MAJOR INSECT AND NEMATODE PESTS OF SWEET POTATOES AND RECOMMENDATIONS FOR TRANSFER OF PEST FREE GERMPLASM

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Sweet potato, a native of tropical America, is widely cultivated in the tropical and warm temperate climates. Although in these habitats a large number of nematode and insect pets are known to be associated with this crop, a few are of major importance to its cultivation. Similarly, some of these pests are associated with the planting material and can be transferred to other areas if the necessary precautions are not taken for their elimination prior to distribution of the germplasm.

Following is a brief outline of the major nematode and insect pests of sweet potatoes found in Peru and those occurring elsewhere and recommendation for their elimination prior to the transfer of germplasm.

Nematodes

The most important nematode species attacking sweet potato is Meloidogyne incognita which occurs in the areas where sweet potato is well adapted for cultivation. It seems to do well in light, sandy soil which happens to predominate and constitute the major production of the world's sweet potato growing area. Meloidogyne hapla also attack this crop, but its distribution is limited to the cooler, temperate region of the world. Although M. javanica also attacks the roots of sweet potatoes, it cannot complete its life cycle on this crop. However, if the planting material are infected, this nematode can be disseminated readily.

Another nematode of major importance is Rotylenchulus reniformis which is rather widely distributed in the warm tropical regions of the world. Since it is a semi-endoparasite, and larvae penetrate the roots, can be transferred by movement of the infected germplasm.

Pratylenchus species also attack sweet potatoes and are widely distributed in the temperate and warm tropical regions of the world. Like Meloidogyne species, these nematodes have a rather wiede host range and because of their feeding habit inside the root tissue, they can be readily disseminated by movement of infected material.

Insects

Several insect pests of sweet potatoes are known to occur in Peru and other regions of the world where sweet potatoes are intensively cultivated. Following are some of the most important insect pests of sweet potatoes.

1) Foliar Pests

Members of this group of insects feed on foliage, causing irregular shaped holes. Severe damage leads to considerable yield loss. They are primarily lepidopterous pests and include:- Brachima sp. near jugata which in Peruvian literature is reported as Tricotapha sp., Ochyrotica fasciata, Sylepta helcitalis and Cosmopterin sp. which is often reported as Bedellia minor.

2) Stem Feeders

The most important insect pests of major consequence which is both stem and storage root feeder is Euscepes postfasciatus. This insect is commonly known as West Indian sweet potato weevil and occurs in the West Indies and Carribean, Central and South America. Larvae of this insect can be readily disseminated by movement of infested plant material.

3) Storage Root Pests

Two of the most important pests reported to attack storage roots in Peru, Central and South America are E. postfasciatus and Diabrotica spp. The latter causes irregular shallow holes while E. postfasciatus causes mining inside storage roots.

Perhaps the most feared and the most important pests of sweet potatoes are the sweet potato weevils, Cylas formicarius and C. puncticollis which occur in many countries. Cylas formicarius is pantropic, occurring from West Africa through East and South Africa, Madagascar, Maurituis, Seychelle, India, Bangladesh, Sri Lanka, S. E. Asia, china, Philippines, Indonesia, Papua New Guinea, East Australia, Solomon Isles, Hawaii, Samoa, Fiji, Coroline, Gilbert and Mariana Isles, South USA, West Indies, Mexico, Guyana and Venezuela. Cylas puncticollis only occurs in Africa, primarily Burundi, Cameroon, Chad, Congo, Guinea, Kenya, Malawi, Mozambique, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, Sudan, Tanzania and Uganda. Both of these pests can be disseminated by movement of infested plant material.

Recommendations for Transfer of Pest Free Germplasm

Following is a list of recommendations which should be taken into account when transferring sweet potato germplasm in order to avoid introduction of the destructive nematode and insect pests mentioned above to different locations.

1. The introduced as well as the export material should have been grown in nematode and insect free environment. Soil analysis for nematode detection and utilization of pheromones as monitoring tools for C. formicarius should receive high priority.

2. All the introduced and the export planting material (stem cuttings & storage roots) should be inspected by qualified personnel and the contaminated material should be destroyed.

3. Chemotherapy. Planting material may be treated chemically to eliminate the destructive pests. Similarly, as a perventive measure, the export planting material may be treated with a suitable insecticide. Fumigation may also aid in controlling some pests, but requires additional studies.

4. Thermotherapy. Application of heat by either placement of the planting material at high air temperature or soaking them in hot water may elimiate shallow seeded pests. Similarly, combination of certain systemic pesticides and hot water treatment may be useful in eliminating the pests present in the planting material.

5. Grow all the introduced material in a quarantine greenhouse for observation prior to their release.

6. In-vitro transfer of germplasm will eliminate possibility of transferring all the pests mentioned above and should receive major attention.

Application of some or all the above mentioned recommendatins would safeguard against the introduction and dissemination of major nematode and insect pests of sweet potatoes. These recommendatins may also be applicable in avoiding the introduction of pathogens of important consequences.