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Effect of Different Nutrient Management Practices on the Economics of Late Sown *Kharif* Maize (*Zea mays* L.) in Western Uttar Pradesh, India

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The field experiment was conducted during *kharif* season of 2015, at the experimental farm of IFTM University, Lodhipur Rajput, Delhi Road NH-24, Moradabad, Uttar Pradesh. Thirteen treatment combinations *viz.*, T_1 (Control), T_2 (120% RDF NPK), T_3 (120% RDF NPK + B), T_4 (120% RDF NPK + Zn), T_5 (120% RDF NPK + B + Zn), T_6 (100 % RDF NPK), T_7 (100% RDF NPK + B), T_8 (100% RDF NPK + Zn), T_9 (100% RDF NPK + B+ Zn), T_{10} (75% RDF NPK + 10 t FYM ha^{-1}), T_{11} (75% RDF NPK + B + 10 t FYM ha^{-1}), T_{12} (75% NPK + Zn + 10 t FYM ha^{-1}), and T_{13} (75% RDF NPK + Zn + B +10 t FYM ha^{-1}) with different levels of NPK with and without FYM, Zn and Boron were taken for this investigation to find out the most economical amongst them. The results revealed that combined application of 75% NPK + Zn + B +10 t FYM ha^{-1} *i.e.*, T_{13} recorded higher grain yield (26.42 q/ha), gross returns (₹.49595.00), net return (₹.30300.00) and B:C ratio (1.57) followed by T_{12} (75% RDF NPK + Zn + 10 t FYM ha^{-1}.

Introduction

Maize (*Zea mays* L.), crop also; called "*queen of cereals*" is the third most important crop in India after rice and wheat. Globally, India stands 5th rank in acreage and 8th rank in production of maize. It is cultivated on 9.7 million hectares with a production of 24.3 million tones having productivity of 26.76 quintals ha^{-1} (MOA, 2014). Maize being an exhaustive crop has very high nutrient demand and its productivity mainly depend upon nutrient management system. The use of major nutrients alone fail to sustain yield levels due to increasing deficiency of secondary and micronutrients and alteration in the physical and chemical properties of soil which is unfavorable for crop growth. The present hike in the price of chemical fertilizers has compelled the Indian farmers for an alternative nutrient management system. At the same time only organic manures alone do not produce spectacular increase in the crop yields, due to their low nutrient status and availability in short period and on the other hand dependency on chemical fertilizers alone may not provide a viable economic option. Therefore, to

maintain soil productivity on a sustainable basis an integrated nutrient management approach, using both organic and inorganic sources of nutrients should be adopted. In the present context, the use of manures must be given prime importance and fertilizer use should be limited to balance the nutrient requirement of the crops. In order to sustain soil fertility and to reap rich harvests of maize, it is imperative that both organic manuring and mineral nutrition have to be given adequate attention under irrigated conditions. Keeping these points in view, the present study was under taken.

Materials and Methods

The field experiment was conducted during *kharif* season of 2015, at the experimental farm of IFTM University, Lodhipur Rajput, Delhi Road NH-24, Moradabad, Uttar Pradesh. The district Moradabad lies between 28°21´ to 28°16´ North latitude and 78°4´ to 79° East longitude above mean sea level of (193.23) meters. The experimental plots have uniform topography with homogenous fertility and soil characteristics typical to suit Maize crop cultivation. The fields were fairly leveled and had good drainage having assured irrigation facility. The soil of the experimental site was sandy loam in texture, having pH= 7.0- 7.5 with 0.6 per cent of organic carbon. Thirteen treatment combinations *viz.*, T_1 (Control), T_2 (120% RDF NPK), T_3 (120% RDF NPK + B), T_4 (120% RDF NPK + Zn), T_5 (120% RDF NPK + B + Zn), T_6 (100 % RDF NPK), T_7 (100% RDF NPK + B), T_8 (100% RDF NPK + Zn), T_9 (100% RDF NPK + B+ Zn), T_{10} (75% RDF NPK + 10 t FYM ha^{-1}), T_{11} (75% RDF NPK + B + 10 t FYM ha^{-1}), T_{12} (75% NPK + Zn + 10 t FYM ha^{-1}), and T_{13} (75% RDF NPK + Zn + B +10 t FYM ha^{-1}) with different levels of NPK with and without FYM, Zn and Boron were taken for this investigation. These treatments were tried by using variety *Naveen* (hybrid) in Randomized Complete Block Design (RCBD) with three replications. Recommended doses of fertilizer (RDF) NPK (120:60:40 kg ha^{-1}), Zinc (10 kg ha^{-1}) and Boron (10 kg ha^{-1}) were applied during kharif maize cultivation. Half doses of nitrogen, full doses of phosphorus, potassium, zinc and boron were applied as basal form. While remaining half dose of nitrogen was applied at teaseling stage according to the treatments. As per the treatments the FYM was applied and incorporated into soil three weeks before sowing and other nutrient sources like N, P, K, B and Zn were supplied through urea, DAP, MOP, borax and zinc Sulphate, respectively. The seeds were sown at the rate of 20 kg ha^{-1} with the spacing of 50cm x 20cm. Irrigation was given as and when required depending upon soil moisture. The analysis of plant samples were done at harvest for calculating yield and B: C ratio was calculated by using the formula:

$$\text{B:C ratio} = \frac{\text{Net returns (Rs/ha)}}{\text{Cost of cultivation (Rs/ha)}}$$

