

Cork production on Monte Novo de Palma

The estate amounts to 2000 ha, including 900 ha of cork oak montado, Maritime Pine (*Pinus pinaster*) plantation and rice paddies on the banks of the Sado Estuary.

The montado has a tree density of 50–60 trees per hectare. These range in age, with the oldest and largest trees at around 150 years old. The cork harvest begins when a tree is about 35 years old, when it has a circumference at breast height in the order of 70 cm (measured roughly using ones hands). The harvesting of cork thereafter continues in a nine-year cycle. Being a large farm, there is a harvest from some trees every year; in general this is not the case with small farms. Each year, there is a harvest of approximately 150,000 *arrobas* from the land (an *arroba* is equivalent to 15 kg) Each tree produces about 7 *arrobas* per harvest and a skilled worker will cut about 70 *arrobas* per day. Total cork production on the farm in nine years is 2100 tons.

Traditionally there was selective harvesting of trees in any one compartment on the property. But there is now a move to harvesting all the trees in a compartment together. This is to facilitate management of the pasture. The five-year rotation of seeding with grasses and legumes involves passing a disc-harrow around the trees resulting in damage to the superficial root systems. For this reason it is not done within two years of a forthcoming harvest. Such a system is easier to accommodate by the new system.

The harvesting is a specialised craft, though involving a very traditional method. A vertical cut is made down one side of the trunk (or branch) using a fine-bladed axe, and then again on the opposite side. A ring is then cut round at the top (and if necessary the bottom), and the blunt back of the axe head is then used to prise the pieces off the tree. In the right conditions (the harvesting takes place in July, preferably in a year which hasn't been too dry) the cork bark has already started to lift away from the cambium layer beneath. Sometimes however, it is not humid enough and the bark sticks and cannot be separated, or if it is forced damages the cambium such that the future growth of cork is compromised. We witnessed a number of cases where trees had been injured in this way, sometimes because of the dryness, sometimes due to inexperience of the cutter.

Traditionally, as the tree gets older and larger, different sections were harvested in different years, for example the base trunk one year, the lower branches another. However, a law was passed in 2015 to stipulate that trees had to be harvested in their entirety. This is to reduce damage to the trees caused by the circumferential cuts.

There are different types of cork. The first cut is called 'virgin cork'. It is very uneven and can only be used in cork agglomerate products (e.g. insulation). The second cut produces 'black cork', already of higher quality and potentially used for wine stoppers. Subsequent cuts are of 'mature cork', more even and of better quality still. Only a small proportion (roughly 15%) of any year's harvest is good enough for wine stoppers. The cork from this area is generally not of best quality because of the nutrient poor, sandy soils. Even though it grows thicker than in some areas (and this varies from year to year

according to the rainfall), it is full of fissures, and therefore not so suitable for the wine stoppers.

The cork oak montados are divided into *sequeiros* and *pastagens*, equivalent to unimproved and improved pastures in English terms. On the *pastagens*, grasses and legumes are sown on a five-year rotation. The nitrogen-fixing legumes improve the soil, and include clovers, *Ornithopus* spp, and wild lupins. Cattle are fed on the dried lupins and other legumes during the dry summer months. On the *sequeiros*, the only management is in the autumn before the first rains of the season, when phosphorus fertiliser and lime (increase the pH) is applied.

The montados are grazed by cattle, apart from an enclosure of around 250 ha where the regeneration of cork oaks can proceed without risk of trampling. (Planting of trees is generally not as successfully as natural regeneration.) Wild pigeons have a key role in the dispersal of acorns. They feed on the acorn mast, and frequently drop the acorns as they transport them from feeding areas. Some fall onto suitable sites and establish themselves. Cork oaks regenerate well within the neighbouring pine plantations, because of the shade cast by these trees and the fact that the pigeons use them as roosting areas.

Wildlife on the farm includes wild boar, fox, fallow deer, Egyptian mongoose, peregrine falcon and eagle owl.

The trees appear to be in good condition, mostly free of sudden oak death caused by *Phytophthora*. Some show branches of foliage visibly being attacked by caterpillars. Others of the older trees had recently lost limbs during winter storms. But damage caused by trampling associated with over-stocking, or the use of disc harrows, is not to be seen. During the 30 years after the revolution in 1974, when the farm was confiscated and occupied, the trees were not well managed, and the results of this (including injuries on the trees) can still be seen. Any diseased or dying trees are cut down for firewood. Cork tree death is a problem further inland, where a property of similar size to Monte Novo has recently taken out 2500 dead trees.

An old primary school dates back to the time when the number of labourers warranted a local school for their children. A population of around 200 was once supported on the farm. The teacher of the school was provided by the state, and the building by the *herdade*. The building is now being reconstructed to be used for workshops and hospitality/refreshments. The workforce today consists of just eight full-time farm workers, supplemented by a team of 16 contract workers over the one and a half months of the harvest each year. The latter consist of 11 cutters, 3 collectors, and 2 tractor drivers. Some of them may be local factory workers using their holidays to work on the farm at a rate of 80 euros/day.

The market price for cork decreased significantly last year, by around 40%. This was tied with the economic downturn which slowed down the construction boom, and reduced the demand for cork materials in buildings. The use of plastic wine stoppers had an effect particularly when they were introduced (the situation has stabilised now). Wine makers

are becoming more demanding for higher quality cork for their stoppers, and it tends to only by the second, third and fourth harvests off a tree which are now used for this product. For maturing wines, the cork stopper is still considered to be superior. The stoppers are punched out across the lenticels of the bark – otherwise there would be leakage through them.

Cork is also made into handicrafts such as hand-bags and umbrellas. The ‘cooking’ of corking in boiling water makes it malleable enough to make such items

Cork fetches a price of 20–25 euros per *arroba* (15 kg) for grades 1–3, compared to 5–7 euros for the poorest quality off-cuts. Most of the cork from Monte Novo is of grade 3. When cork is bought, it is usually paid for in instalments, and it is only when the last instalment is made that it is allowed to be shipped off the property. In the meantime, it is piled on top of plastic sheeting, which prevents fungi from the moist soil from contaminating the cork. The corky taste sometimes evident in wine is due to fungal contamination.