European Sweet Cherry Industry: Germany, France, Italy, Turkey

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Presented at the 44th Annual IDFTA Conference, February 17-21, 2001, Grand Rapids, Michigan

GERMANY

Altogether there are about 6,000 ha (14,800 acres) of sweet cherries grown in Germany. Seventy-five percent are destined for the fresh market. The requirements for this market are:

- fruit size at least 1.02 inches = 0.32 oz
- dark red color
- firmness (Durofel 25: >58)
- product uniformity
- no rotting
- good shelf life
- resistance to transport

For variety recommendation there are two different climatic sites. Northern Germany is characterized by a humid, windy climate. Up to now rain covers could not be successfully installed, so the choice of a variety is dependent primarily on tolerance to cracking. The cultivars used (Table 1) were bred at the experimental station in Jork near Hamburg, most of them are Schneiders x Rube hybrids. With the exception of Regina and to some extent Oktavia, production has been confined to the regions of northern Germany.

TABLE 1

Cherry varieties for northern German orchards (Niedersachsen, Hamburg, Mecklenburg-Vorpommern, Sachsen-Anhalt). Ripening week is listed in relationship to the earliest ripening cherry cultivar. Bing is considered to ripen in week 5.

Name	Ripening week	Characteristics
Valeska	3-4	small to medium size, soft, dark
Annabella	4-5	
Oktavia	6	medium to large size, upright growth, medium firmness
Bianca	7	small size, pollinator for Regina, very productive
Karina	7-8	large fruit size, upright growth, medium precocity, good taste
Regina	7-8	large fruit size, firm, flat angled branches, medium taste

TABLE 2

Sweet cherries in Germany, both imports and domestic production.

Country	1996	1997	1998
Imports from:			
France	3,039	2,873	760
Belgium	290	60	169
Netherlands	409	691	425
Italy	8,841	9,316	8,704
Greece	3,025	3,626	2,880
Spain	3,147	3,013	4,066
Amount EU	18,751	19,579	17,004
Turkey	10,056	9,946	4,071
Domestic production	32,500	17,700	31,800

In Germany in 1996 and 1997 Turkey was the most important import country with about 50% of the market.

In the other German production areas with less rain or less wind, cultivar choice is determined more by fruit quality for the fresh market than by sensitivity to cracking, though this is still the most important problem for sweet cherry production throughout Germany. Generally Van is considered to be the most susceptible variety for splitting and is no longer planted.

Only a third of the German production is handled by processors such as coops. In many years, the quality of local German produce which is handled by these coops does not compare favorably to imports from southern European countries such as Turkey, Italy, Spain and France which are competing especially with the early ripening varieties (Table 2). In contrast, growers find good demand for early ripening varieties through direct marketing (weekly markets, roadside stands, selling on the farm, direct contact with retail trade).

As a result of growers' and researchers' experience there is an assortment of old and new varieties meeting the demand of the fresh market and now being recommended for the southern parts of Germany:

- Burlat (2nd ripening week, seedling, France): Vigorous tree, medium productivity, only average fruit firmness, especially in hot weather, good fruit size (7-9 g), susceptible to rotting.
- Merchant (3rd ripening week, open pollinated Merton Glory, UK): Medium firmness, fruit size 7-9 g and good tolerance to splitting and rotting. Also planted in north Germany.
- Giorgia (3rd to 4th ripening week, ISF 123 x Caccianese, Italy): Tree shape dominated by the central leader, hanging side branches. Firm fruits, slightly acidic. Fruit branches have to be pruned consistently to avoid small fruit-size.
- Starking Hardy Giant (4th ripening week, seedling, USA): Very firm fruits with medium size (7-9 g), flat, broad growth, precocious and productive, in the orchard good tolerance to splitting. Use only virus-free planting material!
- Sylvia (4th ripening week, Compact Lambert x Van, Canada): Productive, upright growth, medium fruit size (7-9 g), difficult to pick because fruits are hanging beneath the leaves, pollinator for Regina.
- Sam (4th to 5th ripening week, open pollinated V-160140, Canada): Not very tasty, but good and regular cropper with good fruit size. Pollinator for Regina. No virus-free trees available and incompatible with Weiroot-rootstocks.
- Schneiders späte Knorpelkirsche (4th to 5th ripening week, seedling, Germany): Main variety in southwest Germany having a very good fruit quality (size, firmness, taste). Good branching but upright growth. Only average productivity with traditional rootstocks. Synonyms: Haumüller, Germersdorfer, Kaiser Franz, Ferrovia. Most productive clone: Nordwunder.
- Kordia (Attika) (6th ripening week, seedling, Czech Republic): Quickly replacing Hedelfingen due to much better fruit quality. Ideal growth for spindle training. Flowering semi-late but bloom susceptible to cold temperatures. One of the most planted varieties recently.
- Regina (7th to 8th ripening week, Schneiders x Rube, Germany): This variety has proven its productivity only in northern Germany and in general on dwarfing rootstocks. Large and firm fruits (9 to 12 g) with a long stem; medium taste, good branching with flat angles, so suitable for spindle training. Due to high late season prices and a very good tolerance to cracking it is the most planted variety of the last 5 years. Self-incompatible and very late flowering period.

