

## **European Cherry Industry Continues to Evolve**

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Returning to Europe after my first trip six years ago I was not surprised to see that the European sweet cherry industry continues to progress and change. In 1994 I found a progressive and dynamic industry that had commercially adopted many new aspects of cherry culture and production that were, at the time, only under experimental review in the United States.

Sweet cherry growers in Spain, Italy, France and Germany were using dwarfing, precocious rootstocks and recently developed training systems to grow pedestrian orchards that could be harvested from the ground without the use of tall ladders. In addition, the production of multiple varieties enabled European cherry growers to reduce risks and extend their harvest up to four months.

Six years later the same forces that encouraged these dramatic advances are still actively shaping the European cherry industry. Labor shortages, high harvest costs and a significant potential for cherry cracking have encouraged cherry growers to continue the trend toward more progressive cherry production. In addition, consumer concern for environmental safety is more immediately affecting European cherry growers today as compared to six years ago.

### **Varieties**

In 1994 cherry growers and scientists were actively searching for new varieties that would improve fruit quality and extend their harvest season. Fruit size was generally considered the most important quality factor followed closely by resistance to cracking. Large markets within one to two days travel from any production area in Europe made fruit firmness of secondary importance. For all of these reasons, Bing was not and is not a cherry grown in Europe.

Six years ago Lapins, Sylvia, Summit and Sweetheart, all from Summerland, Canada were the new varieties everyone was talking about. Today, production of these varieties continues to increase, but the search for new and better varieties continues. Europeans continue to look first to Canada for these varieties. Symphony (25-25) and Splendid (20-09), two very late varieties out of Summerland, seem to be the most talked about new cherries in Spain and Italy. Cristallina is also generating excitement from nurseryman Jose Marsal of Spain who comments that it appears to be "very, very good here.....very firm and large with very good flavor." Marsal also commented that Skeena was garnering interest, and some in Europe believed Skeena to be a better variety than Lapins for that harvest window.

But the Europeans are also looking to Canada's neighbor to the south to help raise the quality of their cherries. Of particular interest are high quality cherries that ripen between Burlat and Sylvia (early to mid-season cherries). European scientists are beginning to take note of both Chelan and Tieton, selections out of Washington State University. Although Chelan is planted in a number of test plots, interest in Tieton is just beginning.

For good reason, growers and scientists in Spain, France and Italy are also excited about two selections from Marvin Niece, a private U.S. breeder. Prime Giant is an early variety that

ripens with Brooks, seven to ten days after Burlat. Like Brooks it is a good tasting cherry, and, in my opinion as early as one week before harvest it already tastes better than a ripe Burlat. It is very firm, with a strong, tart-sweet flavor. Cherries are large with an average size greater than 10 row. However, the cherry is susceptible to cracking and, unfortunately, many Prime Giant trees planted in Europe seem to be suffering from a virus that significantly affects tree yield and health.

Crystal Champaign is the second early variety from Niece that deserves a closer look. Only a few days after Burlat, it appears to be of significantly higher quality than Burlat. Averaging 10 row in size it is very firm, with a crunchy texture. Crystal Champaign is high in sugar, and has a very good flavor and a blocky appearance with broad shoulders. It is a nice looking cherry with a shiny finish and appears to have some rain cracking resistance.

Other early varieties that are being considered for commercial production in various regions of Europe include Earlese, Primolat Firpreem, Early Bi Gi, Sweet-Early, and Early Star. In my opinion Early Star from the University of Bologna, Italy is the best variety from this group but it suffers from very poor productivity and questionable flavor. I believe the other varieties are all too soft for the American market.

While North American varieties have garnered much acceptance it is interesting to note new European varieties are less widely grown outside their region of origin. There are no new European varieties that are as widely grown as several of the Canadian varieties such as Lapins, Sylvia and Sweetheart. In part, I believe this is due to the importance that Europeans place on fruit size. The Canadian varieties have definitely made an impression in this respect. However, even a relatively large cherry like Regina from Germany, lacks recognition or acceptance in many parts of Europe. In Spain, where other late varieties such as Lapins are grown, I found no knowledge of Regina which I believe is one of the highest quality cherries grown in Europe. One Italian scientist had planted Regina, but only because it was part of a European-wide rootstock trial coordinated out of Denmark.

