

Leader Control Field Day
5/16/2007

The following provides a contact summary regarding the use of Sucker-Stopper RTU to control Christmas Tree leaders on noble and Nordmann fir

Locating Application Tools:

- Drakes Crossing Nursery is the U.S. distributor for the EasyRoller applicator device. Their web site is:
 - <http://www.drakescrossingnursery.com/>
 - Or call 503. 873.4932
- Information on the EasyRoller firm in Denmark
 - <http://www.easyroller.dk/engelsk.htm>

Locating an Oregon supplier of Sucker-Stopper RTU (Monterey Chemical Corporation):

- Contact your local agricultural chemical supplier, or-
- Contact Bob Lovatt, Monterey Chemical Technical Rep. at 503.510.7082, e-mail: rlovatt@msn.com
- Information on Monterey: <http://www.montereyagresources.com>

Contact Information on those with field testing experience with Sucker-Stopper RTU and/or surfactants.

- Mike Bondi, OSU Extension Forester, (503) 655-8631 or michael.bondi@oregonstate.edu
- Joe Cacka, Western Farm Services, (503) 623-9322 or joec@westernfarmcascade.com
- Rick Fletcher, OSU Extension Forester, (541) 766-3554 or rick.fletcher@oregonstate.edu
- Chal Landgren, OSU Extension Forester, (503) 725-2102 or chal.landgren@oregonstate.edu

NAA Leader Control Results from Oregon- (adapted from NCTA journal article)
Chal Landgren

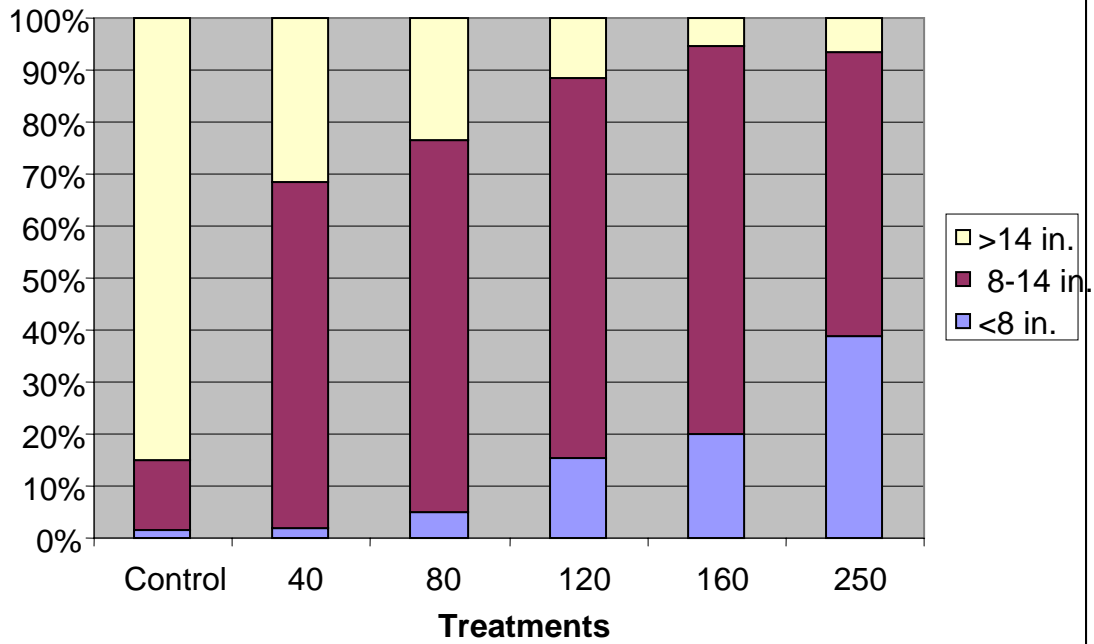
In Oregon, trials conducted during 2006 investigated two aspects of NAA application and use. First, we investigated the effects of various rates of Sucker-Stopper RTU on both Nordmann and noble fir Christmas trees. With these trials we had 8 different sites (4 for noble and 4 for Nordmann) and we treated 50 randomly selected trees for each test concentration at each site. A second investigation evaluated various surfactants for efficacy.