TABLE 3

Share of different rootstocks in German sweet cherry orchards (estimate).

Rootstock	Percentage in existing orchards	Percentage in new plantations in 2001
Mazzard	60	20
Colt	20	6
P. mahaleb	10	1
Maxma 14	5	20
Gisela 5	1	45
Weiroot types	3	3
other types	1	5

SUMMARY OF GERMAN SWEET CHERRY ACREAGE AND VARIETY TRENDS BY REGION

Altes Land, north Germany 520 ha (1285 acres)	Current production: Regina, Valeska, Oktavia, Viola (rest: Alma, Bianca, Erika, Rube) New plantations 2000/01: Regina, Karina, Kordia, Merchant, Oktavia, Viola, Valeska
Middle Rhine Valley 377 ha (932 acres)	Current production: Schneiders, Hedelfingen, Starking H. Giant, blushed cherries, (rest: Burlat, Van, Moreau) New plantations 2000/01: Regina, Kordia, Schneiders, Sylvia
Upper Rhine Valley 2000 ha (4942 acres)	Current processing production (85%): Dollesseppler,Benjaminler, Napoleon, Büttners. New Plantations: none. Current fresh market production (15%): Burlat, SHG, Schneiders, Hedelfingen, Regina. New plantations 2000/01: Regina, Kordia, Oktavia, Sweetheart, Merchant
Franconia, Bavaria 922 ha (2278 acres)	Current production: Regina, Hedelfingen, Sam, Büttners, Star, Kordia, local varieties. New plantations: Regina (70%), Kordia, Sam, Lapins, Margit

Regional Specialties in Southern Germany

In Franconia, the Hungarian cherry named Margit (3rd to 4th ripening week) and the Canadian Lapins are recommended. In other regions there have been some bad experiences with these cultivars. In Baden (southwest) Dollesseppler is planted on a certain scale for mechanical harvest and industrial uses such as by distilleries and for canning.

Rootstocks

The most planted rootstock now is the dwarfing Gisela 5 (Table 3). Although experiences in the experimental stations are for only 10 years, growers are keen to plant small cherry trees. Highest densities can be found with traditional apple growers who are disappointed at the marketing difficulties of apples. In traditional cherry areas such as the Rhine valley or Franconia the orchards are often too small for irrigation or water is not available. Here Maxma 14 (40% growth reduction compared to mazzard) is an alternative.

FRANCE

Though production has declined from 120,000 metric tons (MT) 20 years ago, France is number 3 after Italy and Spain (Fig. 1) in the European community with about 75,000 MT annually, thereof 20 to

25,000 MT for processing. Altogether 15,700 hectares (38,790 acres) are planted with cherries. Statistically the average cherry grower has less than 2 ha (5 acres). Forty-four percent of all cherry farms have less than 0.5 ha (1.2 acres) and are cultivating only 9% of the total acreage. Only 5% of the farms have more than 5 ha (12.4 acres), but they are cultivating 24% of the total acreage.

