Summer 2013 Issue
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- Foreign Olive Import Report
- Olive Cultivars and Oil Polyphenols

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Contributing Writers In This Issue

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Adin Hester

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10 OLIVE CULTIVARS AND OIL POLYPHENOLS
First, a quick look in the mirror to recall the results of the 2012 table olive season. In summary, from a production point of view, Northern California enjoyed a somewhat reasonable harvest season considering a heavy crop although impacted by serious labor shortages that extended the season into November. Harvested tonnage was heavy as growers kept trees well irrigated and were rewarded with good sizes and good returns.

In sharp contrast, Central California growers ended with a disappointing short crop thanks to weather incidents that dramatically reduced tonnage. With a frost during bud swell, some intermittent rain showers during bloom and a few days of heat during crop set, the average tons for the district averaged about two tons per acre. In addition to the pain of short tonnage, serious labor shortages caused harvest cost to be high.

Now fast forward to what we may expect for the 2013 season. First in Northern California, the Manzanillo crop appears short as would be expected coming off the big 2012 harvest. However, Sevillano bloom looks very good and could have potential for another good crop this year. However, the Northern California olive district has been buffeted by strong north winds the last several weeks, a condition that could impact the bloom and ultimately shorten the crop.

Central California, with the major production area being Tulare County, currently shows a strong possibility of a heavy crop. Weather conditions have been close to ideal although season-to-date rainfall is well short of normal which could impact groves that are behind on irrigation. If temperatures remain normal during the June drop period, some speculate the crop could average 6 to 8 tons per acre for the county.

**PRUNING**

Assuming a heavy crop, growers must focus on producing olives in the premium size ranges of medium to extra-large sizes. Small and limited size olives will not provide profitable farm-gate returns. There are some basic production practices that will help improve fruit size. First, a good pruning program based on each grower’s crop size will be of value. Reducing the overall crop on the tree will provide several benefits. It will reduce fruit load and give the tree a somewhat better chance to size the fruit. Second, an open tree with sunlight and good air movement will dramatically reduce the Black Scale infestations. Third, open, airy trees offer better harvest conditions by reducing brush and allowing for more effective and efficient harvest conditions. Workers are not anxious to pick olives in brushy trees with dead wood which will give rise to increased harvest cost.

Trees well pruned also make more efficient use of production inputs including water, fertilizer, pest control and reduced harvest cost.

On a final note, growers who have an extremely large crop and want to reduce the load should investigate spray thinning.

**FERTILIZER**

Tree nutrition is especially critical during bloom, crop set and fruit sizing prior to harvest. Greatest tree stress occurs in July, August and September prior to harvest. It is wise for all growers to have a good handle on the nutritional balance of your olive grove to ensure the trees are able to properly size the crop. It is important to engage your PCA in the process of taking leaf samples, analyze the results, determine fertilizer needs and make recommendations for timely application of the appropriate materials. Likewise, your PCA can advise you on insect and disease control including Black Scale, Olive Fruit Fly and Olive Knot.

**OLIVE FRUIT FLY**

Speaking of the Olive Fruit Fly, spring trapping results in both the North and South are showing very high populations when compared to previous
years. It’s in the interest of each and every grower to have a “quick strike” contingency plan agreed to by you and your Pest Control Adviser. Remember processors have a “ZERO” tolerance for olives damaged by the fly. If and when a heavy population of Olive Fruit Fly strikes, growers need to have their materials (GF-120) already arranged for quick and immediate access and application. When trapping indicates time to spray, all growers must move quickly. Remember, processors have no tolerance for fly damaged table olives.

IRRIGATION

Olive trees, like all fruiting crops, need adequate water on a timely basis during the critical weeks of crop set and fruit growth prior to harvest. As many soil nutritionists tell us, growers must grow the pit to a good size prior to hardening if olives are to reach desired marketable needs of medium, large and extra-large in the Manzanillo. Processors, particularly the green olive (Sicilian Style) processors need good Sevillano sizes to meet their processing requirements.

