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Ecological effects of changing climate on the yield and quality of maize (*Zea mays L.*) through integrated nutrient management approaches under rain fed conditions

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Changing climate creates world food security threat being a serious concern for future crop production. Maize (*Zea mays L.*) among the cereal crop after wheat and rice is mainly utilized as staple food in many developed countries of the world. The dire need of modern agriculture is improvement in soil fertility status, enhanced agriculture production, and to protect the environment. The production of maize is highly hampered by low fertility status of the soil. Therefore, some alternative but sustainable, environment friendly and cost effective approaches of nutrient management can be a possible solution for these problems. So, the present study was conducted at Agronomic Research Area, University of Agriculture, and Faisalabad, Pakistan during spring season 2013-14 to check the effect of various fertilizer levels and seed inoculants on the yield and quality of maize. The experiment was laid out in randomized complete block design (RCBD) with factorial arrangement by using three replications. Treatments were control, 100% recommended dose of NPK, 75% recommended dose of NPK+1.5 t ha⁻¹ PM, 75% recommended dose of NPK + 3 t ha⁻¹ FYM and 75% recommended dose of NPK + 4.5 t ha⁻¹ press mud along with seed inoculants (*Azospirillum* and *Azotobacter*) separately for each plot. Data regarding growth yield, and quality parameters were collected and analyzed. Interactive effect of both the factors was non-significant for all the observed parameters except 1000-grain weight (g), and grain yield. While considering the individual effect of fertilizer levels, maximum number of grains cob⁻¹ (512), 1000-grain weight (342 g), grain yield (8530 kg ha⁻¹), and grain zinc contents (33.80 mg kg⁻¹) were obtained with treatment N₂ (100% recommended dose of NPK). Regarding seed inoculants maximum values of yield and yield contributing parameters were obtained in I1 (*Inoculation with Azospirillum*). Regardless of superior performance of N₂, economic analysis showed that maximum net income and benefit cost ratio were obtained where 75% recommended dose of NPK+1.5 t ha⁻¹ poultry manure was applied (N₃). Consequently, it was recommended for the farmers that 75% recommended dose of NPK+1.5 t ha⁻¹ PM along with *Azospirillum* gave maximum output and net return.

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