

TOPIC 5.5

Irrigation Methods

SUGGESTED SKILL

 *Environmental Solutions*

7.C

Describe disadvantages, advantages, or unintended consequences for potential solutions.

**AVAILABLE RESOURCES**

- Classroom Resource > [Agriculture and the Nitrogen Cycle](#)

Required Course Content

ENDURING UNDERSTANDING

EIN-2

When humans use natural resources, they alter natural systems.

LEARNING OBJECTIVE

EIN-2.E

Describe different methods of irrigation.

EIN-2.F

Describe the benefits and drawbacks of different methods of irrigation.

ESSENTIAL KNOWLEDGE

EIN-2.E.1

The largest human use of freshwater is for irrigation (70%).

EIN-2.E.2

Types of irrigation include drip irrigation, flood irrigation, furrow irrigation, drip irrigation, and spray irrigation.

EIN-2.F.1

Waterlogging occurs when too much water is left to sit in the soil, which raises the water table of groundwater and inhibits plants' ability to absorb oxygen through their roots.

EIN-2.F.2

Furrow irrigation involves cutting furrows between crop rows and filling them with water. This system is inexpensive, but about 1/3 of the water is lost to evaporation and runoff.

EIN-2.F.3

Flood irrigation involves flooding an agricultural field with water. This system sees about 20% of the water lost to evaporation and runoff. This can also lead to waterlogging of the soil.

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LEARNING OBJECTIVE**EIN-2.F**

Describe the benefits and drawbacks of different methods of irrigation.

ESSENTIAL KNOWLEDGE**EIN-2.F.4**

Spray irrigation involves pumping ground water into spray nozzles across an agricultural field. This system is more efficient than flood and furrow irrigation, with only 1/4 or less of the water lost to evaporation or runoff. However, spray systems are more expensive than flood and furrow irrigation, and also requires energy to run.

EIN-2.F.5

Drip irrigation uses perforated hoses to release small amounts of water to plant roots. This system is the most efficient, with only about 5% of water lost to evaporation and runoff. However, this system is expensive and so is not often used.

EIN-2.F.6

Salinization occurs when the salts in groundwater remain in the soil after the water evaporates. Over time, salinization can make soil toxic to plants.

EIN-2.F.7

Aquifers can be severely depleted if overused for agricultural irrigation, as has happened to the Ogallala Aquifer in the central United States.