Multiple biotic and abiotic factors constrain tomato production in Kenya

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Background

- Tomato is widely grown in Kenya for fresh consumption and processing into value added products.
- Production predominantly under rainfed open field conditions
- Severely constrained by various biotic and abiotic factors.

Methodology

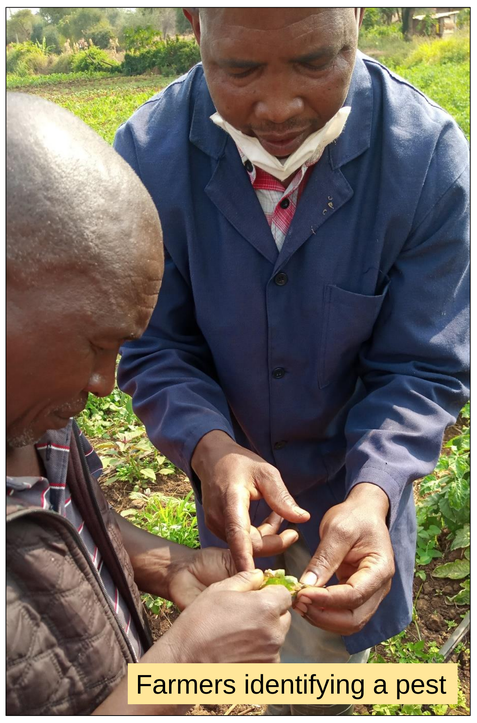
- A survey carried out under the Kenya Climate Smart Agriculture Programme.
- Documented major production challenges for targeting with different technologies, innovations, and management practices.
- Qualitative data obtained through Focus Group Discussions.
- Nine sub counties in Kajiado, Siaya and Elgeyo Marakwet counties targeted.
- Other data by observation in tomato fields and visit to local produce markets.


Healthy tomato fruits


Women are major beneficiaries


Meeting farmers in the field


Meeting farmers in Focus Group Discussion


Farmers identifying a pest

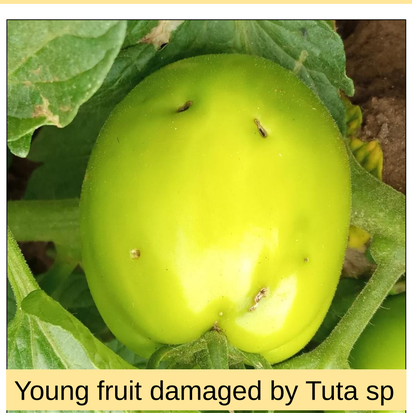

Data collection in local markets

Results

- Tomato highly irrigated in Kajiado, more rainfed in E. Marakwet and Siaya.
- Pests and diseases are major constraints.
- Late blight *Phytophthora infestans*, early blight *Alternaria solani* and root knot nematode *Meloidogyne incognita* incidence equally high in the different regions.
- Powdery mildew *Leveillula taurica* and bacterial speck *Pseudomonas syringae* pv *tomato* higher in Kajiado while bacterial wilt *Ralstonia solani* higher in Siaya.
- Leaf miner moth *Tuta absoluta* was the most destructive insect pest in all areas.
- Thrips and whiteflies were present but less damaging.
- Large quantities of tomato fruit damage by pests was discarded at harvest.
- Drought, costly hybrid seed, soil infertility, seasonal gluts are major constraints.
- Post harvest loss, dysfunctional markets and exploiting broker remain significant.

Tomato crop severely attacked by blight

Tomato crop and fruit attacked by *Tuta absoluta*


Young fruit damaged by Tuta sp


Tomato crop excessively sprayed with pesticides

Assorted containers of chemicals used in one farm

Other observations

- Farmers relied on chemical pesticides to control pests and diseases.
- The choice and frequency of pesticide application was not based on assessment of existing risk of attack.
- A large number of tomato cultivars was grown in different regions depending on consumer preference.
- High cost of hybrid seed has dampened uptake of new cultivars and compelled farmers to recycle seed.


Mature tomato crop abandoned in field


Excess fruits during glut are fed to goats


Alternaria blight infection


Pest damaged fruits discarded are fed to cattle


Tomato packed in reed crate


Poorly packed in extended crate


Inappropriate postharvest handling

Recommendations

- Build farmers capacity for pest surveillance and initiate effective control measures
- Prioritize low cost, environment friendly methods aimed at reducing pesticide use.
- Value addition capacity should also be developed to minimize wastage of fruits that may not be marketed directly due to pest damage.
- Value chain governance to improve relations and reduce middlemen influence.

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