Enhancing economic significance and yield response of hot pepper (*Capsicum annuum L.*) through urea and NPS fertilizers application under irrigation in Abergelle, Waghimra, Eastern Amhara

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ABSTRACT

Hot pepper (Capsicum annuum L.) is a globally significant spice crop, but nutrient deficiencies often hinder its productivity. To address this issue, an experiment was conducted in 2019 and 2020 under irrigation in the Abergelle district of Wag-himra, eastern Amhara, Ethiopia. The objective was to determine the optimum and economically feasible fertilizer rates for sustainable hot pepper production. The trial consisted of four rates of urea (0, 100, 150, and 200 kg ha^{-1}) and three rates of NPS (0, 100, and 150 kg ha^{-1}) with factorial combination in Randomized Complete Block Design (RCBD) with three replications. It was conducted in a plot size of 17.64 m^2 with Mareko Fana variety and irrigated by 5 day intervals under furrow irrigation method with farmer practice water depth. The collected data exposed to analysis of variance using R software version 4.0.5, and mean separation was performed using the Duncan multiple range test (DMRT). The findings of the study demonstrated that the application of urea and NPS fertilizers had a significant influence on growth and yield parameters of hot pepper including plant height, number of pods, pod weight, and green pod yield. The highest green pod yield of 13.86 t ha^{-1} was achieved through the combined application of 150 kg ha^{-1} urea and 150 kg ha^{-1} NPS. A substantial yield of 12.98 t ha^{-1} was obtained using 100 kg ha^{-1} urea and 150 kg ha^{-1} NPS. Cost-benefit analysis also revealed that, in the Abergelle district's Beltarf irrigation command area during the irrigation season, the optimal rates for maximizing green pod pepper yield were 150 kg ha^{-1} urea and 150 kg ha^{-1} NPS, with an alternative option being 100 kg ha^{-1} urea and 150 kg ha^{-1} NPS.

Keywords

INTRODUCTION

Capsicum annum F

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MATERIALS AND METHODS

Description of the study area

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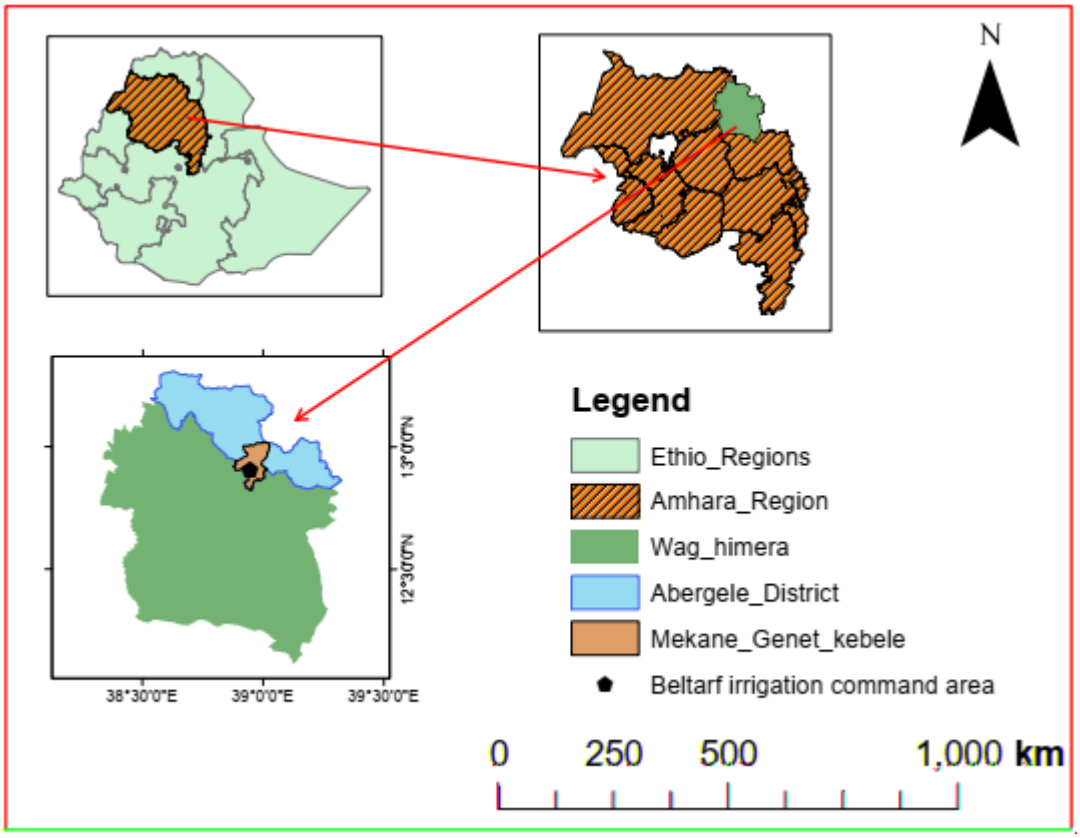

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Soil sampling, pre-processing and analysis

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Experimental design and treatments

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Experimental procedures
Mareko Fana

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Data collection

Partial budget analysis

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Data analysis

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RESULTS AND DISCUSSION

Response of yield and yield components of hot pepper to urea and NPS

Response of green pod yield

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Response of plant height

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Response of pod number and pod weight

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Partial budget analysis

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CONCLUSION AND RECOMMENDATION

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ACKNOWLEDGEMENTS

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DECLARATION OF INTERESTS

REFERENCES

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