European cherry producers recognized years ago the advantages of growing multiple cherry varieties. In a region where labor shortages are acute and small family farms hire only a few additional workers at harvest time, picking must extend for several weeks in order for the crop to be completely harvested. Through the use of multiple varieties, cherry growers in the Jerte Valley, Spain's largest production area, harvest cherries from April through July. In addition, the production of multiple varieties gives growers additional protection against rain damage. Early rains had caused significant damage to Burlat's in the Jerte Valley and to Garnet in the Ebro Valley of Spain. Although partly destroyed, other varieties were as yet unscathed. Finally, the production of multiple varieties gave growers, especially those in early and late production areas such as Spain and Norway a market advantage for early and late fruit respectively.

## **Rootstocks**

The search for the perfect rootstock continues in Europe as it does in the USA. A European wide project, coordinated out of Denmark, is evaluating 12 different rootstocks grafted with Lapins and Regina. Included in the project are Gisela 4, 5, and 6, Weiroot selections, Maxma 14 and 60, Edabriz and a new Colt selection, among others. Besides this project, there are numerous regional rootstock evaluations being conducted, although in most regions there seems to be a degree of satisfaction with the rootstocks already used for commercial production.

For example, Edabriz is still being recommended in France for planting on vigorous soils while Maxma 14 is suggested for all soils but has some tolerance to wetter as well as calcareous soils. In France, trees grown on Edabriz look healthy and vigorous with good fruit size. Edabriz, however, seems to be specifically adapted to French conditions as there is little interest in this rootstock in neighboring countries and, where tested, it has performed less than satisfactorily. French growers are widely planting both rootstocks and seemed satisfied with the results.

The Weiroot rootstocks, originating near Munich, Germany are widely planted commercially, and successfully grown in the Franconian region of Germany. However, they are found in commercial production only occasionally in other regions of Germany and rarely, if at all outside Germany.

Among European growers, probably the most widely planted dwarfing rootstock is Gisela 5. More than any other, this rootstock has gained international acceptance. Planted most heavily in northern and western Germany, where it had its origin, it can, nevertheless, be found in orchards from Italy to Norway. In fact, one Italian packing house has recommended that their growers use only Gisela 5 rootstock in their new plantings.



Techlovan being evaluated in Ahrweiler, Germany

One production region that is actively looking for a new rootstock is the Jerte Valley of Spain. Currently using full-size rootstocks such as Santa Lucia 64, a mahaleb selection, their desire is to find a rootstock that would maintain fruit size yet provide for smaller tree size and earlier production. Dr. Marco Antonio Manzano, the provincial scientist with cherry responsibilities, may have found what they are looking for in the CAB rootstock series. These Italian rootstocks are not new but rather 30 years old. What is interesting is that this is the first production area that I have visited that has shown interest in this rootstock series. Dr. Manzano prefers CAB 11E and 6P. He finds they perform well in water-logged soils, both are considerably smaller than Mazzard (up to 50%) yet do not detrimentally affect fruit size. In addition, precocity is advanced by up to two years. On the negative side, both rootstocks are hard to propagate and sucker readily.

### Training Systems

Probably more than anything else, the European growing practice that most impressed me in 1994 was the use of training systems to produce "pedestrian orchards". With help from dwarfing rootstocks, or low vigor soils, many European growers were successfully growing trees that could be completely harvested from the ground or small ladders. Once again, I was impressed by these same training systems. I saw third leaf Spanish Bush orchards of self-fertile Canadian



25 year old trees pruned to the Spanish Bush training system

varieties that were covered in bloom and 20 year old Spanish Bush trees that were still eight feet tall but were able to maintain a foot of new growth and strong blossoms throughout the tree.