Irrigation studies have shown that table olive trees require roughly the same amount of water as do other tree fruits averaging 30+ inches per season. One of the dangers of water shortages in the grove is shrivel which, during the critical growth period, will have a major impact on fruit size. Be fully aware that following a short rainfall season, water will be critical to growing and sizing a high-value table olive crop.

HARVEST LABOR

What the labor pool will be this fall is a huge question and major concern in the minds of all table olive growers. Looking back on last season, regardless of the good Northern crop or the short Central California crop, both districts had to scramble to find pickers. Some more optimistic folks suggest Congress will pass legislation providing for a “Guest Worker” program that will provide adequate labor for farmers. Unfortunately, the track record of Congress has not been favorable when debating the labor issue and many politicians are more focused on what they can do to improve their longevity in Congress having little or no concern about the concerns of agriculture and the farming industry.

We can only hope that something will happen within the next few weeks that may help improve the labor pool for table olive growers. Thanks to COC research funding and the cooperation of the University of California, some great strides have been made in mechanical harvesting of olives. Although the industry is not ready to make a major transition at this point in time, the pieces of the puzzle seem to be coming together presenting a much more optimistic picture for growers who may want to consider planting for the machine. Although there is still work to be done as the industry moves ahead and researchers continue their quest to fine tune mechanical harvest technology including the hope to find a successful loosening agent, results from the 2012 harvest trials were even more positive than in previous years. Stay tuned as the marketing order continues to work toward a more secure harvest system for table olives.

TABLE OLIVE PRICES

It is never too early to begin thinking about what table olive prices should be for the coming 2013 harvest season. Although the Olive Growers Council is charged with the mission of negotiating the best possible prices per ton based on factors including carry-in inventory, market movement, current crop size and the negative impact imports are having on California growers, prices paid for olives should be first and foremost on each and every growers mind. You are encouraged to always have the pricing subject as a part of any discussion you are having with your processor representatives. You are one of their valued customers and they need your fruit. As we have
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AN EARLY PREVIEW OF THE 2013 CALIFORNIA TABLE OLIVE SEASON
Continued from page 4

seen table olive acreage dwindle down to levels well below California’s peak years, the industry needs to encourage growers to keep their trees in the ground and continue to improve their production practices.

IN SUMMARY

The table olive industry will have a much better idea of what the 2013 table olive crop will become the first of July. What happens between now and then is open to speculation. Suffice it to say, growing olives is a long term farming operation. What we do today in terms of planning and management will have a strong impact on next year and the years beyond. As mentioned earlier, for the table olive industry to survive, growers must become more visionary as we look to the future of the industry in California.

There are many uncertainties growers face season to season: Will I set a crop? Can I find olive pickers? What’s the cost per ton to harvest? What will I be paid for my olives? Regardless of what may or may not happen at the farm-gate, costs keep moving up, government continues to regulate well beyond what is fair and reasonable, taxes take bigger and bigger bites from the bottom line and added to many other uncertainties, farmers must continue to maintain an optimistic outlook while both dealing with and trying to handle the daily demands of his farming operation.

FOREIGN OLIVE IMPORT REPORT
August 1, 2012 to March 31, 2013 (8 Month Report)

U.S. Customs Service files a monthly report showing the tons of foreign black ripe olives that are exported to the U.S. By each country and is broken down by processing style (whole, pitted, sliced, wedged), by market destination (retail or food service) and if the deliveries are raw or preserved in brine for processing. When reviewing the figures, please note which olive style (sliced) commands the greatest amount of tonnage. Foreign table olive suppliers now control the U.S. food service market.

Although this is only an 8 months report, it clearly reveals how foreign competition is the major supplier of the U.S. Food service industry and although much of the quality is sub-standard, the quantities overwhelm what California sells. Thanks to EU generous olive subsidies given to both growers and processors through various means, their landed prices for food service product sells for significant discounts against domestic product by $8.00 to $12.00 per case.

