

## TASK E8: Irrigation

1: In an arid area such as this most crops will require some form of irrigation. Study the information in Figure E15: (Types of Irrigation).

2: If you were are a Bedouin living in the village of al-Makaftah. You have a large extended family and have the rights to extensive land in and around the village. What sort of irrigation would you choose for the each of the following. Give reasons for your choices:

- a: a few olive trees for family use
- b: a fruit farm
- c: vegetables for local and market use
- d: flowers for the Amman and overseas market

3: Which of the following would you consider appropriate/inappropriate for cultivation in the Badia? Give reasons for your choices and state what water source and irrigation method you would use:

- |                 |                 |
|-----------------|-----------------|
| a: dairy cattle | e: potatoes     |
| b: merino sheep | f: rice         |
| c: water melons | g: camels       |
| d: wheat        | h: tourists (!) |



Fig. E16: The Dayr Al-Kahf Camel Farm, east of Umm Al-Quttayn.

Fig. E15: Types of irrigation

Type of Irrigation:	Description:	Water Source:
<b>Centripivotal irrigation:</b>	The water rises through a central pivot (CP) around which wheeled arms up to 200m long rotate around the field spraying water from overhead. <b>Disadvantages:</b> Uses large amounts of water; wasted ground in between CP's (circles do not fit well together); high evaporation loss; expensive to set up. <b>Advantages:</b> liquid fertilizers can be delivered direct to the crop. See Fig.E17.	Mains or pumped from well.
<b>Drip Feed irrigation:</b>	Lines of pipes are laid along the ground. Nozzles deliver water direct to the plant. <b>Disadvantages:</b> cost of initial outlay. Needs large machinery for cultivation. <b>Advantages:</b> minimal evaporation loss; liquid fertilizers can be delivered direct to the crop; readily controlled. See Figure E18 and Case Study (Al At'al Fruit Farm)	Mains or pumped from well.
<b>Circular bunds:</b>	Soil around the base of a tree is raised to allow water to be held immediately for the use of that tree. Often used in conjunction with drip-feed. <b>Disadvantages:</b> needs regular maintenance; cannot deliver fertilizer. <b>Advantages:</b> water provided direct to tree. See Figure E19.	Harvested water or pumped from well*
<b>Channel irrigation:</b>	Water is diverted into fields through channels and directed to where needed. <b>Disadvantages:</b> requires regular manual attention; high evaporation loss; higher risk of salt accumulation; individual plants may not get the water they need. <b>Advantages:</b> simple to construct and operate; low overheads. See Figure E20	Harvested water or pumped from well*
<b>Plastic sheeting:</b>	Rows of crop are overlain with sheets of black plastic. Moisture released in photosynthesis recycles naturally to the soil. <b>Disadvantages:</b> fertilizers not so easily applied (unless used in conjunction with drip-feed); often left in place after use; lack of vegetation cover increases soil erosion risk (wind). <b>Advantages:</b> uses less water. See Figure E21.	Harvested water or pumped from well*
<b>Polytents:</b>	Semi-circular plastic tents allow heat and prevent moisture loss. <b>Disadvantages:</b> very high humidity makes working conditions difficult; no good for extensive crops. <b>Advantages:</b> uses least water; enables repeated crops; easy plant management. See Figure E22.	Harvested water or pumped from well  *(sometimes illegally)



**Fig. E17: Centripivotal irrigation for potatoes on the Rum Farm, Disi, S. Jordan**

**Fig. E18: Drip-Feed irrigation for grapes on the Rum Farm, Disi, S. Jordan**





**Fig. E19: Bund irrigation for vegetables, Aqaba, S. Jordan**

**Fig. E20: Channel irrigation system for fruit trees, Dana, west central. Jordan**





**Fig. E21: Abandoned plastic sheeting for tomatoes & aubergines, Sabha, NE Badia**

**Fig. E22: Polytents for horticulture in the Jordan Valley, N. Jordan**

