

Surface Irrigation

- Most common type of irrigation in the world, used by ancient Egyptians.
- Also known as flood irrigation.
- Water arrives near fields via canals or ditches. Flood gates are opened to release the water into sections of the field or siphon tubes are used to bridge water from canal to field.
- Often uses furrows to contain water to sections of field to help direct water to the end of the field versus just seeping to the side and running off.
- Modern agriculturalists frequently laser levels fields using flood irrigation to a slight descending grade away from the water source. This allows gravity to help distribute the water to the end of the rows with very little runoff at the end of the field.

Pro:

- Does not require a lot of mechanical parts or technology.

Con:

- Requires a lot of water.
- Increased loss of water due to evaporation.
- Increased loss of water due to runoff if control measures aren't used.
- Requires more manual labor to open flood gates or set siphon tubes.
- Requires preparation of the land surface to create furrows and leveling to a slight slope for water to be used efficiently and reach all sections of the field.

Micro or Drip Irrigation

- Water is sent through plastic pipes that are laid along the crop rows.
- A tiny hole allows water to drip at the base of the plants.
- Most effective for fruits and vegetables.

Pro:

- Evaporation is reduced since water is slowly released and positioned to saturate the soil near the root zone.

Con:

- This method is costly as it requires a lot of planning and constant maintenance to fix tubes and unclog the openings.
- Increased manual labor in laying tubes at beginning of season and removing tubes before harvesting.

Overhead or Spray Irrigation – Hand and Wheel Lines

- Uses a pressurized system to spray water over a large area.
- A long tube is fixed at one end to a water source like a well or canal. Sprinklers extend from the tube for water distribution to plants across the field.
- Hand lines are laid on the ground between crop rows and then moved by hand to water the next section of the field. If a handline is mounted on wheels and uses a motor to propel it across the field versus the pipes being moved by hand it is called a wheel line.

Pro:

- Wheel line requires less manual labor than hand line.
- Can be used on most any terrain. Can adjust to uneven or rough land surfaces.

Con:

- Increased manual labor to move hand lines to different sections of the field.
- Increased loss of water due to evaporation.
- Wind can blow overhead spray off target.
- Runoff of water from field if overwatering.
- Hand and wheel lines take up a lot of space when stored over the winter.

Overhead or Spray Irrigation – Center Pivot System

- Large sprinkling system on wheels.
- Line of sprinklers “pivot” around a center point in a field. A control panel is mounted here that controls starting, stopping, changing direction, amount of water, and more.
- Electric motors move the frame in a big circle.
- Hoses drop from the overhead irrigation pipe to spray water closer to the plants.
- This method of irrigation is what creates green crop circles that can be seen from a plane.

Pro:

- Lower labor requirements compared to other systems once it is installed.
- Capable of also applying fertilizers and herbicides to fight pests and provide plants with needed nutrients.
- The framework is tall, so it can accommodate the growth of tall growing plants like corn. The hoses can be adjusted to different heights to allow for plant growth.
- Technology allows for control of Center Pivot using mobile apps on smartphones or computers.

Con:

- Initial purchase and installation is expensive.
- Loss of corner section of the field since the shape is a circle vs. the contour of the land. These can be developed to bring in pollinators or as wind breaks however.

Handout: Irrigation Method Cards
Nevada Agriculture and Water Series



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