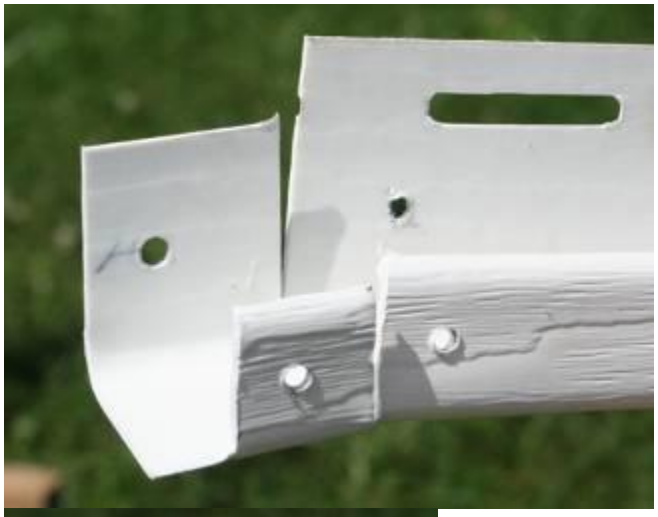
Components and Assembly of a Cornell Vertical Patternator

Window screen and water catch gutter

Aluminum window screen frame of choice with fine mesh nylon screen material

Water catch gutter is attached with screws to window frame with a slope to the water drain
Holes are drilled in top of frame so frame can be hung on screw type square bend hooks
Screens may be constructed to any size desired by purchasing the screening components in the local Hardware or Home and Garden store and

Water catch gutter fabricated from vinyl 5/8" "J" channel



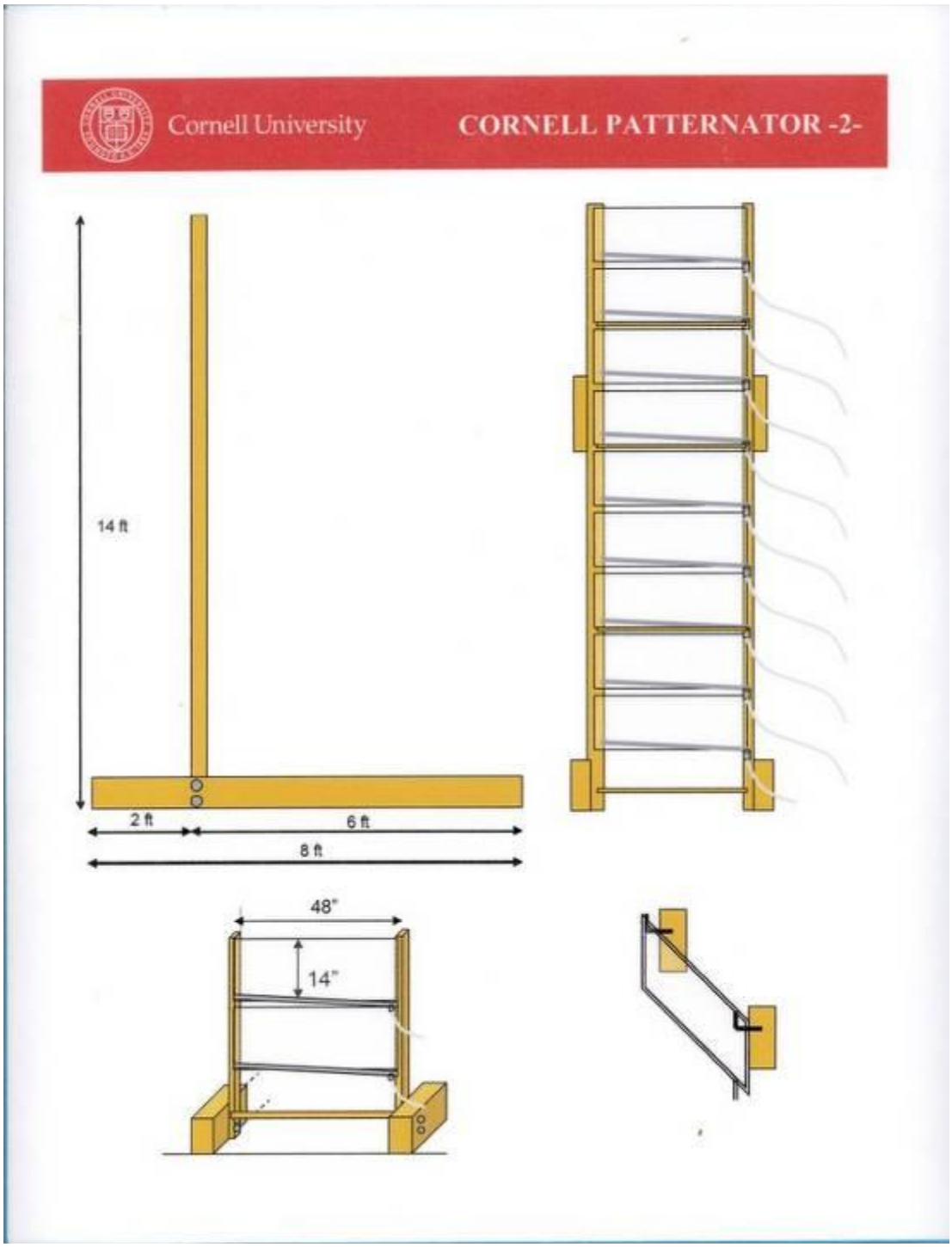
Ends are formed by cutting the "J" channel and bending up to form an end cap. J channel is the material used in vinyl siding on houses.
Use 1/8" aluminum pop rivets or stainless steel screws to attach end cap
Seal seams with silicone caulk

