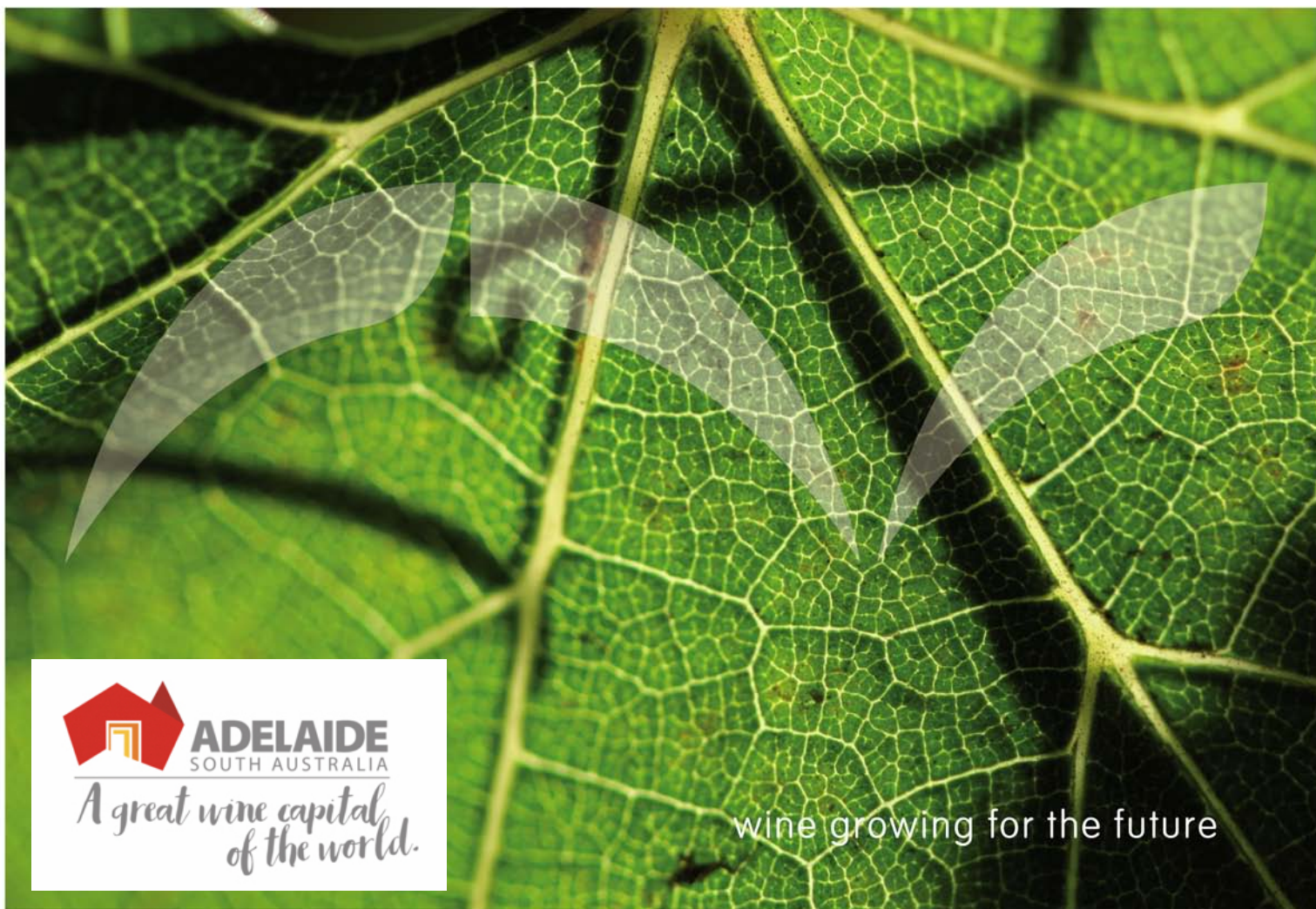




PIRSA's Great Wine Capitals Knowledge Exchange Travel report for Bordeaux, Verona and Lausanne, 2019

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1. BACKGROUND

Mary Retallack was an inaugural recipient of the Primary Industries and Regions South Australia Great Wine Capitals Knowledge Exchange Bursary, and visited the Great Wine Capitals of Bordeaux, France; Verona, Italy; and Lausanne, Switzerland from 30 June to 18 July 2019. A summary of these travels is presented below.

