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BULB SIZE AND OTHER CHARACTERS OF ONION BULB AS INFLUENCED BY COMBINED APPLICATION OF BIO-FERTILIZERS WITH VARIED LEVELS OF NPK IN BELLARY RED ONION DURING *Kharif* SEASON UNDER RAINFED CONDITION

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ABSTRACT

Field investigations on the influence of combined application of bio-fertilizers with varied levels of NPK on bulb size and other characters of onion (cv. Bellary Red) were conducted during *kharif* seasons of 1999-2000 and 2000-2001 under rainfed conditions at the Agricultural Research Station, Hiriyur located under Central Dry Zone of Karnataka. Effects of twelve treatments viz., Control (T_1), A*zotobacter* (T_2), *Azotobacter* +75% N+PK (T_3), *Azotobacter* + 100%N +PK(T_4), *Azospirillum* (T_5), *Azospirillum* + 75%N+PK(T_6), *Azospirillum*+ 100%N+PK (T_7), VAM(T_8), VAM+75%P+NK(T_9), VAM+100%P+NK(T_{10}), Recommended NPK (125:50:125 kg/ha) T_{11} and 75% recommended NPK (T_{12}) were tested on onion crop cv.Bellary Red in medium black soil under field condition. The recommended dose of FYM @25t/ha was applied to all the treatments as basal dose. The results revealed that the application of *Azospirillum*+ 100%N+PK (*Azospirillum*+125:50:125 NPK Kg/ha) was found to be the best in improving the bulb weight, bulb volume, neck diameter, number of rings per bulb and also ring thickness under rainfed condition during *kharif* season. This level could be recommended for Bellary Red onion during *kharif* season under rainfed conditions, particularly in Central Dry Zone of Karnataka for production of bigger sized onion bulbs.

Key words : Onion, Bio-fertilizers, Bulb characters, *Kharif season*, Rainfed condition.

Onion (*Allium cepa L.*) is an important vegetable crop of the country. In India, it is grown in 4.8 lakh hectares, with a production of 5.46 million tonnes and productivity is 12.82 tonnes per hectare. In Karnataka, the crop is cultivated in an area of 1.03 lakh hectares with annual production of 12.27 lakh tonnes and the average yield is only 11.91 tonnes per hectare, which is very low compared to national and world average productivity. Like many other crops yield of onion is affected by inadequate input of manures and fertilizers in the soils having poor status in nitrogen, phosphorus and potassium. So crops give good response to use of chemical as well as bio-fertilizers. However, due to heavy rise in the prices of chemical fertilizers and also to maintain the eco-system of soil, it has become necessary to use of bio-fertilizers in addition to chemical fertilizers in the soil. Among the various microbial inoculants, *Azotobacter*, *Azospirillum* and *Vesicular Arbuscular Mycorrhizas* (VAM) are of prime importance in non-symbiotic nitrogen fixation and phosphorus uptake respectively.

In onion cultivation marketing assumes the crucial importance. Many a times, onions are required to be stored if the prices are low. It is also observed that big sized onion has more storage life than small ones. The bigger sized bulbs also fetch better price in the market. The size of bulb is mostly dependent on nutrition. In absence of experimental data, it was felt worthwhile to find out the effect of bio-fertilizers singly or in combination with levels of nitrogen, phosphorus and potassium on bulb size, bulb weight and other characters of onion bulbs in *kharif* seasons under rainfed conditions.

MATERIALS AND METHODS

Field investigations on the influence of combined aaplication of bio-fertilizers with varied levels of NPK on bulb size, bulb weight and other characters of onion (cv. Bellary Red) bulbs were conducted during *kharif* seasons of 1999-2000 and 2000-2001 under rainfed conditions at the Agricultural Research Station, Hiriyur located under Central Dry Zone of Karnataka. Effects of twelve treatments viz., Control (T_1),*Azotobacter*(T_2), *Azotobacter* + 75%N+PK (T_3), *Azotobacter* + 100%N+PK(T_4), *Azospirillum*(T_5), *Azospirillum* +