Results and Discussion

Combined application of 75 % of recommended dose of NPK (120:60:40 kg ha^{-1}) + Zn 10 kg ha^{-1}+ B 10 kg ha^{-1} + FYM 10 t ha^{-1} i.e. T_{13} was found most remunerative and gave maximum gross returns (19295.00 ₹ ha^{-1}), net returns (30300.00 ₹ ha^{-1}) and B:C ratio (1.57) followed by T_{12} (75% RDF NPK + Zn + 10 t FYM ha^{-1}) ₹46138.61 ha^{-1}, ₹.27493.61 ha^{-1} and 1.47, respectively. This may be due to higher grain yield (26.42 q ha^{-1}) (Table 1). The lower gross returns ((₹ 25094.58 ha^{-1}), net returns ((₹12489.58 ha^{-1} and B: C ratio (0.99) were noticed with the T_1 (Control). Similar results observed by Raskar *et al.*, (2013). Highest B: C ratio was found to be significant under application of 160 kg N ha^{-1}, 80 kg P_2O_5 ha^{-1} and 5 kg Zn ha^{-1}, over other treatments (Rao *et al.*, 2013; Ahmad *et al.*, 2013)).

Table.1 Economics of maize as influenced by different nutrient management practices

Treatments	Grain yield (q ha^{-1})	Cost of cultivation (₹ ha^{-1})	Gross Return (₹ ha^{-1})	Net Return (₹ ha^{-1})	B:C Ratio
T_1 (Control)	15.01	12605.00	25094.58	12489.58	0.99
T_2 (120% RDF NPK)	18.31	17460.00	35724.28	18264.28	1.05
T_3 (120% RDF NPK + B)	16.43	18110.00	36658.47	18548.47	1.02
T_4 (120% RDF NPK + Zn	21.51	17790.00	41374.03	23584.03	1.33
T_5 (120% RDF NPK + B + Zn)	23.84	18440.00	45158.89	26718.89	1.45
T_6 (100 % RDF NPK)	19.99	16516.00	39178.89	22662.89	1.37
T_7 (100% RDF NPK + B)	20.14	17166.00	39076.53	21910.53	1.28
T_8 (100% RDF NPK + Zn)	20.94	16846.00	40269.31	23423.31	1.39
T_9 (100% RDF NPK + B+ Zn)	21.47	17496.00	41778.89	24282.89	1.39
T_{10} (75% NPK + 10 t FYM ha^{-1})	22.14	18315.00	43493.61	25178.61	1.37
T_{11} (75% NPK + B + 10 t FYM ha^{-1})	23.03	18965.00	44722.92	25757.92	1.36
T_{12} (75% NPK + Zn + 10 t FYM ha^{-1})	24.28	18645.00	46138.61	27493.61	1.47
T_{13} (75% NPK + Zn + B +10 t FYM ha^{-1})	26.42	19295.00	49595.00	30300.00	1.57

Yadav *et al.*, (2016) also showed that growth, yield attributes, maize equivalent yield, net return and B:C ratio were significantly higher in treatment 5 t ha^{-1} Vermicompost +75% recommended dose of NPK over other treatments. It gave grain yield (4.77t ha^{-1}), maize equivalent yield (6.06 t ha^{-1}), net return (₹. 26273 ha^{-1}) and B: C ratio (0.85) over other treatments.

References

Ahmad, W., Shah Z., Khan F., Ali S and Malik W. 2013. Maize yield and soil properties as influenced by integrated use of organic inorganic and bio fertilizers in low fertility soil. *Soil environs*, 32: pp 121-129.

MOA, 2014. Directorate of Economics and Statistics, Ministry of Agriculture, GOI. htpp://dacnet.in/

Rao P. Venkata, Subbaiah G and Veeraraghavaiah R. 2013. Agronomic responses of Maize to plant population and nitrogen availability. *International Journal of Plant Animal and Environmental Science Vol* issue (1): pp 107.

Raskar, S.S., Sonani V.V and Patil P.A. 2013. Study of Economics of Maize as influenced by different levels of Nitrogen, Phosphorus and Zinc. *International Journal of Scientific and Research Publications* 3(10): pp 31.

Yadav Ajay Kumar, Chand Subash and Thenua O.V.S. 2016. Effect of integrated nutrient management on productivity of Maize with mungbean inter cropping. *G. J. B. B.* 5(1): pp 115-118.

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