

## 2007 ARS/NGWI Field Tour



### Technology Transfer and University Extension



University of Idaho

USDA-ARS and the Land Grant universities follow different models for the dissemination and application of research results, but with the same goal: **transfer of knowledge and technology to the grower**. ARS scientists like Julie Tarara speak to growers regularly about advances in their work - field days, short courses, and grower meetings organized by University Extension, in service to industry. USDA-ARS pursues cooperative R&D agreements with the public and private sectors, and patents the technology developed by its scientists—for example, the 'Trellis Tension Monitor' pictured in this handout. University Extension specialists like Mercy Olmstead cooperate with ARS scientists—for example by building a web page on the TTM technology that growers can access through her Viticulture Extension website. The rapidly growing grape and wine industries of the northwest have recognized a critical need for expertise in "research-to-grower" information transfer, and have sought support for the region's Land Grant institutions to fill those needs.

#### New--2004 !

- **Jim Harbertson**, Enology Research & Extension, Washington
- **Mercy Olmstead**, Viticulture Extension Specialist for Washington and Director, V&E Extension Education 'Certificate' Programs (WSU)

#### New--2006 !

- **Patty Skinkis**, Viticulture Extension Specialist for Oregon
- **James Osborne**, Enology Extension Specialist for Oregon
- **Gwen Hoheisel**, Extension Educator, Benton & Franklin co. (WA)

#### Soon to Arrive--2007 !

- **Kerry Ringer**, Enology Extension Specialist for Washington

#### Extension programming:

- Web resources
- Short courses
- Grower breakfasts & discussion forums
- Annual forums--research updates
- Field days and hands-on demonstrations
- Extension bulletins
- Extension Education "Certificate" programs in enology and viticulture (WSU)



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## Web Links:

<http://winegrapes.wsu.edu/cropload/cropload.html>

<http://winegrapes.wsu.edu/wineweb/>

<http://wine.oregonstate.edu/>

## Northwest Viticulture Extension Team:

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## Northwest Enology Extension Team:

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## USDA-ARS 'Trellis Tension Monitor' technology:

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WASHINGTON STATE UNIVERSITY  
World Class. Fair to Fair.

WSU Viticulture Extension  
**Trellis Tension Monitoring**

Weather Data  
Undergraduate Degree  
Graduate Opportunities  
I Want to Give

WSU VineWeb Home  
Faculty  
Current Research  
Certificate Programs  
Viticulture Extension  
Meet the Viticulturists  
Calendar of Events  
Growing Grapes in Washington  
Topic of the Month  
Archived Topics  
Research Newsletters  
Viticulture Links

Trellis Tension Monitoring  
How it Works  
Trellis Tension Measurement  
The Bridge  
Processing Data  
View Graphs  
Glossary  
Contact Us

Enology Extension  
NorthWest Grape Foundation Service  
Industry Employment  
WSU-Prosser  
Directions to WSU-Prosser  
Links

### The Trellis Tension Measurement System

**Figure 1.** Schematic diagram depicting components of the continuous monitoring and yield estimation system in a trellised crop. A single cordon wire is shown for simplicity. Yellow arrows depict forces or loads on the trellis wire that influence wire tension.

We insert an electronic device, a load cell, into the trellis wire to measure tension. Many forces affect tension in the wire including vine growth, temperature, and wind. Our goal is to develop a predictive model and computer program that account for these variables to improve yield estimates.

The load cell is connected to a data logger or computer that records increases in tension during the season. Tension can be used to follow crop development and to make estimates of final yield. The physical concept is straightforward but there are many environmental and biological factors to be considered for successful application.

For example:

- daily temperature cycles
- wind
- management practices
- variation in support among posts and vine trunks
- variation in a biological system from year-to-year

After four seasons of working with our system, we have learned how to account for most of these factors

<http://winegrapes.wsu.edu/cropload/trellistension.html>