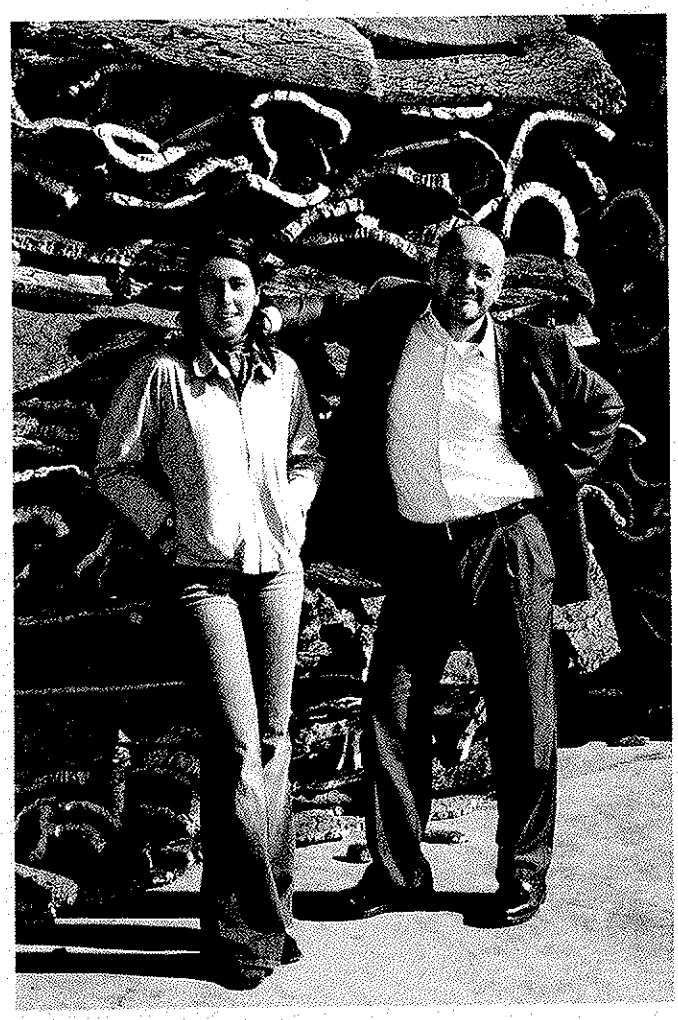
Leading cork industry player takes action

Lauren Corsey



Amorim's Joana Mesquita, public relations manager and Carlos de Jesus, director of marketing and communications.

As winemakers the world over begin to pay an increasing amount of attention to New Zealand and Australia's adoption of screw caps and other 'alternative' wine closures, the larger players in the cork industry are investing millions of dollars annually to take big steps towards improving their product offering. One of the companies leading the charge is Amorim & Irmãos, S.A, with its head office and major processing facilities in Portugal, the world's largest cork producing country.

Driven by the necessity to reduce 2,4,6- trichloroanisole (TCA) contamination of wine, Amorim is employing significant research and development practices and using the findings to improve its processing techniques. By offering the wine market a dramatically improved product, the company hopes to raise the cork industry standard at large, thereby forcing many of the 600 existing cork producers to follow suit. Though the industry maintains an 80-85% share in the wine closure market, producers that ignore the need for an improved product will most likely be swallowed up by consolidation among the larger companies such as Amorim, in a push for quality control across the industry.

