

# The Use of Ionizing Radiation to Prepare Polymeric Agro-Waste Composite for Sandy Soil Application

A Thesis Submitted to Faculty of Science Ain shams University

for
The Degree of Doctor of Philosophy
in science

**B**y

Ahmed Hamed Ammar Sayed

(B. Sc. 2006 & M. Sc. 2013)

(2018)



Faculty of Science Department of chemistry

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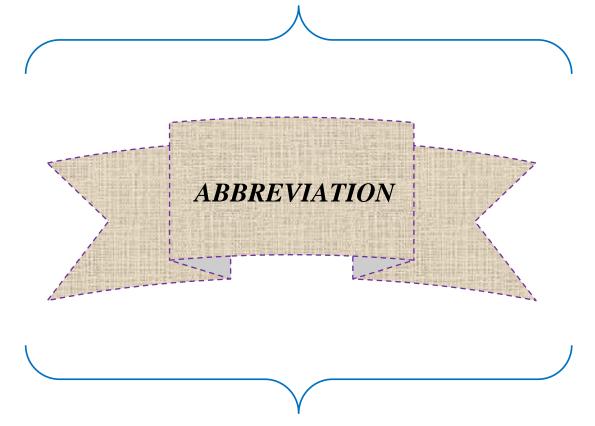
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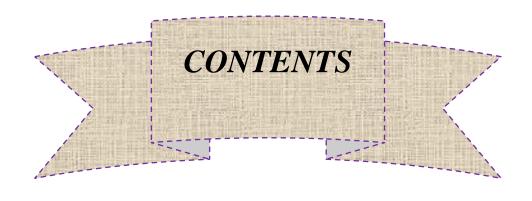
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## **ABBREVIATION**

Symbol	Nomenclature
PAAm	Polyacrylamide
RS	Rice straw
WS	Wheat Straw
PVA	Polyvinyl alcohol
Mrad	Mega-rad= 10 KGy
kGy	Kilo-gray
phr	per hundred part of PAAm
Composite	Combining two or more different materials.
Water absorbency	The amount of water absorbed by a material under specified test conditions.  Commonly expressed as a weight percent of the test specimen.
Crosslinking	The establishment of chemical bonds between polymer molecule chains. It may be accomplished by heat, vulcanization, irradiation or the addition of a suitable chemical agent.
IPRC	Irradiated PAAm/ RS Composite (50 phr) at dose 30 kGy

HPRC	Heated PAAm/ RS Composite (50 phr) at 120°C
The ionic strength	a measure of the concentration of ions in that solution
Bulk density	Weight of a unit volume of a loose material (such as a powder or soil) to the same volume of water. Expressed in kilograms per cubic meter (kg/m³).
Porosity	A measure of the void (i.e. "empty") spaces in a material
рН	A measure of acidity or alkalinity of water soluble substances (pH stands for 'potential of Hydrogen).
Water Permeability	The state or quality of a membrane that causes it to allow water to pass through it.
Retention	Action of holding something in position or containing it.
Control	without any treatment (No IPRC)



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