Wine Growing in Piedmont (the one in Italy)

Note: the format of this report is arranged by wineries but the information in each section may not be particular to that winery or person. I did my very best, based on translating language and notes, to communicate accurately what was said and seen.

“The poverty of this soil is priceless.” – Frederico Curtaz at Gaja

An adventure often begins with a good book. In this case, the book is “The Making of a Great Wine: The Story of Gaja and Sori San Lorenzo” by Edward Steinberg. Written 15 years ago it describes in vivid and technically interesting detail how Angelo Gaja, and his great team of wine makers and viticulturists, craft a great wine from one of the world’s greatest vineyards, Sori San Lorenzo. The book looks suspiciously like an easy and superficial read, one of those fluffy, over-romanticized books about the glamorous life in the vineyard but instead, it is contains contemporary and practical viticulture and enology information that is useful to today’s wine grower. In case you do not know, Signore Gaja is one of the key figures who lead the rise in quality of Italian wines and brought world-wide respect and recognition to the Piedmont region.

I wrote to Mr. Gaja to thank and compliment him on the book and to explain my appreciation for his dogged pursuit of quality, recognition and respect for his wines and region. That I received any reply at all was a surprise but to be invited to visit the winery and meet him and Mr. Steinberg was an offer I would be foolish to refuse.

Piedmont is a wine region rich in history yet there, as in even the oldest wine areas around the world, modern viticulture and enology methods have only taken root over the past two decades. For wine growers in emerging regions like the Mid-Atlantic, it is heartening to know that we have access to the same technology and knowledge as colleagues in France, Italy, California and other established regions but they are not that far ahead of us. Our challenge is to apply this knowledge in the production of consistently fine wines.

In nine years as the extension wine grape agent at Penn State Cooperative Extension I have tasted countless wines around the region and come to realize that one of our biggest challenges is to balance and harmonize acidity and tannin in red wines. These are qualities in red wine that consumers and wine critics demand. Cooler temperatures with more rain than is desirable can lead to wines that have a sharp and edgy taste, what some refer to as an “Eastern twang.” A cure for the twang needs to be found both in the vineyard and cellar.

Nebbiolo is the great grape of the Piedmont region where it makes a wine of prodigious quality that is worshipped by wine lovers around the globe. It is stubbornly insistent on the right place
and most would agree that despite efforts to cultivate it elsewhere, Piedmont is the only place where it feels truly at home. Despite its relative comfort among the beautiful hills and villages of the region, it is a demanding grape that requires extremely refined viticulture and enology to extract its best features and mold it into a great wine. I put it in the category of Pinot Noir and Sangiovese in its fickle and prickly nature, yielding wines of either majestic quality or great disappointment. It is known for its high natural tannin and acid. After reading Steinberg’s book, I was convinced that maybe answers to our red wine production problems could be found in Piedmont and this grape.

_Jancis Robinson on Nebbiolo (from her Guide to Wine Grapes)... great, geographically sensitive vine responsible for some of the finest and longest-lived wines in the world. The wines are very deep coloured, high in tannins and acidity in youth, but can evolve after years in bottle into some of the most seductively scented wines in the world, with a bouquet ranging from tar through violets to roses. Nebbiolo is native, and almost confined, to Piedmont in northwest Italy, where it is the undisputed king in a kingdom of distinctive vine varieties. It was recorded as a celebrated vine of the region as early as the 14th century and probably takes its name from nebbia, or fog, a frequent phenomenon in Piedmont in October when the grape is harvested._

Everyone we met insists upon the generous and fortunate convergence of Nebbiolo with the hills of Piedmont. The continental climate with its mixture of alpine and Mediterranean influence is characterized by late and cool springs (such as the one they are having now) and hot summer days (30-35C). A steady breeze in summer helps to control disease. Rainfall averages about 25” annually but autumn can be dry but with the namesake fog (nebbia) keeping the grapes cool. One morning, as we drove up the steep hill to La Morra, we could see the entire valley below engulfed in a thick fog but the vineyards on upper slopes enjoyed the sun.

Nebbiolo only accounts for 3% of all the wine produced in Piedmont where other varieties such as Barbera and Dolcetto among red wines and Moscato, which makes my favorite summer wine, Moscato d’Ast, among whites thrive and make delightful wines. But I wanted to chase after Nebbiolo for a possible solution to our problem of acidity, tannin and concentration by spending time in some of the great vineyards and wine cellars of the world. Mr. Gaja offered me this opportunity.

This mission was a professional development opportunity for me during my sabbatical leave in spring, 2008. Penn State encourages its educators to expand their knowledge with non-traditional learning opportunities. I was sponsored by the Pennsylvania Association of Winegrowers, which generously offers professional development funds to the Wine Grape program. In preparation for this exploration I created a list of questions which I offered in advanced of each visits (see appendix). The wineries selected were chosen based on my own tasting experience and cross referencing two books, _Making Sense of Italian Wine_ by Matt Kramer and _The World’s Greatest Wine Estates_ by Robert Parker, Jr. Six wineries were selected and appointments were made at:
Gaja    blend with a nod towards modern
La-Spinetta  modern
Roberto Voerzio modern
Elio Altare modern
Giacomo Conterno very traditional
Luciano Sandrone modern

Other wineries on the list included Ceretto, Bruno Giacosa, Paolo Scavino, Vietti and Domenico Clerico. While we were not able to visit them information was collected about their vineyards. In each case I asked to visit with the viticulturist (which they often call an agronomist) or the owner of the winery so the most technical information would be available. The focus was always on the vineyard, where I thought answers are most likely to be found. If there was time to see the winery and taste wines that was a bonus.

