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## Maize yield and its attributes influenced by biofertilizers and presoaking treatment of nitrate salts

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**ABSTRACT :** The present study was carried out to examine the grain yield and attributes of maize (*Zea mays*) influenced by bio-fertilizers and presoaking treatment of nitrate salts during *Kharif* 2008-09 and 2009-10 at precision farming development centre I.G.K.V. Raipur (C.G.). Experiment was conducted in Split Plot Design comprising of three varieties (desi, hybrid and composite) as a main plot, while biofertilizers and nitrate salts combination in sub plot treatment. Observations were taken the number of cob per plant, cob length, cob diameter, number of seed per cob, seed weight, grain yield, stover yield and harvest index. It is clearly indicated that superiority in treatment 9 (50% fertilizer + *Azospirillum* + Calcium nitrate salts) exhibited maximum grain yield, stover yield and harvest index.

**Key Words :** *Azospirillum*, Biofertilizers, Nitrate salts, Yield attributes, Harvest index

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Maize is one of the most important cereal crops in the world agricultural economy both as food for man and feed for animals. There is no cereal on the earth which has so immense potentiality and that is why it is called queen of cereals. The soil-plant-climatic management complex are often ignored while selecting hybrid seeds of maize. Appropriate hybrids are those which allow weather technology and management to be fully expressed in high yield. Maize is a highly income generative and cost effective crop so management orientation is essential to fetch the maximum profit. Therefore, efforts were made to find suitable composite or hybrid varieties of maize along with proper fertilizers and nitrate salt combination for agro-ecological farming situation of this region.

Among the coarse cereals, maize has the highest average national productivity of 2.18-2.35 t ha<sup>-1</sup>. At present, the area covered by maize crop in India is about 8.0-8.2 m ha (Anonymous, 2009). Maize potential has to be seen in terms of its productivity in countries like U.S.A. (8 t ha<sup>-1</sup>) and China (5.6 t ha<sup>-1</sup>). Giving allowance to different growing situations in India, it could, however, be safe to expect national average yields to reach around 3 t ha<sup>-1</sup>. Maize does possess tremendous potential

in terms of feeds for dairy, poultry and piggery agro-industries. Diversified uses of maize for starch industry, corn oil production, baby corns, popcorns etc., would further provide the much-needed impetus to the growth of maize. No other cereal can be used in as many ways as maize. Virtually every part of the maize plant has economic value, including the grain, the leaves, the stalks, the tassels and in some cases, even the roots.

The high efficiency of nitrogen fixation combined with low energy requirements easy establishment on plant roots and tolerance of high soil temperature exhibited by *Azotobacter* and *Azospirillum* seem to make them ideally suited as microbial inoculants for cereal crops under tropical condition results of the preliminary field trials on crops like rice, wheat, barley, sorghum, maize, millets are quite encouraging. The higher yield potentiality of maize cannot be manifested upto the breme due to several biotic and abiotic factors among which poor nutritional management is the prime one. The soaking of seed with various nitrate salts prior to sowing of maize, mustards and okra has shown a positive impact on their germination as well as on vegetative growth.