Wicking Bed

Presented by:

Pat Scott

Wicking Bed

- Wicking beds are a unique and increasingly popular way to grow vegetables. They are self-contained raised beds with built-in reservoirs that supply water from the bottom up - changing how, and how much, you water your beds. In this workshop, we'll talk about how wicking beds work and why we love them.

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How Wicking Beds Work

- A wick works through capillary action – the same force you observe when you dip a piece of paper towel partially into a glass of water and watch the water climb the paper. Wicking occurs in many materials; cotton, wool, geo-textile, soil, gravel and even wood to some degree. Every material has different wicking properties which you can test by placing that material into a glass of water and watching the water “climb” up.

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- When one end of the wick is saturated and the other end is dry, it creates a moisture gradient, which drives the wick until the gradient no longer exists or you run out of water. As the plants use the moisture in the soil, it creates a moisture gradient (the soil is drier than the reservoir) which drives moisture through the wick into the soil. The physical limit for water wicking up into a soil with lots of organic matter is about 12".

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Advantages of Wicking Beds

- Wicking beds have a lot of advantages over standard raised beds and in-ground gardens:
  - They are water-efficient! Watering from the bottom up prevents evaporation of surface water (which occurs when you water beds from the top).

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- They are self-watering. A full wicking bed should irrigate itself for about a week. No evaporation means no salting of soil. If you are watering your soils from the top with hard water, you risk accumulating salts, because the water evaporates and leaves the minerals behind. Eventually your soil will struggle to support plant life.

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- You can easily make them into mini-greenhouses (see example on last slide).
- They are great for people with less mobility and strength as you don't have to haul heavy water containers; they're raised so it's easier to plant & harvest, and there are fewer weeds and insects. The few weeds that blow in are easily pulled up.

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- By using an intermediary tank, you can automate the watering process (put a float in the tank).
- They're more-or-less portable. Since you're not digging up the yard for a garden, renters can move them by taking them apart, bagging the soil & gravel, and setting them up at a new location.
- Since they're raised, you don't have to dig below grade. If you're sitting on rock with a 1/2" of top soil , you don't have to use dynamite to plant a tomato.

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Disadvantages of Wicking Beds

- They cost more to install than in-ground and standard raised beds.
- In a long, cold winter (somewhere much further north than San Antonio) , they may freeze sooner in the winter than non-raised beds. *Note* I've been growing with raised beds for 4 years and have found that the gravel seems to act as a heat sink.

