



TRENTODOC: SPARKLING WINES OF SNOW AND SUN

In the beautiful mountainous Trentino region of Alpine northeastern Italy, Trentodoc was the first traditional-method sparkling wine to win DOC status in Italy. Anne Krebiehl MW explores a region infused with Germanic influences and finds a growing crop of quality-oriented producers who are making the most of the cool high-altitude vineyards to produce “mountain bubbles” of real distinction

It is the majestic, snow-capped peaks of the Dolomites that give so much character to Trentodoc, Italy's most northerly traditional-method sparkling wine. Aptly dubbed *bollicine di montagna*, or “mountain bubbles,” these sparkling wines originate in the Alpine northeast of Italy, around the town of Trento, stretching from Lake Garda to mountainous vineyards of up to 2,625ft (800m). Altitude is the most significant element of Trentodoc; it gives both acidity and, as we shall see, very specific flavors to these elegant, long-lived wines. Based mainly on Chardonnay, along with some Pinot Noir, Pinot Meunier, and Pinot Blanc, production is small—in 2015, there were just 7.3 million bottles. Only 45 producers bottle wines, while numerous growers farm roughly 800ha (1,980 acres) of mountain vineyards. Trentodoc is thus still a small but surprisingly well-kept secret—one that deserves fizzing across the globe.

Trentino, the region surrounding Trento, borders Veneto to the south and Alto Adige, or Südtirol, to the north. It forms the southern part of Italy's northernmost province, Trentino-Alto Adige. More than half of Trentino (53.3 percent) is forested; 80 percent of it lies above an altitude of 1,970ft (600m), and 60 percent above 1,000m (3,280ft).¹ The area is small but encompasses a great transition: From Mezzolombardo in the north, to Riva del Garda in the south, a short stretch of just 25 miles (41km), the landscape changes from strictly Alpine to almost Mediterranean—citrus will ripen on the shores of Lago di Garda.

When it comes to agriculture, apples are nearly as important a crop as grapes in Trentino. There are 9,750ha (24,090 acres) of apple orchards and 10,050ha (24,835 acres) of vines, dedicated to varieties like Teroldego or Marzemino,

Müller-Thurgau or Nosiola, Traminer or Pinot Grigio. The 390ha (965 acres) of olive groves lend a Mediterranean accent. This mix of crops neatly illustrates that this is borderland, both climatic and cultural. For centuries, Teutonic and Italian sensibilities both clashed and mingled here. Long part of the Habsburg Empire, Trentino still has traces of Germanic rigor, mellowed and deliciously pervaded by Italian flair—an intriguing combination. Something similar is also apparent in its sparkling wines—they have the briskness of cool mountain air but also the brilliance of southern sunshine.

Sustainable growth with quality paramount

Only 800ha (1,980 acres), a mere 8 percent of Trentino's total vineyard area, are dedicated to Trentodoc, which became Italy's first DOC for traditional-method sparkling wine in 1993.² This *metodo classico* thus has a relatively short history, even if historic sources suggest that there might have been something like effervescent wine during the Council of Trent in the 16th century.³ Enrico Zanoni—current president of the *consorzio* and also general manager of Cavit, a large local cooperative and Trentodoc producer—credits Giulio Ferrari (whose full story will be told in a later issue of *WFW*) and another family called Valentini, also operating in the early 20th century but no longer in business, as the founders of the sparkling-wine industry in and around Trento. “They understood that the climate of this region was the perfect environment for a Chardonnay with the right characteristics for making sparkling wine. For many years it was mainly Ferrari who produced sparkling wines in the area,” he explains. “They were the pioneers. By the 1970s there were some newcomers.” These were Letrari in 1976 and the now-defunct Equipe 5.

Zanoni makes clear that a collective impetus came only after the creation of the DOC, which gained further momentum in the wider region with the registration of the Trentodoc trademark in 2007. “It was over the past decade that we saw a real boost and lots of producers enter into the category, even cooperatives. Now we have 45 associates in the *consorzio*, including Ferrari. It’s a good mix of smaller and larger producers.” This, along with the limited production, may help explain why Trentodoc is still relatively little known internationally, despite its high quality. “I think we already have an important critical mass,” Zanoni says. “Of course there is room for improvement; the awareness of the appellation is not yet at the level we would like. But we have tangible signs that people are more and more interested, that they understand the quality, the passion, and the region.” For now, only one fifth of production is exported. Domestically, Ferrari’s Perlé brand is almost synonymous with traditional-method sparkling wine. A request for *una coppa di spumante, per favore* will get you exactly that in many bars across the country.

