

## Influence of inorganic and bio-fertilizers on dry matter production and yield of rainy season onion (*Allium cepa* L.) cv. BELLARY RED

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Accepted : March, 2009

### ABSTRACT

A field experiment on the influence of inorganic and bio-fertilizers on bulb yield and dry matter production of onion (cv. BELLARY RED) was conducted in medium black soils during rainy seasons under rainfed condition at the Agricultural Research Station, Hiriyur located under Central Dry Zone of Karnataka. Influences of 12 treatments viz., Control (T<sub>1</sub>), *Azotobacter* (T<sub>2</sub>), *Azotobacter* + 75% N + PK (T<sub>3</sub>), *Azotobacter* + 100% N + PK (T<sub>4</sub>), *Azospirillum* (T<sub>5</sub>), *Azospirillum* + 75% N + PK (T<sub>6</sub>), *Azospirillum* + 100% N + PK (T<sub>7</sub>), VAM (T<sub>8</sub>), VAM + 75% P + NK (T<sub>9</sub>), VAM + 100% P + NK (T<sub>10</sub>), recommended NPK (125:50:125 kg/ha (T<sub>11</sub>) and 75% recommended NPK (T<sub>12</sub>) were tested on onion crop cv. Bellary Red under field condition. The recommended dose of FYM @ 25 t/ha was applied to all the treatments as basal dose. The results revealed that the plants provided with *Azospirillum* + 100% N + PK (125:50:125 NPK kg/ha) produced highest bulb yield (232.98q/ha) and highest total dry matter production (6287.03 kg/ha) under rainfed condition during *kharif* season. This level can be followed for Bellary Red onion under rainfed situation in *kharif* season in the Central Dry Zone of Karnataka.

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**Key words :** Onion, Bio-fertilizers, Dry matter production, Inorganic fertilizers, Rainy season

Onion (*Allium cepa* L.) is one of the commercial vegetable and spice crops of India, belonging to the family Alliaceae. In India, it is grown in 4.8 lakh hectares, with a production of 5.46 million tonnes and the productivity is 12.82 tonnes per hectare. It is mainly grown in the states of Maharashtra, Orissa, Karnataka, Uttar Pradesh, Gujarat, Tamil Nadu and Madhya Pradesh. 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. The higher productivity could be determined by selection of suitable varieties, balanced nutrition, optimum water management and timely plant protection measures. Among these factors, integrated nutrient management plays an important role in enhancing the yield and productivity. In this regard, the use of bio-fertilizers has currently attained a special significance in crop production to address the sustainability problem and tremendous success has been achieved in several crops. Bio-fertilizers have a potential use in horticulture in recent years. But, there is only little information on bio-fertilizers use in onion. Therefore, the present study was undertaken to investigate the impact of bio-fertilizers singly or in combination with levels of nitrogen, phosphorus and potassium on bulb yield and dry matter production in onion during *kharif* season under rainfed condition in Central

Dry Zone of Karnataka.

### MATERIALS AND METHODS

The present study on the influence of inorganic and bio-fertilizers on bulb yield and dry matter production in onion (cv. BELLARY RED) was conducted in medium black soils during *kharif* seasons under rainfed condition at the Agricultural Research Station, Hiriyur, located under Central Dry Zone of Karnataka. Effects of twelve treatments viz., Control (T<sub>1</sub>), *Azotobacter* (T<sub>2</sub>), *Azotobacter* + 75% N + PK (T<sub>3</sub>), *Azotobacter* + 100% N + PK (T<sub>4</sub>), *Azospirillum* (T<sub>5</sub>), *Azospirillum* + 75% N + PK (T<sub>6</sub>), *Azospirillum* + 100% N + PK (T<sub>7</sub>), VAM (T<sub>8</sub>), VAM + 75% P + NK (T<sub>9</sub>), VAM + 100% P + NK (T<sub>10</sub>), recommended NPK (125:50:125 kg/ha) T<sub>11</sub> and 75% recommended NPK (T<sub>12</sub>) were tested on onion crop cv. BELLARY RED in medium black soil under field condition. The experiment was laid out in Randomized Block Design with three replications in both the years. The seeds of Bellary Red onion were sown in first week of May in the nursery. The crop was transplanted in the second week of June. Each experimental plot consisted of 10 rows for each treatment. The plot size was 2.0 x 1.5 m. The plants were spaced at a row to row distance of 15 cm and plant to plant distance of 10 cm. *Azospirillum* (500 g/ha) and *Azotobacter* (500 g/ha) were applied to seedlings at transplanting separately by dipping the roots in the slurry