

Coping with wet and waterlogged soils

Vegetables
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Many crops have experienced excessive summer rains, resulting in transient waterlogging and even soil flooding in more extreme cases. It's important to understand what happens to plants growing in these conditions and what to expect later. At this stage, it really is wait-and-see. Some plants are already showing injury symptoms, although visible symptoms on trees may not occur for a year or more.

Typical symptoms include reduced growth of shoots and roots, leaf yellowing, leaf twisting, leaves dropping off the plant, root death, increased susceptibility to predators and pathogens, absence of fruiting, and—worst case—plant death.

In flooded soils, the oxygen concentration drops to near zero because water replaces most of air in the soil pore spaces. Roots need oxygen to respire and have normal cell activity.

The impact of waterlogging is directly related to varietal tolerance, soil type, time, duration and depth of flooding, and the age and size of the plants.

Low lying areas of fields are most affected by excess rainfall. However, cropping practices can also increase water ponding. Soil compaction and poor soil structure will reduce water infiltration and increase ponding.

In general, if flooding or waterlogging lasts for less than 48 hours, most vegetable crops can recover. However, longer periods will lead to high amounts of root death and lower the chance of recovery.

Physiological effects of waterlogging:

- Leaching, losses through denitrification and limited nitrogen uptake in flooded soils will lead to nitrogen deficiencies across most fruit and vegetable crops.
- Lack of root function and movement of water and calcium in the plant can lead to calcium related plant disorders. Most notably, you can have a higher incidence of blossom end rot in tomatoes, capsicums, watermelons, and several other susceptible crops.
- In bean crops, flooding or waterlogging has shown to decrease flower production and increase flower and young fruit abscission or abortion.
- Ethylene build-up in saturated soil conditions can cause leaf drop, flower drop, fruit drop, or early plant decline in many vegetable crops.

An important thing you can do to aid in vegetable crop recovery after floods or waterlogging is to help get oxygen into the soil. This may require strategic cultivation in crops that are still small enough, ripping between the rows as soon as you can get back into the field.

To address the issue of nitrogen leaching and other losses, apply nitrogen as soon as possible. Foliar calcium sprays can also ease the problem of blossom end rot. In fields that are still wet, foliar applications of micronutrients are also beneficial.

Tags:
waterlogging