



EVALUATION OF SHELF LIFE OF LIQUID AND CARRIER BASED INOCULANTS OF *MESORHIZOBIUM* SP. AND *PSEUDOMONAS* SP. UNDER DIFFERENT STORAGE CONDITIONS

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ABSTRACT

Survival of *Mesorhizobium* sp. and *Pseudomonas* sp. at room temperature and under refrigerated conditions in liquid inoculants was compared with their carrier based inoculants. The shelf life of liquid and carrier based inoculants was better under refrigerated conditions than at room temperature conditions. The liquid and carrier inoculants under refrigerated conditions indicated 4.0 and 10.0% more mean viable counts of *Mesorhizobium* sp. and 6.5 and 13.5% of *Pseudomonas* sp. at different intervals. Liquid inoculants by recording 12.5 and 19.5% more mean viable counts of *Mesorhizobium* sp. and 10.6 and 18.4% of *Pseudomonas* sp. count under refrigerated and room conditions, at different intervals gave better shelf life than their carrier based inoculants.

Key words : Carrier based inoculants, Liquid inoculants, *Mesorhizobium* sp., *Pseudomonas* sp., Shelf life.

INTRODUCTION

Bio-fertilisers are identified to have a supplementary role to chemical fertilisers to increase soil fertility and crop production in sustainable farming. Microbial inoculant of poor quality is one of the major constraints in adoption of bio-fertilisers by the farmers. The quality of inoculants is determined mainly by number of viable cells present in it. Microbial inoculants not only increased the assimilation of nutrients by plants but also improved soil properties such as organic matter content and total nitrogen in soil (W.U. *et al.*, 2005). The number of microorganisms in the inoculant also influences their performance in field. The carrier based inoculants can be used more advantageously and they are currently being produced (Dube *et al.*, 1980; Kandasamy and Prasad,

1971). These inoculants suffer with drawbacks short shelf life and contamination leading to a poor response in the inoculated crops. The cost of production of carrier based inoculants is high as it is an energy and labour intensive process (Somasegaran and Hoben, 1994). Liquid inoculants have been claimed to provide solutions to these problems associated with carrier based inoculants (Singleton *et al.*, 2002). Besides, storage conditions play a vital role in the survival of microorganisms in the inoculants. Liquid inoculants are the new innovations in bio-fertiliser technology. Bio-fertilisers with solid carrier material can be used more advantageously because they can increase the supply of nutrients to plants, resistance to soil borne pathogen and biological degradation of organic pollutants (Warren *et al.*, 2009). In the present