2. BORDEAUX, FRANCE

The Bordeaux region is in south-western France and is located on the Gironde estuary, which includes the Garonne and Dordogne rivers. The region has a long winemaking history with about 120,000 hectares planted to wine grapes, comprising 60 different Bordeaux appellations (Left Bank and Right Bank). The region produces some of the most expensive and sought after wines in the world.

Red varieties include Cabernet Sauvignon, Merlot, Cabernet Franc, Petit Verdot, Malbec and less commonly Carménère. Cabernet Sauvignon is typically the predominant variety in red wine blends from the Left Bank (situated on the left bank of the Garonne river) and Merlot is the predominant variety in red wine blends from the Right Bank (situated on the right bank of the Dordogne river).

White varieties include Sauvignon Blanc, Semillon and Muscadelle. Sauternes, a sub-region of Graves is known for its intensely sweet botrytised desert wines.

2.1. Cité du Vin

Bordeaux, France

Cité du Vin opened in May 2016 and is an impressive museum and exhibition centre, which provides an interactive voyage of discovery of the world of wine. The permanent display houses 20 different themed spaces, including a small interactive display on the Barossa.

At the end of the tour you can go to the eighth floor to enjoy the view and a complementary glass of wine. Cité du Vin is easy to access via tram from the city centre.

For more information see <http://www.laciteduvin.com/en>



Figure 1: Cité du Vin museum and exhibition centre



Figure 2: Cité du Vin interactive display featuring Stephen Henschke from C.A. Henschke and Co. in the Barossa



Figure 3: Cité du Vin viticulture display



Figure 4: Cité du Vin interactive sensory display

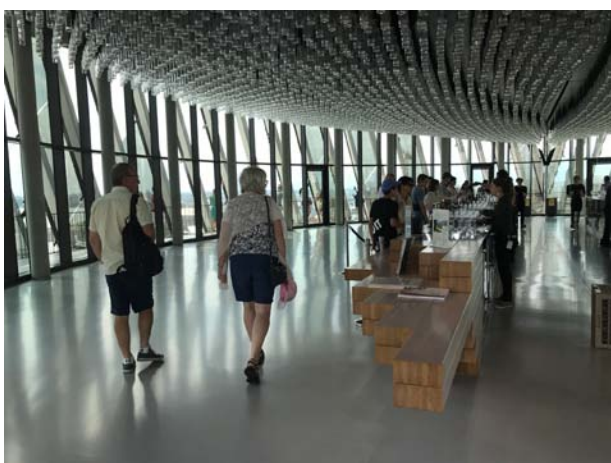


Figure 5: Cité du Vin wine tasting deck



Figure 6: Cité du Vin cellar

2.2. Institut national de la recherche agronomique (INRA)

Bordeaux, France

Research

INRA is a French public research institute dedicated to agricultural science. I met with researchers Dr Adrien Rush and Pauline Tolle who are working on a number of landscape ecology projects including SAVE and BACCHUS, a 900 square kilometre project looking at the effects of broadscale landscape use and function and the biocontrol of key insect pests. They have a long-term trial site located in Saint-Émilion which they plan to monitor over the next 10 years. The goal of the SAVE program is to manage vine diseases and pests based on biological regulations, plant management, and varietal choices.

We discussed the management techniques for key pests and diseases. The phytoplasma *Flavescence dorée* (from French 'Flavescence' : yellowing and 'dorée' : golden) is specifically transmitted by the American grapevine leafhopper, *Scaphoideus titanus*. Infection may kill young vines and greatly reduce the productivity of old vines. Control of these leafhoppers is legislated using a range of insecticides, including broad spectrum pyrethroids, which will also negatively impact on predatory arthropods.

They also mentioned that in a recent study up to 70% of bat scats tested positive for the presence of European grapevine moth, *Lobesia botrana* and contribute towards the control of these leafrollers. They have also found that mid-row management has a bigger impact on functional biodiversity, rather than organic or non-organic practices in France.

For more information visit <http://www.bordeaux-aquitaine.inra.fr/Le-centre-Les-recherches/Unites-de-recherche/SAVE> and <http://siteatelier-bacchus.com/en/>



2.3. Château d'Yquem

Sauternes appellation, Gironde department, Graves (Left Bank), France

Château d'Yquem is located approximately 50 km south-east of Bordeaux.

