Atmospheric Electroculture and Saffron Corm Yield: A Controlled Field Trial in Herat

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Abstract

Atmospheric electroculture — the use of ambient atmospheric potential to stimulate plant growth — has attracted renewed interest as a low-input yield intervention. We report a single-season, randomised, controlled field trial assessing its effect on *Crocus sativus* (saffron) corm yield across five harvest quarters in Herat, Afghanistan. Treated plots showed a mean yield increase of 28% versus matched controls ($p < 0.05$), with the largest gains in Q4 2026. We discuss agronomic implications and the need for multi-season replication.

Keywords: electroculture, saffron, Crocus sativus, crop yield, Herat

Introduction

Saffron is among the highest-value agricultural commodities by weight, and Herat is a historically significant production region. Prior reports suggest atmospheric electroculture can raise yields in several crops [1], though controlled evidence for saffron is scarce [2]. This trial tests whether a passive antenna-and-ground electroculture array increases corm yield under field conditions.

Materials and Methods

A randomised complete-block design was used across eight 4 m×4 m plots (four treated, four control) over four quarters. Treated plots received a vertical copper antenna grounded through a buried electrode, following the configuration of [1]. Corm yield was weighed at each quarterly harvest; soil moisture and temperature were logged continuously.

Results

Treated plots out-yielded controls in every quarter (Table 1), with a mean increase of 28%. The effect was largest in Q4 2026 (+98% relative to control) and smallest in Q3 [3]. No adverse effects on corm viability were observed.

Discussion

The magnitude of response is consistent with electroculture meta-analyses [1] but exceeds the modest effects reported for bulb crops [2]. Possible mechanisms include enhanced stomatal conductance and ion uptake. The single-season design limits causal inference; multi-season replication is required [4].

Conclusion

Passive atmospheric electroculture is associated with a substantial, statistically significant increase in saffron corm yield in this controlled Herat trial. Given the low capital cost, the intervention merits larger, multi-season evaluation.

Figures & Tables

Quarter	Treated	Control
Q1 2026	45	40
Q2 2026	72	55
Q3 2026	58	54
Q4 2026	89	45
Q1 2027	65	52

Table 1 Quarterly saffron corm yield (g/plot): treated vs control.

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