

Installation guide for harvesting rainwater from high tunnels

This rainwater harvesting guide from high tunnels (rainwater catchment tool) was written after the completion of a SSARE grant project during 2024-2026 (Project Number: FS24-360). The grantee, Natural & Local LLC based in Cary, NC completed the project. The guide was written based on the rainwater catchment tool installed by Natural & Local LLC based on prevailing situation on the farm and available materials at that time. This guide and materials can be modified based on local circumstances. Natural & Local LLC and SSARE do not warrant any success or take liability for anyone installing rainwater catchment tool using this guide.

Lit of materials

Materials	2024 price (\$)
200ft vinyl gutters, end caps, support brackets, and connectors	320
Plastic water tanks, 550 gallonsx2	2279.70
45PSI 4.0 GPM Self-priming 115V AC Diaphragm Pump	85
300W Portable Power Station with Foldable 60W Solar Panel	300
¾" brass threaded hose fittings, splitter, and Teflon tape	75
4" Greenhouse tape to cover wiggle wire channel (2 rolls)	50
Spigot fittings and silicon for each tank	30
¾" Garden hose and splitter to connect tanks	25
¾" hose threaded water filter	15
1 1/4" exterior wood screws	20
T-postsx2	5
Window screensx2	5

This rainwater catchment tool guide and the materials given above are for a 16 ft x 100ft high tunnel supplying water to a drip irrigation inside the high tunnel. It is assumed that the high tunnel already exists on which this rainwater catchment tool can be installed.

1. Place the water tanks on either side of the high tunnel such that the opening is closest to the end of the high tunnel. It is assumed that there is an incline from one end of the high tunnel to the other such that the water from the high tunnel runs to the lower end of the high tunnel through the gutters. Place the water tanks at the lower end of the high tunnel for this reason.



2. Install the window screen on the openings of the water tank using screws. This is to avoid large pieces of materials and insects getting into the water tanks.



3. Install the gutters on both sides of the high tunnel on existing hip boards using gutters, support brackets, connectors and 1 1/4" exterior wood screws (about 3 ft apart). If you expect snow in your area, you can put screws closer than 3 ft. Extend the gutter so

Natural & Local is a small urban farm for Asian vegetables, herbs and ethnic plants in North Carolina, USA. Contact naturalnlocal@gmail.com for more information.

that the end of the gutter is over the opening of the plastic tanks on either side of the high tunnel. Make sure that there is an incline in the gutters so that they drain the water to one side of the tunnel. Put a T-post between the water tank and the high tunnel hip board on both sides to support the gutters.



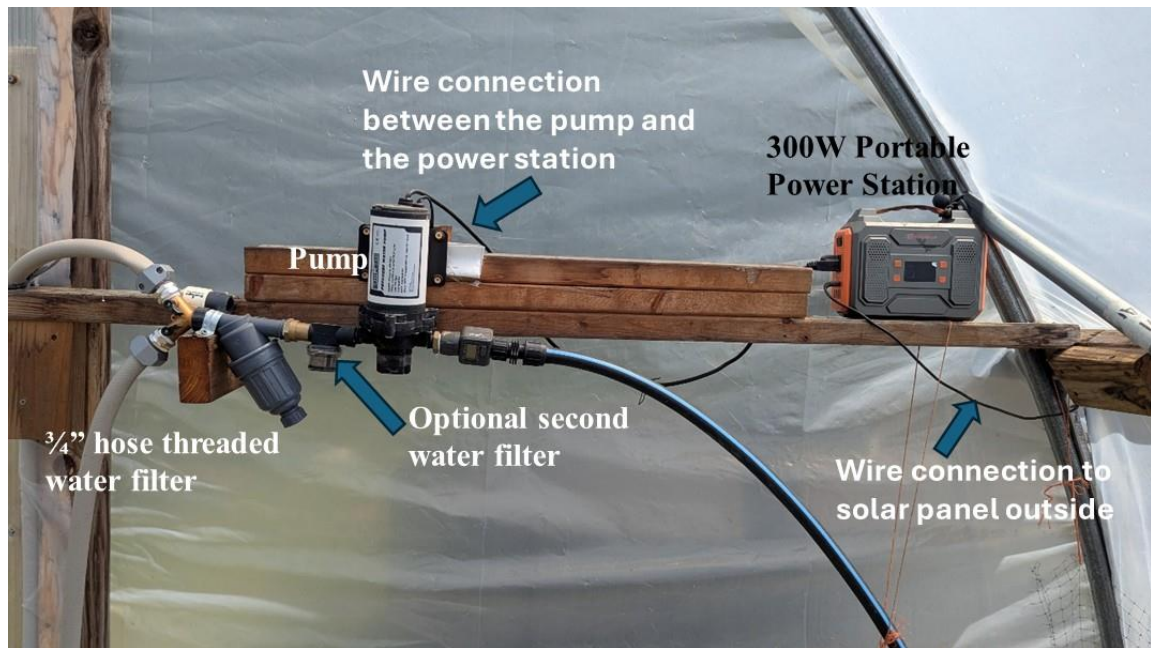
- Put the greenhouse tape over the installed gutter and to the high tunnel plastic so that the gap between the gutter and the high tunnel plastic is sealed for all the rainwater to flow into the gutters.
- Put spigot on each water tank using spigot fittings and silicon to make it water tight.