Zanoni is clear about Trentodoc’s business model: “Trentino is a tiny region; our Chardonnay production is not unlimited. Our main objective of course is a value- not volume-driven strategy, even if with the current area planted to Chardonnay and Pinot Noir we have room to grow while keeping this level of quality.” He says, “Volume is not yet saturated, so our aim is sustainable growth where quality is paramount.” Zanoni’s dream for the future is to go into a restaurant and see Trentodoc listed under its own category—not subsumed under sparkling wine.

Long aging, low dosage

In his role as manager of Cavit, which functions as a co-op of co-ops, with 4,500 members covering 5,000ha (12,350 acres) of vineyards across Trentino, effectively half the region’s viticulture, Zanoni says that the production of Trentodoc is a small but prestigious part of the business. 120 growers across 60ha (150 acres) of vineyards produce the grapes that go into Cavit’s Altemasi range. Altemasi Graal is its prestige cuvée, made only in outstanding vintages and representing not even 3 percent of the Altemasi production. When it comes to identifying suitable vineyards for sparkling production, Cavit’s enologist Andrea Faustini says that existing, mature vineyards at altitudes of about 1,300–1,970ft (400–600m) and about 20–25 years of age are the most suitable; these will yield naturally balanced wines that are an ideal base for Trentodoc. Cavit’s aim is to identify 40 more hectares (100 acres) of vineyards to take its Trentodoc vineyards to a total of 100ha (247 acres). The Altemasi wines, like Trentodoc wines across the board, are brisk and taut, pristine and clear-cut, with a subtle backbone of autolysis. Blends of predominantly Chardonnay with Pinot Noir, they are creamy despite their slenderness and brilliantly fresh.

They also exhibit two common, cross-regional traits that appear to be a decisive quality factor—they far exceed the prescribed minimum aging on lees and they have a restrained *dosage*. By law, Non-Vintage brut sparklers require a minimum of 15 months’ lees contact; Millesimato, or vintage-dated, wines require a minimum of 24 months, which rises to 36 months for Riserva wines. By and large, these minima are greatly exceeded by most producers, who do not feel that they have to augment their wines with generous *dosage* levels. At a comparative tasting of 115 Trentodoc wines from 43 of the 45 producers at

the *enoteca provinciale*, the historic Palazzo Roccabruna in Trento, only three wines reached a *dosage* of 9g/l, most ranging somewhere from zero to 6g/l. Both white and rosé wines are made, the addition of red wine to make rosé being illegal.

High achievements

Lucio Matricardi, winemaker at the Gruppo Mezzacorona co-op, whose Trentodoc wines are called Rotari, after a Langobard king, explains the importance of the cooperative movement: “Only one quarter of land in Trentino is arable. This explains the incredible fragmentation of the producer base. Imagine the poverty of this valley in the past. This was just a place of passage from north to south—there was no industry. Thus the cooperative movement here is very strong. Eighty percent of dairy production is organized cooperatively, and so is 90 percent of apple horticulture.” This Apulian southerner’s take on the local climate is apt, however: “Trentino is the only place in the world where you see people skiing while you do the pruning. This is a different kind of cold from Champagne and entirely due to latitude. Here the cold comes from altitude, from the glaciers, but we also have Mediterranean sunshine. In every bottle of Trentodoc you should feel the snow and the sun.”

Marcello Lunelli, vice president of Cantine Ferrari—the region’s pioneering and leading family-owned producer, with an annual production of around 4.5 million bottles, responsible for almost 20 percent of Trentodoc’s output—also points to the mountains and puts it very simply: “400m [1,310ft] of altitude in a normal landscape are very different from 400m on the slope of a 2,000m [6,560ft] mountain. At night the cold air comes down. We have big diurnal swings, and this way our grapes achieve aromatic development while retaining acidic freshness.”

