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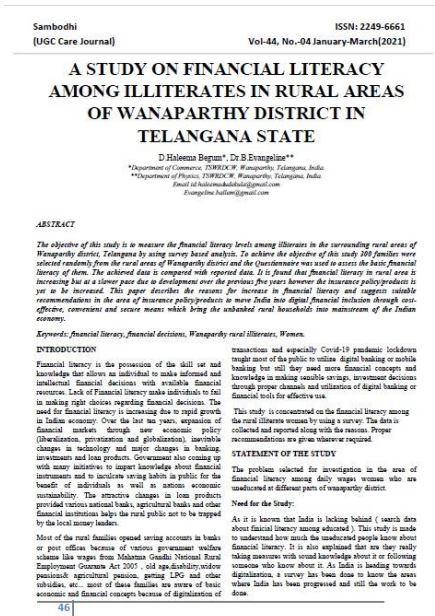
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3.3.1 Number of research papers published per teacher in the Journals notified on UGC care list during the last five years.

D. Haleema begum, 2021-A Study On Financial Literacy Among Illiterates In Rural Areas Of Wanaparth District In Telangana State. ISSN number: 2249-6661, Name of journal: Sambodhi Vol-44, No.-04

link to the research paper:

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J. Swapna, 2023- Studies on isolation, identification and characterization of Rhizobium species from Nallamalla forest area of Mahabubnagar district, Telangana state. ISSN number: 0972-5075, Name of journal : Biochem. Cell. Arch.

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STUDIES ON ISOLATION, IDENTIFICATION AND CHARACTERIZATION OF RHIZOBIUM SPECIES FROM NALLAMALLA FOREST AREA OF MAHABUB NAGAR DISTRICT, TELANGANA STATE

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ABSTRACT : Nitrogen is essential element for plant growth and development, which is supplied by mutual symbiosis of rhizobium in soil legume plants. Biological nitrogen fixation could help to enhance agricultural productivity and ensure food security. The artificial nitrogen fertilizer to aid crop yield is a common farming practice, despite its undesirable effects and hazard to the environment and human population. In the present research work, we explored the isolation, identification & characterization of Rhizobium species from Nallamalla forest region of Mahabub-Nagar district in Telangana State. A single Rhizobium spp isolate was isolated from rhizospheric soil sample. Isolated Rhizobium species were cultured on Yersol Extract Mannitol Agar (YEMA) medium and inoculated in 2% Yeast Extract Broth (YEB). We also confirmed Rhizobium species by different biochemical methods, bacterial species shows gram-negative, rod-shaped, fast grower, positive for nitrogen fixation ability, catalase activity, utilization of carbon sources and negative for motility, fermentation test by MacConkey agar. Finally, the bacterial spp shows positive results for pH, temperature and salt tolerance. Based on the above results, we subjected Rhizobium spp. for 16S rRNA sequencing (nucleotide characterization) method. Interestingly, the isolates were member of same cluster of Rhizobium spp and identified as Rhizobium sp. KS001, KS002 and KS003 strains based on 16S rRNA sequence (95% similarity). We have submitted gene sequence to NCBI for accession numbers.

Key words : Nitrogen fixation, Rhizobium, bio-fertilizer and 16S rRNA sequencing.

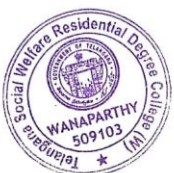
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INTRODUCTION

Microorganisms are living organisms, they are ubiquitous and live in familiar settings such as soil, water, food, and plant roots. Soil microorganisms constitute the world's largest reservoir of biological diversity and are crucial to the functioning of terrestrial ecosystems. These microbial diversities significantly enhance the rates carbon and nitrogen cycle in the ecosystem (Castron et al., 2003). They have a profound impact in every facet of human life. The beneficial microbes are fascinating, versatile and carry out extremely useful processes that can't be achieved by other physical and chemical means (Aguilar et al., 2008). Biological nitrogen fixation is carried out by either symbiotic or free living prokaryotic. It is well documented that biological nitrogen fixation mediated by nitrogenase enzymes is a process important to the biological activity of soil. Soil microorganism that have capacity of fixing nitrogen have frequently been reported

as plant growth promoters. A number of microorganisms such as Rhizobium, blue-green algae (cyanobacteria), Acetobacter, Azospirillum and Clostridium can play significant role in agriculture as nitrogen fixing microorganisms (Gadh et al., 2010 and Ojeyee et al., 2013). Rhizobium are soil microorganism that can live on plant residues (saprophytes) or entirely within plants (endophytes) or (rhizobacteria) or in close association with the plant roots (Geniaux et al., 1993). They play a central role in the nitrogen supply of most soil ecosystems through their ability to fix nitrogen in symbiosis with legumes. Based on ability to fix nitrogen, rhizobia are classified into slow (Bradyrhizobium) and fast growing Rhizobium. The process in which the Rhizobium colonize the rhizosphere, infect the roots and fix nitrogen leads to plant development and grain yield improvement (Kumar et al., 2014 and Maman et al., 2013). The effectiveness of rhizobia populations in fixing nitrogen is correlated with



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