Rooted resilience: harnessing rootstock diversity in cucurbit prosperity

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Cucurbits, vital for global economy, confront myriad stresses impacting yield and quality. Rootstocks offer vital stress tolerance, enhancing crop performance. The present review explores rootstock diversity in cucurbit cultivation, different grafting methods and various rootstock–scion combinations, assessing their roles in stress mitigation and quality improvement across cucurbits. Assessing diverse stressors like drought and diseases reveals rootstocks with genetic variability, providing viable solutions. Crucial for sustainable production, these rootstocks improve crop vigour, yield stability and fruit quality. Future research should delve into rootstock-mediated stress tolerance mechanisms to optimize agricultural benefits.

Keywords: Cucurbits, grafting, quality, rootstock diversity, stress.

arid surroundings, along with winter greenhouses that provide cool, low-light conditions. According to reports[3], the production of cucurbits can decrease by 10–15% due to climate change. Continuous cropping exacerbates issues like salinity, the prevalence of cucurbit pests, disturbance of soil microflora and soil-borne diseases such as fusarium wilt caused by *Fusarium* spp. The adverse effects of continuous cropping in cucumbers are due to the change in the soil fungal population[6]. These circumstances lead to various physiological and pathological disorders, resulting in substantial crop losses. Insect pests that invade cucurbit crops result in significant financial setbacks for farmers due to decreased crop yield, elevated production expenses and diminished quality of the harvested produce[7]. Utilizing chemical methods for pest control, despite being costly and lacking consistent efficacy, poses adverse consequences for the environment, soil quality and human health. Grafting