

# Keep it Clean for Field Vegetables

## Non-plant sources of pests and diseases

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### Non-plant sources

In addition to plant sources of pests, all people and objects can also be a source of insect pests and diseases.

**People** (both workers and visitors) can be a source of insect pests and diseases if good farm hygiene and quarantine is not followed. People entering and moving around your production area can be a transport system for pests. Pests can be carried on clothes, people's hands and especially shoes. People can not only introduce insect pests and diseases into the crop, but also carry them around within the crop.

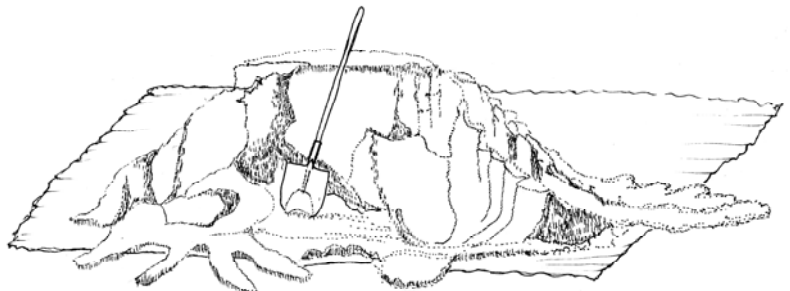
### Vehicles, tractors and farm

**implements** can transport pests and diseases and are often overlooked when considering where insect pests, nematodes and diseases may come from, but can be an important source of problems. Plant debris and soil are the main ways that pests get carried on vehicles, tractors and farm implements. Second-hand equipment can also introduce new pests, diseases and weeds.

**Rubbish** piles can be a problem on many farms. Rubbish is often contaminated with soil and plant debris which can harbour pests. Rubbish piles also provide protection for these insect pests and diseases enabling them to survive longer and giving them more chances to get into your crop.

**Tools** such as secateurs, hoes and pegs and even mobile telephones can carry diseases in and around the farm.

**Bulk soil amendments** can be a source of pests. Organic materials such as compost and animal manure are a higher risk. Inorganic materials like gypsum and lime can generally be considered to



*Bulk, loose organic materials are a high risk for root rot diseases*

be disease free on delivery, but if left uncovered can accumulate weed seeds

### Soil

Growing in soil can be a major challenge if the same crops are repeatedly grown. Many crop pests including diseases, nematodes, insects, mites and weeds have lifecycle stages adapted to survive for long periods of time in soil without a host crop.

A large amount of resources need to be invested in making sure that the soil is healthy, pest lifecycles are disrupted (for example, with crop rotations) and the biological, chemical and physical properties of the soil appropriate for the crops you are growing.

This includes careful fertiliser and irrigation management and maintaining sufficient organic matter levels in the soil.

*"Seeds or seedlings are planted into a clean cultivated area which has not grown the same family of crop (or host of regular soil borne fungus such as sclerotinia) in the previous year"*

The use of compost can improve soil health and has been shown to be effective in controlling some soil-borne diseases such as verticillium.

When significant pest, particularly disease problems exist, soil may need to be fumigated. If soil needs to be fumigated, a certified contractor must be used. Remove all the equipment and materials from the area and remove as much of the old crop as possible then thoroughly plough in the residue. Allow plenty of time for the crop debris to decompose otherwise the fumigation may not be effective. Never fumigate soil that is too cold, too wet or too dry.



*Soil on buckets, boots and any other items is a risk of root rot diseases*

**Water** can carry many diseases, especially bacteria and root rot fungi. All water to be used in the crop for irrigation, cleaning and cooling can be a risk and has to be carefully monitored. Water

recycling dams are a high risk for carrying diseases and should be disinfected before use. Bore water is usually free from plant diseases, but should be tested to make sure.

Poor drainage that results in run-off water entering the crop during a rain storm can bring in diseases. Water splashing into the crop from rain hitting the ground, from tractor activity or from a vehicle driving through a puddle is also a way to spread diseases. Minor flooding can cause even greater problems.

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