

Irrigation 101

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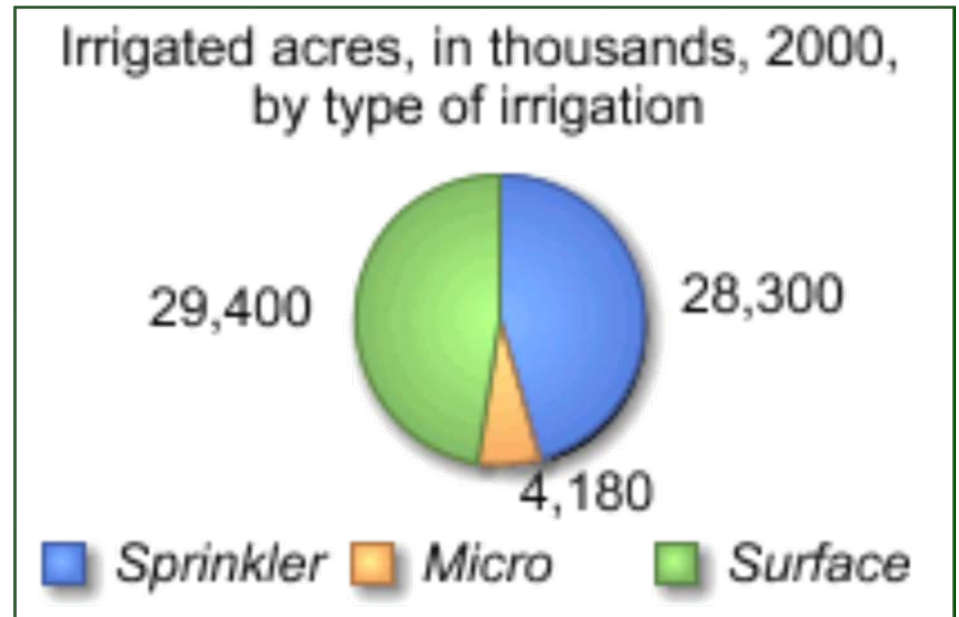
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- Types of Irrigation
- Physical Demands
- Potential Modifications
- Special Considerations with Irrigation

Types of Irrigation

- Surface (Flood -- Basin, Furrow, Uncontrolled)
- Sprinkler (Spray)
- Drip (Micro, Subsurface)



- Water is diverted from a ditch or pipe to flow over the field, either covering the entire field (basin/uncontrolled irrigation) or in trenches (furrow irrigation).
- Used primarily with field crops
- Extremely labor intensive
- Assumes at least 50% water loss due to evaporation, runoff, etc.

Water Source:

- Canal/Ditch (unlined, lined, covered/piped)
- Groundwater wells

Application of Water to Field:

- Open flood
- Furrows
 - Siphon tubes
 - Gated pipe





Surface Irrigation Tasks

- Setting Dams
- Moving Pipe
- Gates
 - Opening
 - Closing
 - Cleaning
- Canal Maintenance
- Field/Furrow Maintenance





Flood Irrigation – Setting a Dam

<https://www.youtube.com/watch?v=pMa4xpJijDw>

- Bending/Stooping
- Lifting
- Carrying
- Shoveling
- Balance
- Walking
- Slippery/Uneven Ground



Surface Irrigation Modifications

- Improve Leverage for Opening/Closing Gates
- Add Handles or Use Tools to Reduce Bending
- Add Walkways
- Reduce Walking/Carrying with Mobility Devices
- Upgrade Irrigation System



Sprinkler Irrigation

- Water is sprayed or sprinkled through the air like raindrops onto crops.
- Used with field crops and other types of production.
- Labor demands vary with method
- Assumes up to 35% water loss due to evaporation.



Sprinkler Irrigation Methods

- Pods
- Guns/Jets
- Hand lines



- Wheel lines
- Center Pivot
- Lateral
Move Pivot

- Moving Irrigation Equipment
- Attaching/Detaching Water Source
- Opening Closing Gates/Valves
- Equipment Maintenance/Troubleshooting
- Equipment Assembly





Sprinkler Irrigation – Moving a Wheel Line

<https://www.youtube.com/watch?v=RlwZgAlFlh4>

- Carrying
- Balance
- Walking
- Lifting/
Pulling
- Bending/Stooping
- Upper Body Strength
- Slippery/Uneven Ground



- Improve Leverage for Opening/Closing Gates/Valves
- Push Bars on Vehicle to Move Equipment
- Add Movers (Remote Start)
- Reduce Walking/Carrying with Mobility Devices
- Upgrade Irrigation System





Drip Irrigation



- Water delivered through pipes directly to plant roots.
- Useful for vegetable or orchard production
- Labor intensive at start up and in maintenance; more expensive than other systems
- More efficient than flood or sprinkler systems (80-95%)

➤ Filtration System with Drip Lines



Drip Irrigation Tasks

- Design and Set Up System
- Monitoring System/Cleaning Filters
- Opening Closing Valves
- Equipment Maintenance
- Equipment Assembly





Drip Irrigation System in Onion Field

<https://www.youtube.com/watch?v=it8EJw7cGnk>

Drip Irrigation System in Orchard

<https://www.youtube.com/watch?v=hlQnQgcFujE>



Drip Irrigation Physical Demands

- Carrying
- Balance
- Walking
- Lifting/
Pulling
- Bending/
Stooping
- Fine Motor Movement
- Uneven Ground





- Improve Leverage for Opening/Closing Valves
- Ergonomic Tools for Fine Motor Activities
- Reduce Walking/Carrying with Mobility Devices
- Reduce Bending/Stooping with Seating



- Water Sources
- Water Rights
- Working with Natural Resources Conservation Service (NRCS)
 - National Water Quality Initiative (MWQI)
 - EQIP grants



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