Effects of Blended NPS Fertilizer Rates on Yield and Yield Components of Pepper (Capsicum annuum L.) Varieties at Mizan Aman, South Western Ethiopia

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ABSTRACT

*Hot pepper (Capsicum annum L.) is the most widely cultivated and economically important spice and vegetable crop in Ethiopia. However, its production and productivity are constrained by lack of seeds of improved varieties and poor soil fertility. Thus, field experiment was conducted at Mizan ATVET College using three hot pepper cultivars (Mareko fana, Bako local and Gojeb local) and four blended NPS fertilizer rates (0,50,100,150 and 200kgNPS+100kg Urea) and one control to determine the growth and yield response of hot pepper under Mizan Aman condition. A 3*5 factorial experiment was laid in RCBD with three replications. Important growth parameters, phenolgy, yield and yield component data were collected for this study. ANOVA revealed that plant height, days to 50% flowering, days to 50% fruiting, number of leaf plant^{-1}, number of primary branch plant^{-1}, marketable, unmarketable and total dry pod yield, pod length, and number of primary branch were highly significantly ($p<0.001$) affected by the main effect of varieties, NPS +Urea fertilizer rate and interaction effect of cultivars and NPS + urea rates, while, pod length plant^{-1} were highly significant between varieties ($p<0.01$)and main effect of fertilizer rate show highly significance difference at ($p<0.001$) and its interaction with varieties were no significance effect at($p<0.05$). Pod number plant^{-1} was highly significantly affected by the main effect of variety, NPS + urea rates and the interaction effect between varieties and NPS + Urea rates. The main effect of cultivars and NPS + urea, were very highly significance effect at ($p<0.001$) respectively. Plant tissue nitrogen, phosphorus and sulfur concentration and their uptake were highly significantly ($p<0.01$) influenced by variety, NPS + urea rates and the interaction effect between varieties and NPS + Urea rates. Marketable pod yield (1.18 t ha^{-1}), total fresh pod yield (11.97 t ha^{-1}) were recorded from Mareko fana with 150NPS + 100 urea kg ha^{-1}. Pod length (12.38cm), the highest above ground dry biomass (4.80 tha^{-1}), unmarketable pod yield (0.29tha^{-1}), total dry pod yield (1.39 tha^{-1}) were observed when Mareko fana combined with 200kg NPS +100 urea kgha^{-1}. The highest (10.33) number of primary and (9.27) secondary branches were recorded from Mareko fana cultivar combined with 150NPS + 100 urea kg ha^{-1}.The main effect fertilizer and Bako local cultivar with 200NPS+ 100 urea kg ha^{-1} prolonged days to 50% flowering (85 days) and (115.33days) to 50% flowering. In general, the growth, phenological and yield of Mareko fana, Bako local and Gojeb local cultivars significantly influenced by NPS + urea rates whereby the highest marketable dry pod yield (2.03 t ha^{-1}) and the most economically profitable yield was recorded when Mareko fana combined with 150 NPS +100 urea kg ha^{-1}. Therefore, the combination of Mareko fana cultivar with 150 NPS +100 urea kg ha^{-1} can be recommended for hot pepper production the study area.*

Key Words: *Blended fertilizer (NPS), Cultivar, nutrient concentration, and nutrient uptake, yield*