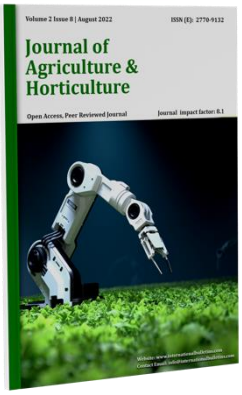

IMPACT OF MINERAL FERTILIZERS ON THE PRODUCTIVITY OF INTENSIVE APPLE ORCHARDS IN KHOREZM REGION

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Keywords: Orchard, fertilizer, grafting, apple seedlings, tree planting scheme, buds, shoots, flowers, fruits, yield.

Abstract: This article investigates the growth, development, and yield of apple varieties grafted onto dwarf M-IX rootstocks and the effects of mineral fertilizers. Scientific data show the highest yields from intensive orchards grafted on dwarf M-IX rootstocks.

The best results were achieved with mineral fertilizers at N160 P120 K40, with Golden Delicious yielding 304 t/ha, Starkrimson 314 t/ha, Gala 311 t/ha, and Redchief 315 t/ha, which is 68-69% higher than the control.

Introduction: In recent years, Uzbekistan has implemented numerous measures to improve fruit quality, increase exports, expand intensive orchard areas, and enhance agricultural practices. New fruit varieties adapted to Uzbekistan's climate are being introduced and scientifically studied for production. The development strategy of New Uzbekistan for 2022-2026 aims to double farmers' incomes and achieve an annual agricultural growth rate of at least 5%.

According to Presidential Decrees and various normative documents, optimizing planting schemes in intensive orchards is crucial for maximizing productivity and quality. Scholars emphasize that planting density plays a vital role in fruit quality, with intensive orchards yielding higher quality fruits compared to extensive ones. Dwarf rootstocks allow for planting densities of 2,000 to 5,000 trees per hectare, ensuring stable yields of 30-40 tons per hectare in mature orchards.

Research has shown that high-density planting methods, like the Tatura system, significantly increase yields compared to traditional spacing. This study aims to evaluate the impact of different mineral fertilizer doses on the productivity of intensive apple orchards grafted on dwarf M-IX rootstocks in Khorezm region.

Methods and Conditions: Experiments were conducted at the Khorezm experimental station of the Academician M. Mirzaev Research Institute of Horticulture, Viticulture, and Winemaking. Biometric measurements and counts were carried out on 10 plants per variant in four replications. The methodology followed the guidelines provided by Buriev et al. (2014) and Moiseyenko (1967), with statistical analysis performed using dispersion analysis (Dospokhov, 1985).

Results: Different doses of mineral fertilizers significantly affected the yield per tree and overall productivity in the intensive apple orchards. Fertilizers applied deeply before irrigation in autumn using the RU-4–10 aggregate showed good results. The highest yields were achieved with N160 P120 K40, where Golden Delicious yielded 213 kg/tree,

Starkrimson 22 kg/tree, Gala 218 kg/tree, and Redchief 221 kg/tree. This represents a 68-69% increase compared to the control.

Conclusion: Intensive apple orchards grafted on dwarf M-IX rootstocks achieved the highest yields with N160 P120 K40 mineral fertilizers, with Golden Delicious yielding 304 t/ha, Starkrimson 314 t/ha, Gala 311 t/ha, and Redchief 315 t/ha, showing a 68-69% improvement over the control..

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