Viticulture

Château d'Yquem has 113 hectares of vines, of which one hundred hectares produce grapes in a given vintage. Two to three hectares of old and unproductive vines are uprooted annually, and the soil is left fallow for a year. It takes at least five years before new vines produce grapes that meet Yquem's high standards. Yquem is planted to Sémillon (75%), which produces a rich wine with body and structure, and Sauvignon Blanc (25%), an early-ripening but less reliable producer, which contributes aromas and finesse.¹

They harvest selectively, and typically over a six week period in response to the gradual development of noble rot, *Botrytis cinerea* which is desirable for botrytised dessert wine production. The fungus colonises each grape and causes water to evaporate through the skin resulting in the sugar and juice of the grapes become highly concentrated under the right climatic conditions. This also results in a reduction of 50% of the total juice volume. As a result, yields are very low, on average 9 hectoliters per hectare.²

Environmental stewardship

Château d'Yquem adopts the philosophy of living in harmony with nature. The soil is regularly worked (light ploughing) and chemical weed control has never been used.

Half of Château d'Yquem's surface area is a permanent natural habitat for fauna and flora. There are 50 hectares of pine and acacia trees on the estate, 35 hectares of meadows where cattle graze, as well as landscaped grounds, and gardens. Fertilisers are organic and comprise manure from local farms composted with an equal amount of crushed vine cuttings.

Grape moths have been trapped over the past 50 years and mating disruption is practiced throughout the estate. Yquem also uses local materials as much as possible, such as acacia wood for vine stakes, and rushes and wicker from swampland in the Gironde to tie up the vines.³

Flower garden

There is an impressive walled flower garden adjacent to the chateau which is a hive of activity from insects and lizards.

Wines

If you wish to taste the wine, book online at least a month in advance via the reservations page <http://reservation.yquem.fr/en/reservation>

For more information visit <http://yquem.fr/int-en/>

¹ Paraphrased from <http://yquem.fr/int-en/domain>

² Paraphrased from <https://www.lvmh.com/houses/wines-spirits/chateau-yquem/>

³ Paraphrased from <http://yquem.fr/int-en/expertise>



Figure 7: Château d'Yquem entrance



Figure 8: Château d'Yquem



Figure 9: Château d'Yquem tasting room



Figure 10: Château d'Yquem sensory garden



Figure 11: Château d'Yquem vineyard with flowers retained along the drainage area



Figure 12: Château d'Yquem vineyard with roses planted adjacent to strainer posts



2.4. Château Suduiraut

Sauternes appellation, Gironde department, Graves (Left Bank), France

Château Suduiraut is located approximately 2.5 km from Château d'Yquem.

Viticulture

The vines are on average 30 years old or older. Two varieties are planted, comprising 90% Semillon on the lighter soils and the remaining 10% is Sauvignon Blanc which is best suited to the heavier soils on the property.

Environmental stewardship

Organic fertiliser are used and the vines are managed by hand. The vineyard is surrounded by forest and this provides a convenient barrier to stop fog from rolling through the vineyard, too early in the season.

Wine

Château Suduiraut produces a sweet white wine ranked as Premier Cru Classé 'First Growth' in the original Bordeaux Wine Official Classification of 1855. The wines produced from vines planted on the gravely sandy soil tend to be more elegant and the heavier soil produces richer fruit flavours.

With thanks to Emilia who hosted my impromptu tasting.

For more information visit <http://www.suduiraut.com/en/>



Figure 13: Château Suduiraut entrance



Figure 14: Château Suduiraut vineyard



Figure 15: Château Suduiraut cellar door



Figure 16: Château Suduiraut



Figure 17: Château Suduiraut tasting with Emilia



Figure 18: Vines tied to the wire with wicker canes

2.5. Château Coutet

Saint-Émilion, Libourne, (Right Bank), France

Château Coutet is located approximately 45 km east of Bordeaux and 2 km from Saint-Émilion.

Viticulture

The property is 16 hectares in size with 12 hectares planted to wine grapes. The remaining area is preserved as natural habitat. A combination of varieties are planted including 60% Merlot, 30% Cabernet Franc, 5% Malbec and 5% Cabernet Franc. Most of the vines are more than 80 years old.

The history of the property can be traced back least 400 years. The Merlot patch has some of the oldest germplasm in the region, as the same plot has been progressively regenerated from its own cuttings throughout this time.

The property is an interesting mix of history, minimal intervention and high tech, with ground vegetation cover managed via horse and plough, or tractor to slash, or the VITIROVER robot. This is the first time I have seen a robot in action in a commercial setting. It looked robust and impressive.

VITIROVER

There is a fleet of about 40 robots in operation and the owner of Château Coutet, Xavier David Beaulieu is also a shareholder of the VITIROVER company. They maintain the robots and hire them out to slash weeds in local vineyards.

