

# Technologies for Small-Scale Irrigation for Horticulture

*Irrigation technology summaries from the Innovations in Dry Season Horticulture Project in Uganda*

## Raised and terraced main canal

A main canal for feeding water into irrigation furrows, which is raised above the level of the field to allow easier control of water into furrows. The canal is terraced to have a minimal slope in each section of the canal. This is done to ensure an even distribution of water through discharge points in along the canal. Spiles are inserted into the sides of the canal to divert the water to the plot.

Benefits include:

- Easy control of water into furrows
- No moving of soil, which can damage furrows and canals
- Good uniformity of flow into each furrow
- Little labor required during irrigation
- Can be used in areas with easily eroded soils



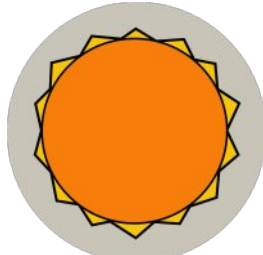
## Conditions for using a raised and terraced main canal

**Crops**  
*Most vegetables*



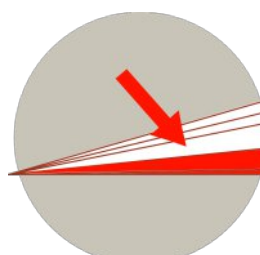
*Appropriate for most vegetable crops, bananas, and other tree crops*

**Seasons**  
*Dry season*



*Best for dry-season vegetable cultivation*

**Slope**  
*Mild to moderate*



*Mild slopes allow for best control of irrigation; faster erosion of furrows and beds can result in steeper sloped areas*

**Water Supply**  
*Various*



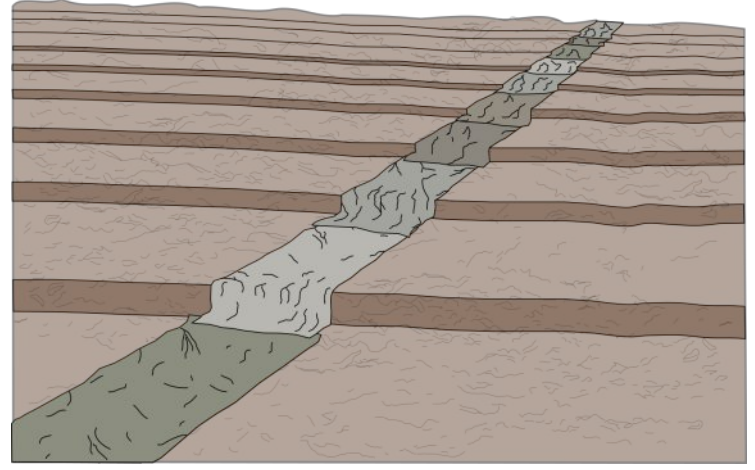
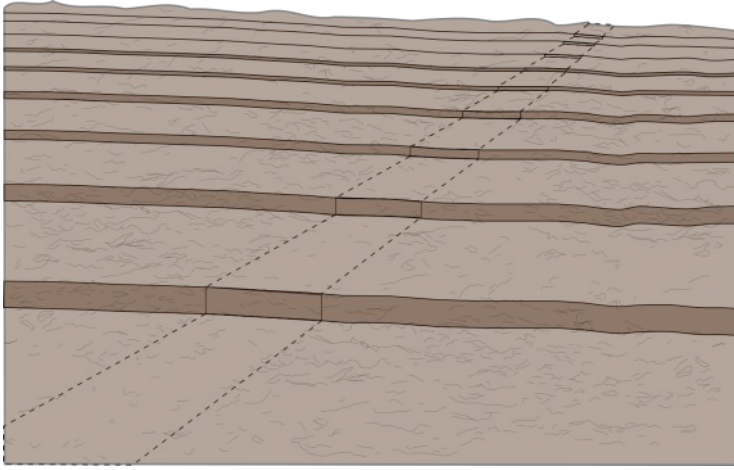
*Most viable in areas downslope of water supply – e.g. stream diversion, valley fringe with natural springs, dam*

## Innovations in Dry Season Horticulture Project

The Innovations in Dry Season Horticulture Project engages in participatory research and development with women and smallholder farmers in Uganda to improve irrigation systems, working within the local context and with a focus on gender issues. Find out more at [www.hortirrigation.org](http://www.hortirrigation.org).

