



Amorim, the largest cork producer in the world, declares that it has 'defeated' TCA. Christian Davis travels to Portugal to see what it has been doing to eliminate taint

You can sense their frustration. They have been accused of complacency, arrogance, aggressiveness – you name it. Critics said: 'Prove it and while you're about it, we want research to show that you are not only combating TCA but defeating it. Show us that there is a future for cork wine stoppers'. So back in the mid-1990's Amorim, the world's largest manufacturer of cork products and the largest single cork producer, set about taking on TCA.

There are approximately 600 cork producers in Portugal. The country controls about 54% of total production (followed by Spain, 26%; Algeria, 6%; Italy, 5%; and Morocco, 4%), and 90% is exported. Amorim exports to 103 countries and 50% (two-thirds of the market) of its €500m business is in cork stoppers. In terms of

alternatives, their battle was first with synthetic stoppers, but now it's screwcaps. So, it cares. Boy, does it care.

Victor Ribeiro, the chief executive officer of the natural cork stoppers division, says:

'We take TCA very seriously. We understand that we are doomed otherwise. In the past there was a lot of bullshit, but R&D was at the beginning and we are now past the bullshitting. We understand that people needed facts, so we got Miguel Cabral (microbiologist and head of Amorim's research and development). Dealing with TCA is a must and we are now fact-based and we look at both prevention and curative – from the forests to boiling the bark through to ROSA and ROSA Evolution.'

Ribeiro, who comes from a food

background, has instilled the culture of the 'consumable' into the final handling of the cork stoppers, which obviously come into contact with something we drink. He says the company was a 'prisoner of its own success. The attitude was, "The alcohol will kill the bugs". The retail industry is aware of food issues so we had to take care of it. We have done a big number of small things and done them better. It is about continuous improvement.'

Cabral arrived in December 1999 and has taken up the cudgels in Amorim's battle to beat TCA. He has overseen the installation of nine gas chromatograph machines, at €120,000 each, so that the company was no longer reliant on visual and sensory analysis alone. Amorim can now check 12,000

samples a month, looking for TCA taint down to around 2 nanograms per litre. It also has had its research carried out and accredited by none other than the Australian Wine Research Institute (which is interesting in itself considering its apparent position over screwcaps), along with Pascal Chatonnet's Excell Laboratory in Bordeaux, Geisenheim in Germany and the Campden and Chorleywood Research Association (CCFRA) laboratory in the UK. The incidence of TCA in cork granules pre- and post-ROSA (Rate of Optimal Steam Application – it was actually named after one of the development scientist's wife, but Amorim head of communications dreamed up the acronym in the shower) treatment dropped by 69.3% in the AWRI test, 80% at the CCFRA and 75.1% at Geisenheim. All granules, disks for Twin Tops and stoppers are now screened by gas chromatographs. Twin Top and Neutrocork granules are 100% ROSA treated and all 'positive' lots of natural corks and disks are treated. As the next generation, ROSA Evolution, comes on stream around June (the 14-metre long machine is due to be installed in February) all natural corks will be so treated.

Most seasoned observers would admit that Amorim has done a great deal to combat TCA and has backed its investment up with credible research. Even so, to say that the company feels aggrieved and frustrated is to put it mildly. Without doubt most of the positive press has been about alternative closures, synthetic initially and now

screwcaps. With the New Zealanders and Australians leading the charge to screwcap and widely regarded as the key innovators in the wine industry, the tide has been running against traditional cork.

But other debates continue over ingress of oxygen and reductive characters. Amorim would argue synthetic closures allow in too much oxygen while screwcaps let in too little, hence reductive characters such as muted aromas of struck flint and rubber.

Amorim research claims to show that on oxygen permeation, 'technical corks' such as Twin Tops (two discs of new, virgin cork with granulated cork between) and agglomerated cork perform like screwcaps. The synthetic corks performed badly in their research.

Cabral commented that the reductive characters associated with screwcaps may be 'scalped' by cork, and he has a PhD student starting in January to research that theory (see *Tyson Stelzer's article for an alternative view on reductive characters*).

On the preventative side, Amorim's head of communications, Carlos de Jesus, points out that the bark once harvested is laid out on concrete the equivalent size of seven football pitches thus keeping it away from any possible contamination from soil. Amorim also ensures that its suppliers (the company owns no cork forests, although the Amorim family does) cut the bark away from the ground where it will be damper and more susceptible to mould and therefore a possible precursor to TCA. At the Coruche facility, the bark is cut, flattened,

put on stainless steel pallets and then lowered into one of four huge (18,000- litre) hot baths. The cork is boiled in circulating water, with solids and any impurities filtered out. With the TCA precursors 'liking' heat and humidity, de Jesus describes these processes as 'fighting fire with fire', so it is vital they get subsequent handling correct.

De Jesus says Amorim has invested €43m, and a new factory, called Equipar, close to the Coruche plant, is about to be officially opened. It will be the largest wine stopper manufacturing unit in the world, producing 3.2m Twin Tops and agglomerated corks a day, 100% ROSA treated.

He says: 'Within Amorim, we have defeated TCA. We are looking for balance – a playing field that is level. People have moved to plastic in droves without any scientific reason. Cell phones "break down" more than cork, but you don't see people going back to pigeons, do you?'

Maybe it is time for Amorim and APCOR (the Portuguese Cork Association) to have some sort of charm offensive. Talk up the sustainability of the farming of the cork forests, preserving the birds and the bees let alone the lynxes. Nothing is wasted, even the cork dust goes into the incinerator to produce heat. The cork lobby would argue: 'What is so eco-friendly about aluminium screwcaps? Ever seen a bauxite mine? And what about synthetic stoppers made from oil?' Maybe they have a point. One thing is for sure, the debate rages on.

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TIMETABLE

1996	Planning and deciding strategy to combat TCA
1998	Construction
2000/1	New plant starts to come on line
2005	Restructuring
2006	New factory at Coruche, near Lisbon. Equipar is the largest cork plant in the world at 200,000 sq m, making 3.5 million corks a day, focusing on Twin Tops Champagne stopper production consolidated in the north near Porto
2007	ROSA Evolution – new machine installed in February, expected to be operational in June

CLOSURES MARKET

Wine produced:	30 billion litres
Wine consumed:	24 billion litres
Wine in bottles:	17 billion
Cork:	13.5 billion
Synthetic:	2.5 billion
Screwcap:	1 billion

(the numbers are approximate and the rest is made up by alternative packaging such as bag-in-box and Tetra Paks)

TCA?

2,4,6-Trichloroanisole (TCA) is a musty, unpleasant-smelling chemical compound produced primarily by interaction between microbial metabolites and chlorine.

TCA can be found in cork trees in situ. Microbes such as mould-forming fungi live in the small pores or lenticels that run through cork bark, and the processing used in making corks from sheets of bark may encourage fungal growth and thus TCA. Chloroanisoles also can be produced in the absence of microbes. All that is needed are the phenolic precursors and a chlorine source.

TCA is found not just in stoppers but also in wineries (such as Gallo's Dry Creek winery in 2003) and is a common cause of taint in both the food and brewing industries.

(Extracts taken from Wine Science by Jamie Goode (Mitchell Beazley, 2005))