For more about VITIROVER visit <https://www.vitirover.fr/en-home>

Environmental stewardship

Three sisters ran the property until 1992 and synthetic insecticides and fertilisers have never been used. Three species of leafrollers (Tortricidae) are managed using mating disruption pheromone ties (known locally as 'sexual confusion'), and it takes three people about half a day to install the twist ties over the 12 hectares. Apple and peach trees were previously planted in the vineyard but have since been removed. A natural vegetation bird hide is used to monitor endangered bird species and bee hives are also located nearby.

For more information visit <http://chateau-coutet.com/en/>

Thank you to Josépha Guenser from Vitinnov <http://www.vitinnov.fr/equipe.php> for organising and accompanying me on this visit.

Also of interest is the nearby old town of Saint-Émilion which is registered as a World Heritage Site by UNESCO.



Figure 19: Château Coutet



Figure 20: Château Coutet midrow biodiversity



Figure 21: Château Coutet young vineyard



Figure 22: Biodiversity area with Josépha Guenser from Vitinnov, Xavier David Beaulieu and Matthieu David Beaulieu from Château Coutet

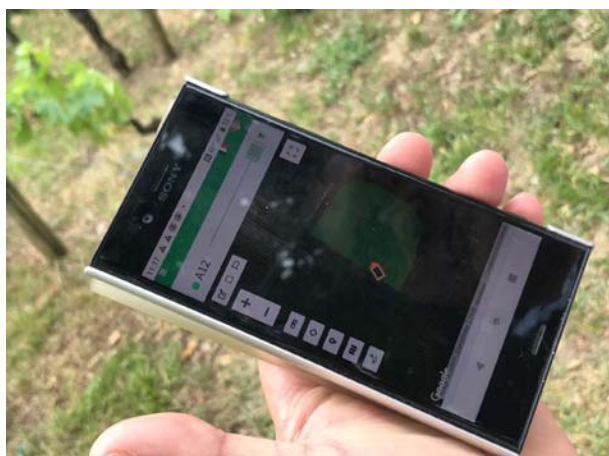


Figure 23: VITIROVER phone app



Figure 24: VITIROVER in action



Figure 25: Château Coutet winery with Matthieu David Beaulieu



Figure 26: Château Coutet cellar



Figure 27: Xavier David Beaulieu demonstrating their proprietary glass stopper



Figure 28: Château Coutet wine with glass stopper



Figure 29: Château Coutet 'David Beaulieu' wine



Figure 30: Château Coutet tasting



2.6. Vignobles Bardet

Saint-Émilion, Libourne (Right Bank), France

Viticulture

Vignobles Bardet has 50 hectares planted to grapevines. Vineyard manager, Eric Fargeot took Josépha Guenser (insectary specialist and translator) and I for a tour of the vineyards. They are in the process of trialing an electric tractor called the 'Beagle'. It is used to plough the undervine area. They have suggested installing solar panels on the roof to further extend the 8 hour battery life. They install pheromone dispensers to manage grape berry moth and mentioned that they coordinate their approach with their neighbours to gain efficiencies. The pheromones reportedly work best when there is an area of 10 to 15 hectares covered. It costs about 230 euros per hectare to install the dispensers.

Environmental stewardship

The owner, Philippe Bardet applies an environmentally friendly approach in his vineyards, which have ISO 14001 certification. They are in the process of renewing the winery and surrounding buildings to ensure they are friendly for local birds and bats by preserving existing nesting sites. Interestingly, Josépha mentioned that a commonly used insectary plant phacelia, may harbour nematodes that transmit virus to vines and this species is not favoured as an insectary plant. Locally-adapted vegetation is encouraged to grow and comprises a range of species including fields of chamomile.

Thank you to Josépha Guenser from Vitinnov <http://www.vitinnov.fr/equipe.php> for organising and accompanying me on this visit.

For more information visit <https://vignoblesbardet.com/en/>



Figure 31: Vignobles Bardet



Figure 32: Hedgerow of fruit trees (apricots)



Figure 33: Vignobles Bardet hedgerows



Figure 34: Beagle electric tractor



Figure 35: Mary Retallack at Vignobles Bardet



Figure 36: Natural camomile insectary

2.7. Domaine Emile Grelier

Gironde department, Lapouyade (Right Bank), France

Domaine Emile Grelier is located 1 hour north-east of Bordeaux.

