HEALTHY FOOD SYSTEMS • HEALTHY ENVIRONMENTS • HEALTHY COMMUNITIES • HEALTHY CALIFORNIANS

University of California
Agriculture and Natural Resources
Making a Difference for California

UCCE

Olive Notes
Tulare County

Vol. 12, Issue 1, June 2015

Southern San Joaquin Valley Pre-harvest Olive Day

A partnership between UCCE, UC IPM Program,
Olive Growers Council and West Coast Olive Guide
Wednesday, July 29, 2015
Exeter Memorial Building
324 N. Kaweah Ave., Exeter

7:30 AM	**Registration**
8:00 – 8:15	State of Table Olive Industry – *Board of Directors, Olive Growers Council.*
8:15 – 8:45	California Olive Committee Update – *Alexander Ott, Executive Director, California Olive Committee.*
8:45 – 9:00	American Olive Oil Industry Update – *Kimberly Houlding, President and CEO, American Olive Oil Producers Association.*
9:00 – 9:15	Table Olive Processing Research – *Dan Flynn, Executive Director, UC Davis Olive Center.*
9:15 – 9:45	Research-based Insights for *Xylella fastidiosa* – Olive Relationships. *Rodrigo Krugner, Research Entomologist, USDA-ARS, Crop Diseases, Pests, and Genetics Research Unit.*
9:45 – 10:15	Identification of Olive Tree Genotypes Which Exhibit Reduced Susceptibility to Olive Knot Disease – *Dan Kluepfel, Research Leader, USDA-ARS Crops Pathology and Genetics Research Unit.*
10:15 – 10:45	**Coffee Break and Visit with Sponsors**
10:45 – 11:15	Insight on Potential use of Plant Growth Regulators to Mitigate Alternate Bearing in Olive — *Carol Lovatt, Professor, Dept. of Botany and Plant Sciences, UC Riverside.*
11:15 – 11:45	Update on Olive Fruit Fly Management — *Emily Symmes, Area IPM Advisor, UC Statewide IPM Program.*
11:45 – 12:00 PM	Meeting overview — Member, Board of Directors, Olive Growers Council
12:00 – 1:00	**Lamb and Chicken BBQ courtesy of our sponsors**

Lunch Sponsors:
California Olive Committee, AgriLogic Insurance Services, West Coast Olive Guide, Olive Growers Council

2.0 hours "Other" Continuing Education Credits have been requested

What values should olive growers use for estimating crop nitrogen removal at harvest?

Elizabeth J. Fichtner, Farm Advisor, UCCE Tulare County

With the implementation of the Irrigated Lands Regulatory Program, olive growers have expressed interest in gaining a more comprehensive understanding of the amount of nitrogen (N) removed by the crop at harvest. There are two components to estimating the quantity of N removed at harvest: 1) the size of the crop, and 2) the amount of N incorporated in the fruit.

Distribution of nitrogen in the olive tree. Leaves are the largest N sink of the olive tree. Approximately 44% of the tree's aboveground N is incorporated in the foliage. The twigs, secondary branches, main branches, and trunk account for approximately 33% of the N stored in the aboveground portion of the tree. Last, the fruit account for around 23% of the aboveground N, with close to 19% incorporated in the flesh. These estimates are based on research published in Scientia Horticulturae (Rodrigues, et al) (Figure 1). The published data was gathered from a dry-farmed *Olea europaea* cv. Cobrancosa orchard in north-eastern Portugal.

Interestingly, the estimated N removal rates in fruit from the test-orchard in Portugal are similar to values estimated by Rosecrance and Kruger for three oil olive cultivars in California. An estimate of N removal from the dryland crop in Portugal is 8.23 lbs N/ton fruit; similar estimates for irrigated Arbosana, Arbequina, and Koroniki in California are 6.30, 6.81, and 7.45 lbs N/ton fruit, respectively. The main consideration when comparing crop N removal between the dryland and irrigated systems is the anticipated yield. For example, the test-orchard in Portugal had an anticipated average annual yield of 1.11 tons/acre; both table and olive oil growers in the central valley anticipate an annual average yield of 5 tons/acre. Although anticipated N removal per ton of fruit may be similar in irrigated vs. dryland systems, the N-use efficiency (NUE) will likely vary considerably between systems. In dryland systems, NUE is estimated at 50-75%; however, the N is applied near the conclusion of the winter/spring rainy season, ensuring less N loss due to leaching. I've heard grower reports of N use ranging from 50 lbs/acre to 90 lbs/acre in California olive orchards. If we assume a crop removal rate of 35 lbs N/acre (5 ton/acre x 7 lbs N/ton), then NUE's may range from around 39%-70% in irrigated, California olive systems.

