Oregon Wine Advisory Board
Research Progress Report

1990 - 1991

Development of Netting Systems for Bird Control in Oregon Vineyards

Project Leader and Department: Richard A. Cavaletto, Agricultural Engineering

Collaborators: Steve Price, Horticulture

Funding 1989 - 1990: $2,600

Objectives:

- Evaluate existing netting systems developed for use as bird control in horticultural crops,
- Provide protection from birds for the Lewis-Brown Horticultural Farm yield trials vineyard, and
- Establish a field trial to evaluate netting systems and provide a location for growers to observe the results.

Background and Justification:

The extent of damage from bird predation to the Oregon wine grape crop is variable. Factors influence the extent of damage are weather, timing of crop maturity, the number of resident birds and the migration pattern of non-resident birds.

Bird damage comes from two groups of birds- local residents and migratory. Local birds will cause more consistent (year to year) damage because of their continual presence. Damage from migratory birds comes only when a crop is late maturing and cannot be harvested before migration occurs.

In an earlier study (deCalesta 1985) which surveyed Oregon growers for types of bird control being used and the effectiveness of the methods, netting was shown to be the most effective, as well as the most costly.

New methods to handle and install the netting material could reduce the cost of these systems. The use of a permanent (year-round) netting system would reduce labor costs but would require a netting material that could stand up to the environment.

Progress During 1989 - 1990

An overhead canopy netting system was installed in 1988 at the Lewis-Brown Farm. Experience from that year indicated that the netting could not be left out during the winter months due to snow and ice loading on the nets. Also, each section of netting should be handled individually to reduce the amount of hand labor needed to install the netting. A method to handle the netting was developed to include the following characteristics:

- the netting is spread out only during the time the bird control is required
- the netting does not have to be removed from the attachment and supporting wires when bird control is not needed
- severe winter weather (snow, ice , and wind) and ultraviolet radiation from the sun do not effect the netting when not in use.

The method consists of attaching the edges of the netting to 12 1/2 gage high-tensile wire using plastic clips at 2 - 3 ft intervals. The clips securely attach the netting to the wire while allowing the netting to slide along the wire. At least one mid-support wire was also used, to which the netting was not attached (See Figure 1).

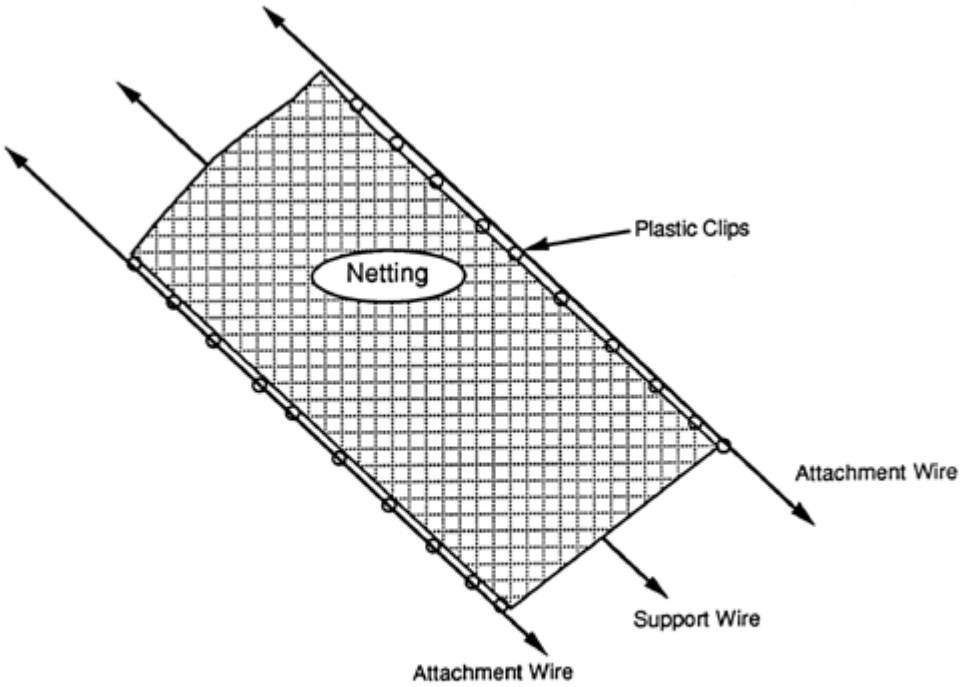

Figure 1. The netting is attached to high-tensile wire using plastic clips.

Closure of the seam between adjacent pieces of netting is accomplished by over lapping the two pieces. A bracket holds the attachment wires supporting the edges of the netting. After the netting is spread out, the bracket is rotated 180'. One piece of netting is pulled over the top of the other closing the seam (See Figure 2). Support blocks spaced 2-5 ft apart are used to keep the attachment wires equal distance apart.. Ground props made from 2" X 2" lumber are used to keep the attachment wires in position and raise their height to 12 ft.