Catch water hose connection

Brass ¼”npt I.D. x 3/8”npt O.D. flanged adapter found at local hardware
3/8” fnpt brass or galvanized coupling
3/8” mnpt x ½” hose barb adapter

Framework for hanging panels (see below for general layout)

Verticals are 2”x4” wood
Base is 2”x8”wood
Cable with turnbuckles can be used between verticals and base for added support
Window screen panels are hung on size 108 square bend hooks screwed into face of verticals at evenly spaced intervals



Below is a photo of the bottom section of the panel support structure. Another section bolts on top of this to hang additional panels

Fluid Collection Box

Outside frame
1”x8” wood
Hoses attach to ½” hose x 3/8” male NPT adapters installed 4 inches on center in top of outside frame
Use 1”x2”material for the stop on the back side of the frame

Inside frame
Inside frame holding graduated cylinders is 1”x6” wood
Cut 2 ½” holes with holesaw 4 inches on center in top of inside frame so when inside frame slides into outside frame, the hose adapters line up with the graduated cylinders

Graduated Cylinders
Cylinders are 500ml with 5 ml increments 14.2 inches tall x 2.17 inches in diameter
Suggest: www.globescientific.com or: www.usplastics.com

Below are photos of patternators constructed by growers

Maine apple grower using old window screens

Using Simple Technology To Improve Spray Deposition and Reduce Drift at Dalrymple Vineyards, Ovid, NY

