Fabrication of Nano Structured PGPR Mediated SRF System and its Influence on Germination of *Arachis hypogaea*

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INTRODUCTION

- Agriculture is the backbone of our Country serving millions of people.
- India ranks 2nd in the world’s agricultural production.
To feed the estimated population of 1.36 billion by 2025, it is necessary to increase the productivity by 100% from present level.

By 2000, about 163 million hectares of land was considered as arable land and it was reduced to 157 million hectares in 2011.
Main issues regarding reduction in the productivity are

- Extensive use of chemical fertilizers.
- Intensive farming and agricultural practices.
- Urbanization and Industrialization.
CURRENTLY AVAILABLE SRFS & THEIR LIMITATIONS

- Urea – Formaldehyde
- Sulphur – coated
- Polymer – coated
- Bio inhibitors

LIMITATIONS

- Environmental concerns
- Affects PGPR population
- Limited availability
OBJECTIVES

To develop a Slow Release Fertilizer System (SRFS) with

- Nano structured Rock phosphate and Phosphate Solubilizing bacteria

- Nano structured Rock Potash and Potash Activa

and examine their effect on germination of *Arachis hypogaea*
FABRICATION OF NANO STRUCTURED SRFS

NEEM CAKE + NANO ROCK PHOSPHATE (0.05%) + PSB = SRFS ROCK PHOSPHATE

NEEM CAKE + NANO ROCK POTASH (0.05%) + KSB = SRFS ROCK POTASH

Sonication -30 minutes ,
0.5 cycles ,
80 amplitude
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GERMINATION CHARACTERISTICS

- **Seed germination (%)**

  \[
  \text{Number of seeds germinated} \times 100 \quad \text{X 100}
  \]
  \[
  \text{Total number of seeds}
  \]

- **Mean Germination Time**

  \[
  \text{MGT} = \frac{\sum n \cdot D}{\sum n}
  \]

  Where

  \[
  n = \text{number of seeds newly germinated at time } D;
  \]
  \[
  D = \text{days from the beginning of the germination test},
  \]
  \[
  \sum n = \text{final germination}
  \]
RESULTS AND DISCUSSION
SRFS PELLET

RP/Rpot + Sonication + Nano RP/Rpot + Neem cake → Pelletizer → SRFS Pellet

Neem Oil
NANO STRUCTURED SRFS

Neem cake
NC NRP
NC NRPot
SRFS RP
SRFS RPot
Influence of SRFS on Germination of *Arachis hypogaea*
Influence of SRFS on MGT of Arachis hypogaea
Influence of SRFS on Germination of *Arachis hypogaea*
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THANK YOU