With these types of experiments both researchers and growers are quickly confronted with the task of measuring success (or otherwise). We determined that for our situation, a successful treatment was one where we significantly increased the % of leaders that fell within a target range. In our case, we felt that a leader length within the range of 8-14 inches would not need additional trimming. If we could achieve a high or increased % of leaders in that range then we were successful as long as two added criteria were met. Those added criteria were; 1) We had few leaders shorter than 8 inches; and, 2) the leaders were not otherwise damaged by bending, discoloration or dead buds. We selected the 8-14 inch length as one most growers could agree as optimum, recognizing that situations and grower goals differ. Further, success in our cases would mean that trees within our target would escape the added expense of cutting and tying which becomes an added cost to growers on somewhere around 40-50% of the trees with leaders that exceed the target length.

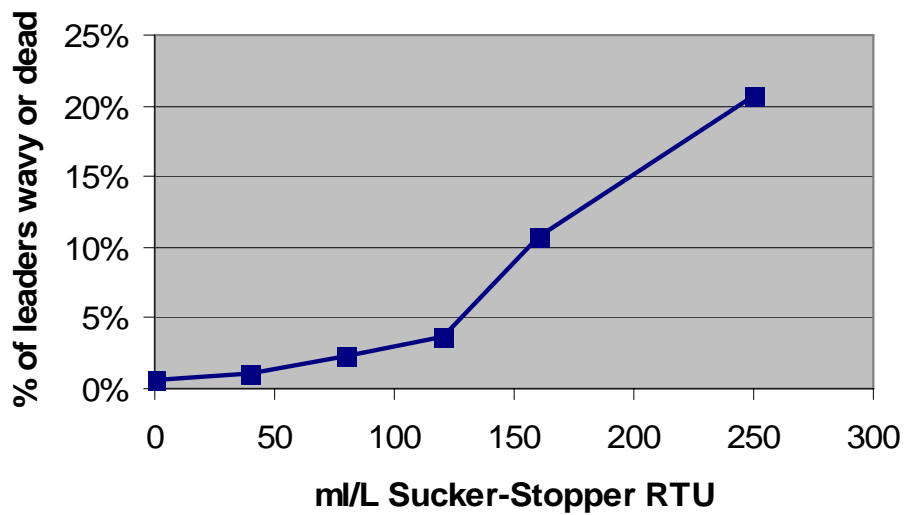
So, were we successful? One fact we learned last year was that each species has differing tolerance to the NAA concentration. To that end let's first examine Nordmann fir and then move on to noble fir.

Nordmann fir In our case, without any NAA treatment, around 85% of the trees had leaders longer than 14 inches (fig 2). At 40 ml/L, we significantly increased the % within our target (roughly a 55% increase), with little change in the % of leaders that were shorter than 8 in. At 80 ml/L, we had a slight increase in the % within our target length and a slight increase in the % of leaders that were < 8 inches (fig 2). Also, if we look at damage rating (fig 3), damage to the leaders was low until the rates reached above 120 ml/L. So, in short, for Nordmann fir on our plots Sucker-Stopper RTU rates in the 40-80 ml/L range met our criteria of little damage, only a few too short, and more in the target range.