An important feature to the wines in the region is the distinction in wine making method. While vineyard practices are similar among the great producers the wine making is categorized as traditional, blended, or modern. The traditional retains some of the wine making practices developed long ago such as aging for up to eight years in large botti (foudres) whereas modern has come to rely on the French barrique as the principle aging container and the rotary fermenter as a tool for tannin extraction and balance. There has been much fussing in the region about the relative merits of wine making methodology in the past, but we sensed that there was a calm and comfort, if not a bit of envy and puzzlement, among those practicing different styles.

My sister, Lisa, provided outstanding technical translation in the field. I have found on previous trips to Italy that wine growers are most comfortable conversing in Italian and that I would have greater access to detailed information if Italian could be used in conversation. With her skills I felt that I was able to capture over 90% of what was discussed. I would strongly recommend to any visiting wine growers that they use a translator. It will offer access to technical instead of marketing personnel, who often speak the best English. My sister’s services are available upon request.

This was my first trip to Piedmont and I was astonished by both the beauty and prosperity of the region. Less touristy than Tuscany, it has a charm all its own. It is a region of steep hills and vineyards with villages perched on top of many of the hills, punctuated by towers and steeples. As with any great wine region, it has an indigenous cuisine that coevolved with the wine. Piedmont is known for its mushrooms, in particular the white truffle, which is celebrated at a festival in Alba in October. The two districts within Piedmont I would focus on are located in the southwest corner of the region called Barolo and Barbaresco, very recognizable names among wine lovers. Here the Nebbiolo grape reaches its pinnacle, especially in vineyards like Sori San Lorenzo. It was difficult not to notice the amount of construction going on in the region. It looked like Shanghai with all the construction cranes dotting the landscape. Many new and modern wineries are being built and many of the older ones are being expanded. The wines at the estates we visited were mostly on allocation, with not nearly enough production to meet world-wide demand. Prosperity has arrived in Piedmont to the delight of many and the concern of some.
Our tour begins in Barbaresco…

Gaja

The winery is right in downtown Barbaresco behind a large metal blue door and a very simple placard that indicates you have arrived at this winery shrine. The Mercedes and Armani suits tell a part of the story but ultimately it is about great vineyards and that is what we came to see. A tour of the winery revealed a tasteful blend of form and function, old and new and an unrelenting commitment to quality. Angelo Gaja understands marketing as well as he does the wine growing. This has allowed his company, as well as many others in the region, to prosper.

The vineyards at Sori San Lorenzo (Fig 1) and Sori Tildin are classic in appearance and proportion. Just looking at them you get the sense of great wine. Sori means “southern slope” in Italian and for Nebbiolo in Piedmont, this is an all important requirement for great wine. Nebbiolo is the first variety to break bud and the last one to be harvested, often two weeks behind Barbera. Every effort is made to push ripening ahead of fall rains and frost. We heard from every grower on our visit the importance of aspect and elevation for Nebbiolo – that it required a southern exposure on the mid to upper slope to get the most benefit of warmth and light.

There is a traditional method of waiting 2-3 days after a snowfall to see what areas among the patchwork on a hill would melt first - these are the best locations for Nebbiolo. This tradition of using melting snow was used by the Romans, as far north as Germany, to find the best sites for wine. San Lorenzo and Tildin typify the best sites on Piedmont with their amazingly steep slopes with perfect position on the hill.

It was curious that rows almost always run across the hill, even if it takes rows out of north-south orientation, resulting in a natural (or cultivated) terracing of the slope. I was told that erosion prevention was the main reason, yet very little permanent cover crop was being used. In the photo of Sori San Lorenzo, there is a small block of N-S rows set among those going across the slope.

Under-vine management was often clean till, either with herbicide or mechanical. Most vineyards cultivate row middles in the summer and winter to improve moisture penetration and reduce compaction. Natural weeds seem to be the preferred cover crop here. Vines are old and mostly pruned to
single guyot with a two bud spur (Fig 2). We saw a small amount of cordon/spur and all is trained unilaterally, it is much more common in Tuscany on Sangiovese. Nebbiolo is notorious for its infertile basal buds so cane is the best system. Most growers prefer to head their vine about half way up the trunk, offering a lower starting position for the cane. I was told that this reduces the amount of energy and vigor to the shoots.

At Sori Tildin, rows are planted north-south, up and down the hill along a long, shallow field on a very steep slope (Fig 3/4). It would be a fascinating comparison of wines from these two vineyards with their distinct row orientations. The vineyard practices at both are impeccable. This was noted at all of the vineyards we visited. The attention of detail, especially the quality of pruning and training that could be observed at this time of year, was impressive. Brush is always removed from the vineyard and burned.

