

## Olives New Zealand BMP – Tree Shakers

Tree Shakers by Sandy Lang and Edwin Pitts

The use of tree shakers is relatively minor in the *EU* (<5%). However, the reason for their low uptake of shaker technology probably has more to do with their industry's commercial structure (relatively low levels of horticultural skill, stifling levels of subsidy, mostly extensive production systems) than with the efficacy of the tree-shaker device itself. Under our conditions (higher skill levels, no subsidies, intensive systems) tree-shaker usage is likely to expand and may eventually dominate. On the other hand, it may not...

Early indications suggest that under New Zealand conditions the cost:benefit advantages offered by tree shakers over pneumatic clappers may be rather marginal. Also, a number of negative-going factors may limit their usefulness here. On the other hand, if the risk pressure from say birds or frost is very high, such that a large proportion of the crop is in danger of being lost with any protraction of harvest, then the rapidity of machine harvesting becomes a critical benefit and may partially overcome a purely the cost-based argument. Again, scarcity of rural labour at this time of year (and especially in some olive-growing regions) may also indicate a preference for machine harvesting. For larger groves with good crop loads, mechanical harvesting would be well worth serious consideration. Smaller, more manoeuvrable, more transportable tree shaker machines could suit many New Zealand situations. We note that over-the-top, grape-type canopy shakers are unlikely to suit most New Zealand grove conditions (canopy designs, pruning methods). These machines can also encourage the spread disease throughout the grove. See [INTENSIVE PRODUCTION SYSTEMS](#)



**Figure 1. A PELLENC tree shaker mounted on a John Deere unit (Spain) - sorry about the car parked in the way...**

**Tissue damage:** There are circumstances in which a tree-shaker can damage the bark. Although, bark damage can anywhere, be the result of inadequate machine set up and operation or poor tree design (an irregular trunk shape), bark damage is also more likely in New Zealand's high-vigour climate. Rapid tree growth is always associated with low

wood density, with soft bark and with a soft underlying cambium. Low-density, soft tissues are much more susceptible to mechanical disruption caused by the *crushing* and *shear* forces imposed by these machines.

**Root damage:** Next, in contrast with olives growing overseas, New Zealand's soils are more likely to be moist at the time of year when harvest takes place. It is the property of a rain-moistened soil to become soft and this will increase the likelihood of root damage as a result of stem shaking. Root damage *is* invisible, but it is *not* unimportant as far as the tree is concerned.

**Scheduling conflicts:** Obviously, the schedule of the shaker operator must match that of the press operator (you cannot press *unharvested* fruit and you should not store *harvested* fruit). By involving *two* independent contractors at this critical time of the production cycle, you will severely reduce your control over events. Thus, with shaker harvesting the possibility arises that the times scheduled for harvesting and for pressing can get out of alignment. Delays can easily occur through equipment failure – shaker or press - to create a sudden dysjunction between the two busy schedules.

**Inappropriate?** Shaker harvesters represent a 'mass-production' harvest system whose high-capital economics depends on minimising machine downtime so as to deliver a super-cheap result. To do this the harvester must travel to the grove, harvest every tree as rapidly as possible, and then move on to the next grove. Not only will this pattern of working be more efficient where groves are very large, but also where there is a high density of olive planting in a region. This is not (yet) the situation in New Zealand where groves tend to be small, and to be very well spread out both around the country and also within any of the regions. Small groves and large distances must reduce the cost-efficiency of tree-shakers.

A related problem is that most New Zealand olive groves contain several cultivars. To obtain the particular qualities and styles of oil required for our developing overseas markets, these cultivars must each be harvested as closely as possible to some ideal stage of maturity. These requirements, that are so important to our 'elite' oil industry, do not sit at all comfortably with a 'mass production' harvest technology that wants to harvest all your trees at once and, when it best suits the shaker operator.