

# Technologies for Small-Scale Irrigation for Horticulture

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

## Micro Basins

Small basins for quick application of large irrigation depth

Micro basins are flat, elevated sections of the field surrounded by soil bunds that hold water inside. These allow users to apply large depths of water in a short time, which will slowly infiltrate into the crop's root zone as the water is held inside the basin by the bunds.

Benefits include:

- Allows quick application of large irrigation depth
- Low cost of equipment required compared to other methods
- System does not require high water pressures
- Enables a long interval between irrigations



## Conditions for using micro basins

### Crops

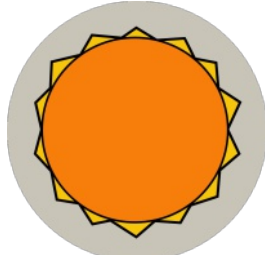
*Most vegetables*



*Micro basins are appropriate for most vegetables; however, fungal disease is likelier in some crops*

### Seasons

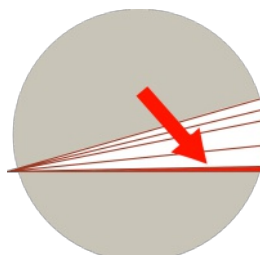
*Dry season*



*Can enable dry-season production of vegetables, but may lead to water-logging in rainy seasons*

### Slope

*Mild*



*Constructing on a slope less than 2% reduces labor requirement and minimizes erosion of basins*

### Water Supply

*Piped or canal*



*Micro basins can be irrigated with various water supplies; manual irrigation is also appropriate for small basins*

## 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).

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# Building and using micro basins

1. Plow the field well to a moderate tilth. Identify the contour of the field, and mark out a rope following a flat contour.

3. Dig a trench along the rope, and lay soil in a bund on the upslope side.

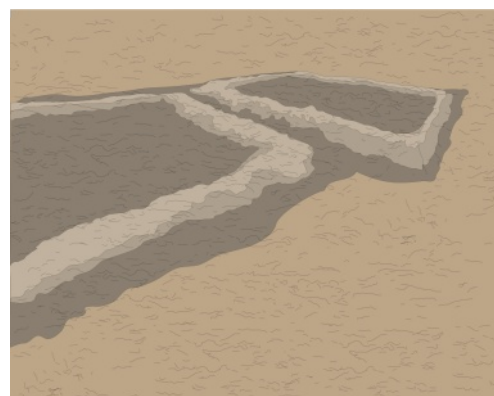
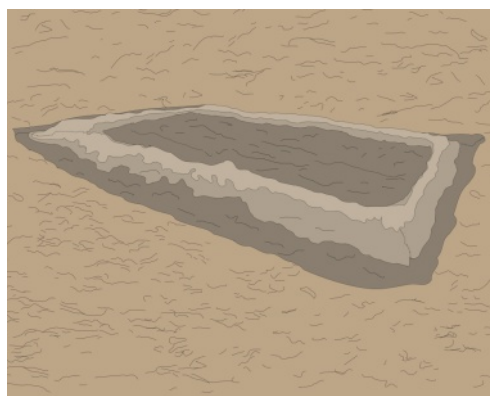
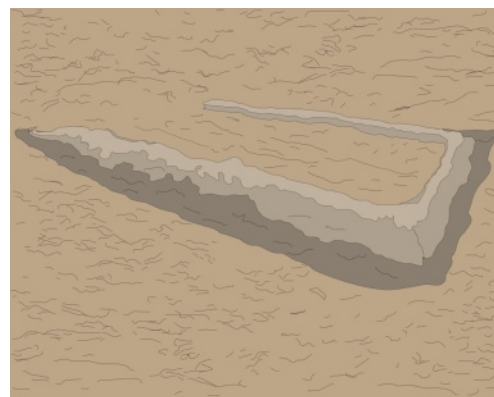
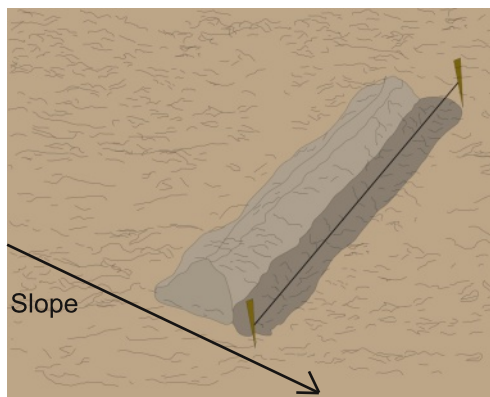
4. Dig 2 trenches perpendicular to the first bund spaced 3-5 meters from each other. Lay the soil in bunds to the inside of each trench.

5. Dig a final trench parallel to the first, completing a rectangular shape, and lay this soil in a bund towards the inside.

6. Level the space inside the bunds by eye, and add soil to the bunds to strengthen them.

7. Add water to fill the basin to 5 cm depth to identify any raised and lowered places inside the basin. Level the basin until water is standing evenly.

9. Repeat these steps for all basins to be made, repositioning the rope as needed.



## Limitations and Challenges

- High labor requirement for constructing basins
- Once made, plowing the entire field will destroy basins; basins should be made permanently and only re-shaped by hand
- Can result in moderate pressure for fungal disease in susceptible crops such as tomato
- Can waterlog in rainy seasons; openings in bunds must be made to allow excess water to drain during rain