His cousin Matteo Lunelli, CEO of Cantine Ferrari, provides some historic context: “We were already betting on mountain viticulture many years ago. The growers of the past wanted to produce a lot [that is, achieve high yields]—but that’s not going to happen in high-altitude vineyards. We were the first ones to start planting at higher altitudes,” Lunelli recounts. “You know when you cultivate mountains—it’s all manual, it’s a lot of work, it’s more complicated. It is very difficult—but it is where you really get the quality. For many years, we could spot the best vineyards that were suited for bottle-fermented sparkling wines.”

He notes that the planting of further suitable vineyards is linked to transforming woodland to vineyard. “In the 19th century the amount of woodland in Trentino was less than today because people were cultivating the mountains,” he explains. “There used to be a lot more dairy farming at these altitudes, but today this is often no longer sustainable economically.” When it comes to prospecting for good vineyard sites, Lunelli says, “You need to have a balance. We got authorization a few years ago to plant a high-altitude vineyard, Alto Margon, which goes up to 700m [2,300ft]; the exposition is perfect, and it’s also basically virgin land. Of course, it is a very long-term project. Being a company that is more than 100 years old, we are now beginning to get the benefit of projects that were started 25 years ago. Likewise, we are now doing things for the future. Alto Margon will be amazing in years to come.”

Previous spread: One of Cantine Ferrari’s organically farmed, pergola-trained vineyards. Opposite: Trentodoc, “the only *metodo classico* sparkling wine from the mountains.”



This article from *The World of Fine Wine* may not be sold, altered in any way, or circulated without this statement. Every issue of *The World of Fine Wine* features coverage of the world’s finest wines in their historical and cultural context, along with news, reviews, interviews, and comprehensive international auction results. For further information and to subscribe to *The World of Fine Wine*, please visit www.worldoffinewine.com or call +44 20 3096 2606



Alpine and Mediterranean

Before anyone starts worrying about the environmental impact, Trentino has managed to reintroduce, or “re-wild,” brown bears in its forests and mountains. Ferrari’s own vineyards are farmed organically (to be certified in 2017), and both vineyard and forest provide very different living environments for local fauna. Professor Tomas Roman Villegas, who is heading the experimental micro-winery at Fondazione Edmund Mach, the local research institute and college, formerly the agricultural institute of San Michele all’Adige, as well as its technology transfer center, also evokes the concept of “cultural landscape” as he speaks of Trentino. It is the idea that so many of the long-populated European regions are shaped as much by human interaction as by nature itself, where landscapes were created over centuries by activities such as farming and herding. To him, the survival and competitiveness of the wine industry in these mountainous areas are pivotal. “It’s the best way to maintain the environment. Without the wine growers, you could not maintain this landscape. It is difficult to maintain a dry-stone wall. It is difficult to avoid erosion,” he says.

Due to the mountainous nature of the vineyards, pergola training is still common. While sloping vineyards are increasingly trained to Guyot systems, the steeper and, especially, the terraced vineyards are still trained to one of various regionally typical pergola systems. Planting densities are usually around 4,500–6,000 vines per hectare, even though some go as low as 3,500/ha.

The two opposing influences are the cold Alpine wind and the warm wind from Lake Garda, called *Òra*, which appears like clockwork every day at around noon and stays until evening. There is more or less of it, depending on where in Trentino the

vineyards are. There are three main subregions. First, the broad Val d’Adige, along the River Adige, the main valley in terms of volume. It has mostly stony, well-drained, calcareous soils. Second, the Valle dei Laghi, a narrower valley of glacial terraces reaching from Lake Garda up to Lago di Lamar, ensconced between two north/south ranges reaching up to 6,560ft (2,000m) on either side. Here, the warm Mediterranean influence is strongest. And third, the Valle di Cembra, a lateral valley of Val d’Adige at up to 1,000m (3,280ft), with many terraced vineyards of porphyric soils. In the smaller areas of Vasugana and Altopiano di Brentonico there also are schist and basalt formations. It is in the Cembra Valley that the diurnal temperature swing is greatest; producers can record early-morning temperatures as low as 46°F (8°C) even in August, rising up to 86°F (30°C) during the day. Valdicembra, as it is sometimes spelled, is the coolest area, least influenced by warm winds. The winters, of course, are fiercely cold.

