

1. INTRODUCTION

Sweet pepper (*Capsicum annuum* L.) is one of the most important solanaceous vegetable crops grown in Egypt, not only for local consumption but also for manufacturing and exportation purposes. Pepper plants are cultivated in summer, fall and winter seasons. Most of the area however, is planted during summer season due to the favourable prevailing climatic conditions for the growth and development of plants. The cultivated area of pepper was 38608, 11489 and 20566 feddan with a production of 266142, 69542 and 131749 tons with an average of 6.89, 6.05 and 6.41 tons per feddan for the summer, fall and winter seasons, respectively. As mentioned by Economic affairs sector Ministry of Agriculture, Egypt, 2005. the yield potential of pepper can be defined as the total biomass produced or the agricultural important part of the crop. The total biomass is a result of the integration of metabolic reaction in the plant. Consequently, any factor affecting the metabolic activity of the plant at any stage of its growth can affect the yielding ability of plant. In this respect, selecting the high yielding ability cultivars and application of suitable amounts of irrigation water and fertilizers, especially under desert conditions where sandy soil naturally found and protected cultivation for vegetable crops is followed, are considered the most effective agricultural practices that greatly govern the metabolic processes and consequently the growth and productivity of pepper plant. Increases in the productivity of pepper can be attributed to genetic gains due to improved cultivars. Often improved cultivars have been the prime factor

for increased productivity and quality as well as have provided the stimulus for adoption of better agronomic practices leading to further yield increase. Vegetable crops, especially pepper is sensitive to over irrigation which is mostly followed by the Egyptian farmers and growers. This usually has led to a rapid rise in the level of the under ground water and associated problems of salinity, alkalinity and spread of soil borne diseases which led to a depression and falling in yielding ability of such crops. Nitrogen plays a key role in plant metabolism, thus it is considered the limiting factor in pepper plant growth and fruiting, because the plants need it relatively in greater amounts, Moreover, N is sometimes lost very quickly from the cultivated soil and therefore, it has been supplied in sufficient economical quantities which reduce the environmental and vegetable pollution on nitrogenous fertilizer residuals. Recently there has been an increasing awareness of the undesirable impact of mineral fertilizers, especially nitrogenous fertilizers, on the environment as well as the potentially dangerous effects of chemical residues in plant tissues on the health of human and animal consumers. Therefore, there is an augment demand for organically grown food products for both local and export markets, which in turn helps the fast spreading of organic and bio agriculture in Egypt and in many other countries, especially the developing countries of the southern hemisphere. In addition, application of organic manure could minimize the amount of added mineral fertilizer, especially nitrogen fertilizer which is a major source of nitrate accumulation in the Egyptian soils. Organic manures are of significance on account of their influence on soil structure. Humus and microbial materials

entering the soil with the organic manure applied has a favourable effect on soil physical, chemical and microbiological conditions, enhance moisture content and reduce leaching of nutrients, water run-off and soil erosion.

Therefore, this study aimed to study the effect of different water regimes and fertilization with nitrogen at the recommended dose either as a mineral, organic or as a mixture of mineral and organic form on the growth and productivity of some sweet pepper cultivars grown in sandy soil under net house conditions. This may help in finding the optimum amount of irrigation water to realize the national goal which aims to rationalize the use of water. Also, this study includes an attempts to substitute part of the mineral with organic N which in turn could reduce environmental pollution as well as nitrate accumulation in sweet pepper fruit as well as gained high yielding ability with best fruit quality.