Building a Field Shade Canopy

CHUCK & CAROL STIFF

Bald Butte Lavender Farm

BBLF is located between Pullman and Colton in Whitman County in southeastern Washington. Our mission is to provide our customers with sustainably, locally grown lavender products, plants, and hand-made crafts with friendly personal service and excellent follow-up support.

Farming is a physically demanding labor intensive job. We plant, harvest, and prune lavender in open fields that typically receive at least 8 to10 hours of full sun per day. The following presentation describes how we built a portable field shade canopy that provides us protection from harmful ultraviolet rays and reduces the intensity of heat from direct sunlight.

Project Materials List

1. (1) 8x8x9 foot Everbuilt straight leg canopy pop up tent from Home Depot
2. (2) 26-inch front bicycle tires
3. (5) 1 ½-inch x 10-foot PVC Schedule 40 DWV pipe
4. (4) 1 ½-inch Schedule 40 4-way cross PVC connector elbow pipe fitting
5. (2) 1x2-inch 8-foot pine boards
6. (1) 1x4-inch 8-foot pine board
7. (2) bicycle tire hub skewers
8. (2) 6 x ½-inch steel bolts
9. (8) 3 x ½-inch steel bolts
10. (4) 2 x ½-inch steel bolts
11. (2) 4 x ½-inch steel bolts
12. (16) ½-inch nuts
13. (32) ½-inch washers

The list above includes materials we used to build our 8x8x9-foot portable field shade canopy. The canopy was designed to provide us protection from the sun while working in our lavender fields. To accomplish our goal, the canopy was built to fit over and between the planted lavender rows, and to easily move from plant to plant within rows and between fields.

Some of the materials utilized were from previous projects, while others were purchased for this project from local retail stores.

Project Materials

8x8-foot Canopy

26-inch Bicycle Tire

Our Everbuilt 8x8X9-foot straight leg canopy pop up tent was purchased at the Home Depot. The independent controlled canopy legs have two parts, a fixed outer upper leg and an adjustable inner lower leg. Canopy height is adjusted using a push button located on the upper leg to raise or lower the inner leg to three heights. The tent is collapsible for convenient off-season storage.

The 26-inch bicycle tires were purchased from a local thrift store which sells all sorts of used goods. The tires were re-furbished at a local bicycle store, who replaced the inner tubes and provided hub skewers for installing the tires on hand-made forks.

Assembled Canopy Frame

8x8-foot Canopy Frame

4-Way Corner Connector

We assembled the 8x8-foot canopy frame using four 1½-inch x 10-foot Schedule 40 PVC pipes which were cut into 8-foot lengths and then joined using four-way cross PVC connector fittings. The straight Everbuilt canopy legs fit through the four-way corner connectors after removing the feet from all four canopy legs. With the lower inner legs fully extended downward the canopy frame can be raised 31-inches before reaching the push button located on the outer upper leg.

Canopy Frame Front Legs

Canopy Frame w/o Legs

Canopy Frame with Legs

Our last 1½-inch x 10-foot Schedule 40 PVC pipe was cut into two 31-inch pieces to serve as the canopy's stationary front lower leg supports. Before installing the front lower leg supports all four of the canopy's lower legs were fully extended. Then the canopy's frame was raised to the push buttons on the two outer upper front and rear legs. The 31-inch PVC pieces were slipped over the canopy's extended inner lower front legs, and a flexible hose clamp was attached to prevent the canopy frame from lowering. Temporary clamps were also placed on the two rear canopy legs to hold the canopy frame level and prevent it from lowering.

Installed Canopy Tires

Hand-Made Fork Assembly

Hand-Made Fork Assembly

The next step was to build two hand-made forks for the canopy's bicycle tires. The forks were built using 1x2-inch pine boards. For both tires the two vertical members were 22-inches in length, and the two diagonal braces 25¼-inches long. The vertical members were attached to the PVC frame 14-inches in front of the canopy's frame rear corners using 6 x ½-inch bolts with ½-inch spacers. Holes were located and drilled in the vertical boards to level the canopy frame when installing the tires with skewers. The diagonal braces were attached to the frame using 4 x ½-inch bolts and the vertical boards using 2 x ½-inch bolts to stabilize and hold the vertical boards perpendicular to the canopy's frame.

Re-Inforced Canopy Frame

Canopy Corner Brace

Canopy Corner Brace

The canopy's frame was stabilized and reinforced using 24-inch long 1x4-inch boards attached to the corners of the PVC frame using 3 x ½-inch bolts. The lower inner rear legs were no longer required to level and stabilize the canopy's frame, and therefore, were raised into the upper outer legs.

Portable Shade Canopy

Shade Canopy in Field

Shade Canopy in Field

When harvesting lavender during June and into August the completed portable shade canopy provided us the protection we needed from harmful ultraviolet rays and reduced the intensity of heat from direct sunlight.