Figure 3: View of Sori Tildin
Figure 4: Vines in Sori Tildin

The trellis systems in the region are a mix of old and new materials and methods. Older vineyards have concrete line and end posts designed for vineyard applications. They have holes for wires or a variety of clip-on devices to hold wires are available. VSP is the only training system present in Piedmont, but various canopy heights are used. Some have systems to spread the canopy at the top but I didn’t find out why. Spacing between posts is about 8m. Almost every vineyard has a short or long stake at each vine and vines are well trained with straight trunks.

La-Spinetta: As far as I could tell, Piedmont is a region made up family owned and operated wineries. No corporate giants here, although there are some large coop wineries. Even Gaja, one of the largest producers, is run by Angelo and his children. It is the same at La-Spinetta, where brother, sisters, nieces and nephews all are involved in the family wine business. Silvia Altare told us that there was a time when the dumb child was the one the one to stay on the farm and the smart ones went off to school and the city. Now that has changed… a new generation of young people want to cultivate the land and extend the heritage of
the region. At La-Spinetta, we had the good fortune to meet Giovanna Rivetti (Fig 5), a 60-year old firecracker who manages their 120 hectares of vineyards. Giovanna reminded me of the Energizer bunny with her amazing energy, delight and enthusiasm in the vineyard. She brings a great passion to the wine at La-Spinetta. We visited her prize Riserva vineyard perched precariously above the Campe winery outside of Grinzane Cavour. Here, 65 year old Barbera vines rule the south slope. Again, cross slope rows with E-W orientation. There is a 3-week difference in ripening from the top of the slope to the bottom and they never blend positions on the hill. She was a good example of a wine grower who has been around for a long time and has managed to blend traditional and modern viticulture. Most of the growers we encountered have fully adopted natural or sustainable vineyard practices. This vineyard is farmed with two large draft horses we saw in a paddock near the winery. No artificial herbicides, pesticides or fertilizers are used.

There is generally less rainfall during the growing season in Piedmont than in the Mid-Atlantic region. In a treatise on Nebbiolo by a respected wine scholar, Renato Ratti, he offered that 100 mm of rain was the limit during post-veraison period to produce a fine vintage. There is no irrigation in the region with the exception of young vines (DOCG regulations). The soils here charge well with water and one grower said his vines could tolerate a two year drought.

At La-Spinetta I saw for the first time a practice which may be adaptable to our area. Growers pull basal leaves on Nebbiolo when shoot length is 100-200mm (4-8”). This is done mainly to open up the fruit zone during the early season to light and air, mostly to prevent disease but also to acclimate berries. It was noted that Nebbiolo sets clusters at the 4th and 5th nodes whereas most other varieties have clusters and nodes 2 and 3. Because they hang higher it is necessary to take off lower leaves to improve exposure. This is a wide spread practice in Piedmont at the best vineyard. At the same time, doubles and suckers are removed. Other important viticultural practices include the removal of the tip of the apical cluster in June to reduce yields using a very sharp, small scissor and strict fruit zone management where grapes must hang properly and never touch each other. They must be allowed to breathe. Green harvest is in July and the end result is a vine with about 700 grams (< 2 lb) of fruit.

It rained all of Sunday and Monday, our first day in the vineyards. The soils were a very sticky clay but we saw now standing water in any vineyards. How could any water stand still on a 30 degree slope? The soils in Piedmont are complicated. The region stands in between the impressive Alps to the north and the Apennines coastal range by the sea. Wilson describes the western soils near Barolo to be argillaeceous-limestone, tuffeau and Tortian sands transitioning to white marls and sandy-limestone Helvetian to the east. With a grape as expressive as Nebbiolo, subtle changes in soil create marked changes in the wine.
Roberto Voerzio: The visit to Voerzio was very reminiscent of a 2006 visit to Jean-Luc Thunevin at Chateau Valandraud in St Emilion. Both embody the Garagiste ideal of taking viticulture to its absolute pinnacle in the pursuit of the biggest wine a vine can produce. As we drove up the steep hill to La Morra we wound around yet another hairpin turn. The only difference here was small vineyard in the crotch that had vines planted dangerously close together. I thought to myself that this must be Voerzio. Lo and behold when young protégé Cesare drove us in the Land Rover this is the first vineyard we stopped at. Good guess! This is viticulture on steroids but everything is about balance and intensity and, believe it or not, the wines show restraint, elegance but with intensity and power, all in harmony.

This may be a good time to talk about vineyard dimensions in Piedmont. Controlling vine vigor is a problem in many vineyards in the Eastern US and pushing vines closer together may aggravate overcrowding. I was not able to see full canopies on this trip since all vines were pruned and tied. However, I was able to observe fruiting cane diameter, internode length and discern relative vigor from canopy management practices such as number of hedging passes and amount of leaf removal. The vines that I saw were mostly planted 1.2m apart or less in the row and appeared to be in balance. Leaf pulling was a normal practice and most vineyards hedge 2-3x in a normal year. Internode length and cane diameter indicated modest vigor, although Nebbiolo is known for long internodes.