On a more serious note, the California Olive Marketing Order may be jeopardized by USDA’s recent move to allow Spain to certify their own product on site in Spain prior to delivery to the U.S. Although listed as a pilot program, it will have serious ramifications for the California table olive industry as the marketing order requires incoming inspection of foreign product if a domestic commodity has an order with quality standards as does California’s order. This borders on the same government policy that provides financial support to foreign countries (Morocco) who are major competitors of the U.S. Table olive industry. Even with major headlines reporting the issue in the SFO Chronicle, California’s congressional delegation has remained silent when Morocco was gifted $300 million to upgrade their olive industry including financing to plant more acres.

Following is a list of countries and shipments to the U.S. in order of highest to lowest tonnage by style of pack for the first eight months of the current marketing cycle.

<table>
<thead>
<tr>
<th>Style</th>
<th>Country</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Service: Sliced Olives</td>
<td>Spain</td>
<td>21,954</td>
</tr>
<tr>
<td></td>
<td>Morocco</td>
<td>11,395</td>
</tr>
<tr>
<td></td>
<td>Argentina</td>
<td>1,001</td>
</tr>
<tr>
<td></td>
<td>Egypt</td>
<td>1,048</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>1,296</td>
</tr>
<tr>
<td></td>
<td></td>
<td>36,714(63%)</td>
</tr>
<tr>
<td>Fresh/Preserved (For Processing)</td>
<td>Spain</td>
<td>11,709</td>
</tr>
<tr>
<td></td>
<td>Mexico</td>
<td>11,003</td>
</tr>
<tr>
<td></td>
<td>Egypt</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>321</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13,047(23%)</td>
</tr>
<tr>
<td>Food Service: Whole &amp; Pitted</td>
<td>Spain</td>
<td>3,066</td>
</tr>
<tr>
<td></td>
<td>Morocco</td>
<td>247</td>
</tr>
<tr>
<td></td>
<td>Argentina</td>
<td>196</td>
</tr>
<tr>
<td></td>
<td>Egypt</td>
<td>340</td>
</tr>
<tr>
<td></td>
<td>Turkey</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>657</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4,561(8%)</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Style</th>
<th>Country</th>
<th>Tons</th>
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</thead>
<tbody>
<tr>
<td>Food Service: Wedged</td>
<td>Spain</td>
<td>475</td>
</tr>
<tr>
<td></td>
<td>Morocco</td>
<td>1,508</td>
</tr>
<tr>
<td></td>
<td>Turkey</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2,000(3%)</td>
</tr>
<tr>
<td>Retail: Whole &amp; Pitted</td>
<td>Spain</td>
<td>988</td>
</tr>
<tr>
<td></td>
<td>Egypt</td>
<td>140</td>
</tr>
<tr>
<td></td>
<td>Turkey</td>
<td>177</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>102</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,281(2%)</td>
</tr>
<tr>
<td>Food Service: Whole &amp; Pitted</td>
<td>Spain</td>
<td>257</td>
</tr>
<tr>
<td></td>
<td>Egypt</td>
<td>205</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>497(1%)</td>
</tr>
</tbody>
</table>

Total Imported Black Ripe Tons: 58,100

***Percent listed by each total ton figure represents style share of U.S.import market.
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Olive cultivars and oil polyphenols

By: Liliana Scarafia
Agbiolab, Inc.

Polyphenols (or biophenols) constitute a large class of natural antioxidants found in olive oil. More than thirty polyphenols have been identified, which are most often measured as an aggregate value: Total Polyphenol (TPH).

Lately, there has been greater emphasis in seeking olive oils with higher polyphenol content, due to the beneficial health effects attributed to them. In addition, it is known that the antioxidant properties of polyphenols extend olive oil shelf-life, an important fact for both retailers and consumers.

Here we focus on oils that naturally have higher polyphenol content, as the olive cultivar is a major determinant. At a later time we will discuss factors that olive oil producers must take into consideration to achieve higher polyphenol levels, such as irrigation, harvest timing and milling. It all starts with the chosen olive variety.