Both France and Italy have farm labor costs in the $10 to $12 per hour range. Besides the large cooperatives, we often can find alliances of a few growers commercializing under their own label. Depending on the year, between 4,000 and 12,000 MT are exported (10% to 18% of the total production).

General Developments in the French Cherry Orchard

Summit (30%), Burlat (25%), Ferprim (20%), Van (10%) and Duroni 3 (10%) are the most planted varieties.

With rootstocks, the traditional Mahalebs (St. Lucie 64 and the new GF 405) and Mazzard selections make up 50% of plantings. Mazzard x Mahaleb 14 (MM 14) is 30% of acreage in Europe. MM 14 is early bearing with tree size about 60 to 70% of Mazzard. The Iranian Tabel (Edabriz, *P. cerasus*) has been selected in France. It is recommended only for fresh market and fertile soils and must be irrigated.

French growers distinguish between standard orchards with a tree height over 4 m (13 ft), and so-called "pedestrian orchards" where most work can be done from the ground. These orchard systems include a range of rootstocks, training forms and planting densities. The most used training form is the vase in different variations (80%). Also Tatura trellis, central leader and Solaxe are chosen for new orchards.

Cherry production under plastic covering occurs only at the Mediterranean coast where the high price for the earliest yields with new varieties can cover the high investments.

Calcium spraying to prevent rain cracking is tested at Carpentras (Province, southeast). They have positive results with a gain of 20 to 30% of non-split cherries.

Geographically, France can be subdivided into three main growing areas, Rhône Valley, Mediterranean Coast and southwest France.

Rhône Valley

With more than 8,000 ha (19,770 acres) from the mouth of the Rhône Valley up to Lyon, cherry orchards can be found in the valleys of the Rhône and its tributaries as well as on the foothills of the Alps and the Cevennes. The growers' union (cooperative) of the Ventoux mountain (department Vaucluse) is the most important in France with more than 800 members. On deep but strong and often calcareous soils *Prunus mahaleb* and Maxma 14 are the most used rootstocks.

FIGURE 1

Sweet cherry orchards of the EU (1000 hectares, 1996).