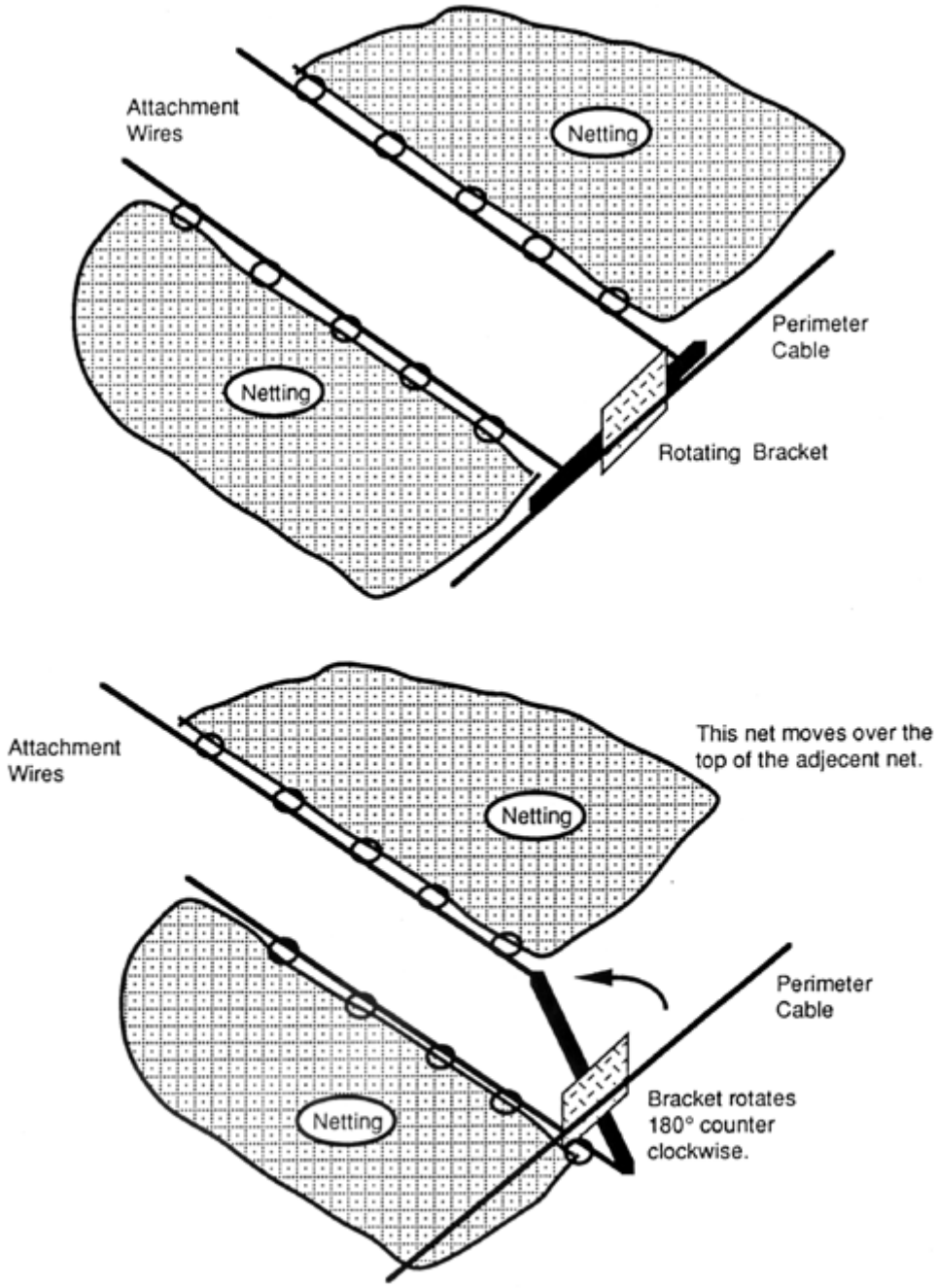

Figure 2. Method to close the seam between two adjecent pieces of netting.

In December 1989 the netting was pushed back on the wires to the end of the rows. It was then tied to the peremiter support cable using plastic bailing twine. and covered with black plastic sheeting to prevent UV radiation from reaching the netting.

Overall the test went well. Several attachment and support wires will need to be adjusted for next year's trial to reduce entanglement between the netting and grapevines. The overlapping method of securing the seams worked adequately. There were some holes due to stretching in the net. Pressure from bird predation was light, thus it is not known if these holes will be a problem.

Net Durability

Two different types of netting have been used in the field trials- multistrand-woven design and single strand design. The multistrand-woven types of netting are characterized by several strands of either round or flat polypropylene woven into a diamond shaped pattern. These nets are flexible and have no fixed shape as does a single strand rectangular patterned net. The netting tested of this type is: "Toron 7/8" mesh" and "Toprite 1" mesh" by J. A. Cissel Mfg. and "Bird-Net" by Tie-Net International Inc..

The single strand nets tested came in several different strand thicknesses and shape patterns. Both the flexible diamond shape and flat rectangular patterns were tested. The mesh sizes of the diamond shaped nets are 1" and 1.5" while the mesh sizes for the rectangular nets are 3/4" square and 1" by 2". These nets were supplied by Bruce King & Co. but are also available through other suppliers.

Observations from the past two years has shown the "Toron 7/8" mesh" and "Toprite 1" mesh" to be the most durable. This is due to the multistrand-woven design and strand thickness. The "Bird-Net" is the lightest of the tested nets because of its thin flat strands. Unfortunately these strands tangle and break easily in the grape vines.

Performance of the single strand design nets is dependent on strand thickness with the thicker strands enduring the handling and weathering the best.

As mentioned earlier, several minor adjustments will be made this next year. The netting system will be used for at least three more years to gain experience on net longevity.