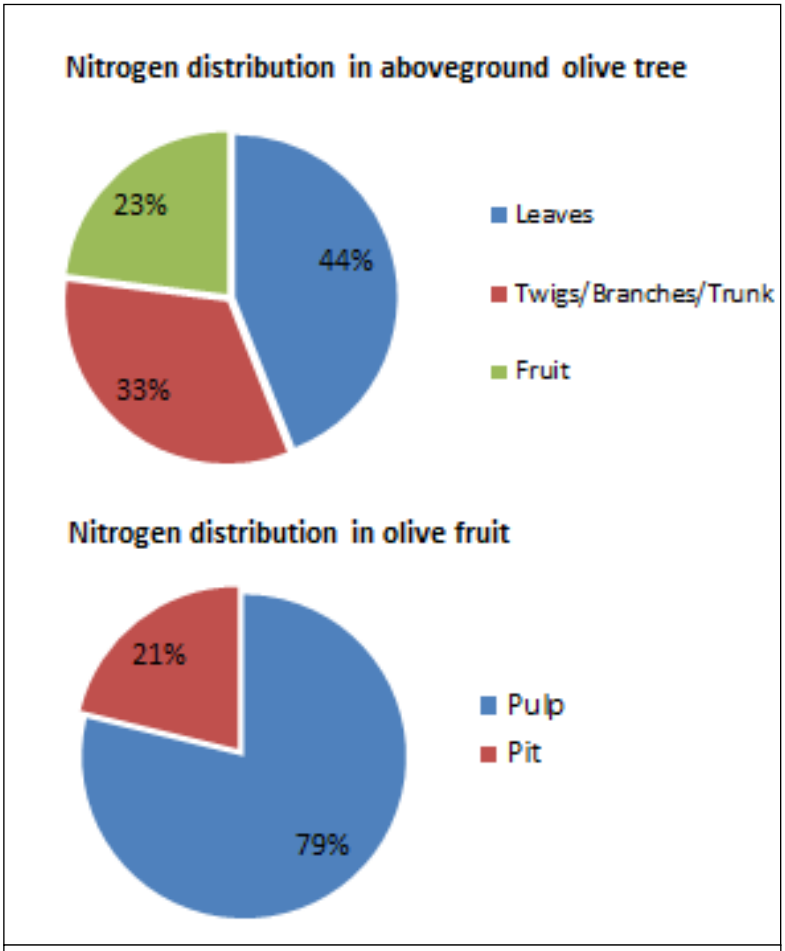

Figure 1. Pie charts illustrate estimates of distribution of nitrogen in the aboveground portion of the olive tree and the fruit. Data was gathered from Rodrigues, et al., based on studies conducted in a rainfed orchard of *Olea europaea* cv. Cobrancosa in northeast Portugal.

Timing of fruit demand for nitrogen. Fruit is only an important N sink during the initial phase of growth. As fruit size increases, the N concentration decreases (Fernández-Escobar et al., 2011). In fact, the pulp is a higher sink for all nutrients than the pit (Rodrigues, et al).

Summary. Estimated N removal by the crop at harvest will likely range from 6.3-8.2 lbs N/ton. To estimate the total N removed per acre, simply multiply the total tons/acre by a reasonable estimate of lbs N/ton (ie. 7.2

lbs N/ton). Alternately, oil growers in CA may prefer using the online 'Olive Calculator' tool produced by Richard Rosecrance, Professor, CSU Chico and Bill Kruger, Emeritus Farm Advisor, Glenn and Tehama Counties. The 'Olive Calculator' website can be accessed at the following URL:
http://www.csuchico.edu/~rrosecrance/Model/OliveCalculator/OliveCalculator.html
The 'Olive Calculator' website additionally addresses the total suite of nutrients lost from the orchard at harvest and allows growers to access estimates from each of three cultivars: Arbosana, Koroniki, and Arbequina.

Select References:

Fernández-Escobar, R., Garcia-Novelo, J.M., Restrepo-Díaz, H., 2011. Mobilization of nitrogen in the olive bearing shoots and after foliar application of urea. Scientia Horticulturae 127:452–454.

Irrigated Lands Regulatory Program: http://www.swrcb.ca.gov/water_issues/programs/agriculture/

Olive Calculator: http://www.csuchico.edu/~rrosecrance/Model/OliveCalculator/OliveCalculator.html

Rodrigues, M.A., Isabel Q. Ferreira, I.Q., Claro, A.M., Arrobas, M. 2012. Fertilizer recommendations for olive based upon nutrients removed in crop and pruning. Scientia Horticulturae 142:205-211.

UC Davis Olive Center: UC Master Milling Certificate Course

Lead by one of the world's top olive oil experts, Leandro Ravetti, this four day course will cover the ins and outs of olive oil milling.