Polyphenols and olive varieties

The genetic makeup of the olive plant determines the polyphenol level potential of its oil, since genes are involved in the synthesis of these chemicals in the fruit. Some olive varieties like Picual and Coratina produce oils high in polyphenols while others do not.

The table below shows olive varieties grown in California, grouped according to the polyphenols levels of their oils:

<table>
<thead>
<tr>
<th>Low TPH</th>
<th>Med TPH</th>
<th>High TPH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arbequina</td>
<td>Aglandau</td>
<td>Coratina</td>
</tr>
<tr>
<td>Casaliva</td>
<td>Arbosana</td>
<td>Cornicabra</td>
</tr>
<tr>
<td>Nocellara</td>
<td>Ascolano</td>
<td>Koroneiki</td>
</tr>
<tr>
<td>Picudo</td>
<td>Bouteillan</td>
<td>Manzanillo</td>
</tr>
<tr>
<td>Sevillano</td>
<td>Carolea</td>
<td>Maurino</td>
</tr>
<tr>
<td>Tanche</td>
<td>Frantoio</td>
<td>Mission</td>
</tr>
<tr>
<td></td>
<td>Hojiblanca</td>
<td>Moraiolo</td>
</tr>
<tr>
<td></td>
<td>Itrana</td>
<td>Picual</td>
</tr>
<tr>
<td></td>
<td>Leccino</td>
<td>Picholine</td>
</tr>
</tbody>
</table>

Note that the low-polyphenol group contains varieties suitable for table olives.

With renewed interest, oil producers and retailers inquire about the polyphenol content of California olive oils. Some have wondered what values should be expected from particular varieties.

To provide an overview of the range in polyphenol content in oils, we have plotted values we measured at Agbiolab in the 2012 calendar year (Figure 1). These oils mostly from California producers display a wide range of TPH, from less than 100 to higher than 500 milligram equivalent of gallic acid per kilogram of oil.

To the left of the graph are the oil blends (e.g. ‘Tuscan blend’) and some uncommon oils derived from single olive varieties (e.g. Frantoio and Coratina). To the right are oils from Mission (known as Picholine Marocaine elsewhere), Arbequina and Favolosa plotted separately.

Mission oils contain high levels of polyphenols that can equal Picual and Coratina. By contrast Arbequina oils have lower content overall but also show a wide range. In California, Arbequina oils are typically produced from a common Spanish clone, a low-vigor plant used in Super High Density (SHD) plantings. Many Arbequina oils may include a fraction of Koroneiki and Arbosana, respectively high and medium-polyphenol varieties, given that these two cultivars are often used as Arbequina pollinators in SHD plantings, and are harvested together.

Plotted for comparison is the newer SHD cultivar Favolosa, also known as FS17. This Italian variety is a low-vigor clone derived from Frantoio. The original Frantoio yields medium polyphenol oils. As shown on the graph, the genetics of Favolosa, a ‘dwarf Frantoio’, have higher polyphenol potential than Arbequina.

Polyphenols during olive fruit development

In 2012, Italian researchers published a detailed study of polyphenol content in fruit along the growing season, from pit hardening onwards. This study included
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low and high polyphenol varieties. Interestingly, the expression of several genes and composition of polyphenols deposition in the fruit was different between the low and high-polyphenols groups.

As depicted in figure 2, the low polyphenols group showed low content from pit hardening onwards. On the other hand, the high polyphenols varieties started with a high level that diminished almost continually in the growing season. However, the composition of the polyphenols changed later in the season (depicted as double arrow on figure 2). Some of polyphenols components became more abundant with fruit ripening.

Conclusion

In summary, there is a wide range of polyphenols values in olive oils in the market. Even common monocultivar oils like Arbequina and Mission show a range of values, in the low end and in the high end, respectively. Genetics play a major role by determining a maximum potential content (low or high TPH). The great diversity of olive cultivars provide options for growers that wish to produce high-polyphenol oils, even in Super High Density plantings with new varietal releases that supersede Arbequina.
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