Most growers in Spain maintain fruit size solely through the use of heading cuts into bearing wood. However, one large grower, who manages a cherry orchard of several hundred acres, hand thins his cherries for maximum fruit size. Through close observation and experience the owner has estimated the maximum yield potential of each variety. For example, he believes that Newstar can carry a maximum crop load of 18 metric tonnes per hectare before size and firmness are affected. By knowing tree density in each block and desired fruit weight, it is easy to calculate the target fruit load per hectare and per tree. He would like to grow a little over 1000 cherries per tree for Newstar.

To achieve this crop load he begins the thinning process each year while pruning. For Newstar, trees were thinned to 350 bud clusters per tree by making heading cuts into bearing wood. Shortly after June drop (which occurs in April in Spain) the thinning crews start to work. The desired fruit load per tree is given to each crew and is different for each variety. The crew boss thins and counts one tree as an example for the crew. Armed with hand pruners the crews rapidly move through clusters, branches and trees. The crew boss follows behind counting and recording the results. Three to four trees per hectares are checked for quality control purposes. These trees are marked and a second man comes through and recounts the same trees. The grower maintains that they never over thin, so if crop load is still too heavy the crew is sent through again.

Through thinning, the grower believes that it is possible to increase the average size of Newstar fruit by four millimeters. It costs him \$2,000 per hectare to thin the fruit but the value of his crop is increased by up to \$1.50 per kilogram. Of course, none of this would be possible if it weren't for the fact that trees are small, with a maximum height of eight feet. All varieties that are overset, especially the self-fertile Canadian varieties, are candidates for thinning.

### **Harvest and Post-Harvest Handling**

Six years ago, without exception, the growers I visited with were paying workers on an hourly basis to harvest their crop. For obvious reasons, this meant productivity was very low, in some cases averaging 25 pounds per person per hour or even less when cherries were harvested for color and multiple pickings were needed, as with early season Burlats. For the most part, Europeans fear bruised and damaged fruit when pickers are paid by the kilo. However, last year, I came across two growers that were experimenting with a per pound payment system. I visited with one grower part way through harvest and found that he had tripled his harvest rate when he paid by the kilo. Most importantly, however, he was convinced that he was not seeing a reduction in fruit quality. The main problem he was having was social. In a region where harvest labor was scarce, pickers were flocking to his orchards from neighboring operations. In addition, many of his own crew, working on the packing line and other areas, wanted a chance to pick so that they could make the higher wages which ranged up to \$120 per day.

Tree fruit orchards throughout Europe are typically very small. Although some large orchards exist, the average size is around five acres. In 1994, harvested cherries were often packed by hand at the farm. Today, this practice continues. In the Vignola region of Italy 40% of the cherries are packed at the farm while the rest are taken to the cooperative and sorted in some



Hand packed cherries from Italy

manner. On one farm in this region two ladies sat in a nearby shed sorting through cherries and placing them individually in small boxes which held one kilogram or 2.2 pounds of fruit. Cherries were arranged in even rows with stems down on the top row giving the appearance of stemless cherries. This packaging process adds about \$1.00 to \$1.50 more per kilo to the crop value compared to fruit packed at the cooperative in a more conventional manner. At the time I was visiting, hand packed Burlats were receiving \$3.50 per kilo compared to \$2.00 to \$2.50 for conventionally processed fruit.

There is, however, a gradual trend to adopt fruit processing techniques more commonly found in the U.S. For example, in 1994 there were no U.S. style cherry packing lines in Spain. Today, there are three lines in operation, including two owned by one packing house alone. These same houses are also using modified atmosphere packaging for some of their cherries.

## **Conclusion**

Europe can be described as a continent of contrasts. It is easy to see this contrast in buildings where the ancient, old and modern co-exist side by side, often within a few feet of one another. This same contrast can be seen in European cherry orchards, where archaic and new techniques can often be seen in the same orchard. Despite these contradictions, however, the trend in European cherry production is for more modern and innovative practices that help to provide the European cherry grower with the margin for success.