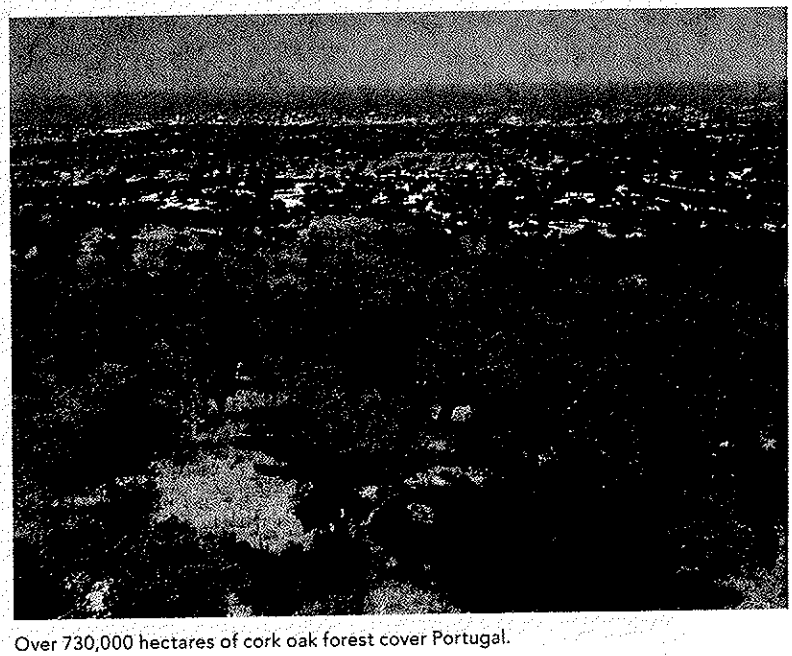
CORK AND AMORIM

Over 54% of the world's cork oak forests of evergreen *Quercus suber* cover 730,000 hectares of Portugal's total land area of 91,951 square kilometres, including the islands of Azores and Madeira. Over 185,000 tonnes of cork, the outer bark of the tree, are produced annually in Portugal alone. Cork forests are also planted in Morocco, Tunisia, Algeria, Spain, Italy and France.

I recently travelled to Portugal as a guest of Amorim & Irmãos, S.A. and saw how the company is taking action to improve its product offering across its operations, from the forest producers to the APCOR (Portuguese Cork Association) board where the company's president António Rios de Amorim acts as chairman.

APCOR is currently in the process of building a cooperative processing facility in northern Portugal with smaller cork producers in mind that may not have sufficient facilities of their own. Completion of the facility is expected by the end of this year and for many producers, the introduction of this new plant will be the first time their corks have been under any sort of TCA-reducing process.

Many of the technologies to be employed at the facility are the same as those used at Amorim's plants at Coruche and Ponte de Sôr, located in southern Portugal near the majority of the cork plantations. Use of the facility will be



Over 730,000 hectares of cork oak forest cover Portugal.

charged at market price on a pay-per-use basis, as profit is not APCOR's aim.

"The cork industry has emerged from 200 years of rest and now received a kick in the pants, so [the introduction of alternative closures] is the best thing that has happened to wake us up. The worst thing is the bad cork producers [who are not keeping pace with research and development]," said Carlos de Jesus, Amorim's director of marketing and communications.

"My aim is to have Amorim's three billion stoppers produced each year marked with an 'A' for Amorim and to be able to track problems and continue to improve. Without traceability, feedback cannot be given to identify the bad guys."

Not all cork buyers, however, wish to have an 'A' marked on their corks. The second step in this process is to have consumers understand what the 'A' represents, Carlos explained, as another cork producers are also marking their corks in the same fashion.

Amorim's Twin Top® technical cork has now become a generic name in the UK, with 820 million corks of these stoppers being sold there in 2004. Each Twin Top® features a cork disc on each end, 3.5 million of which are produced daily at the Coruche-based plant alone. The cork industry as a whole produces 12 billion cork stoppers annually.

"The lack of discussion about wine faults in the past was one cause of the cork industry blaming winemakers for wine problems. The current closure debate is healthy for both the cork and wine industries alike. There can be a happy coexistence of corks and screw caps if both sectors stick to the facts in their promotion – there is no need to hit the panic button," Carlos said.

Carlos believes there is not enough factual science-based information to confirm one stopper choice is better than another.

"No closure can offer 100% protection from wine problems," he said. "When someone comes out claiming to have eradicated the problem, I need to see scientific evidence, then I will trust the claim."

Amorim does not actually own a single cork forest in Portugal, the reason for which Carlos says is because Amorim is 'an industrial company rather than a forest company'. However, selected forest owners work in close consultation with the Amorim Forest Department throughout the year to ensure the cork will be of high quality come harvest time from June to September. Samples for testing are taken from each forest with the results entered into a historical database to identify quality-producing areas.

Cork is a highly sustainable product and is harvested by stripping the bark only every nine years, with each tree providing an average of 16 harvests over its 150-200 year lifespan. The calendar year is painted onto the trunk post-harvest to ensure the tree is stripped again at the correct time. At 25 years, the virgin cork is harvested for use with

flooring and insulation among other things. A tree is around 48 years old before the cork produced is of high enough quality for wine corks.

The area under cork forest is growing by 4% annually due to a large-scale reforestation program. Strict Government regulations control the forest landscape from cultivation to harvest. A forest cannot be cut down for reasons such as the construction of a new highway or otherwise.

Cork is purchased per arroba (weight unit measurement) and price is negotiated by quality. Planks of cork bark are bought to the Amorim facility at Coruche as quickly as possible after harvest so as to prevent contamination from the forest floor. Also to avoid contamination from the ground, planks are seasoned on stainless steel palates placed on concrete flooring at a gentle slant to avoid bacterial contamination. Planks are hand-sorted by thickness and are visually graded for quality. Twin Top® discs are punched from planks with insufficient thickness for a whole cork.