*The Innovations in Dry Season Horticulture Project is supported by the Horticulture Innovation Lab and the Global Center for Food Systems Innovation with funding from the U.S. Agency for International Development, as part of the U.S. government's global hunger and food security initiative Feed the Future.*

# Building and using a raised and terraced main canal



**1. Identify the main slope and cross slope of land.**

**2. Adjust the cross slope of land** to be as level as possible. If it is not possible to flatten the cross slope, terrace along contour lines.

**3. Make flat terraces** every 6 to 20 meters down the main slope; wider terraces can be made on mild slopes.

**4. Identify a high point** along the cross slope at which to place the main canal. If there is no cross slope, select preferred position for canal.

**5. Mark the width of the main canal** running down the main slope.

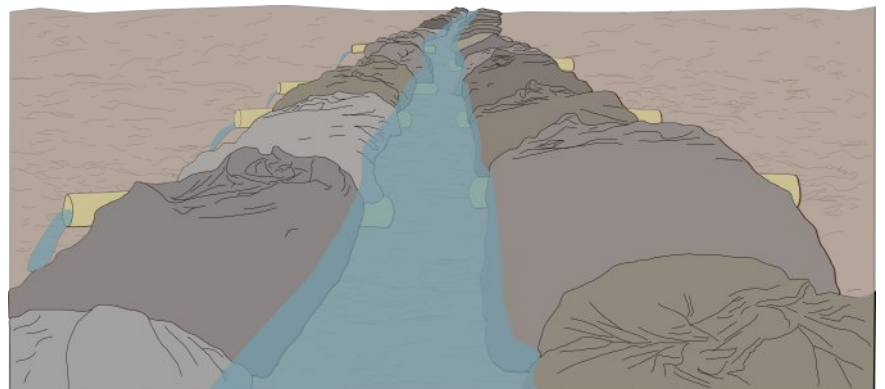
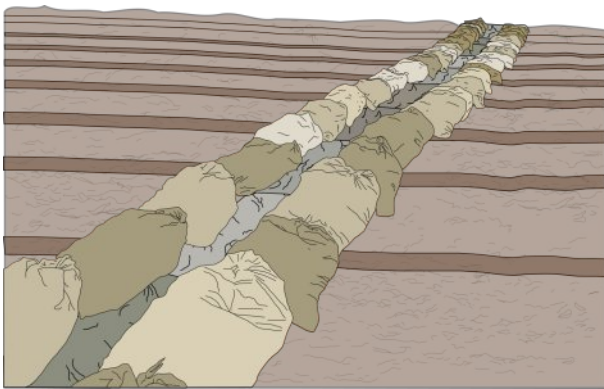
**6. Compact and flatten** the bottom of the canal within each terrace, leaving a short drop at the end of each terrace.

**7. Line the bottom of the main canal** with plastic sheet or another lining to prevent erosion.

**8. Lay sand bags or compacted soil as walls** along the sides of the canal to raise the water level above the plots.

**9. Fit spiles into the canal walls** over each terrace

**10. To operate, block the opposite end of each terrace and open spiles** to deliver water to the plot.



## Limitations and Challenges

- Need for careful leveling of terraces
- Yearly re-leveling of soil in bottom of canal is recommended to maintain good water uniformity to all spiles
- Making canal walls requires a significant amount of labor, especially if using sand bags (required for loose, sandy soil)
- If spiles are left open without monitoring, plots can become waterlogged