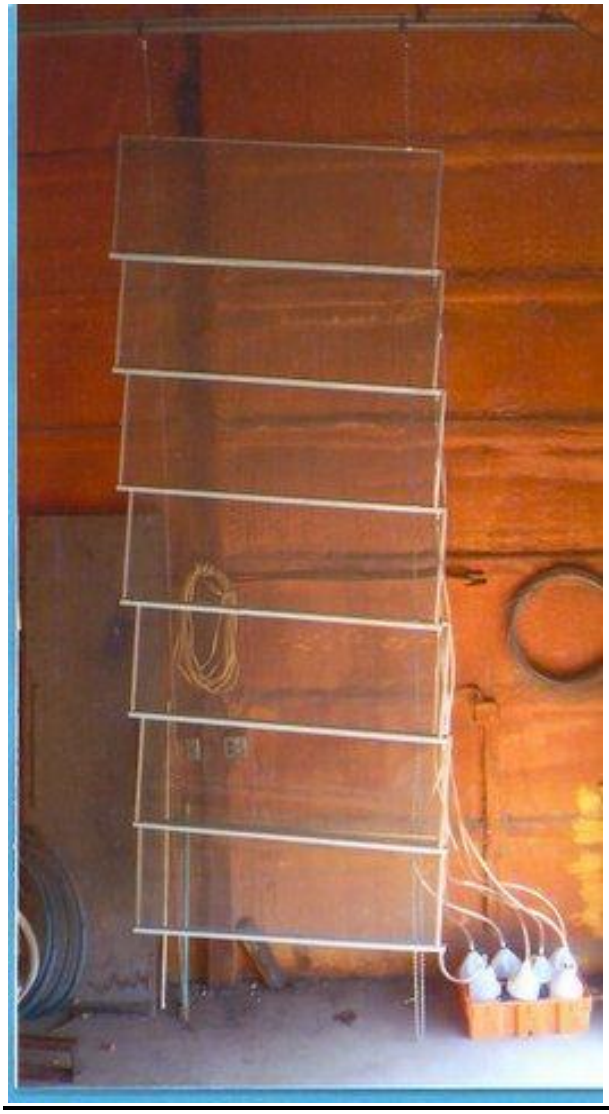
By Tim Martinson and Bill Dalrymple,

I first saw Andrew Landers demonstrate his spray patternator at a field day demonstration in 2004. It inspired me to build my own. The unit I built cost me less than $50, and as you can see is made mostly out of old window screens I had laying around. Each screen has a channel in the bottom that funnels the water into the seven gallon-sized jugs, so I can run my sprayer for 15 minutes and find out how evenly the water is being distributed in the canopy.

When I first tried it out with my standard sprayer settings, it was throwing spray way up to the top, which obviously wasn't making it into the vine canopy. I was able to change the direction that nozzles were pointing to adjust for the direction of air coming out of the fan - downward on the left side to counteract the upward air movement (the fan turns clockwise), and slightly upward on the right side to counteract the downward air movement. I also ended up changing nozzle size in some of the positions where overlap in coverage by two nozzles resulted in uneven volume. By making these adjustments, I was able to get uniform coverage and target the deposition onto the canopy, instead of having half of it shoot into the air. It greatly reduced drift.

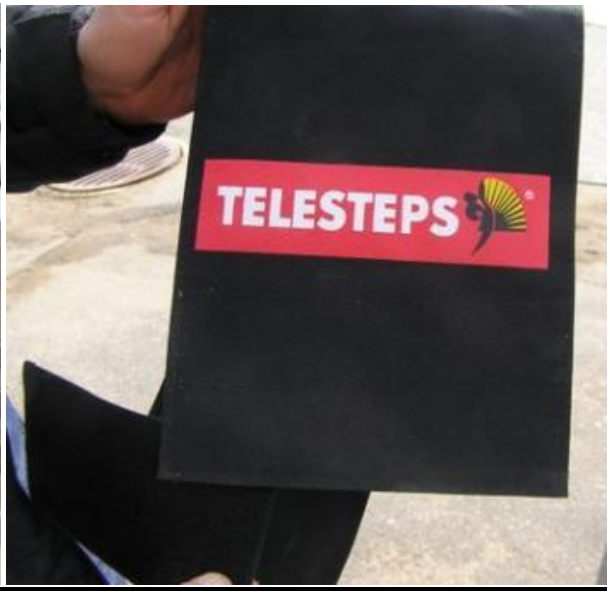
The photographs below show the Spray Patternator made of old screen windows. The air-blast sprayer sprays into screens (left) and spray water drains through the channel at the bottom of the screen (center) to individual bottles (right).The amount of water draining to each bottle is then measured.
The sprayer adjustments I made with my homemade 'patternator' allowed me to be confident that I was getting good coverage, and not losing a lot of material to spray drift or spraying it on to the ground. Overall, this has helped us be more environmentally conscious, while also saving us money. It's been a big benefit all around.

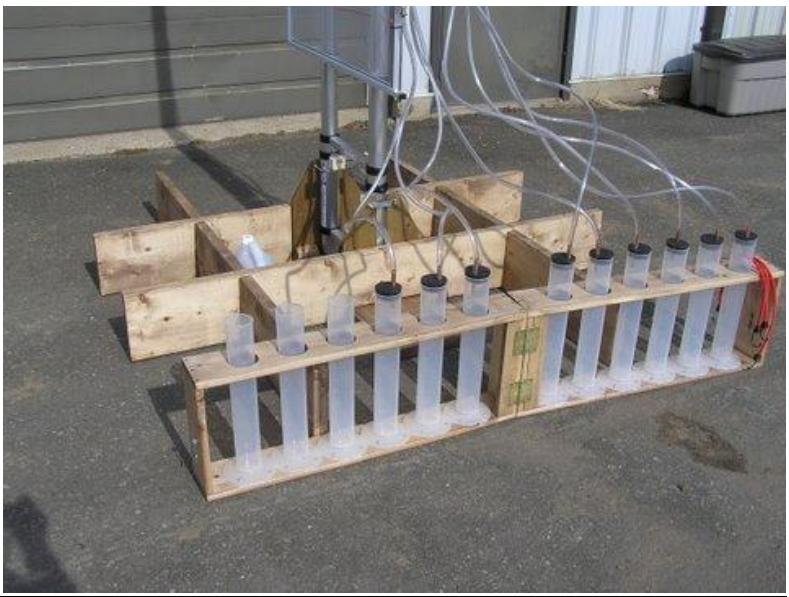
Reproduced, with permission, from Vine Balance, Sustainable Viticulture in the North East, August 2009. http://www.vinebalance.com/newsletter.php