When: October 1 – 4, 2015

Where: Silverado Vineyards Sensory Theater, Robert Mondavi Institute for Wine and Food Science, 392 Old Davis Rd., Davis, CA 95616-8571.

Course Description: Experience the best olive oil milling course in the United States at UC Davis, presented by the UC Davis Olive Center at the Robert Mondavi Institute.

The course will be led by Leandro Ravetti, among the world's top experts in olive oil processing, growing, and standards. As executive director of Australia's Boundary Bend Limited, Leandro has helped guide the company to rapid growth, high efficiency, and top awards at international olive oil competitions. The company's success is guided by innovation, data, and analysis to maximize oil production efficiency and quality.

The four-day course will be held at the Silverado Vineyard Sensory Theater at the Robert Mondavi Institute for Wine and Food Science. The course will include a field trip to three olive oil processors in Yolo County, including to Boundary Bend's new U.S. facility in nearby Woodland. Olive oil will be processed on site at UC Davis by Olive2Bottle Mobile Services.

Past attendees of the Master Milling Short Course have made immediate improvements in the quality and profitability of their oil processing operation. This course is a small investment that will pay off in more efficiency, better quality, and higher profits.

Registration: Online registration can be accessed through the UC Olive Center website: http://olivecenter.ucdavis.edu/. Registration for the 4-day course will be $1,025 until August 1, 2015, $1,225 after August 1, 2015.

Olive Quick Decline in Italy is associated with unique strain of *Xylella fastidiosa*

Elizabeth Fichtner[1], Dani Lightle[2], and Rodrigo Krugner[3]
UC Cooperative Extension Tulare[1], Glenn[2], Butte[2], and Tehama[2] Counties, and USDA, Agricultural Research Service, San Joaquin Valley Agricultural Sciences Center, 9611 S. Riverbend Avenue, Parlier, California 93648-9757[3]

Olive quick decline syndrome (OQDS) is a destructive new disease currently affecting approximately 20,000 acres of olive in southern Italy—an area approximately the size of table olive production in California. Symptoms of OQDS include extensive branch and twig dieback, yellow and brown lesions on leaf tips and margins, vascular discoloration, and subsequent tree mortality (Figure 1). Similar symptoms have been observed in olives in California, but disease incidence appears to be low when compared to Italy. The causal agent(s) of the disease is still unknown. A number of organisms, including fungi and a bacterium, have been isolated from sick trees in Italy and California. The bacterium *Xylella fastidiosa* has been found to infect olive trees in both locations. To date, only strains belonging to *X. fastidiosa* subspecies *multiplex* have been isolated from olives in California. These California strains have limited association with the disease and experimental infections did not cause disease in olive varieties commonly cultivated in California. In Italy, recent publications indicate that strains of the bacterium isolated from the outbreak area are closely related to *X. fastidiosa* subspecies *pauca*, a subspecies group not known to occur in the United States. The OQDS outbreak in Italy marks the first report of the bacterium in the European Union. Research is underway in Italy to evaluate the role of the bacterium in OQDS.

What are the *pauca, fastidiosa,* and *multiplex* subspecies?

Strains of the *pauca* subspecies are known to cause citrus variegated chlorosis, a serious disease of citrus reported in Brazil and Argentina. In California, *X. fastidiosa* subspecies *fastidiosa* causes Pierce's Disease on grapevine as well as scorch on almond, whereas *X. fastidiosa* subspecies *multiplex* infects almond but not grapevine. Strains of *fastidiosa* and *multiplex* subspecies do not affect citrus in the United States. Knowledge of the subspecies present in different cropping systems is important because the relative risk to other crops in the landscape depends on the host range of the *X. fastidiosa* subspecies present.

What are the implications of OQDS for California olives?

Olives can be a host for *X. fastidiosa* strains belonging to three subspecies groups: *pauca* in Italy and *multiplex* and *fastidiosa* in California. In addition, species of fungi associated with OQDS are not currently known to occur in California. Therefore, olive growers and landscape managers should report new incidences of extensive dieback or scorch on olives to farm advisors to facilitate early detection of potential pathogen introductions. International movement of plants and plant materials assures a constant flux of organisms across borders, necessitating constant awareness of global trends in pathogen and vector establishment.