Regulating yield was considered a key component of quality at every estate we visited but Voerzio was the most dramatic example. The example was given of a year when additional rainfall fell after veraison and clusters gained weight to 100g/vine. A crew was sent through to remove the additional weight. This kind of meticulous care reminded me of removing individually hail damaged berries at Rudd in Napa Valley. Yield per vine is typically in the 700-800 gram range, sometimes lower for the best cru Nebbiolo.

Most of the vineyards are on hillsides so the distance between rows begins at 2m and may extend to 2.3m – safety, equipment and shading are all important factors. Distance between vines is close by our standards, starting at 1m even in older vineyards down to 42cm in some of the cru Nebbiolo vineyards. But .7m to 1m is probably average for these high quality vineyards. Typically, single guyot canes have 5-6 nodes and are arched over a fixed wire about 10cm above.
the fruit wire and tied down. Fruit wire is about 50-60cm high and my concerns about humidity and its effect on disease was dismissed. Every plant has to be in its own space. They want to avoid crowding and manage the fruit zone rigorously. Canopy height is significantly greater than Bordeaux or Burgundy at 100-120cm. I was told that the ideal canopy to fruit ratio was 1m² of leaves for every kilogram of fruit.

Clones are traditional but changing in Piedmont. There are four main clones of Nebbiolo but only two are now in favor – Lampia and Michet. The latter was virus-infected but has been cleaned up and is now being widely planted. Rauscedo and others, including the University of Turin, are developing new numbered clones, but the traditional clones remain popular.

The method of determining ripeness is unusual here. Roberto will spit skin and pulp on the ground, if color is moving from skin to pulp the grapes are ripe and ready.

Elio Altare: We are greeted by the bubbly and bright Silvia Altare (Fig 10), who speaks excellent English, which she learned in America and Australia. She is good friends with Manfred Krankl from Sine Qua Non in Santa Barbara County. Her father, Elio, is thoughtful and philosophical. Here is another masterful blend of tradition and modernity with a delicious outcome in the wines. This is the smallest estate we visited but the focus on quality is no less intense. We go immediately into the vineyard and see the 60+ year old Barbera (Fig 9) vines in the Arborina vineyard just below the winery, gnarly and majestic, once head trained but now on VSP.

In Piedmont we heard from every grower the belief that farming with natural methods is preferred. While a strict explanation of natural was never arrived upon, it is clear that an effort is being made to reduce the use of herbicides, pesticides and fertilizers. At Altare, Signore Altare explained that he has spent 20 years reversing the toxic farming practices of his father. He does not fault his father for farming in such a manner, it was the method of the time, but now he states quite simply that the ways have changed. He is adamant about the protection of the land and the preservation of the heritage and character of the region. Farming in this manner requires that growers cultivate a symbiotic relationship with the vines. In all of our visits we realized that wine growing in Piedmont is much more empirical and intuitive than the brand of technical viticulture we tend to practice here. They use technology to support their observations and conclusions. This skill is deeply ingrained in the viticulture here and is developed over generations. They told me that their main farming tool is common sense. It is amazing how
absent that can be in industrial agriculture. Silvia told us a wonderful story related to technology… her sister studied enology at the University of Alba and a few years ago brought home a refractometer for her father as a gift. He had never used one before but delighted in taking it into the field during the harvest like a new toy. But they only saw it used that one year and now no one even knows where it is.

At Altare, the traditions that survive are carried on by Eduardo, their 70 year old vineyard manager who looks like he will easily go another 70 years. We met him suckering and pulling basal leaves. He knows each vine as if they were his children. It is a remarkable achievement to transcend so much viticultural change over seven decades and be able to hold fast to those useful traditions yet be open enough to adopt new ideas and methods. The bird nets on the vines are not used for birds but instead for hail, a real problem in the region.

In the cellar, Silvia uses very modern practices. All reds visit the rotary fermenter for a short fermentation that finishes in stainless steel tanks and then moves quickly to barrique. This treatment during primary fermentation is an important way to extract color and flavors and the long, smooth tannins that help temper the astringency and give the wine better mouth feel. It yields wine with a more international style. While the primary solution to the problem of harsh tannins lies in the vineyard in grape ripeness, this technology and methodology may be worth investigating, along with timely microoxygenation. Barriques are all French oak, used for 3-4 vintages. Taransaud MT seems to be the preferred cooper for Nebbiolo. Every cellar we visited was spotlessly clean, well organized, thoughtfully designed for both form and function and well-equipped, often with new winery equipment but in some cases with meticulously maintained old fourdres, some over 50 years old. Each one radiates the feeling of meticulous care and attention to every minute detail of wine making.