Chardonnay and Pinot Noir perfectly married

Giorgia Brugnara, winemaker at Cesarini Sforza, an estate that farms 300 of Cembra Valley’s 900ha (2,225 acres) of vineyards to make Trentodoc wines, now part of the La Vis cooperative, says the wines have “a particular finesse and structure, a certain ‘verticality’ of flavor, an aromatic aspect that is down to this fresh environment, like apple and green fruit.” Harvest in this northerly valley usually happens two weeks later than elsewhere in Trentino. The road from Trento up to the valley has hairpin bends and goes through dense forests. Even in between vineyards you can see plots of forest. Professor Villegas points out that these are the spots where the topsoil is too shallow for viticulture. At Opera Vitivinicola, also in Valle di Cembra, the

Marcello Lunelli says, “You have to age for a long time to get something amazing.” The long lees contact, unusually, provides creaminess and texture rather than broad, bready, autolytic notes

theory of long lees aging is borne out; its Opera Brut, 100 percent Chardonnay from its first vintage year 2007, kept on lees since then and disgorged within the hour, is an excitingly pure expression of Chardonnay. It still has the ring of fresh, green, crisp-apple fruit and the mere beginnings of the rounder notion of Golden Pearmain apples. Only 10–15 percent of the blend underwent malolactic fermentation, in oak barriques and tonneaux, the rest being vinified in stainless steel. This wine of exquisite poise was only just getting into its stride. By comparison, its 2013 version was still raw and too young. Winemakers Paul Tiefenthaler and Mattia Clementi explain how the different exposures of the vineyards in the valley influence the choice of grape. West-facing slopes, which have no morning sun, favor a slower maturation of the grapes, and this is where Chardonnay is planted, so the drawn-out ripening helps synthesize flavor compounds and precursors. Pinot Noir, on the other hand, needs warmer sites and is thus planted on south- and southeast-facing slopes.

Paolo Dorigati, winemaker at Methius in Mezzocorona, echoes this view exactly. “Trentino is very well suited to the production of Chardonnay base wines due to its climatic predisposition and its soils,” he explains. “The production of Pinot Noir base wines is more difficult; the climate we have here favors the production of Pinot Noir that is vinified as red wine with a different aromatic composition than the one we need for the base wines used to make sparkling wines. Having said that, there are certain altitudes, especially above 400–500m [1,310–1,640ft], especially east-facing, with a predisposition for Pinot Noir, which give us base wines of great freshness and minerality.” What, in his opinion, does Pinot Noir add to Trentodoc? “It is above all in our Riserva wines that Pinot Noir base wines have a fundamental role to play, by lending substantial structure, above and beyond the creaminess, elegance, and finesse of Trentodoc. Especially after long lees aging, it gives that very important fullness of body.”

Roberta Stelzer of Maso Martis in Martignano founded her winery with husband Antonio with the aim of making Pinot Noir-rich Trentodoc. All of their 12ha (30 acres) of vineyard are in one contiguous piece, facing southeast at 1,475ft (450m) of altitude. “We started in the 1980s, and right from the start I wanted to have a style that was original and recognizable. So, our choice was a little different in an area that is dominated by Chardonnay. Today I see a bit of a tendency toward more Pinot Noir, perhaps because over time Pinot confers such elegance to the bubbles,” she says. “I believe very much in Pinot Noir, and certainly our cuvées have a prevalence in the blend because, for me, Pinot Noir has an elegance and a velvety quality that Chardonnay doesn’t. Chardonnay has freshness and crunchiness and reminds me of sunshine. These two things for me are *un connubio perfetto*, a perfect marriage.” Her top cuvée, Madame Martis, is based on 70 percent Pinot Noir, 25 percent Chardonnay, and 5 percent Pinot Meunier. It shows exceptional depth, creaminess, and texture. While Pinot Blanc and Pinot Meunier

are allowed in the statutes, they play a subordinate role. Maso Martis’s other cuvées have up to 30 percent Pinot Noir, which is substantial but no longer so unusual. Undoubtedly, though, Chardonnay is the mainstay of Trentodoc. There are specific, local Chardonnay clones selected by the Fondazione Edmund Mach, still named with the prefix SMA, after the former agrarian institute of San Michele all’Adige.