NY grape grower, patternator stored in the barn, note screens attached to chains so can be mounted on a fork lift or tractor fore-loader

Nova Scotia





OMAFRA in Ontario Province

WHAT IS YOUR ORIENTATION? – a guide to nozzle orientation to ensure better deposition within the canopy

Dr Andrew Landers, Cornell University, NYSAES, Geneva, NY 14456
http://www.nysaes.cornell.edu/ent/faculty/landers/pestapp/

Orientation of the nozzles affects the spray pattern being emitted from an air blast sprayer. Traditionally nozzles are positioned radially around the air outlet of the sprayer. The airblast, on a counter-clockwise fan rotation, carries the droplets upwards over the canopy on the right-hand side of the sprayer and downwards on the left-hand side. On other types of sprayer there is a need to fine tune nozzle and air outlets.

A vertical patternator is used to simulate the canopy; it is placed at the end of the vine row, in-line with the trellis wire. The sprayer is stationary, then turned on and CLEAN water is sprayed out of the nozzles with the fan turned on. Water is collected in the graduated cylinders. The results show the vertical distribution pattern. Different nozzle configurations (number and orientation) are selected and vertical spray patterns determined.

Results from the patternator show great variability in spray pattern produced according to nozzle orientation and which side of the sprayer they are fitted. On the Berthoud S600EX sprayer used in the trial, nozzles set in the "typical growers" pattern, Figure 1, pointing radially outwards, resulted in a large quantity of spray being blown above the target row. The best spray pattern for the grape zone, Figure 2, occurred when the right hand side nozzles were pointing horizontally and the top two nozzles were 20^{o} below horizontal on the right side, to counteract the upward movement of the air from the fan. Best results occurred with the left side nozzles pointing 45^{o} upwards to counteract the downward direction of the air from the fan. The results show the importance of correct nozzle orientation if pesticides are to be applied effectively onto the target.

NOTE: Results shown are for a Berthoud S600EX sprayer, individual sprayers will vary.

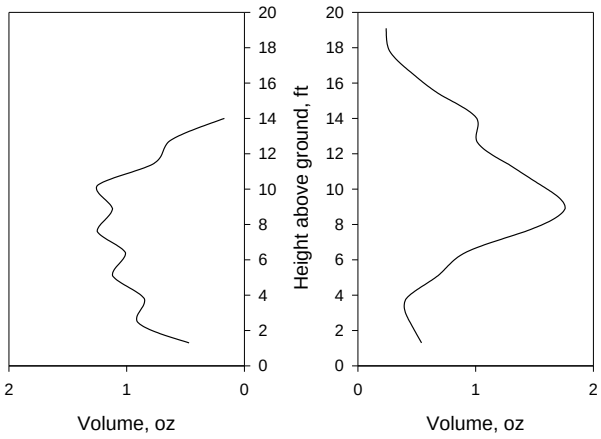


Figure 1 Original nozzle setting

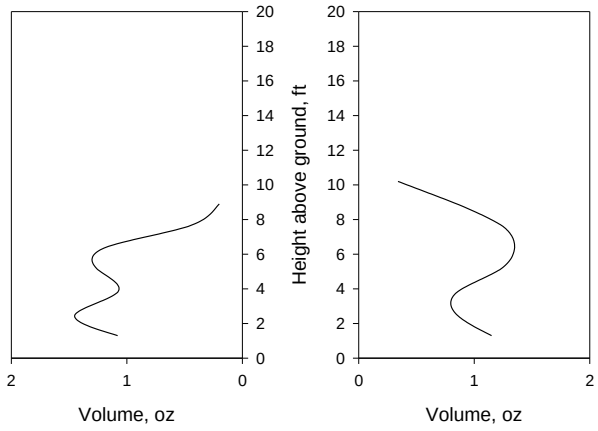


Figure 2 Improved nozzle setting