Giacomo Conterno: Roberto Conterno continues the tradition of his grandfather at his beautiful winery in Monforte d’Alba. Wines here are crafted in very traditional methods but with extremely modern and capable tools. The grapes all come from his Cascina Francia vineyard just south of Serralunga d’Alba in a zone of cru vineyards. It’s on a SW slope with rows across the field. Yields are low at 45-50 hl/ha. Spacing here depends on the slope and it is steep. 2m x .7m is typical. Roberto told me that he prunes and manages for 1m² of canopy for every 0.6 kg of fruit. Vines are thinned to 1 cl/shoot with about 12-14 leaves per shoot. Canopy height is 2-2.5m. Cluster counts are taken before veraison and then crop is adjusted to 6-8 cl/vine. He says our typical spacing of 800-1000 vines per acre is too low to achieve high quality. He insists
that his acid and tannin balance comes straight from the vineyard, that very little manipulation is
done in the cellar and certainly never deacidification. He spoke philosophically about the
evolution of a partnership between Nebbiolo and the farmer, how they have grown together and
created a beautiful relationship. Natural methods are practices here. He stated that maybe what
man can do is to interfere as little as possible in the process of the wine but know exactly when
and why to intervene only if it is necessary. There is very intuitive wine growing and making
here. The 2007 vintage was near perfect and Roberto thought he had outstanding fruit in the
cellar. But halfway through fermentation he was not pleased with the flavors and aromas of the
wine so it was declassified out of Riserva. This singular judgment that would cost the winery
10s (if not 100s) of thousands of dollars, was made by a simple sensory analysis based on his
experience. He always selects the riserva lots in the vineyard and makes the final cuts based on
his sensory opinion in the cellar. This was not unusual among the wineries we visited where
declassifying wines or even entire vintages to protect and preserve quality and reputation are
done without a second thought. He learned to analyze grapes and wine from his father, a 15-20
year study process. He continues his studies to improve the practices but holds fast to traditional
methods. Often science confirms what the wine maker already knows.

We found that science and traditional methods were not always comfortable partner in Piedmont. There was a concern that science and technology would compromise the unique character of the wines in the region. Yet the viticulture schools such as those at Alba and Pollenza provide valuable training for professionals in the industry. Research could also help to advance knowledge and quality in areas such as clones and rootstocks.

At Conterno we saw the modern-traditional version of wine making in Piedmont at its best with open top wood fermenters and grand, old Slovenian oak foudres for aging. The Barolo is typically aged 7-8 years. He knows by tasting when it is done. No fast fermentation here. It all happens at its own pace. There is a very quiet determination here to make great wines.
Luciano Sandrone: Just outside of Barolo is a very modern looking winery with a brightly colored tower. We met Luca, brother of Luciano, who run the vineyards and winery as a team. Luca studied enology in Alba but is now also the vineyard manager. On a bright, sunny afternoon we jumped into his pickup truck and drove along winding roads to a terraced vineyard with Barbera. The quality of the vineyard development work here is outstanding by any measure and the difficulty of planting a vineyard on such steep slopes cannot be underestimated. Yet the uniformity in every dimension, from vines to trellis, is remarkable. Luca was probably the most technical of all the growers we met, blending empirical methods with his interest in science and research. He works with researchers at the University of Turin to conduct viticulture trials in their vineyards and keeps in close contact with his professors in Alba. The results are obvious and impressive in the quality of the vineyards and wines. Tradition and experience are the main drivers of quality in Piedmont. He compared wine growing to Formula 1 racing, you can have the best technology in the world but if you don’t have a great driver the results will never be the best. Tradition is the cornerstone of wine growing in the region but smart, educated adjustments, such as new clones, rootstocks, trellis systems, are part of the evolution of quality.

Southeast to southwest slopes are the best. The cru Cannubi vineyard faces southeast, along with Brunate and Cerequio, the vineyards are at 250-550m. Elevation and aspect are very important, especially for variety assignment. Also, in this area, protection from the cold winds flowing down from the Alps, easily visible to the north, is critical. He showed us how the first line of hills were not planted and acted as a wind break for the slopes behind it that are covered with vines.

Rootstocks used in Piedmont are mainly SO4 and 5BB, both vigorous stocks. I was a little bit surprised by the lack of emphasis among many growers on rootstock selection. At Sandrone, there was great interest in understanding rootstock performance and cooperator trials with the university contained Riparia Gloire, Rupestris du Lot, 1103P, 420A, and 41B x four clones of Nebbiolo. He noted that shallow and light soils with vigorous stocks produced fewer and smaller bunches with lower acidity. 41B and 420A have lower acidity.

Even though the area for Barolo is very small there is so much variation in grape performance from one vineyard to the next. Mid-slope is usually preferred. Steep hillside, facing south with 8 yr old Barbera is extremely well developed with a plastic full length stake at each vine. 5200 vines/ha, single guyot. Barbera clone 84 is planted on Rupestris du Lot and 1103P. A 2 bud spur is positioned halfway up trunk: double shoots are removed, approximately 80cm between
vines, 4-5 shoots per cane and they rub off half of buds. Barbera will offer 2-3 clusters /shoot (more fruitful than Nebbiolo) so they leave 6 shoots and 5-6 cl/vine, each cluster weighs 150-250g. 1-1.2 kg/vine x 5200 v/ha translates to about 5-7 t/ha. Barbera can do much bigger yields but the quality goes way down. The ratio of canopy to fruit is important and they want the plant to be in natural equilibrium (balance). Vine density is decided by exposition of the hill, equipment requirements and the optimal yield per plant. Old vineyards were 1-1.5m between vines and in recent years spacing is much closer.