Environmental stewardship

I was given a tour of the vineyard by the owner, Benoit Vinet. The 8 hectare vineyard was planted to Merlot in 2002. The vineyard started as a monoculture but Benoit has transformed the site by incorporating biodiversity throughout each patch, which incorporates an interpretative trail with signage to explain each innovation. They started by planting 570 trees in and around the vineyard (as well as in the vine row), as habitat for insectivorous birds and bats which can eat up to 3,000 insects each night.

They have three species of bats present and many bird species, which contribute to the control of grape berry moth. Birds are present during the day and bats at night. Hedgehogs are also insect eaters and they have incorporated habitat via houses and branches arranged into sheltering sites to encourage their presence. A range of fruit and ornamental trees are planted in the vine row above the vines every 8 metres including maple, elm, willow, cormier, and ash trees. Interestingly, less water is used on site when the grass is not slashed (as it is not trying to replenish its size). It produces plentiful seed for birds and habitat for small animals. All vineyards in Bordeaux are dry grown.

For more information visit <http://www.domaine-emile-grelier.fr>

With thanks to Josépha Guenser for organising this visit and Nicole McPheeters and Mark Hoddy for providing accommodation while I was based in Saint-Émilion.



Figure 37: Domaine Emile Grelier merlot



Figure 38: Domaine Emile Grelier bat boxes



Figure 39: Domaine Emile Grelier



Figure 40: Domaine Emile Grelier ladybird



Figure 41: Domaine Emile Grelier vineyard tour



Figure 42: Domaine Emile Grelier hedgerow



Figure 43: Domaine Emile Grelier agroforestry



Figure 44: Domaine Emile Grelier agroforestry



Figure 45: Serpent (snake) conservation



Figure 46: Insectivorous bird perches



Figure 47: Bat conservation



Figure 48: Hedgehog conservation



Figure 49: Soil biology



Figure 50: Dragonfly



3. VERONA, ITALY

Verona is a UNESCO world heritage listed city in northern Italy's Veneto region with the wine region Valpolicella famous for its production of recioto dessert wine and Amarone style wines located nearby. Verona is famous for being the setting of Shakespeare's 'Romeo and Juliet' with a 14th-century residence with a tiny balcony overlooking a courtyard said to be Juliet's House. Nearby is the Verona Arena which is a huge 1st-century Roman amphitheatre, which hosts concerts and large-scale opera performances.

For more information visit <https://whc.unesco.org/en/list/797/> and <https://www.arena.it/arena/en>



Figure 51: Castelvecchio castle



Figure 52: Verona streets



Figure 53: Juliet's House



Figure 54: Ponte della Vittoria



Figure 55: Verona Arena



Figure 56: Verona Arena opera



3.1. World Biodiversity Association

Verona, Italy

Biodiversity Friend

I met with Gianfranco Caoduro, Honorary President of the World Biodiversity Association (WBA) and Enrico Ruzzier from the University of Padova. WBA are a no-profit Association formed by naturalists, botanists, zoologists and simple nature lovers involved in studying and conserving the biodiversity hot-spots all over the world. They are working with local growers to document vineyard biodiversity.

For more information visit <https://biodiversityassociation.org/en/>



Figure 57: Wine with the Biodiversity Friend logo



Figure 58: Gianfranco assessing water quality



Figure 59: Enrico with butterfly



Figure 60: Enrico and Gianfranco in the field



Figure 61: Wasp on flowers



Figure 62: Gianfranco assessing lichen



3.2. Allegrini

Valpolicella, province of Verona, Italy

The Allegrini Palazzo Della Torre vineyard is located on the site of the Villa Della Torre approximately 22 km north west of Verona.

Environmental stewardship

I was accompanied by Gianfranco Caoduro and Enrico Ruzzier from the World Biodiversity Association who work in association with Allegrini. I met with the owner, Franco Allegrini who strives for the best biodiversity outcomes and takes a wholistic approach to managing the vineyards.

A range of parameters are regularly assessed including the presence and diversity of lichens as a measure of air quality, and the honey produced from bees is tested for the presence of residues. They stopped spraying insecticides and use pheromones to manage grape berry moth. Dry stone walls are also being restored to provide habitat for birds, lizards, spiders and beetles.

For more information visit <https://website.allegrini.it/en/index.php>

Allegrini are members of Biodiversity Friend and have documented their biodiversity approach in a book titled 'In vino habitat' <https://www.bluarte.it/taste-e-wineart/vino-habitat-dalla-natura-ai-vigneti-biodiversity-friend-allegrini>



Figure 63: Villa Della Torre Allegrini



Figure 64: Villa Della Torre Allegrini fireplace



Figure 65: Villa Della Torre Allegrini



Figure 66: Villa Della Torre Allegrini



3.3. Cantina Valpolicella Negrar

Valpolicella, province of Verona, Italy

Cantina Valpolicella Negrar is a cooperative of 230 members covering 700 hectares of wine grapes in the Valpolicella region in the Province of Trentino.

