

Research Article

Effect of Thermotherapy on Regeneration of Single Node Setts of Sugarcane Infected by *Sugarcane Mosaic Virus*

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Abstract

Sugarcane is a significant global crop used for sugar production and considered as a potential source for biofuels and renewable energy. However, sugarcane is susceptible to various diseases, including the sugarcane mosaic disease incited by the *Sugarcane Mosaic Virus* (SCMV), which leads to substantial economic losses. The investigation aimed to enhance the germination of SCMV-infected single noded setts and improve the vigour of seedlings. SCMV-infected setts typically exhibit reduced germination and seedling health. SCMV-infected setts were exposed to different temperatures (50 C, 51 C and 52 C) for varying durations (10, 20, and 30 min) using a hot water bath. Following thermotherapy, the setts were treated with a solution of carbendazim (0.1%), a fungicide commonly used to control fungal infections. The investigation found that treating SCMV-infected setts with hot water at 50 C for 20 min, followed by dipping in carbendazim (0.1%) solution for 30 minutes, led to enhanced germination and increased seedling vigour in comparison to control. The presence of SCMV in the seedlings was confirmed using reverse transcription-polymerase chain reaction (RT-PCR). Thermotherapy combined with carbendazim treatment improved the germinability and vigour of SCMV-infected single noded setts. Although SCMV was still detected in the seedlings after thermotherapy, the treatment likely helped by reducing fungal infections and enhancing overall seedling health.

Key words: RT-PCR, sugarcane, *Sugarcane Mosaic Virus*, sett germination, thermotherapy and vigour

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