I asked about the importance of vine age to wine quality and he explained that vine age is very important – an old healthy vine in good health reaches an equilibrium of fruit – a comfortable zone of moderate yields. The vine doesn’t react as strongly to changes in the environment or surroundings. He considers 15 years is the threshold for a mature vine.

As the sun got lower we drove north out of Barolo into the Roero region to the Valmaggiore vineyard which would be hard to describe to anyone who hasn’t tried to walk down the slopes of the Mosel or Cote Rotie. It was incredibly steep. The hill curved to various aspects but predominantly south to southeast and southwest. The soil is sandy marl with more lime than vineyards near Barolo. Crossing the Tanaro River into Roero the soil changes into a more recent geologic age. This area was an uplift from the sea – first the Langhe pushed out then the Roero area. Langhe is calcareous, marl clay. A special grass from Argentina was brought in for a cover crop, it goes dormant in the summer and is very deep rooted. The vineyard is farmed all by hand and helicopter sprayed. During harvest, half-ton sleds are lowered down the alleys and the grapes are winched to the access road at the top. Nebbiolo has found an interesting home here and makes a unique wine.
It is hard to imagine the rational for this kind of extreme viticulture other than the pursuit of something completely unique and remarkable. Luca told us he did it on a dare with his brother what thought he was nuts when he saw the site. The wine from these 10 year old vines was the most interesting we tasted… lighter in color and style yet with laser-like focus of fruit and flavors, it had great complexity and depth although not the same depth and concentration of the cru wines. We were very grateful to Luca for showing us this amazing vineyard.

The winery at Sandrone is high tech and modern with the ever present attention to detail and sanitation. The grapes and wine are given every possible opportunity to make great wine.

**Tuscany**

Our journey continued to Tuscany and vineyards around Montepulciano and Montalcino, including the relatively new region of Santa Restituta where Gaja has his new vineyards and Ferenc Mate, author of “A Vineyard in Tuscany” (a good read), and the great wines from Gianfranco Soldera wines come from a shallow bench at the foot of low hills southwest of Montalcino. Tuscany is such a stark contrast in appearance and personality from Piedmont. The two regions are wonderful travel companions.

**Trunk diseases:** During this trip I also met with Dr. Laura Mugnai, professor of plant pathology at the University of Florence. She has been studying vine decline and, in particular, Esca, for many years. She will host the bi-annual international grapevine trunk disease symposium in Florence this September. Laura stated that fungal and viral maladies are still a very important problem in Italian vineyards. The main frustration in research is the transitory nature of the disease, that may appear in a vine one year and not the next. Correlating the biochemical and physiological effects has been extremely difficult.

The Italian wine industry has developed a robust vine certification program and growers told me that they only plant certified vine materials.
Observations and take home message:

- Winery sanitation, organization, neatness and attention to detail make better wines
- Make the wine in the vineyard. Really make the wine in the vineyard.
- Empirical wine making and viticulture. Using experience and intuition as guide with practical and academic in supporting roles
- Natural practices in the vineyard and sometimes in the cellar
- Blend traditional methods and ideas with modern for the best outcome in vineyard and the winery. In the end, go with what works.
- Blending of wines is not an important tool for achieving balance in wines. The emphasis is in the vineyard and fruit maturity.
- Go outside your own mind and region for new ideas and inspiration
- Match the grape to the terroir: Nebbiolo in Piedmont and Sangiovese in Tuscany
- Aspect matters: southeast to southwest but how important is row direction?
- Elevation matters: local and absolute: adapt variety to position on the hill, absolute elevation affects ripening. Mid to upper slope is preferred for best varieties (see Burgundy)
- Find out where the snow melts first
- <1m between vines
- 50-60cm fruit wire, single guyot headed ½-3/4, 5-6 shoots/cane, 1 cl/shoot
- Old vines make better wine. >15 years
- Investigate new clones and rootstocks to improve quality
- Canopy management is rigorous. They aim for 1m² for every 0.6-1 kg of fruit
- Fruit zone management: keep clusters separated, do not handle fruit until harvest
- Yield/vine: 500-800 gr/vine (Voerzio) to 1.2 kg (Sandrone)
- Be extremely passionate about the quality of the wine. It was well represented in the orderliness of the vineyards, the cleanliness and organization in the winery, down to the packaging and a the beautiful presentation rooms at the wineries.

I was told by each wine grower we met that balance and harmony of tannin and acidity must be achieved in the vineyard via ripe fruit. It is a matter of matching the right grape with the particular climate and then regulating yields to achieve the best results for the wine. There are many viticultural tools that can be used to achieve this effect such as rootstock, vine density, canopy management, and these are all available and known to wine growers in Pennsylvania. The matter of application is certainly improving in our vineyards but we have yet to develop the empirical and intuitive skills of wine growing that they use in Piedmont.
Of course, they have a 1400 year head start but it is only with the advent of modern viticulture and enology philosophies and methods that wine quality has taken a quantum leap.