TCA-REDUCTION TECHNIQUES BRING RESULTS

Quality control is maintained at every step of Amorim's production of 3 billion corks per annum, using state-of-the-art equipment. Amorim is a strong supporter of the International Code of Cork Stopper Manufacturing Process (ICMP), first published in 1997 by the European Cork Confederation C.E. Liège to refine the production processes of cork and introduce company audits to ensure compliance with set standards. Half of all existing cork companies are certified today and the code becomes stricter with each passing year as technology advances.

Carlos says the market possesses significant power to dictate the laws and rules associated with cork production.

"The product is not questionable, the manufacturing processes are questionable – judgement is not able to be passed without scientific research," he said. "Nothing can be managed if it can't be measured."

He also says that Amorim has a strong focus on the prevention of TCA contamination – starting in the forest – rather than working solely towards a cure. Since the late 1990s, Amorim has developed several preventative strategies including improved cork harvesting methods and controls; strict controls on storage and seasoning of raw corkwood; improved cork purchasing and selection procedures; and a totally revised boiling system for washing the cork planks.

"Curative measures grab headlines," Carlos said. "Preventative measures can only be controlled as a raw product and we believe this is far more important."

At a cost of €100,000 each, Amorim has purchased seven Gas Chromatography (GC) machines over the past five years, giving Amorim access to clear evidence of the presence or lack of TCA.

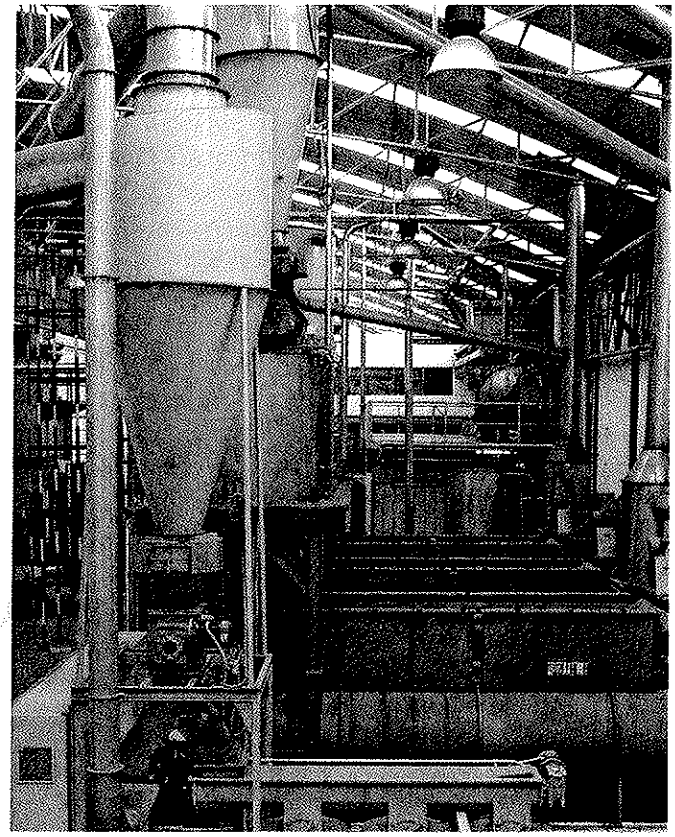
With no batch of corks leaving the facility without being tested by one of the machines, around 10,000 cork samples are analysed each month with a commercial value of €80-100 per sample. Approval or rejection of cork batches are based on this process and the test results are run in stages

of stabilisation to ensure problems do not occur before bottling. Affected samples are removed as soon as a problem is detected. Individual analysed corks are not put back into production because of the level of handling the cork has received.

Though several other top cork manufacturers have now successfully adopted steam distillation processes for reducing TCA, Amorim developed ROSA (Rate of Optimal Steam Extraction) in 2003 and named the technology after the Rosa, the wife of Amorim scientist Stefan Dahl. ROSA uses a process of pressurised water and steam to force volatile contaminants out of the cork. There is a patent pending on the ROSA process, but Carlos admits that as with all intellectual property, the company has to act as its own police force.

The ROSA process reduces TCA in cork granules by around 80%, as validated by research results conducted by Miguel Cabral, head of Amorim's research and development department, as well as the Australian Wine Research Institute, The Campden & Chorleywood Food Research Association in the UK and the Geisenheim Research Institute in Germany.

The past six years have been especially significant for Amorim with the development of its research and development department, particularly due to the introduction of alternative closures into the wine market. The R&D department's original aim, says Miguel, was to fight against TCA but now there are three major objectives; of course, to continue to lower the levels of TCA present in corks, increase product performance and to increase client and consumer knowledge of the product.



The ROSA unit.

