



Drainage Water Management

Overview

Water is a vital resource for agriculture, but excess water can disrupt farm operations, restrict plant root growth and increase erosion. Agricultural drainage removes excess water from the soil to enhance crop production.

What you should know

- In some soils, natural drainage is sufficient for crop growth, but in others, artificial drainage is needed.
- Plant roots need oxygen. When soil is saturated, plant roots survive short-term by using the oxygen in water. Prolonged wetness depletes the oxygen and roots die. Drainage makes room for air in the soil to replenish oxygen to roots.
- Improved drainage is important for timely field operations in the spring. Soil must be adequately dry before planting can take place. Improved drainage can allow access to fields days or weeks earlier.
- In poorly drained soil, early season root growth is restricted by a high water table. When the water table drops rapidly during the drier mid-season, further root growth is impaired. In drained soil, root systems develop more fully in the spring, giving plants access to deeper water during mid-summer dry periods.
- A symptom of poor drainage is yellowing of green vegetation. Yellowing can be caused by nitrogen deficiency from poor oxygen uptake by the roots. Yellow areas in a field can indicate where additional drainage might be needed.



Poor drainage can inhibit plant growth, especially root development.

Types of drainage

- Surface drainage removes water that collects on the land surface. Land leveling, surface inlets and shallow ditches or waterways can allow water to leave fields.
- Subsurface drainage removes excess water from the soil profile, usually through perforated tubes installed 2-4 feet below the surface. These tubes are called "tiles" because they used to be made from clay pipes. When the water table in the soil is higher than the tile, water flows into the tubing.

<https://engineering.purdue.edu/SafeWater/Drainage/drainintro.htm>

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30-Second Summary

- Agricultural drainage is an important crop management practice.
- Proper drainage improves growth and optimizes crop production.
- A combination of surface and subsurface drainage techniques can maximize drainage benefits.

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