ABSTRACT

In Kenya, citrus industry has been on the decline due to pests and diseases specifically African citrus triozid (ACT), false codling moth (FCM) pests and HuÃ¡nglÃ³ngbÃ¬ng (HLB) disease.Management of ACT, HLB and FCM is currently based on application of pesticides. Use of pesticides is associated with increased environmental risks, substantial increase in production costs and pesticide resistance. Furthermore, exports are limited due to non-compliance to maximum residue levels (MRLs) in the international markets especially the European Union (EU). This study aimed at contributing to strengthening citrus production system by assessing the magnitude of yield losses as a result of ACT, HLB and FCM as well as estimates the potential economic impacts of the proposed IPM strategy by icipe among smallholder citrus producers in Kenya. The study employed a multi-stage sampling technique where the first stage involved purposive selection of two counties;Machakos and Makueni, and then four sub-counties were purposively selected from the two counties across different altitude. Finally, probability roportional to size sampling method was used to select a sample size of 324 citrus growers. Expert opinions were sought from researchers,scientists and extension officers on several aspects such as, expected yield increases, adoption rate, adoption lag and success rate. The economic surplus model was used to measure the potential benefits of the research, using Dynamic Research Evaluation for Management (DREAM 3.0)software. Results on magnitude of citrus yield losses show that ACT, HLB and FCM leads to proportional losses of 8.6%, 10.6% and 15.86% respectively. This translates to economic losses of USD 933.88, 1528.27 and 2396 per hectare due to ACT, HLB and FCM respectively. The losses impact significantly on the livelihoods of the citrus farmers, and thus may render the citrus industry unsustainable if no intervention measures are put in place. Simulation results showed that investing in IPM was viable with an NPV of USD 51.3 Million over the simulated 15 years, approximately USD 3.4 million annually, IRR of 60.3% and BCR of 16.29. This means that the Kenyan citrus sector has the potential to derive benefits from adopting IPM with consumers gaining more than producers. The results help in setting policy intervention and strategies to enhance the dissemination and adoption of IPM strategies for suppression of citrus ACT, HLB and FCM. Sensitivity analysis shows that the results remain robust even when key parameters assumed from secondary data and expert opinion were varied on extreme low and high. Distribution of benefits to consumers and producers is very sensitive to price elasticity of demand and supply