A SANITATION PROGRAM FOR NEMATODE CONTROL

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Plant parasitic nematodes can be spread by any means where infested plant material or soil is moved from one place to another. The purpose of sanitary measures in the control of nematodes is to exclude these organisms from non-infested land. Within a given infested field such precautionary practices are of little value. However, sanitary measures can be of great importance in preventing the spread of nematodes (and other plant pests) from infested to non-infested land.

Sanitary programs are carried out by various governmental agencies at the national, state and county levels. On the national level an elaborate system is in operation to help prevent the introduction of plant pests into the United States. Federal inspectors examine all cargo, mail and passenger baggage arriving from overseas. In 1962, these workers stopped the introduction of a plant pest on the average of every 16 minutes around the clock, a total of over 32,000 interceptions. Infested plant material is either destroyed or returned to its source. Other items, equipment, packages, etc., are either fumigated or steam cleaned to rid them of pests.

A good example of a sanitary practice which prevented the introduction of two serious nematode pests occurred in Washington last August. Federal inspectors intercepted four used tractors from England. The tractors had been cleaned and repainted. However, the inspectors removed 2-3/4 lbs. of soil from these machines. The soil was found to contain cysts of the golden nematode of potato and of the oat cyst nematode. After a thorough steam cleaning the tractors were released for distribution in Washington.

State and county (where these exist) inspection or quarantine agencies have functions similar to those of the federal agency. However, the responsibility for preventing the spread of plant pests within a farm or between farms in a given locality must lie with the individual grower.

Sanitary practices fall into two broad categories; i.e. the destruction of infected or infested plant tissue and the disinfestation of equipment, storage bins, etc.

A. Sanitary practices for handling plant material

When vegetatively propagated plants are grown, extreme care should be taken that the planting stock is not contaminated with nematodes or other plant pests. Infected planting stock, e.g. potato tubers, mint roots nursery stock, etc. harboring root-knot nematode, should either be destroyed or disposed of in a manner which prevents contamination of clean land.

In the Columbia Basin there are numerous examples where root-knot nematode has been introduced with mint planting stock. Although this nematode may not seriously damage mint, it can cause extreme losses in crops following mint in rotation. Mint planting stock should never be dug from fields known to be infested. If an infestation is not found until after the roots have been dug, the planting stock should be destroyed and all equipment used in the operation should be steam cleaned.

Nematode infected potato tubers, either seed or commercial grade, should be disposed of safely. Since potatoes are of value for animal feed it is not an economically sound policy to destroy them. However, infected tubers can be fed to animals with little chance of spreading root-knot nematode if certain precautions are taken. The ensilage process will effectively kill nematodes so whenever possible infected tubers should be ensiled before they are used for animal feed. Composting of manure from feed lots for at least one year will also kill these pests. In addition to these methods, tubers can be fed on scab land with relative safety providing manure from these areas is not used for fertilizer.

Tare dirt from sugar beets or other root crops should never be returned to the farm or used for fill.

B. Sanitary practices for disinfecting equipment, storage bins, etc.

Thorough steam cleaning is the best method for disinfecting farm machinery. Portable high pressure steam cleaners are available in most communities. Care should be taken that all debri and soil clinging to equipment is washed off. In this manner, both the equipment and soil are exposed to the intense heat of live steam.

If steam equipment is not available a thorough washing with water will help reduce the chances of spreading pests with farm machinery. For this purpose a washing rack with a water trap is essential. Do not allow wash water to drain into a field or irrigation ditch.

Storage bins, shovels, boots, etc. can be disinfected with solutions of household bleach (Ca hypochlorite) or Roccal (a quarternary ammonium cpd.). Calcium hypochlorite solution is used at a concentration of 3.5% active material and is prepared by diluting commercial household bleach at 1:10 ratio. Roccal is used at a concentration of 800 ppm. and is diluted according to directions on the label. These materials are applied liberally to surfaces requiring disinfection.