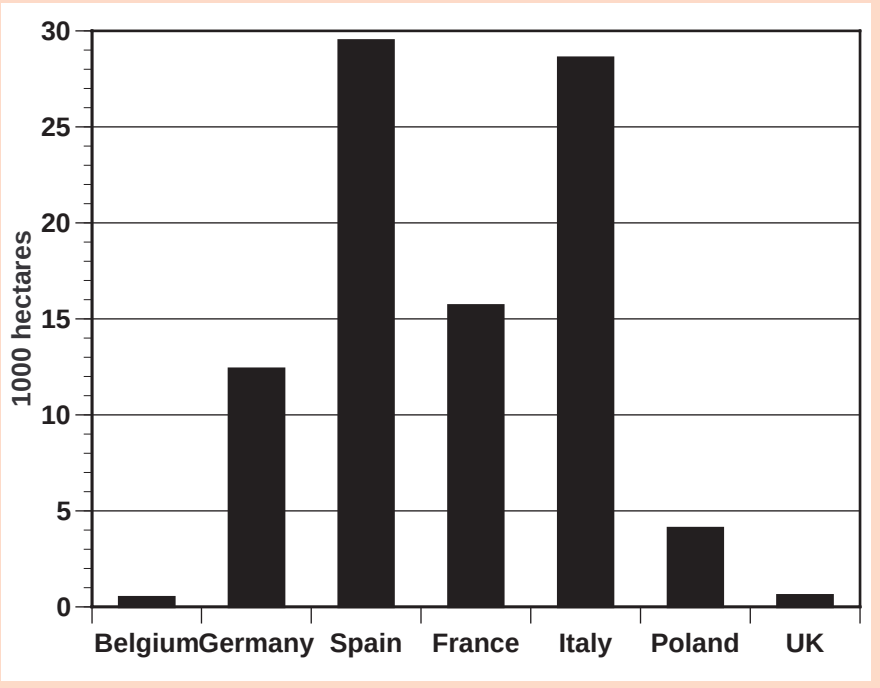
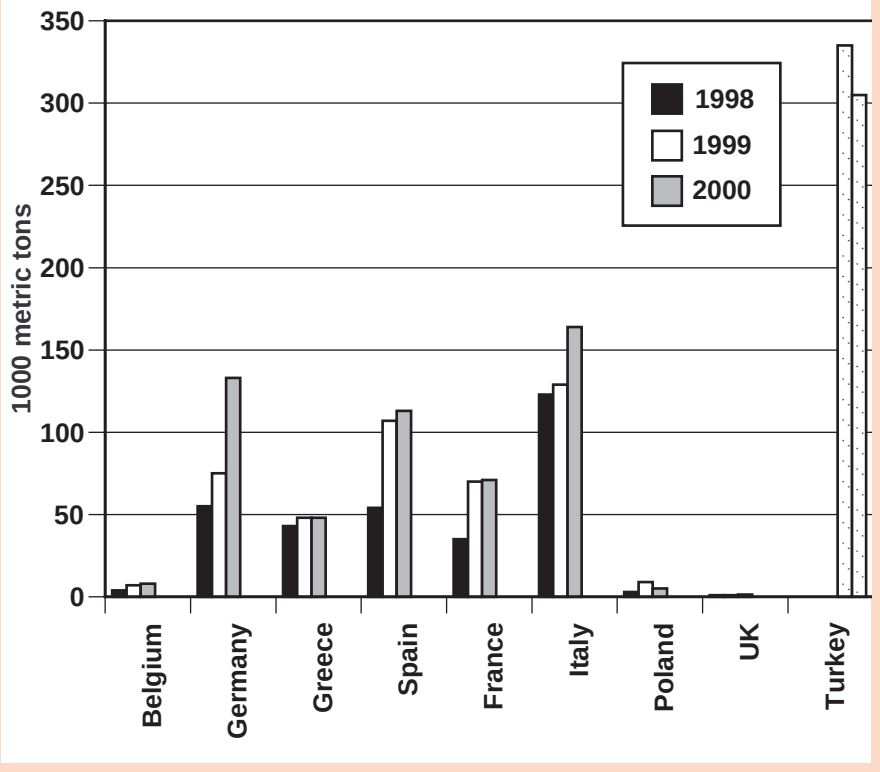


FIGURE 2

Sweet cherry production in the EU (1000 metric tons).



The predominant planting density is 6 x 6 m (20 x 20 ft), 200 to 300 trees/ha (81 to 121 trees/acre). Growers are very sensitive to market developments and in the 1990s they could earn more money with apricots and peaches where picking costs are much lower. These are only two reasons for the decreasing cherry acreage. Only during the last 2 years has interest in sweet cherries increased (as all over the world). Belge is a typical variety for the Mediterranean climate. More in the north, fruitset is too average. Because Belge has a good image with dealers, also other varieties at the same ripening time (i.e., Noire de Meched, Badacsony) are commercialized under the name of Belge. In the district of Lyon at about 500 m (980 ft) above sea level, some 100 ha (247 acres), mostly grafted on mazzard, earn their money for the late market.

Mediterranean Coast

From the Spanish border to the mouth of the Rhône river are planted about 700 ha (1730 acres). In France Perpignan is well known for the first Burlat cherries trucked to Paris in the beginning of May. This area, traditionally specialized in early cultivars, had suffered from Spain's joining the European Community in the 1980s. The decrease in production is the sharpest of all French cherry areas. Burlat is still the most important variety. New early ripening varieties are Primulat and Earlise. More to the north also, later ripening varieties as Summit or Noire de Meched are planted. Because thunderstorms and rainy weather must be expected every summer, the first plots with plastic rain covering have been installed. This area has been declared to be behind the time for many years, but now we can see the most innovative orchards and a very positive thinking.

Southwest France

The surroundings of Moissac and the Tarn valley are the most important production areas in the southwest of France. Ripening time is 2 weeks later than at the Mediterranean coast. Cherry is mostly a complementary product to vine grapes, plums and apples. Oriented to the late ripening time, cherries grown in this area always found a good market. With new varieties and new dwarfing rootstocks such as Tabel® Edabriz or Maxma 14 which helped to reduce picking costs, the expansion of the cherry industry from the beginning of the 1990s is more dynamic than in the other growing areas. Because of the problem of high picker wages, dwarfing rootstocks and low tree forms such as the Solaxe have been introduced.

