



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



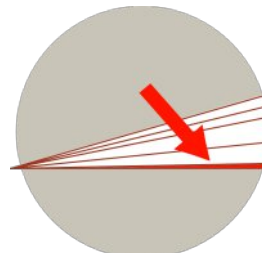
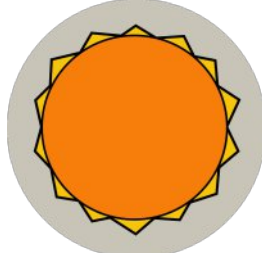
Conditions for using micro basins

Crops
Most vegetables

Seasons
Dry season

Slope
Mild

Water Supply
Piped or canal



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

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

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

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.

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 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.

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

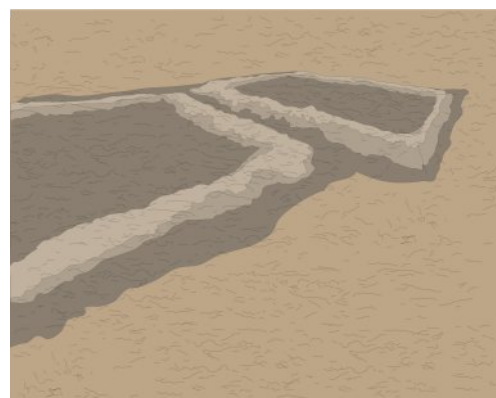
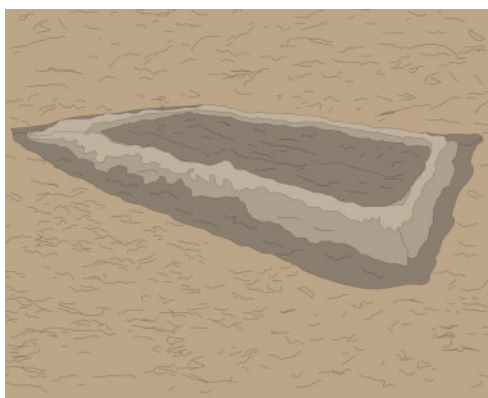
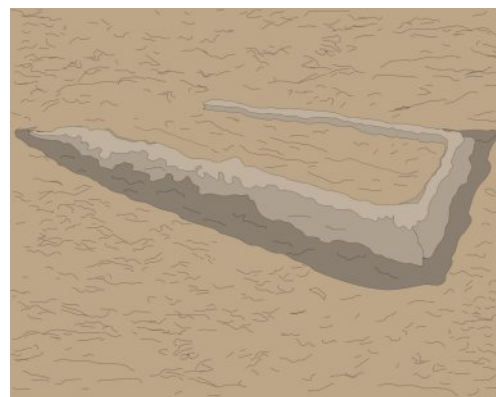
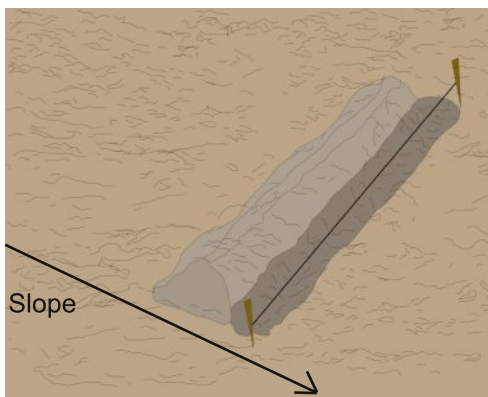
3. Dig two trenches perpendicular to the first bund and spaced 3-5 meters from each other. Lay the soil in bunds to the inside of each trench.

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

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

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

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



Limitations and Challenges

- Constructing basins can be labor-intensive compared to other irrigation methods
- Once made, plowing the entire field will destroy basins; basins should be made permanently and only re-shaped by hand
- Can lead to moderate pressure by fungal diseases in certain susceptible crops, such as tomato and eggplant
- Can waterlog in rainy seasons; openings in bunds must be made to allow excess water to drain during rain

