

# Tension on the grapevine

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Trellis Tension Monitoring (TTM) assembly (center) in line with the main trellis wire in a wine grape vineyard. The row in the background also contains a TTM assembly (toward right). The metal post supports the vine at the left edge of the photo and is a normal part of this trellis system. Credit: Photo courtesy of Julie Tarara

Predictions of grape yields are extremely important to juice processors and wineries; timely and precise yield forecasts allow producers to plan for harvest and move the highly perishable grape crop from vine to processing efficiently. Until recently, wineries and grape juice processors have relied on expensive and labor-intensive hand-sampling methods to estimate yield in grape crops.

Thanks to extensive research efforts, grape producers may soon have access to a dynamic tool to estimate yield called Trellis Tension Monitor (TTM). TTM allows for real-time monitoring of plant growth and predicting yield in trellised crops. Simply put, TTM technology works by

detecting weight change on trellised [grapevines](#) as the vine and grapes grow. Data recorded by the TTM electronic monitoring system can be used to predict [crop yields](#), enabling growers to create more efficient timetables for grape-picking operations.

To support their previous work and further investigate the effectiveness of TTM, researchers Julie M. Tarara and Paul E. Blom of the USDA-Agricultural Research Service's Horticultural Crops Research Unit in Prosser, Washington, and colleagues from the University of Idaho and Washington State University, undertook a groundbreaking 5-year study of TTM. Two recent reports of Tarara and Blom's research were published in the American Society for Horticultural Science's journal *HortScience*.

"The objective of our research was to assess the dynamics of fruit and shoot fresh weight in grapevines trained to a single curtain, within and between seasons of a wide range, to develop functional relationships of expected responses to improve the potential for meaningful interpretation of TTM data in vineyards", according to Tarara.

Measurements of shoot and fruit fresh mass in 'Concord' grapevines were collected at intervals of 14 to 21 days over 5 years in research vineyards in Washington State. Data were correlated with variables including shoot length, number of leaves per shoot, and number of clusters per shoot.

Using 10 commercial vineyards, the researchers found that TTM produced more-accurate estimates of yield in most vineyards than did the standard processor protocol. No subjective inputs were allowed, which otherwise would be the case in commercial practice

Summarizing the research, Tarara remarked; "The TTM method could replace traditional, manual methods of yield estimation or could be used

in conjunction with processors' and wineries' traditional approaches to increase the amount of real-time information and provide data for revising yield estimates right up to harvest."

More information: The complete study and abstract are available on the ASHS HortScience electronic journal web site:  
[hortsci.ashspublications.org/c ... nt/abstract/44/3/678](https://hortsci.ashspublications.org/content/abstract/44/3/678)

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