): Effect of inoculation with PDB , Azotobacter sp. and Azospirillum sp. combined with organic manures and 2 Levels of N-supplementation on N% of shoot and root of corn (Zea mays) .	91
Table (38): Effect of inoculation with B. megatherium , Azotobacter chroococcum. and Azospirillum Lipoferum combined with organic manures and 2 Levels of N-supplementation on N – Content Of Shoot and root of corn (Zea mays)	92
Table (39): Effect of inoculation with B. megatherium, Azotobacter chroococcum and Azospirillum lipoferum combined with organic manures and N-supplementation on N-content of whole plants of corn (Zea mays) .	93
Table (40): Statistical main affect of biofertilizer , organic manures and N – Fertilizer on P – content of corn (Zea mays) .	95
Table (41): Phosphate percentages and contents in shoots (mg/plant) of Zea mays as affected by organic matter amendments and inoculation with PDB, , Azotobacter chroococcum and Azospirillum Lipoferum combined with N-supplementation.	97
Table (42): Statistical main effect of biofertilizer , organic manures and N- Fertilizer Yield component on corn (Zea mays) .	98
Table (43): Effect of inoculation with PDB , Azotobacter sp. and Azospirillum sp. Combined with organic manures and 2 Levels of N-supplementation on yield component of Corn (Zea mays)	99
Table (44): Statistical main effect of biofertilizer , organic manures and N – Fertilizer on Grain yield of corn(Zea mays) .	102

Table (45): Effect of inoculation with PDB , Azotobacter and Azospirillum combined with organic manures and 2 Levels of N-supplementation on grain , straw and biological yield of corn (Zea mays).	103
Table (46): Statistical main effect of biofertilizer , organic manures and N – Supplementation combined with time on fresh weight of shoot of Sweet sorghum .	106
Table (47): Statistical main effect of biofertilizer , organic manures and N – Supplementation combined with time on dry weigh of shoot in Sweet sorghum .	107
Table (48): Statistical main effect of biofertilizer , organic manures and N – Supplementation combined with time on fresh weigh of Root in Sweet sorghum .	108
Table (49): Statistical main effect of biofertilizer , organic manures and N – Supplementation combined with time on dry weight of Root in Sweet sorghum .	109
Table (50): Statistical main effect of biofertilizer, organic manures and N – Supplementation combined with time on fresh weight of whole Plant in Sweet sorghum .	110
Table (51): Statistical main effect of biofertilizer , organic manures and N – Supplementation combined with time on Dry weight of whole plant (Sweet sorghum) .	111
Table (52): Fresh and dry weight of Shoot of Sweet sorghum g/plant as affected by organic manures and Inoculation with PDB , Azotobacter chroococcum and Azospirillum lipoferum combined with N – supplementation .	112

Table (53): Fresh and dry weight of root in Sweet sorghum g/plant as affected by organic manures and inoculation with PDB , Azotobacter chroococcum and Azospirillum lipoferum combined with N–Supplementation.	113
Table (54): Fresh and Dry weight of whole plant in Sweet sorghum g/plant as affected by organic manures and inoculation with PDB , Azotobacter chroococcum and Azospirillum lipoferum combined with N– Supplementation.	114
Table(55): Statistical main effect of biofertilizer , organic manures and N–supplementation combined with time on chlorophyll content in (Sweet sorghum).	116
Table (56): Effect of inoculation with PDB , Azotobacter and Azospirillum combined with organic manures and 2 Levels of N-supplementation on chlorophyll content (SPAD)* of (Sweet sorghum)	117
Table(57): Statistical main effect of biofertilizer , organic manures and N – supplementation combined with time on N % of shoot in Sweet sorghum .	119
Table(58): Statistical main effect of biofertilizer , organic manures and N – supplementation combined with time on N % of root in Sweet sorghum .	120
Table (59): Statistical main effect of biofertilizer , organic manures and N – supplementation combined with time on N-content of shoot in Sweet sorghum .	121
Table (60): Statistical main effect of biofertilizer , organic manures and N – supplementation combined with time on N -content of root of Sweet sorghum .	122