Method of reducing the effect of saline water:

1. Applying extra water
2. Good subsoil drainage
3. Halophyte
4. Mulch
5. Fertilizer
6. Gypsum blocks or stones
7. Organic matter
8. Pitcher or Pot irrigation system
9. Magnetic field treatment
10. Solar distillation

Irrigation Agronomy

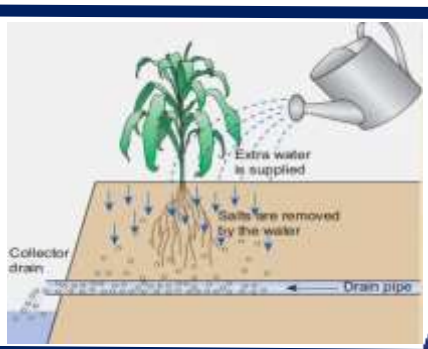
Applying extra water

- Apply extra water to leach salts below the root zone.
- Leaching often occurs with rainfall.
- In other cases, irrigation water beyond the crop's water requirement may need to be applied.
- Efficient irrigation scheduling keeping in view the delta of water on critical growth stages should be considered.

Irrigation Agronomy

Example: As a starting point, apply 6 inches of water to reduce salinity by 50% and 12 inches of water to reduce salinity levels by 80%.
The 24 inches of water may need to be applied to reduce salinity levels by 90%
It helps farmers to avoid salts to come up again on the surface of the soil.

Irrigation Agronomy



Irrigation Agronomy

Irrigation Agronomy

Drainage

- Ensuring good subsoil drainage may leach saline water under gravity, which can regularly remove salts accumulation in the root zone of the soil.
- Use of tillage implements like sub-soiler or chisel plow must be practiced every 2-3 years to break the hardpan of the soil to improve drainage.

Irrigation Agronomy

Halophytes

- Plants that tolerate an environment having high salt content.
- Use "**halophyte**" species locally available for cultivation as a new cash crop.
- **For example**, choosing crops like Canova or used saline-resistant rootstocks for vegetable grafting for vegetable production can minimize the detrimental effect of salinity.

- However, some fodder and pasture can be growth i.e. rood grass, barley, mood grass, etc. with saline water up to some extent of salinity.

Rood grass

Barley

Mulch

- As saline water evaporates from the soil it leaves behind salts.
- A good mulch under the crop helps reduce surface evaporation, maintains moisture near the soil surface and lessens the build-up of soil salinity.
- Therefore, the use of plastic mulches, rice and wheat straw mulches, sawdust mulches, etc. may be helpful.

Irrigation Agronomy

Irrigation Agronomy

Irrigation Agronomy

Irrigation Agronomy

Gypsum block

- Put gypsum blocks or stones in the watercourse while irrigating fields with saline water.
- It reduces salinity hazards. Gypsum blocks can be ordered at a very cheap price from QuaidAbad city near Khushab Pakistan.

Irrigation Agronomy

Organic matter

Irrigation Agronomy

- Incorporation of low salt containing organic matter such as peat or compost will also help to reduce the injurious effects of salts because the soil will be able to hold more water, and salt concentration will thereby be diluted.
- Therefore, use well-decomposed farmyard manure (FYM) or poultry manure or green manure on a consistent basis in crop rotation.

Irrigation Agronomy

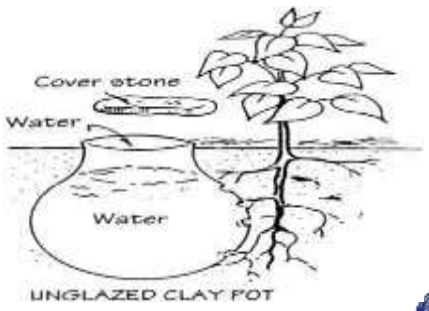
Pitcher or Pot irrigation system

- Pitcher or Pot irrigation system for horticulture crops, preferably for orchards and vegetables. i.e., chilies, tomatoes, graves, and mangos in a greenhouse as well as in fields may be one solution for high saline irrigation water. Please read more about it from the internet and YouTube.

Irrigation Agronomy

Irrigation Agronomy

Irrigation Agronomy

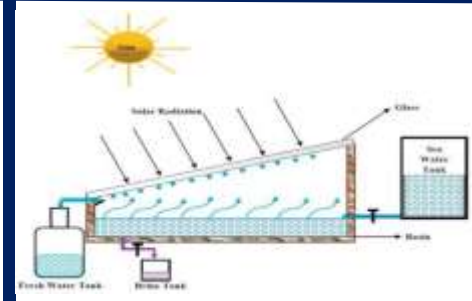


Irrigation Agronomy

Magnetic field treatment to saline water before an application can reduce salinity problems.

Solar desalination technique is done to reduce the salinity in water.

Irrigation Agronomy



Irrigation Agronomy

Why micro-irrigation is not suitable

- Micro-irrigation is not suitable if you are using highly saline water for irrigation.
- Using saline water in a drip or sprinkler irrigation system starts depositing calcium or salts precipitation on emitter opening resulted in clogging/closure.

Irrigation Agronomy

- Highly saline water will be more viscous, therefore pumping units installed for micro-irrigation setup will consume extra electricity to develop pressure required for uniform irrigation, contribute towards enhancing the cost of irrigation.

Irrigation Agronomy

- Moreover, we often need regular chlorification and flushing to micro-irrigation pipes which may cost us extra.
- Saline water deteriorates PVC pipes material quickly, resulted reduce the self-life of pipes.
- Therefore, micro-irrigation for heavy saline water will not an appropriate practice.

Irrigation Agronomy

Irrigation Agronomy

Irrigation Agronomy