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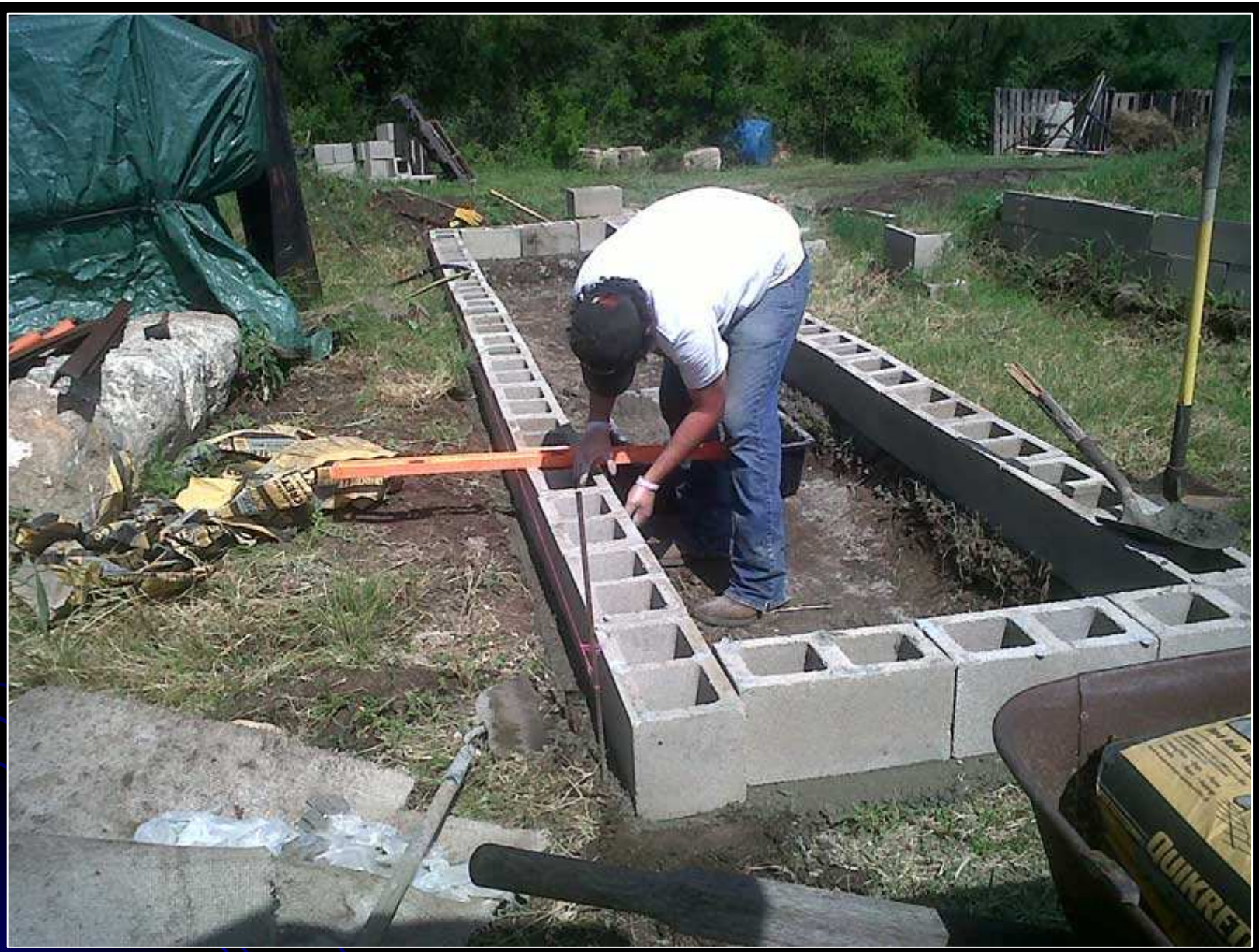
- I had tomatoes in January growing in the wicking bed when the tomatoes planted in the ground were frozen.
- There are some plants that seem to prefer dryer conditions. Lavender and Mediterranean herbs probably would not do well in a wicking bed.
- The soil used in the wicking beds **must** have a high level of organic matter and be friable. Soil much like a good potting soil needs to be used (you can make your own, you don't have to use bagged potting soil).

Start with a small mountain of pea gravel and a hole in the ground.

Very few tools are needed.



The bed starts 10" below grade. Newer beds are not below grade allowing them to be drained.