The winery is located approximately 12 km north-west of Verona. They recently won a Great Wine Capitals tourism award for an initiative led by technical viticultural consultant, Claudio Oliboni where local school children are invited to design a wine label each season.

Viticulture

The majority of the vineyards in the area are dry grown. Albeit the weather patterns have become unpredictable, the region is facing drought conditions and are now considering the best way to facilitate the installation of water storage and irrigation delivery. Some growers are digging bores on their properties to access ground water reserves.

The cooperative have an experimental vineyard where approximately 40 varieties are grown. They were saved after the devastation of grape phylloxera. Previously, there were hundreds of endemic varieties in the region. Unfortunately, many were lost.

The region faces similar fungal challenges to Australia with powdery mildew, downy mildew and bunch rots predominating.

There are a range of other pest challenges also including;

- European grapevine moth, *Lobesia botrana*, and vine moth, *Eupoecilia ambiguella* (pheromones are used for control),
- Spotted wing drosophila, *Drosophila suzukii*,
- Leaf minor moths, *Holocacista rivillei*, *Antispila oinophylla*, and *Phyllocnistis vitegenella*,
- European fruit scale, *Parthenolecanium corni* and cottony maple scale, *Pulvinaria vitis*,
- Vine mealybug, *Planococcus ficus*,
- Green leafhopper, *Cicadella viridis* and smaller green leafhopper, *Empoasca vitis*,
- Yellow vine mite, *Eotetranychus carpini*, and
- Trunk diseases including esca.

The brown marmorated stink bug (BMSB), *Halyomorpha halys* and *Xylella fastidiosa* are present in Italy but are commonly found further south. Hail can cause considerable damage in some seasons, along with wild boars!

Pheromones work well over an area of 200 hectares in the region. Previously 3 to 4 sprays were applied and now it is often 1 spray or less. Pheromone dispensers are installed at a rate of 500 lures/ha or 250 ties/ha. Ties are concentrated around the perimeter of the block and less frequently inside. Scales are parasitised up to 90% by parasitic wasps where grass is present to provide habitat. Mealybugs are managed using a combination of pheromones, predatory arthropods, and parasitic wasps. Sulphur and Copper are regularly applied as well as seaweed, potassium carbonate, and tannins to combat botrytis.

Endemic varieties are commonly planted on the pergola trellis system (or Guyot) which produces yields (up to 11 t/ha) and provide shade to protect the developing clusters as they ripen. Kaolin clay is also used as sunscreen if needed.

Vine spacing varies from 0.8 to 0.9 m and up to 2.5 metres in the midrow. It is legislated that there must be at least 3,300 vines/ha.

Previously cows and vegetables were included under the pergola system but not now.

There are a range of other crops grown in the region including cherries, pears, apples but mostly grapes.



Environmental stewardship

They follow the following mantra in the vineyard ‘Riduce, rispetta, risparmia’ (Reduce, Respect and Save). For more details about their approach visit https://www.cantinanegrar.it/wp-content/uploads/2018/09/il_rispetto_approfondimento_en.pdf

With thanks to Claudio Oliboni and Sara Albertini for showing me around the vineyards and winery and sharing information about their integrated pest management practices.

For more information visit <https://www.cantinadinegrar.it/en/>



Figure 67: Cantina Valpolicella Negrar entrance



Figure 68: Mary Retallack and Claudio Oliboni



Figure 69: Stink bug nymph



Figure 70: Claudio Oliboni under pergola trellis



Figure 71: Pheromone lure



Figure 72: Superficial damage to leaves caused by the leaf minor moth, *Holocacista rivillei*



Figure 73: Cantina Valpolicella Negrar vineyards with stone walls



Figure 74: Old drying racks used for Amarone production



Figure 75: Cantina Valpolicella Negrar pergola



Figure 76: Sara Albertini in the cellar



Figure 77: Cantina Valpolicella Negrar wine labels designed by local school children



Figure 78: Cantina Valpolicella Negrar wine tasting



3.4. University of Padova

Veneto, province of Verona, Italy

The University of Padova is located approximately 90 km east of Verona.