I believe that one of the most significant variables contributing to the quality of their wines is rainfall distribution. They have less rain than the Mid-Atlantic (25” vs. 40” annually) and the rain during harvest is considerably less (<4” through the harvest) with no hurricanes. Tracking temperature profile post-veraison may offer another key to their successful ripening of Nebbiolo. While I am convinced that there are viticulture and enology solutions to the problem of high acid and green tannins it may be worth examining the varieties we are growing. Ripeness comes from growing the right grape in the right place and it should reach maturity on a consistent basis in average conditions. With the USDA NE-1020 variety trial underway, we may discover other varieties that fit our climate.

There is a tension between the traditional and modern producers in the region but not the extent that wine writers like the play them off against each other. I got the sense of a healthy respect for each other’s philosophy and wines and a realization that Piedmont will never be all things to all people or even one thing to an individual. It thrives on its diversity that is all tied together by a common wine culture that simply does not exist anywhere in the U.S. Growers like Angelo Gaja, Elio Altare and Roberto Voerzio all mention specifically the need to travel to other wine regions, near and far, to learn and understand what methods might be adopted to improve quality at home. I can assure any grower in Pennsylvania that a visit to Piedmont will be as revealing and enjoyable an experience as you can possible have. This was a tiny slice of the larger Piedmont wine community and six of the best wine growers in the world. They do not represent what is average. Keep this in mind when reading my remarks and observations. I still subscribe from learning from the best and applying at all levels of production and quality.

Recommended reference resources. Books about Italian wines abound, most are of the coffee-table type but here are a few that helped me to understand the region and its viticulture:

   http://www.renatoratti.com/eng/popup_nebbiolo.lasso

Acknowledgements: First and foremost is my gratitude to my sister Lisa and brother in law Julien Houben for their help in making this mission possible. They were my devoted translator, chauffeur and guides through Piedmont and Tuscany. Angelo Gaja and Edward Steinberg were the inspiration for this journey but Sonia Franco at Gaja helped with my arrangements to visit the great estate and Alessandra Forlani guided our tour and tasting. Each visit was unique and
special for us. We were treated with grace, respect and warmth at each place. Everyone was very friendly and also professional and generous to a fault. We extended our visits at almost every location due to their willingness to share information, taste wines and offer their gracious hospitality. My heartfelt thanks go to Anja Cramer, Giovanna Rivetti, Stephano Mazzetta, Davide and Roberto Voerzio and Cesare Bussolo, Elio and Silvia Altare, Roberto Conterno and Micol Becati, Barbara, Luciano and Luca Sandrone. Thank you, also, to Luca Paschina, Eric Miller and Gino Razzi who offered their Italian and American varietal wines for me to share with our colleagues in Italy. We were treated and dined very well at the restaurant of Diego Paschina in Alba and happy birthday to their mama! Elena Picedi was the consummate host at l’Antico Asilo. We hope that Julia (born the week before we arrived) is in good health and sleeping through the night. I am always grateful to Penn State Cooperative Extension and the Pennsylvania Association of Winegrowers for their support of my professional development. I hope the feedback will be useful to its members. Thanks to Judi and Mandy who kept the home fires warm and took over my duties while I was away. Thank you to everyone who made this memorable trip possible!

Travel notes: The exchange rate with the euro is brutal but that doesn’t mean you have to sleep in a cardboard box and eat candy bars. We found a wonderful B&B in Serralunga d’Alba, arguably the most attractive hill town in the Barolo region. Elena Picedi is your host in her beautiful ground floor 4 room B&B called L’Antico Asilo (http://www.anticoasilo.com/text/asilo.htm). You won’t find a more comfortable or welcoming place to stay and the breakfast will sustain you, to, well, lunch. The towns are chock full of wonderful and relatively inexpensive trattorias and pizzarias but there are also Michelin starred restaurants to choose from. You won’t want to miss the homey atmosphere and food at Sognatori in Alba (0173 34043). The restaurant is owned by Diego, brother of Luca Paschina at Barboursville Vineyards in Virginia. Restaurants open for dinner at 7-8 p.m. and are often closed on certain weekdays so if you have your heart set on a particular place, call to make sure it’s open! If you rent a car make sure you get a GPS navigator to get you to your destinations. It may cost more but you will save a lot of time. But still get some good maps to get a sense of the local geography. Make appointments at all of these wineries. I suggest two visits per day, one in the morning and one in the afternoon. We budgeted two hours at each winery but ended up spending 3-5 hours due to the grace and generosity of our hosts. While enotecas in the towns serve many of the local wines, if you want to talk with knowledgeable production personnel you must specifically indicate that you are in the wine business (production, not marketing) and that you are interested in viticulture and/or enology. The best time to visit to learn from the vines is late August to early September. April seemed to be a quiet month with pruning and tying done and wines resting. Do research on all your visits before you go. If you are talking to production people, having a translator would be enormously helpful. For this you can call Julien Houben in Lucca. USAir has a direct flight from PHL to Milan Milpensa (MXP).
Wines tasted: I find it essential to taste wines when visiting other wine regions to calibrate quality and set benchmarks for our own progress in wine growing. On this trip it was critical to evaluate acidity and tannin balance. While I made it clear that my main interest was in the vineyard, all of the wine growers I met generously poured wines. The wines were uniformly impressive, if not incredible in quality and uniqueness to Piedmont…