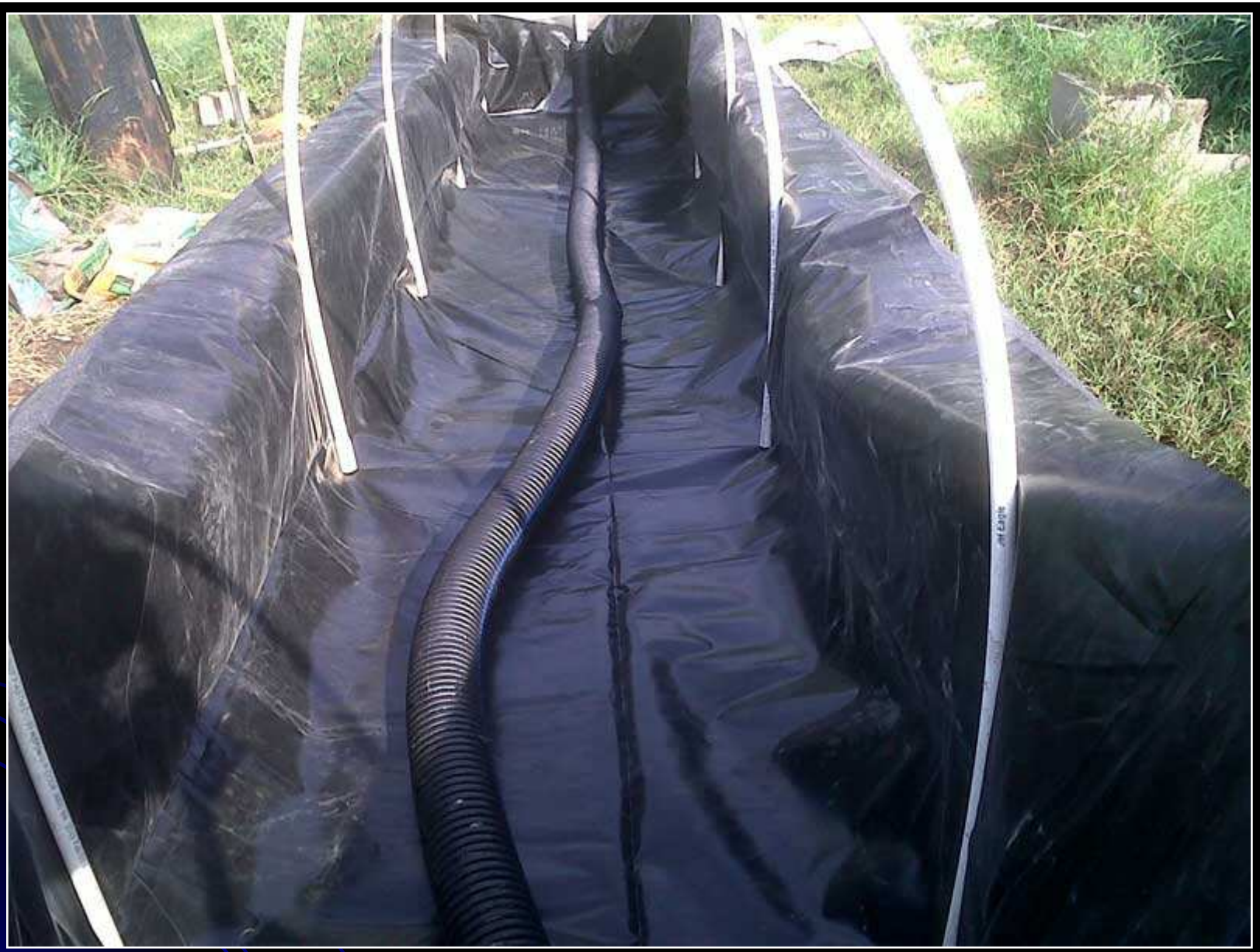
First row of retaining wall completed using 8” x 16” cinder blocks

Building second row of retaining wall

Getting everything level is probably the most important (and difficult) part of the project.

The bottom layer is weed cloth. The next layer is used carpet that forms a pad below the liner.

The liner is installed using PVC hoops to temporarily hold it against the retaining walls.



Cover carpet with waterproof liner. Hoops of PVC temporarily hold in liner in place.

Fill pipe is 4" perforated, flexible, drain pipe laid in the bed.

The fill pipe is covered with pea gravel.