ITALY

After a bottoming in the 1970s at approximately 100,000 metric tons (MT) of sweet cherries per year, Italian production grew to 120 to 150,000 MT in the 1990s. In the 1950s, an annual yield of 200,000 MT was standard. The total area of Italian cherry orchard is about 28,000 ha (69,190 acres). Most cherries are sold on the fresh market. Only 6,000 MT are processed. Because of the dry climate, rain shelters and applications against cracking are not used. Eighty-five percent of Italian cherry production is found in four areas: Puglia, Campania, Emilia Romagna and Veneto.

Puglia

Between 40 and 50% of the Italian cherry industry is located in Puglia (southern Italy). Only in this area is cherry acreage increasing at a yearly rate of 5 to 7%. There are different reasons for this development: low wages in comparison to the northern production areas, earliest ripening times in Italy, but also early on a European scale (Burlat cherries are normally picked in the 1st week of May), very dry climate (guaranteeing high quality) and poor, shallow soils limiting vigor and tree height of the standard Mahaleb rootstock. Production is concentrated in the province of Bari and extends from the Adriatic shore up to 450 m (1500 ft) above sea level. In spite of some recent introductions such as Giorgia, Summit and Lapins, the major varieties in new plantations are the traditional Burlat, Moreau and Ferrovia (syn.: Schneiders).

Twenty percent of the production is destined for local markets, 50 to 60% is sold in northern Italy and 10 to 20% is exported, mostly to Germany and Belgium.

After bad experiences with the Colt rootstock, growers returned to *Prunus mahaleb* which is currently dominant.

The most common training system is the vase (open center). The prevalent spacing in new plantations is 6 x 5–6 m (20 x 20 ft), although there are some rare examples of more dense plantations of 5 x 2.5–3 m (16.4 x 10 ft).

Campania

This region neighboring Puglia just opposite to the heel of the Italian "boot" is the second largest producer. Cherry trees are grown on very small plots, often mixed with other trees. Soils are deep and volcanic. Because mahaleb is not suited for these soils, mazzard predominates. About 30% of the cherries produced are processed in this region. The leader for processing cherries is the town of Avellino, about 30 miles from Naples. In the absence of cooperatives or other centralized marketing structures, both production and marketing are disorganized. Traditional local varieties such as Delmonte, Malizia, Della Recea and Imperiale predominate. The first Burlat cherries are picked at the beginning of May. Marketing is managed by private dealers or by the growers themselves. In spite of the neighborhood of large urban centers such as Naples, production is decreasing steadily.

Emilia Romagna

Vignola in the region called Emilia Romagna (Po Valley) is perhaps the most well-known Italian cherry center. Although with only 100 additional hectares (247 acres) planted per year, (total area of 3,000 ha or 7410 acres), the marketing strategy and dynamism of the growers have created a high quality image for the Vignola cherry. Seventy percent of the plantations are situated in the province of Modena, 22% in the province of Bologna and the rest (8%) on the hills of the province of Forli. Traditional high quality varieties are Duroni di Vignola (I to III), Moreau, Burlat and Mora. The last few years, Lapins, Van, Giorgia and Ferrovia have been expanded. In 2001 the varieties most in demand by nurseries are Sweetheart and Lapins as well as Burlat. The ripening time begins about 2 weeks later than in the south of Italy. *Prunus mahaleb* represents only 50% of the rootstock demand, while the other 50% are split between dwarfing rootstocks such as Colt, Maxma, *Prunus cerasus* (CAB 11E and CAB 6P) and very few Gisela 5. There is no predominant training form. V-systems and palmette as well as low free shape, open center and low hedgerow (e.g., Flag) are common. Altogether, the development of the northern Italian cherry industry is impaired by current economic prosperity (difficulty in finding pickers for low wages) and by traditional marketing oriented not enough on European discounter and supermarket chains.