1. Gaja
   - 2001 Sperss (Serralunga – Barolo. 94% Nebbiolo, 6% Barbera)
   - 2000 Sugarille (Brunello di Montalcino. 100% Sangiovese)
   - 2005 Barbaresco (blend of 14 vineyards. 95% Nebbiolo and 5% Barbera)
   - 2005 Carmarcanda (Bolgheri, Tuscany. 50% Merlot, 40% Cabernet Sauvignon, 10% Cabernet Franc

2. La-Spinetta
   2nd wines from younger vines:
   - 2006 Il Nero di Casmore, 85% Sangiovese, 15% Colorino from Tuscany vineyard
   - 2006 C G’Dilan Barbera d’Asti
   - 2006 Bionzo Barbera d’Asti Superiore – 5-6 cl/vine
   1st wines:
   - 2005 Vigneto Valeirano
   - 2004 Vignetto Campe

3. Roberto Voerzio – all tank tasted
   - 2007 Dolcetto and Barbera
   - 2006 Nebbiolo
   - 2006 Merlot – still trying to find out how to handle this grape in cellar and bottle
   - 2005 La Serra
   - 2004 Langhe Nebbiolo Vigneti S Francesco and Fontanazza (bottle)

4. Elio Altare
   From tank:
   - 2007 Dolcetto
   - 2007 Barbera
   - 2007 Barolo
   Bottle:
   - 2003 Barolo
   - 2004 Barolo
   - 2004 L’Insieme – joint project wine made for charity with other wineries. Blend 40% Cab Sauvignon, Merlot, Petit Verdot, Barbera, Dolcetto and Nebbiolo.

5. Conterno – tasted from botti
   - 2006 Barbera. Wow! Beautiful ripe and delicious fruit, bracing acidity but excellent balance.
   - 2004 Barolo Riserva – selection in the vineyard, no barrel blending. He looks for the zones each year that developed the best grapes then keep it in separate vats, no temperature control with longer maceration. The sections of the vineyard that make Riserva vary.
6. **Luciano Sandrone**
   - 2006 Valmaggiore Nebbiolo from Roero – light, delicate, a ballerina next to male dancers. Lighter but beautiful color, sophisticated and smooth on palate. Why is it lighter from that site?
   - 2004 Barolo Le Vigne – very deep, rich, tannic and powerful. A big Barolo but with grace and style.
   - 2004 Barolo Cannubi Boschis, the same as LV if not more of everything!

7. **Other wines tasted along the way:**
   - 2002 Tenuta di Trinoro Riserva
   - 2005 Antinori Tignanello (85% Sangiovese, 10 Cab S, 5 Cab F)
   - 2004 Avignonesi Vino Nobile di Montepulciano Grandi Annate Riserva (85% Sangiovese, 15 Cab S)
   - 2003 Brunello di Montalcino Azienda Fuligni (100% Sangiovese)
   - 2003 Apostili Sec XV Vino Nobile di Montepulciano Riserva

Local red and white vino di tavola are usually fine in restaurants and relatively inexpensive

Questions:

What distinguishes the best vineyards in Piemonte?

Grape
   1. Why is Nebbiolo so well adapted to Piemonte? Why does it perform so poorly in other areas, such as California?

Site:
   1. What is the best soil for Nebbiolo
   2. What are the main features – drainage, warm/cool,
   3. What is the best mesoclimate characteristics – elevation, aspect, slope
   4. Rain distribution. The 100mm rule after veraison.
   5. Terroir effects:
      a. Soils
      b. Climate

Grapes
   1. How to achieve balanced acidity in the vineyard
   2. What are ratios of malic to tartaric and lactic?
   3. How to achieve balanced tannins?
   4. What kind of tannins are best?
   5. Full ripeness: what are key indices?
   6. How is picking moment determined? By whom?
   7. How to push ripeness in Nebbiolo to avoid late harvest
   8. Vine: do clones make a difference with Nebbiolo
   9. What are the best vs. most commonly used rootstock

Viticulture – distinguish between red and white varieties:
   1. What is the best vine density and how does it affect wine quality
a. Distance between rows
b. Distance between vines
2. What is the best trellis system? VSP?
   a. Fruit zone wire height
   b. Height to top of canopy
3. Training system – cane or spur prune? Why?
4. Pruning
5. Optimum yield per vine or hl/ha
   a. Nebbiolo
   b. Barbera
   c. White varieties
6. How to estimate crop and when to thin grapes
7. Canopy management: what are the practices, how meticulous is the work.
8. Disease and pest problems
9. Rootstocks – what are the most common rootstocks and why are they used?
10. Clones – how important for Nebbiolo?

Wine making

1. Primary fermentation
   a. Tank size and material
   b. Rotary fermenters
   c. Cap management – irrigate, pump over or punch down. How often?
   d. Maximum temperature
   e. Cold soak and maceration period

2. Reverse osmosis, concentrators?
3. Other key cellar practices?

General:

1. What is the greatest factor in producing great wine in Piemonte?

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