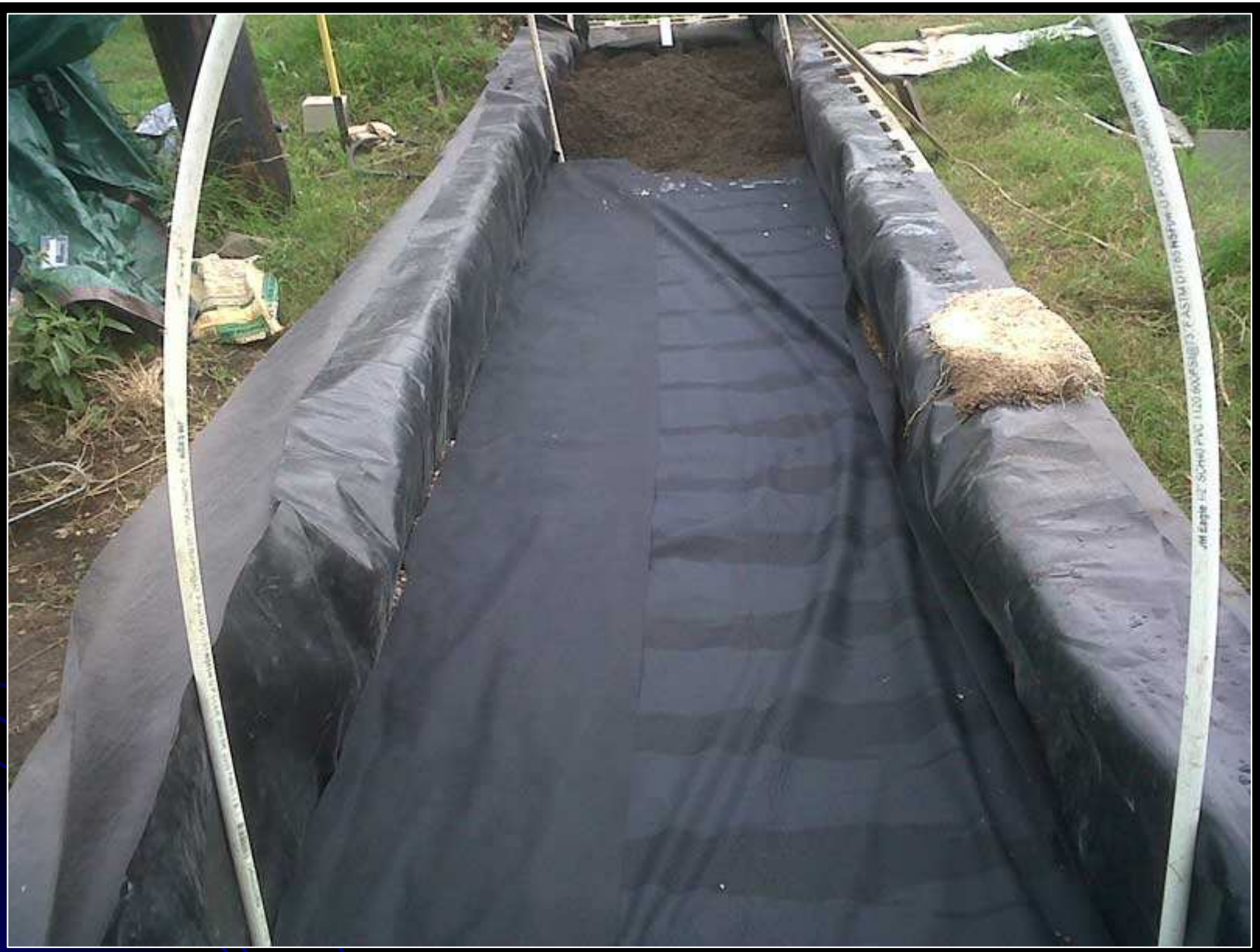
Make sure you have enough fill pipe to turn up at end, through the gravel as shown above, or:

- Cap both ends of perforated pipe,
- Cut a hole large enough to accommodate a piece of 1-½” PVC in the top of one end,
- Notch one end of the PVC,
- Insert the notched end into hole in the top of perforated pipe,
- Apply silicon glue to hold in place.

The pea gravel should fill the bed to approximately 12" below the top of the retaining wall.

Level the surface of the pea gravel.