Research

I met with Associate Professor Alberto Pozzebon a researcher in grapes and soft fruits, with a focus on the biocontrol of pest insects.

We discussed the groups recent research findings and interests. His team found the rate of contamination by BMSB on Prosecco (Glera) is >10 bugs per bunch to cause taint. The physical damage caused to soft fleshy fruits has a much higher economic impact locally.

For example, external damage is hidden on kiwi fruit but the damage is evident in the flesh when the skin is removed. Apples, peaches, pears, walnuts, olives, cherries, plums, apricots and oranges are all particularly susceptible. When they are present BMSB tend to be most prevalent along the perimeters of vineyards.

They are also studying transmission vectors of Phytoplasmas including Bois noir, *Candidatus Phytoplasma solani* and its vector, *Hyalesthes obsoletus*; and Flavescence dorée, *Candidatus Phytoplasma vitis* and its vector the American grapevine leafhopper, *Scaphoideus titanus*.

They have recently assessed the efficacy of an Australian biocontrol agent 'the mealybug destroyer' ladybird beetle, *Cryptolaemus montrouzieri* and found that it provides better control than the insecticide Spirotetramat on mealybugs. This paper will be published later this year.

For more information visit <https://www.dafnae.unipd.it/en/>

3.5. Masi Agricola

Valpolicella, province of Verona, Italy

The Masi Agricola is located approximately 20 km north-west of Verona.

Viticulture

I met with Andrea Dal Cin, Director of Enology and Roberta Beber from the Masi Technical Group who specialise in the production of Amarone style wines. They manage approximately 1,300 ha of vineyards including 350 hectares of organically managed vineyards worldwide.

Brassicas are used as a cover crop to help combat against nematodes, also clover and Plantago are encouraged. This is in contrast to Australia where Plantago (Plantain) is considered a weed and breeding site for light brown apple moth, *Epiphyas postvittana*.

Guyot and pergola trellis systems are predominantly used in Valpolicella. The grapevine variety Corvina is sensitive to sunburn and pergola works best to shade the bunches.

Environmental stewardship

Masi measures the sustainability performance of the vine-to-wine supply chain. A tool called VIVA is used to measure the environmental impact of a vineyard, by measuring factors to do with its management, greenhouse gases, water, economic, human and social resources, and ability to enhance the territory.

For more information visit <https://www.masi.it/en> and <https://www.masi.it/en/masi-green>



Figure 79: Andrea Dal Cin, Mary Retallack and Roberta Beber



Figure 80: Drying racks used for Amarone production



Figure 81: Varieties used in Amarone production



Figure 82: Masi Agricola cellar



Figure 83: Masi Agricola vineyards



Figure 84: Roberta Beber in the vineyard



Figure 85: Masi Agricola vineyards



Figure 86: Masi Agricola vineyards



Figure 87: Pheromone dispenser



Figure 88: Pheromone ties



Figure 89: Mary Retallack in a neighbouring pergola trellis vineyard



Figure 90: Masi Agricola vineyards



3.6. Fondazione Edmund Mach

Veneto, province of Trentino, Italy

Fondazione Edmund Mach is located approximately 115 km north of Verona in the Trentino region. The Edmund Mach Foundation carries out research, scientific experiments, education and training activities. As well as providing technical assistance and extension services to companies with a focus on grapevine and apple production.

Research

I met with Franca Ghidoni who showed me around the region and Claudio Ioriatti who is the Director of Fondazione Edmund Mach. Franca has previously worked in McLaren Vale, South Australia.

The native wine grape varieties grown in the region include the white Nosiola and two red varieties Teroldego Rotaliano and the Marzemino. Other varieties include Chardonnay, Cabernet, Merlot, Moscato, Pinot Nero and Pinot Grigio, and Müller-Thurgau. The main trellis systems employed are pergola (70%) and 30% guyot. Production is up to 18 t/ha on the pergola system and rainfall is up to 1,200 mm per year. Vine spacing is typically 0.5 to 0.8 metres and row spacing is 4 to 4.5 metres.

I visited the vineyard where the first symptoms of Grapevine Pinot Gris Virus (GPGV) were initially observed. The symptoms are best seen on first 6 leaves but some vines are asymptomatic (as is the case for the adjacent block of Legrain). Franca commented that yield losses of 30 to 40% have been recorded where GPGV is present.

They are working to find the main vectors of the virus and have found evidence that erineum strain of blister mite, *Colomerus vitis* is involved in the epidemiology of the GPGV.