- Connect both spigots from the tanks using $\frac{3}{4}$ " garden hose and splitter to $\frac{3}{4}$ " hose threaded water filter. Attach this assembly onto a wooden board inside the high tunnel as shown below.



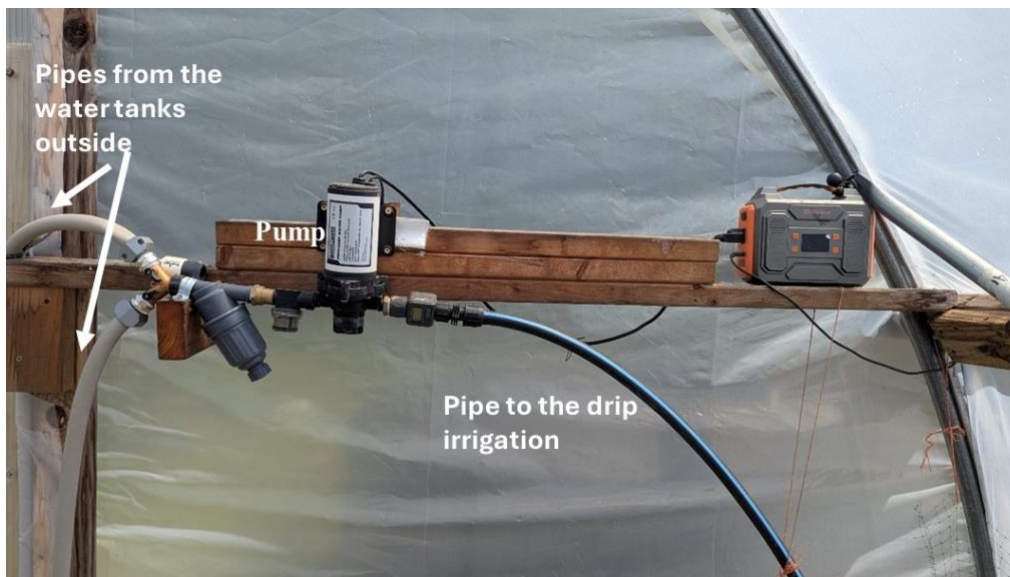
- Fix the 45PSI 4.0 GPM Self-priming 115V AC Diaphragm Pump and the 300W Portable Power Station on a wooden board inside the high tunnel. Make sure that the power station is shaded during sunny days to extend the battery life.



8. Connect the $\frac{3}{4}$ " hose threaded water filter to the pump as shown in the picture above. You can put an optional second filter between the threaded water filter and the pump.
9. Place the Foldable 60W Solar Panel outside the high tunnel in a sunny spot. Connect the power station to the solar panel and the pump with the provided wire connectors.



10. Connect the water outlet of the pump to the irrigation system.



11. Make sure that the battery is fully charged before starting the self-priming the pump.

12. The rainwater catchment tool installed using the above listed materials and guide worked without any issue for two years at the time of writing of this guide.