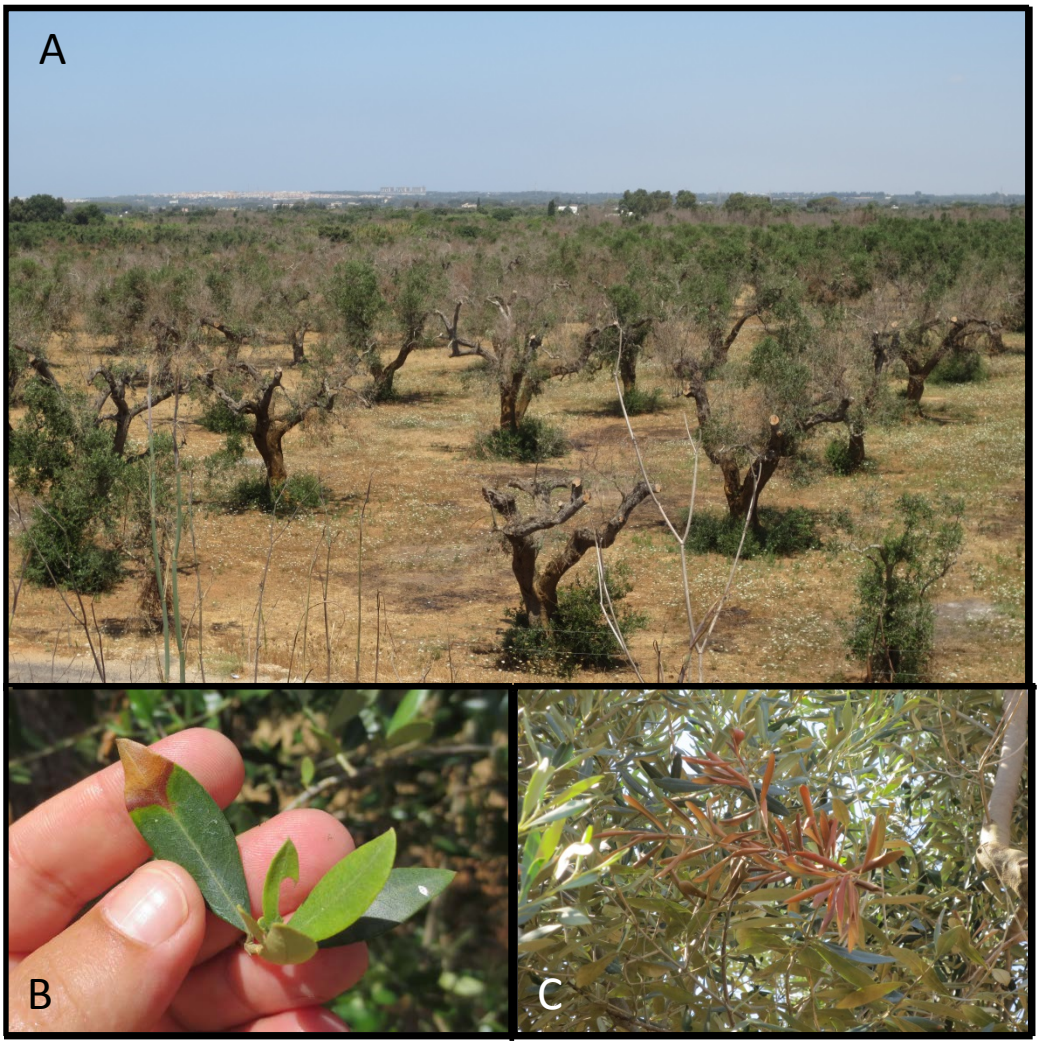

Figure 1. Symptoms of olive quick decline syndrome in Italy include canopy dieback (A), leaf scorch (B), and branch dieback (C). Photos: R. Krugner, USDA-ARS.

Select References

Cariddi, C., Saponari, M. D. Boscia, M.D., De Stradis, A., Loconsole, G., Nigro,F., Porcelli, F., Potere, O., Martelli, G.P. 2014. Isolation of a *Xylella fastidiosa* strain infecting olive and oleander in Apulia, Italy. Journal of Plant Pathology 96:1-5.

Elbeaino, T., Valentini, F., Abou Kubaa, R., Moubarak, P., Yaseen, T. Digiaro, M. 2014. Multilocus sequence typing of *Xylella fastidiosa* isolated from olive affected by "olive quick decline syndrome" in Italy. Phytopathologica Mediterranea. 53:533-542.

Janse, J.D., and Obradovic, A. 2010. *Xylella fastidiosa*: Its biology, diagnosis, control and risks. Journal of Plant Pathology 92: S1.35-S1.48.

Krugner, R., Sisterson, M.S., Chen, J., Stenger, D.C., Johnson, M.W. 2014. Evaluation of olive as a host of *Xylella fastidiosa* and associated sharpshooter vectors. Plant Disease. 98*:* 1186-1193.

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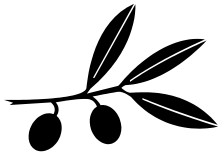

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