



Maize Yield Response under Various Phosphorus Sources and their Ratios

Waqar Ali

Department of Soil and Environmental Sciences, The University of Agriculture, Peshawar, Pakistan

Abstract

Improper use of fertilizers and its ratio is one of the main reasons for low productivity; therefore balance fertilization is required to maintain crop production and improved soil fertility. Therefore the experiment was carried out at Cereal phosphorus sources on days to tasselling, days to silking, days to maturity, plant height, grains ear-1, grain yield, biological yield, and harvest index, whereas the emergence m-2 was found non-significant with different P sources. The combined use of organic and inorganic P sources delayed tasselling, silking and maturity. Plant height, grains ear-1, at the rate of 100 kg ha⁻¹ from different sources in different ratios. The results indicated a significant effect of different control treatment with no P fertilizer. Phosphorus was applied biological yield, grain yield, and harvest index was also higher with the addition of P from both sources as compared with the sole application of organic or inorganic fertilizer. The combined application of organic manures 50:50 (FYM or PM) and inorganic fertilizer (DAP) performed better as compared to the rest of the ratios and produced higher yield and yield components.

Introduction

P application and organic manure are very essential for P availability and as well as yield profitability [7]. Under the semiarid condition, the major limiting factor of crop

production is the unavailability of P and lack of organic matter. Phosphorus is an important essential macronutrient often limiting plant growth due to fixation in soils and its low solubility. Bound P by microbial inoculants is an important factor for increasing productivity and improving soil fertility [8]. Due to low fertilizers use efficiency the crop yields in Pakistan are either stagnant or not increasing [9]. Unavailability and inadequate supply of fertilizers at the time of requirement adulteration and high cost [10]. A large amount of energy and high cost are required for the synthesis of chemical fertilizers. Moreover, the continuous use of chemical fertilizers creates an environmental problem [4]. Be that as it may, natural cultivating, with or without concoction composts is by all accounts a conceivable answer for the predominant circumstances [11]. The joining of natural supplement sources with engineered ones supply basic supplements as well as has some positive cooperation with synthetic manures to expand their proficiency in this way. decreasing ecological risks [12]. Non-customary squanders like poultry excrement and press mud from the sugar industry are of concern and should be overseen in ecological point of view.



Keywords

Farmyard manure (FYM); Poultry manure (PM); DAP; Grain yield; Nowshera; Khyber pakhtunkhwa (KP); Pakistan.

Conclusion

It is concluded from the results that combined application of organic and inorganic P sources produced 29.3%, 28.64% and 24.5% more yield as compared to the sole application of farmyard manure, DAP, and poultry manure respectively. Application of P in 50:50 ration of organic and inorganic fertilizer produced 45.8% more grain yield as compared to control plots.

Recommendation

Combined use of organic and inorganic fertilizer in 50:50 is recommended for higher maize yield in Peshawar region. Further studies are required to identify and integration of other organic with inorganic fertilizers on different crops under the different ecological zone of KPK.

References

1. MNFSR (2014) Agriculture statistics of Pakistan. Ministry of National Food Security and Research, Islamabad, Pakistan.
2. Borch K, Bouma TJ, Lynch JP, Brown KM (1999) Ethylene: A regulator of root architectural responses to soil phosphorus availability. *Plant Cell Environ* 22: 425-431.
3. Vance CP, Uhde-Stone C, Allan DL (2003) Phosphorus acquisition and use: Critical adaptations by plants for securing a nonrenewable resource. *New Phytol* 157: 423-447.
4. Oad FC, Buriro UA, Agha SK (2004) Effect of organic inorganic fertilizer application on maize fodder production. *Asian J Plant Sci* 3: 375-377.

E-mail: waqarali@aup.edu.pk