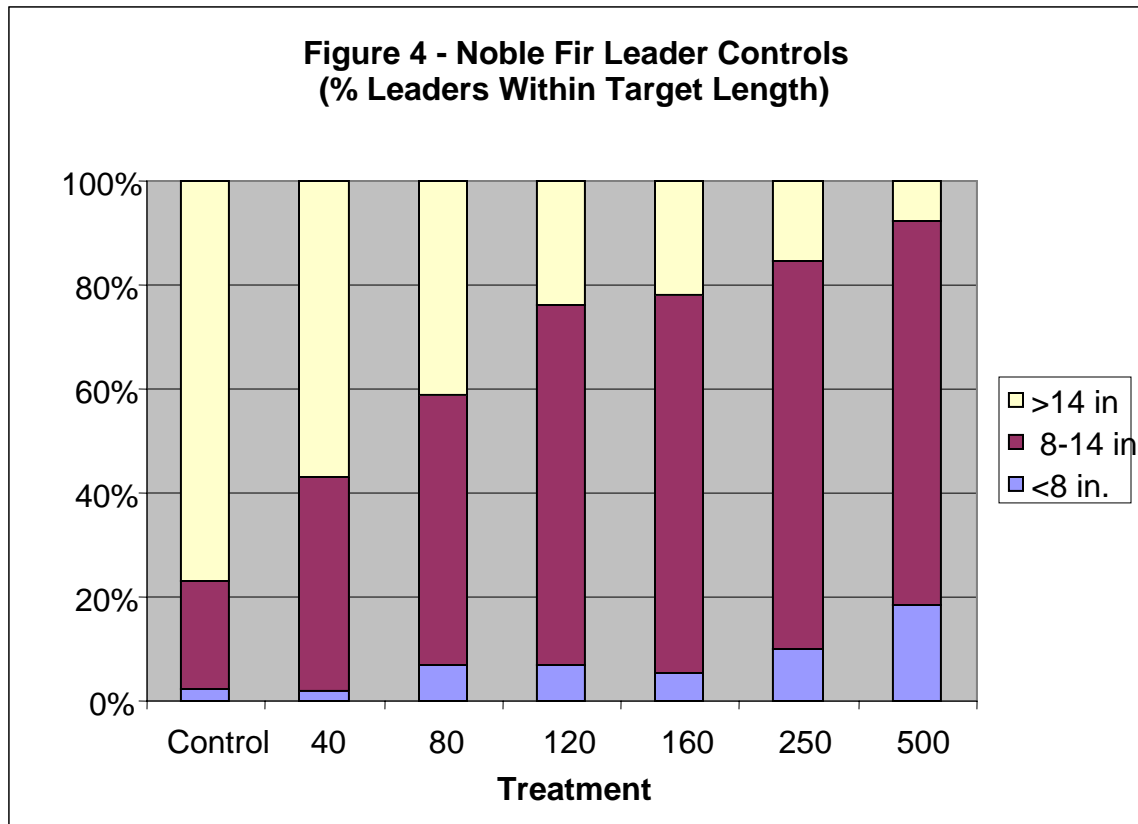
**Figure 2 - Nordmann Fir Leader Controls
(% of leaders within target length)**