Mountain due and scientific proof

Almost everyone feels compelled to comment on the region’s predilection for prolonged lees aging. Cesarini Sforza’s Brugnara says, “We think that in order to have the right kind of complexity Trentodoc needs to be on its lees for at least four to five years. Then it begins to express itself best. This is a very positive aspect because the freshness and coolness of the mountain slows down evolution.” Marcello Lunelli says, “Here, Chardonnay has great longevity, so you have to age for a long time to get something amazing.” The long lees contact, unusually, provides creaminess and texture rather than broad, bready, autolytic notes. There always seems to be taut freshness. As Mezzacorona’s Matricardi says, “Yeast is an element of complexity, but it is not the protagonist.”

It is at the Fondazione Edmund Mach that Professor Fulvio Mattivi names the Dolomites as that very protagonist. Mattivi, of the institute’s food quality and nutrition department, gives hard evidence that Trentodoc really is all about altitude, that the mountains really make all the difference. Mattivi presented the results of a 2015 paper—a collaborative study he conducted with the cooperation of the University of Modena and Reggio Emilia, Fondazione Edmund Mach, and the local Ministry of Agriculture, Food, and Forestry—on the characterization of the volatile fraction of Trentodoc sparkling wines using metabolomics.⁴ Metabolomics is the “systematic study of the unique chemical fingerprints that specific cellular processes leave behind.”⁵ In Mattivi’s words, it’s “a holistic approach that is non-selective. Usually samples are injected into a kind of analytical instrument that is optimized to provide very accurate quantitative readings only of the compounds you want to analyze,” he says. “The chemical complexity of food [here, he actually means wine] is much wider than acknowledged. The usual, classical approach is slowing down our capacity to discover new chemical entities that are interesting.” Metabolomics, by contrast, note everything that is there—whether you are looking for it or not. This process has only recently become possible by “solid-phase micro-extraction and comprehensive two-dimensional gas chromatography coupled with time-of-flight mass spectrometry,” as the title of the published study says. Mattivi explains: “The machine [a gas chromatography-mass spectrometer] monitors everything that can be monitored; it is not selective. It takes note of anything that can be detected; also compounds we can measure but of which we still do not know the chemical identity.” He asserts that “it’s an essential tool to improve the progress of wine chemistry.” He reckons that there are at least 5,000–6,000 compounds in wine, whereas “the ones you find described in a handbook of enology might be around 300,” he says. “Of course, several of these are not interesting, but several are important.”

Mattivi and his team used this metabolomic approach to map the volatile compounds of Trentodoc sparkling wines:

“We wanted to describe Trentodoc, but in order to describe, you need a comparison. We decided to compare to the closest competitor, Franciacorta, which is also a [traditional-method] sparkling wine, produced at almost the same latitude from the same grape varieties, at a similar price. Besides, production methods are comparable.” Mattivi shows heliothermic diagrams comparing the two regions, where Trentodoc, due to its altitude, is constantly cooler than Franciacorta, from veraison to harvest, which is usually 15 to 20 days later in Trentodoc. The comparison in this study was drawn between 47 samples from 37 wineries from the vintages 2004–09 from Trentodoc, and 23 samples from 11 wineries in Franciacorta covering the same five vintages, “to ensure as much diversity as we could,” according to Mattivi. They made sure to include the most prestigious and expensive wines in the study, and it turned out that most of the wines were made entirely or mostly from Chardonnay, with the same proportion of grape varieties for both areas. Before setting out the results of the study, Mattivi emphasizes the analytic complexity of traditional-method sparkling wines relative to other wines because of their second fermentation, the prolonged aging on lees with yeast autolysis, and the addition of *dosage*. That hand-harvested, high-quality grapes are usually used is another factor. “It is thus not surprising that we find increased complexity,” he says.

Mattivi reports that the spectrometry captured 1,695 different compounds, 769 of which are down to cultivar and winemaking elements like yeasts, use of wood, and *dosage*. This leaves a “common matrix” of 969 compounds that were present in at least 44 wines of the 70 wines tested. Of these, 196 compounds are present in both the Trentodoc and the Franciacorta wines but, crucially, in statistically different concentrations. “If we use these 196 compounds that have a very different concentration, we can distinguish all Franciacorta from all Trentodoc wines,” Mattivi says, and emphasizes that this is not a discriminant analysis but a principal component analysis [PCA]. Of the two, PCA is used as a technique that finds the directions of maximal variance.⁶

