

**Tomato Production Practices in Kirinyaga District and Assessment of Pest Management
Options at KARI - Thika**

Onyango Irene Awino

**A thesis submitted in partial fulfillment for the award of Master of Science in Zoology in
the Jomo Kenyatta University of Agriculture and Technology**

2008

ABSTRACT

A study was carried out on tomato production practices in Kirinyaga District and assessment of pest management options at KARI - Thika. The study endeavored to establish farmers' knowledge on tomato pests and their pest management practices, and to evaluate pest management options. The aim of the study was to come up with an integrated pest management strategy for tomato. The tomato production practices were studied through a survey which entailed interviewing tomato farmers in Kirinyaga District. While assessment of pest management options were done through tomato trials conducted at KARI-Thika. A structured questionnaire was used in the survey and only farmers who had been involved in tomato production for at least the past six months were each randomly administered with a questionnaire. Tomato field trial experiments were laid on randomized complete block design with five pest control treatments replicated four times. The pest control treatments were; mulch with no pest control option; untreated control; mulch with need-based pest control using biopesticides; farmers' practice with regular pest control and staking with need-based pest control using biopesticides. Disease control and other agronomic practices were conducted regularly on all the treatments. Pest incidence was recorded once in a week throughout the crop season. Harvested tomatoes were weighed and converted into yield/ha for all the treatments. The trials were conducted during the long and the short rains. One hundred and twenty farmers were interviewed during the survey. It emerged that pests and diseases were a constraint in tomato production. Some of the pests mentioned included spider mites, African bollworm, thrips, aphids and whiteflies while the diseases included late and early blight, bacterial wilt, tomato spotted wilt virus, leaf curl virus, powdery mildew, blossom end rot and nematodes. Farmers used pesticides in pest management and they had little or no knowledge on alternative pest management and

IPM. The pests observed in the field trial experiments were whiteflies, aphids, thrips, spider mites, leaf miners and African bollworms, while the beneficial insects observed were the ladybird beetles and spiders. Pest incidence varied within pest control treatments in both crop seasons at $p < 0.0001$. The mean marketable yield in the long and short rains differed significantly within treatments in both seasons at $p < 0.0001$. Farmers' practice which involved routine pesticide use had the lowest mean pest incidence and highest mean marketable yield in both seasons. The short rains had higher pest incidence and lower yields compared to the long rains. Treatments with mulch and where biopesticide application was used had low whiteflies population. Routine pesticides applications as well as poor weather conditions increased pest management costs. Farmers needed training on alternative pest management and IPM to reduce reliance on pesticides, reduce costs of pest management and to ensure correct choice and use of fertilizers and pesticides. Mulching reduced the cost of labor on weeding and provided an environment conducive for beneficial insects. Farmers incurred losses due to price fluctuations therefore there was need to put in place appropriate marketing policies to stabilize prices. Early planting was an important factor to take advantage of good weather and evade pests.