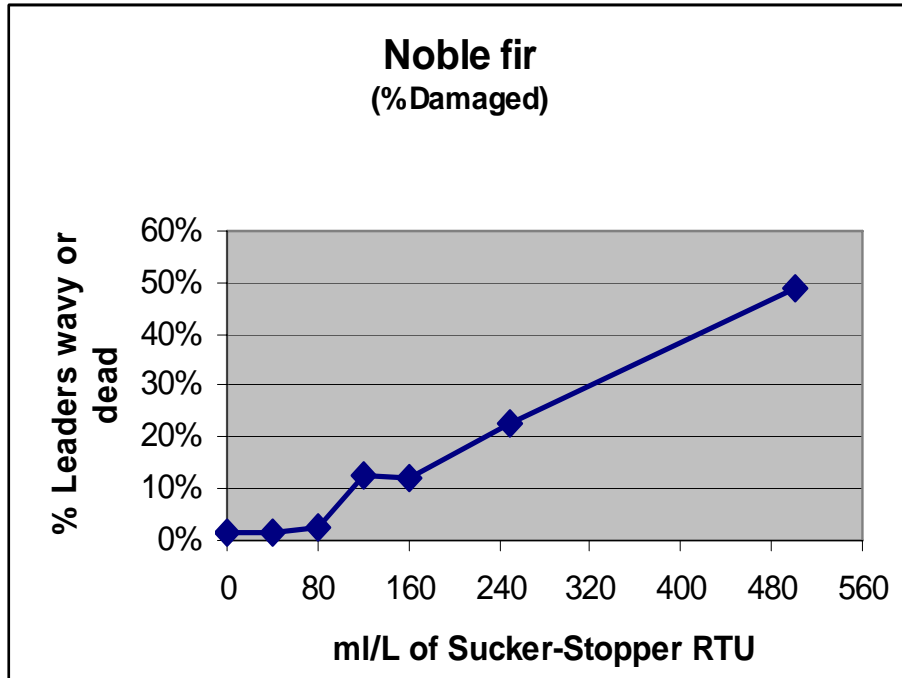


**Nordmann Fir
(% Damaged)**



Noble fir In our trials, noble fir seems both to tolerate a wider range of Sucker-Stopper concentrations and require more Sucker-Stopper RTU to achieve acceptable results. Without any NAA, around 78% of leaders are longer than our target (fig 4). With increasing concentrations we could achieve somewhere around 75% of the leaders within our target, without major changes in the % of leaders that were < 8 inches. Yet at concentrations above 160 ml/L the percentage of damaged leaders, starts to increase (fig 5). For this reason, likely acceptable rates for noble fir are in the 80-120 ml/L range.





Surfactants A surfactant is typically added to the Sucker-Stopper RTU to spread and stick the material to the leader. Joe Cacka, Research Agronomist with Western Farm Services, conducted two experiments using a variety of surfactant types on both noble and Nordmann fir. First, he evaluated any phytotoxic effects that the surfactants alone (in distilled water) may have on leaders. Next he evaluated the surfactants and Sucker Stopper RTU in combination at a standard rate of 80 ml/L.

In this short article, we will only touch on some highlights. Noble fir seems to be more sensitive to the surfactants alone than is Nordmann fir. A number of surfactants caused some level of needle damage on noble fir, yet the damage was transitory.

When Sucker-Stopper RTU was added, there were a number of surfactants that proved acceptable, yet only two that worked well on both species. These were: First Choice Oranj-All and First Choice MSO. Both surfactants showed little beading and resulted in smooth spreading.

Product Name	Product Type	Active ingredient	Manufacturer/Distributor
First Choice Oranj-All	d-Limonene	Paraffinic hydrocarbons, Polyoxyethylene isopropylamine sulfonate, Ethylene glycol monobutyl ether --- 100%	Western Farm Service
First Choice M.S.O.	Methylated Seed Oil	Methylated Soybean oil, Alkylphenol Ethoxylate – 100%	Western Farm Service

Other Observations The trials in Oregon were conducted on trees that were 3-5 feet at time of treatment with uncut leaders which, in the preceding year, had grown more than 14 inches. We also limited our analysis to only those trees where treatment application was made while the leaders were in the 3-8 inch range. Over the past year of trials, we quickly learned that the leader length at treatment is critical. Leaders shorter than 3 inches are impossible to “roll” and leaders longer than 8” can be damaged or fail to respond.

We also acknowledge that each site and each growth year has differing “growth potential”. Some sites on some years may barely reach the target lengths. On other sites in wetter years, the growth reduction provided by NAA may not achieve the same level of control as we found.

In our case with Nordmann and noble fir, the leader treatments provided sufficient leader control such that we are encouraged. In operational use, the treatments could provide a cost saving over the traditional cutting/tying treatments. In addition the increased bud density and intact leader whorl, may provide for a quality improvement, a yet unproven hypothesis

The table below will assist growers in converting between Metric and US units

**Conversion
Table**

ml/L	ounces/qt
20	0.7
30	1.1
40	1.4
60	2.1
80	2.9
100	3.6
120	4.3
130	4.6
140	5.0
160	5.7
180	6.4
200	7.1

Acknowledgements

The research team testing the materials consisted of Chal Landgren, Rick Fletcher and Mike Bondi, all Extension Foresters with Oregon State University. Joe Cacka, Research Agronomist with Western Farm Services conducted the surfactant trials. Manuela Huso, statistician, in the OSU Forest Science Dept. assisted with data analysis. AMVAC and Monterey Chemical supplied the NAA material, and the Christmas Tree License committee with the Oregon Department of Agriculture provided funding.