Veneto

In spite of a favorable geographical site near the arterial roads to the main export markets of Austria and Germany, the province of Verona produces only 10 to 15% of Italian cherries, and 90% are absorbed by the local market. The total production area of 2,400 ha (5930 acres), divided into small plots, extends from Lake Garda to the Alpone valley. Beginning of ripening time is comparable to that of Vignola. The traditional varieties are Mora di Verona and Mora della

Punta. New varieties from the University of Verona (e.g., Corinna and Francesca) can be hand-picked without the stem. Trials showed improvements in picking performance and shelf life.

TURKEY

During recent years Turkish exports have become more important for the European Community, particularly for Germany. In Germany in 1996 and 1997 Turkey was the most important import country with about 50% of the market. Particularly with the late ripening time, Turkey is the main competitor for the other European regions.

Geography, Climate, Soils

Most cherries are grown in the highland of central Anatolia in a 1,000 m to 2,000 m range (3,300 to 6,600 ft). The area is characterized by the great lakes of Akcehir, Egirdir and Burdur. Climate is very dry in summer with annual precipitation of 300 to 500 mm (12 to 19.7 inches). Winters can be very cold, irrigation is always necessary, mostly carried out as flooding system. Soils are sandy and calcareous and so lack iron, zinc and manganese.

Social and Economic Structures

As a result of the tradition that the land is divided in equal parts for the children, a farm has seldom more than 2 ha (5 acres). An expansion often is limited by the availability of water and electricity. Moreover, fruit industry guarantees a relatively good income so that prices for good land are very high. Therefore there is a great interest in intensification. Professional training such as is standard in western European countries does not exist. Know-how of cultivation still is passed from one generation to the next. New technical developments are transmitted in talks on the field or by dealers of phytosanitary products. Cooperatives do not exist. In every village there are middlemen representing a group of growers. They are in contact with each other and they are also partners for the wholesale trade and the exporters. Price is fixed following many discussions. First Burlat prices in France and Spain and then European yield estimations have an influence. The wage for pickers is $5 a day. Competitive wage systems are unknown, trees are picked by groups, mostly families.

Growing Technique

The two major rootstocks are Mazzard and Mahaleb. A tree (whip) costs about $1.50. Planting distance is 5 x 3 m (16.4 x 9.8 ft) or 6 x 4 m (20 x 13 ft). Because trees are not normally pruned most cherry trees are between 6 and 12 m (20 to 40 ft) high. In Anatolia only around the town of Akcehir trees are pruned regularly. The traditional method to cure trees of gummosis is by cutting stems and side branches longitudinally.

Ninety percent of the acreage in Turkey is planted with one variety, 0900 Ziraat; syn.: Dark Napoleon. The fruit has many characteristics of Schneiders (the Italian Ferrovia): 5th ripening week (3 weeks after Burlat), self-incompatibility, long stem and a firm, dark red fruit. Overcropping is very seldom. There must be a pollinator problem, because pollination of 0900 is a question in several trials. Recommended pollinators are Noble, Lambert, Merton Marvel, but many orchards still are planted without a pollinator. The Turkish cherry industry is not just old fashioned. Everywhere small new plantations can be found with new rootstocks, varieties and fertigation. The interest in Gisela 5 is high. Many phytosanitary products, leaf-fertilizers and PGR, for example, gibberellic acid, can be bought everywhere and are used.

Logistics of a Cherry Dealer and Exporter

- Picking from 8:00 a.m. to 4:00 p.m. Without sorting pickers harvest 18 lbs per hour.
- Fruit is transported to the packing house a maximum distance of 150 km (93 miles). The last trucks arrive at midnight.
- After arriving, cherries are immediately cooled to 5°C (41°F) by hydrocooling.
- In the cold storage cherries are cooled further to 2°C (36°F) until next morning.
- The next day manual grading on transportbelts at 10°C (50°F) into grading classes:
  - <22 mm (0.87 inches)
  - 22–24 mm (0.87–0.98 inches) (main quantity)
  - 25 mm (0.98 inches)
  - They are packed in wooden boxes of 10 pounds
- Fruit is again cooled down to 2°C (36°F).
- Trucking with refrigerated trucks to German wholesale markets via Serbia, Bulgaria, Hungary and Austria, a duration of 2 to 5 days.