“So, what is the difference?” Mattivi asks, answering his own question: “It’s down to basically three things. The primary aromas, terpenoids, are on average more than twice as high for Trentodoc. This, in our view, is the clearest sign of the mountains, because it is known that the grape is reacting to the cool climate and in particular to the difference in temperature between day and night, which increases the synthesis of these compounds. And we are speaking of neutral varieties [that is, Chardonnay and the grapes of the Pinot-family are considered non-aromatic varieties, as distinct from aromatic varieties like Gewürztraminer or Muscat, which are naturally rich in terpenes]. Nonetheless, we have a huge amount of compounds present. The second group of compounds are the C6 compounds, which are pre-fermentative.” He explains that these are related to pressing protocols and due to the action of lipoxygenases on unsaturated fatty acids at the time of crushing. One of the main parameters affecting these is the ripeness of the grapes. This varies sufficiently in the two areas to account for the difference; the warmer climate in Franciacorta does not necessarily mean “riper” grapes, since they have less time and opportunity to synthesize aromatic compounds. Growers are compelled to pick before acidity drops significantly. In this context, Trentodoc grapes are usually “riper.” The third group

of statistically different compounds are secondary fermentative aromas, such as “some ethyl esters of diprotic acids, sulfur compounds, and cyclic acetals,” which are found in higher concentration in Franciacorta wines. “This for me is a beautiful explanation of the diversity of the two interpretations of the same wines in these two areas,” concludes Mattivi.

While this is certainly the most striking finding, Mattivi and his team compared not only Trentodoc and Franciacorta wines but also younger and more mature wines from Trentodoc, and also found increased values for norisoprenoids (aromatic compounds derived from grape carotenoids during aging), complex sulfur compounds, and acetals (aromatic compounds, either floral or pungent, also found in fortified wines). Esters and acetates, on the other hand, are significantly decreased in mature wines. Mattivi singled out certain norisoprenoids—vitispirane is often described as reminiscent of camphor, while alpha isophorone has a peppermint-like smell and safranal is the scent of saffron—and all are present at significantly higher concentrations in mature Trentodoc wines.

Mattivi admits, “I can say that at the beginning I thought we would never find anything, so I am happy to show these results because this is completely unbiased. This was a basic study. It was not a study to demonstrate anything in particular; we just wanted to see if this was possible.” The *consorzio* likes to refer to these aromatic measurements as Trentodoc’s “ID card.” Of course, every sparkling-wine lover now wonders what a metabolomic analysis of traditional-method sparkling wines from other areas of the world would reveal... The *consorzio*’s literature states, “This research provides scientific feedback on the objective link between the territory and the sparkling wine of Trentino. For Trentodoc, it is a certification that unquestionably strengthens the origin and identity of Trentodoc, which, now more than in the past, can be defined as the only *metodo classico* sparkling wine from the mountains.” So, if you like it brisk and intense, you know where to look. ■

NOTES

1. *La Piccola Terra dai Grandi Numeri*, published 2011 by Provincia Autonoma di Trento. However, the production specification published by Trentodoc puts this figure at 70 percent. All other statistical data concerning Trentino was taken from *Agroalimentare in Trentino: Dati 2015 sulle Produzioni del Territorio Trentino* (Camera di Commercio IAA di Trento; September 2016).
2. Franciacorta received its DOCG in 1995, and the first bottles were released in 1997. Trentodoc was thus the first DOC for traditional-method sparkling wine in Italy. Not to be outdone, Franciacorta was the first DOCG, albeit two years later.
3. Pederzoli, Spagnolli, and Magrone, *Trentodoc: Perlage Among the Mountains* (Artimedia, Trento; 2012), p.23.
4. Carlin, Vrhovsek, Franceschi, Lotti, Bontempo, Toubiana, Zottele, Toller, Fait, Camin, and Mattivi, “Regional Features of Northern Italian Sparkling Wines, Identified Using Solid-Phase Micro Extraction and Comprehensive Two-Dimensional Gas Chromatography Coupled with Time-of-Flight Mass-Spectrometry,” *Food Chemistry* (Elsevier), 208 (March 30, 2016), pp.68–80.
5. <https://en.wikipedia.org/wiki/Metabolomics>
6. www.quora.com/topic/Principal-Component-Analysis