Other key pests in the area include American grapevine leafhopper, *Scaphoideus titanus*, the vector for phytoplasma Flavescence dorée (FD) and mealybugs.

My visit was recorded on the Edmund Mach blog <https://www.fmach.it/CTT/Chi-siamo/I-nostri-ospiti-internazionali/Mary-Retallack>

For more information visit <https://www.fmach.it>



Figure 91: Fondazione Edmund Mach entrance



Figure 92: The first detection of Grapevine Pinot Gris Virus was found in this vineyard



Figure 93: Pergola trellis



Figure 94: Pergola trellis



Figure 95: Fondazione Edmund Mach



Figure 96: Young vineyard



Figure 97: Symptoms of Grapevine Pinot Gris Virus



Figure 98: Pergola trellis



Figure 99: Mary Retallack



Figure 100: Trentino vineyards



Figure 101: Franca Ghidoni and a pergola trellis



Figure 102: Lavender at the end of rows



Figure 103: Trentino vineyards



Figure 104: Butterfly on lavender



Figure 105: Mating shield bugs



Figure 106: Bumblebee on lavender



Figure 107: Mary Retallack and Franca Ghidoni



Figure 108: Moth on lavender

4. LAUSANNE, SWITZERLAND

4.1. HES-SO Ecole d'ingénieurs de Changins

Lausanne, Switzerland

Changins is located approximately 40 km south-west of Lausanne and is the national centre of excellence for training in viticulture, enology and arboriculture.

Viticulture

I met with Professor Jean-Philippe Burdet, Head of Viticulture and Plant Protection and Matteo Mota, a researcher in the soil group. They are researching alternatives to herbicide use, by using different native vegetation species (also assessing the allelopathic qualities). They are also using drones to map the area of erosion damage on the steep hills where vineyards are planted. They have annual rainfall of 800 to 1,100 mm each year.

Pheromone ties 500/ha are often used but 300/ha is sufficient, placed preferentially around the perimeter of the vineyard and more broadly spaced inside the vineyard. They are used to control two species of leafroller.

For more information visit <https://www.changins.ch>



Figure 109: Mary Retallack at Changins



Figure 110: Changins rootstocks



Figure 111: Chasselas grapevines



Figure 112: Jean-Philippe Burdet at Changins



Figure 113: Changins cover crop trial



Figure 114: Matteo Mota at Changins



4.2. International Organization of Vine and Wine (OIV)

Geneva, Switzerland

42nd World Congress of Vine and Wine

The 42nd World Congress of Vine and Wine was held in Geneva from 14 to 18 July 2019. More than 750 participants, researchers, professionals in the sector, academics and students from 50 countries participated in the world congress. The central theme was ‘Preservation and innovation: expectations at the environmental, economic and social level’.

I presented a 20 minute presentation on the topic ‘Native insectary plants support populations of predatory arthropods for Australian vineyards’, which was simultaneously translated into 5 languages.

The other Australian delegate in attendance was past President of the OIV Peter Hayes, who is also from Adelaide. As a result of this trip have recently been invited to join the Australian delegation of the Viticulture Commission, and ENVIRO group. I am looking forward to contributing to policy development in these areas.

For more information visit <http://www.oiv.int/en/oiv-life/42nd-oiv-congress-the-third-in-switzerland-is-a-huge-success>



Figure 115: OIV congress



Figure 116: OIV congress



Figure 117: Domaine des Champs-Lingot at dusk



Figure 118: Mary Retallack and past President of the OIV, Peter Hayes from the Australian Delegation



Figure 119: Mary Retallack presenting at the congress



Figure 120: Mary Retallack presenting at the congress

5. ACKNOWLEDGEMENTS

I wish to thank Minister Whetstone, and Primary Industries and Regions South Australia (PIRSA) who administer the Australian Wine Industry Development Scheme, for the opportunity to travel to the great wine capitals in France, Italy and Switzerland, as well as the Great Wine Capitals global network initiative <http://www.greatwinecapitals.com>, and all of the people I met along the way who generously offered their knowledge and advice.

This was a unique opportunity to meet with growers, researchers and to experience the best wine and regional experiences that each great wine capital has on offer. It was a great way to expand my professional networks and to share more about the great wine capital of Adelaide and South Australia more generally.

/Users/RetallackViti 1/Library/Mobile Documents/com~apple~CloudDocs/Documents/Documents - MacBook Pro/Retallack Viticulture/RV Submissions/PIRSA/Great wine capitals trip July 2019/Rmjr180819Great Wine Capitals Knowledge Exchange - Mary Retallack.docx



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