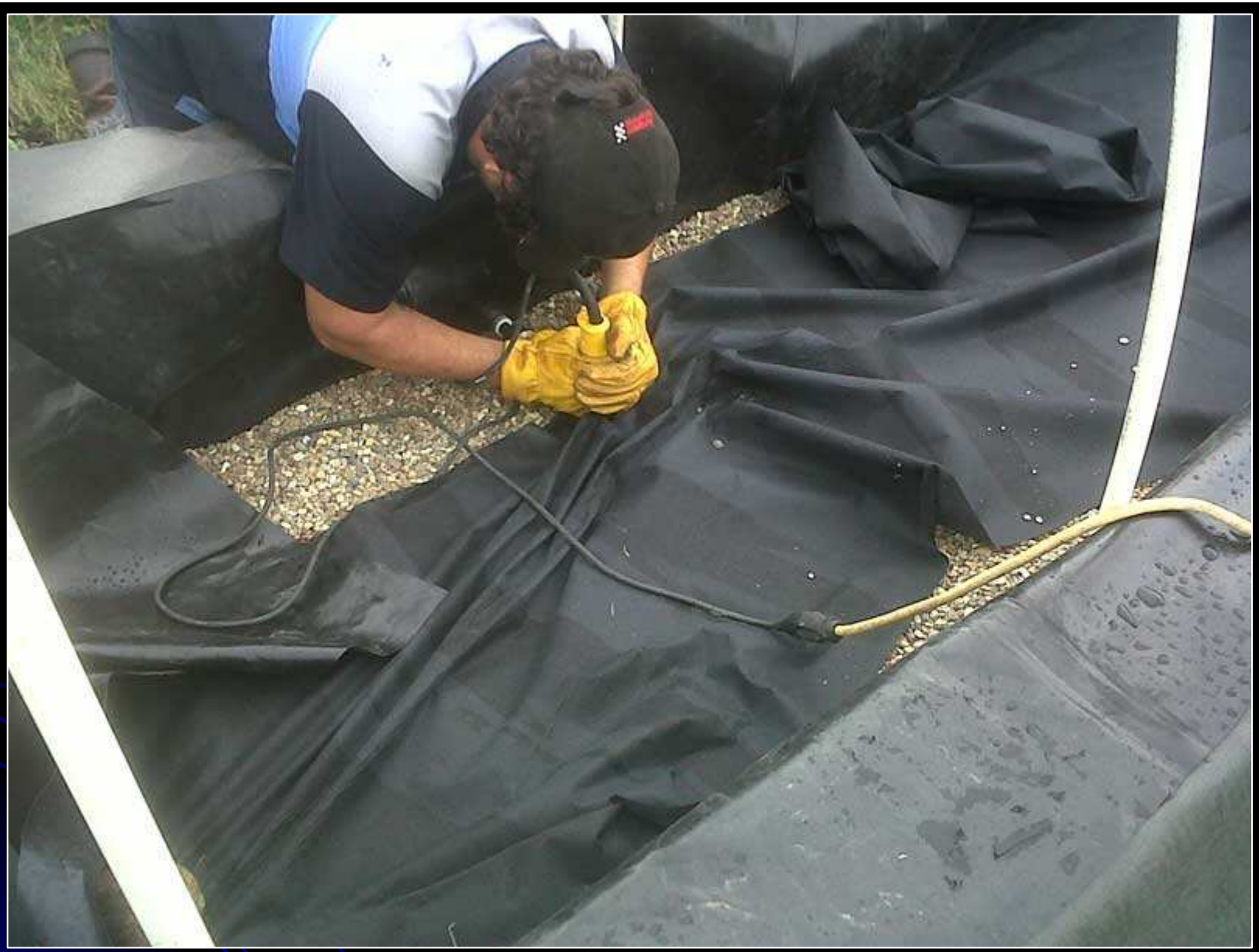
Take time out to admire your work.



Install a layer of weed cloth over the pea gravel.

PVC hoops temporarily hold the liner and weed cloth in place

Drill a ¾" drain hole immediately above the top level of the pea gravel.



Another view of the drain hole

¾" PVC in drain hole. Use 2 drains in a 20’ bed.
Use fill pipe until water runs from drains.

Fill bed with soil, to top of retaining wall. 2” caps on top of walls allows room for mulch.

Completed bed except for caps on retaining walls.

The bed has been covered with 4" sq stock panels to keep digging dogs out.

Water directly, from top, until roots can reach damp soil.

More finished product less retaining wall caps

Six month old asparagus

PVC pipe is used to support the cover in cold weather. This is <u>one</u> 4 month old tomato plant.