

INTRODUCTION

1. INTRODUCTION

Farmers try to increase yields of vegetable crops by means of heavy nutrients. The use of chemical nitrogen and phosphorus fertilizers at high levels had an adverse effect on the accumulation of NH_4^+ , NO_3^- , NO_2^- and PO_4^{3-} in fruit tissues. Therefore, clean agriculture recently depends upon using organic and biofertilizers in order to produce high yields with the best fruit quality without contamination and less accumulation with heavy metals.

Biofertilizer applications depend on inoculating seeds, soil, plant roots with free living or symbiotic microorganisms in order to increase these microorganisms in the root zone. *Rhizobium sp.*, *Azotobacter sp.* and *Azospirillum sp.* are used for the activation of N fixation. Some kinds of fungi and actinomyces such as phosphorus dissolving bacteria (PDB) and Mycorrhiza Vesicular Arbuscular (MVA) are responsible for increasing the availability of soil phosphorus.

The mechanism of these microorganisms depends on:

1. Nitrogen fixation through free or symbiotic bacteria.
2. Production of growth promoting substances or organic acids. (El-Hadad et al., 1986)

3. Enhancing nutrient uptake or protection against plant pathogens. (Sarig et al., 1984)

The first experiment was carried out to investigate the effect of inoculating sweet pepper seeds and transplant roots with Nitrobin (contains N-free living bacteria ; *Azotobacter* and *Azospirillum*) and Phosphorin (contains a PDB such *Bacillus*) in order to decreased the needed N and P fertilizers required for growing and producing sweet peppers under clay loam soil conditions.

Organic fertilizers provide soil with essential nutrients such as N, P, S and some micronutrients after its minerilization under soil conditions (Follett et al. , 1981). Organic matter (humus) also improves soil texture, and increases ion exchange capacity of soil, increase buffering capacity and adsorb essential nutrients against leaching. Organic residues release essential nutrients faster by microbial decomposition (Follett et al., 1981). Therefore we have to focus our interest on organic fertilizer application as a good source for essential elements and improving soil texture.

The importance of using organic fertilizers in vegetable production depends on the following:

1. Producing clean vegetables for export purposes and local markets.

2. Reducing the used quantities of mineral fertilizers in order to reduce soil and plant contamination and save quantities required of N and P chemical fertilizers.
3. Producing highest yield with best quality by using less chemical fertilizers and moderate quantity of organic fertilizers.

Therefore, the second experiment aimed to study the effect of different organic fertilizer sources (FYM, Chichen manure, Biogas manure and Agrolig). in order to determine the optimum organic level and source required for clean sweet pepper production .i.e the highest fruit yield with least contamination.