New initiatives of the R&D department include using an improved and cheaper glue in the Twin Top® product, and the development of a 'corkscrewless' cork. This cork will be a combination of the bar-top cork and the SPARK® Champagne cork, giving consumers the ease-of-use offered by screw caps.

"The problem of TCA in cork granules is solved but not eradicated," Miguel said. "TCA analysis by GC and GC/MS

Miguel Cabral, head of Amorim's research and development department with one of the GC machines used to test every batch of corks produced by Amorim.

Ask the right questions, get the right answers

Carlos de Jesus believes that many winemakers are misinformed about cork, simply because the important questions are not asked of their cork supplier.

"If the winemaker knew what questions to ask of the cork industry, I do not believe that we would be having these current problems. Incomplete knowledge of the product and the process of manufacturing is damaging the perception of cork," Carlos said.

He suggests that some of the important questions to ask are:

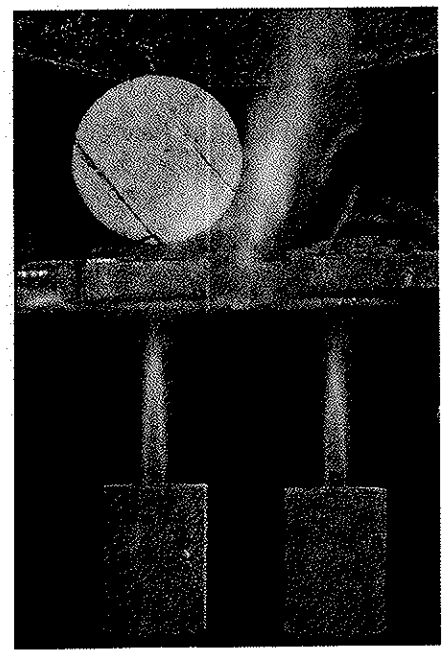
- Does the supplier have the ability to exercise preventative measures on all corks produced?
- How well integrated are preventative and curative measures?
- Are stainless steel palates used for seasoning the cork?
- Is investment being made into Gas Chromatography?

MAINTAINING CORK QUALITY IN THE WINERY

Cork producers' control over the quality of the cork ends once the product leaves the factory. Therefore, it is important that winemakers are aware of the correct storage methods for their corks to ensure contamination does not occur before the cork reaches the newly bottled wine.

Amorim recommends the following guidelines for winemakers on storing and handling cork stoppers:

- Store corks in cool conditions – clean, well ventilated, free from volatile or aromatic products, with temperature set to 15-20°C and relative humidity of 50-70%
- Compression should not exceed 15.5mm for a 24mm diameter cork
- Rapidly insert the corks to avoid creasing at its lower end
- Store bottles upright for a short time after corking, to allow the cork to recover and ensure a perfect seal
- Leave a head space of at least 15mm between the cork and the wine at 20°C to accommodate temperature variations; and
- Ensure good maintenance of the corker and set jaws to the correct diameter. Use CO_2 or vacuum during bottling to minimise internal pressure and the risk of leakage.



Corks are either fire branded or ink branded according to the clients' requirements.

has allowed Amorim to reduce the amount of corks being rejected to only 3-5% but when we started with this new system, we were rejecting 25% of corks.

"Amorim reduced the rejection level by this amount because we started to educate our clients about how to correctly store corks at their facility and to avoid incorrect washing practices."

Amorim's human workforce of 4000 in Portugal alone works with the assistance of some automation, allowing an increase in the speed of production. The human sensory analysis of the corks complement the automation and according to Carlos, the two systems coexist efficiently.

"The sensory analysis is variable which is where the automation steps in by removing the guess factor. The GC machine can tell whether the problem is TCA or TBA, whether the problem is coming from the wine or the cork and indicate the levels present – the GC machine is an ally not an enemy," he said.

Automated visual assessment of the quality of the Twin Top® discs, both top and bottom is based on information stored in a database of what constitutes good quality cork. Amorim is looking to be able to produce 3-dimensional readings of the discs in the near future and is currently in the process of a six month trial using tailor-made equipment.

Carlos says Amorim will maintain its good risk management and quality control, remaining in business by helping people to 'see beyond the headlines' and encouraging wine industry people to undertake their own research into the cork industry.

FURTHER READING:

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Simpson, R.F. *et al.* (2005) Incidence and nature of 'fungal must' taint in wine corks. *The Australian and New Zealand Wine Industry Journal*, 20/1, pp. 26-31

Telfer, T *et al.* (2004) Achieving closure in the cork debate. *The Australian and New Zealand Wine Industry Journal*, 19/3, pp. 63-70

Bloodied by not bowed, cork industry continues the fight against TCA. (2003) *The Australian and New Zealand Wine Industry Journal*, 18/5, pp. 22-23