Effects of irrigation frequency and repellent plants on false codling moth (Thaumatotibia leucotreta) infestation, growth, yield, and quality of sweet pepper

Sweet pepper (Capsicum annum L.) is an important vegetable and spice crop grown worldwide for its pungency, which is derived from high concentrations of capsaicinoids. Despite the economic importance of sweet pepper as an export vegetable in Kenya, its production is currently constrained by the false codling moth (FCM) (Thaumatotibia leucotreta) and inadequate management strategies for the pest, among other factors. This study, therefore, evaluated repellent plants (Artemisia (Artemisia absinthium), Lavender (Lavandula angustifolia), and Spearmint (Mentha spicata) under different irrigation frequencies to control FCM. A split-plot factorial greenhouse experiment was conducted at Kenya Agricultural and Livestock Research Organization, Muguga (trial 1) and the Horticulture Research and Teaching Field, Egerton University, Kenya (trial 2). Irrigation frequency at three levels (irrigating once a week, irrigating twice a week and irrigating thrice a week) was the main-plot factor, while repellent plants at four levels: sweet pepper (Capsicum annum L.), artemisia (Artemisia absinthium), lavender (Lavandula angustifolia) and spearmint (Mentha spicata) constituted the sub-plot factor. Irrigating thrice or twice a week and using lavender as a repellent plant significantly reduced false codling moth infestation by 90%, increased yield by 28% and improved fruit quality in terms of fruit collar diameter and total soluble salts (TSS). The findings demonstrate that integrating lavender repellent plants with frequent irrigation can be adopted as an eco-friendly management strategy for FCM and enhancing sweet pepper yield and quality.