performance. It is now widely regarded as one of the most valuable tools available against soil-borne diseases and adverse environments, and its expansion accelerated after restrictions on environmentally harmful soil fumigants increased the need for non-chemical alternatives in intensive vegetable systems (Tsaballa et al., 2021). The agronomic value of grafting extends beyond disease control. Reviews across vegetable crops show that grafting can increase yield, improve tolerance to drought, salinity, temperature extremes, waterlogging, nematodes, and other biotic or abiotic stresses, while also supporting longer production cycles and lower dependence on agrochemicals (Kappel et al., 2024). In eggplant, these benefits are particularly relevant because the crop is frequently cultivated in soils affected by wilt complexes and in environments where water scarcity or climatic instability limits productivity. Rootstocks can improve water and nutrient uptake, strengthen plant vigor, and buffer the scion against stress through changes in root architecture, xylem transport, antioxidant activity, and hormonal signaling (Musa et al., 2020). Grafting is therefore not simply a rescue technique for diseased fields; it is increasingly viewed as part of a broader low-input and climate-resilient production strategy. At the same time, its practical value depends on rootstock-scion compatibility, nursery skill, and the ability to offset higher transplant cost through gains in yield, quality, and crop reliability (Awazade and Verma, 2024).

Research on eggplant grafting has expanded from simple compatibility testing to a broader analysis of how rootstocks influence growth, physiology, yield, fruit quality, and adaptation to stress. Early and ongoing work has shown that eggplant benefits substantially from grafting and that a wide range of rootstocks, including *Solanum torvum*, *S. macrocarpon*, *S. aethiopicum*, allied species, and interspecific hybrids, can improve vigor and productivity while offering alternatives where rootstock rotation or local adaptation is needed. Experimental studies consistently report higher total or marketable yield in grafted plants than in self-rooted controls, although the magnitude of improvement depends strongly on the specific graft combination. For example, grafting onto wild relative rootstocks increased vigor and marketable yield in multiple scion backgrounds, and some combinations based on *S. torvum* or *S. aethiopicum* increased marketable yield by about 20%~31% relative to non-grafted plants (Musa et al., 2020; Consentino et al., 2022). More recent work has also clarified some of the mechanisms underlying these responses. Rootstocks with stronger root systems and favorable anatomical traits, such as wider xylem or greater root volume, are associated with better water and nutrient acquisition, improved photosynthetic performance, and higher fruit yield, indicating that grafting effects on production are mediated through whole-plant physiological integration rather than simple disease escape alone (Kappel et al., 2024). Even so, the literature also shows that responses in fruit quality traits are less uniform, with some traits improving, some remaining unchanged, and others varying by environment, harvest maturity, and rootstock-scion interaction.

Current eggplant grafting research increasingly emphasizes performance under specific stress scenarios and integrated production systems, which makes the subject especially relevant for a study focused on growth and yield. Under deficit irrigation, grafted eggplant has shown clear advantages over non-grafted plants through stronger canopy vigor, greater root proliferation, improved water and nutrient uptake, and better maintenance of fruit yield and water productivity; in one recent field study, grafting improved fruit yield by 12.7%-24.5% and reduced yield losses under water deficit while maintaining key fruit-quality traits (Wakchaure et al., 2025). Likewise, under semi-arid conditions, drought-tolerant wild rootstocks such as S. sisymbriifolium and *S. torvum* outperformed non-grafted plants under both full and deficit irrigation, indicating that rootstock choice can materially alter growth and yield stability when water is limiting (Khapte et al., 2025). Beyond water stress, grafting can also reshape the rhizosphere environment, as grafted eggplants have shown increased microbial biomass, greater enzyme activity, lower bacterial wilt incidence, and higher yield than non-grafted controls, suggesting that soil biological effects may contribute to plant performance. Against this background, the objective of the present paper is to examine the effects of grafting on the growth and yield of eggplant, with particular attention to how grafting modifies vegetative vigor, physiological performance, and productivity through rootstock-mediated mechanisms under practical production conditions (Tsaballa et al., 2021).