



“Bird control in vineyards using alarm and distress calls”

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- The most numerous, and therefore serious, bird pests in California vineyards are the American robin (*Turdus migratorius*), the European starling (*Sturnus vulgaris*), and the house finch (*Carpodacus mexicanus*). Each has their own etiquette when it comes to helping themselves to grapes. Robins and starlings *pluck* grapes, then consume them whole. Finches *peck* holes in the berry, then consume the pulp.
- *Biosonics* is the technique of using electronically-reproduced alarm and distress calls to discourage birds. Anecdotally, *alarm calls* are different from *distress calls*, and in this study the authors use both. Alarm calls are those that the bird gives when danger is perceived. Distress calls are emitted when the bird is captured, restrained or injured. In solitary species (like albatross), there is generally no reaction to distress calls. In species that live moderately dispersed (like robins), distress calls can attract other members. But in species that live in compact flocks (like starlings), distress calls are strongly repellent, acting as sort of a “Distress to one – danger to all” warning.
- Most birds eventually habituate to biosonics. But some studies showed that this could take 6-8 weeks. Since grapes are most susceptible in the 5-8 weeks before harvest, if broadcast calls were effective, they could mean the difference between an abundant crop and practically no crop!
- The authors compared 3 control strategies: 1) netting, 2) conventional methods (reflective tape, cannons, depending on the vineyard owner), and 3) conventional methods supplemented with alarm/distress calls. Three different regions were selected. Within each region, 3 separate vineyards - located far enough apart to avoid sound and bird “cross-contamination” - were selected, using one control strategy in each vineyard. The trial was run in 2004 and 2005 (the broadcast call treatment was only included in 2005).
- The “broadcast unit” consisted of two trumpet speakers attached to a box containing an audio digital circuit, and hanging from the trellis wire. The system was deployed at veraison (~ 14°Brix) at a density of one unit every 0.6 hectares, mostly concentrated in the perimeter of the vineyard, with one unit in the center. The location of each unit was moved around (advanced ~50 vines clockwise) every week. The authors obtained non-copyrighted recordings for all three species from government wildlife and ornithological organizations. The broadcast was light-activated, starting at dawn and ending at sunset. The programming included changing the interval between playbacks at different times of the day, as well as changing the order in which the “tunes” were played (not unlike the shuffle feature on our CD player).
- **Damage assessment.** For each control strategy, damage was assessed throughout the season by collecting random berry samples and calculating % damaged berries. The authors also distinguished between *plucked* and *pecked* berries.

- **Effect of bird species.** *Starlings* and *robins* responded well to most of the broadcast calls, which were effective in driving them away. With robins, some of the recorded calls actually attracted more birds (these calls were obviously not used when making the final broadcast selections). On the other hand, the response of finches varied strongly depending on the specific call used. Many calls only made the finches move further up on their perches, but not leave, so the authors are uncertain whether all of the collected calls were true distress calls.

- **Effect of control strategy.** In 2004, netting was the most effective control system, reducing total berry damage from 0.5-12% in the conventional-treated vineyard, to 0.5-2% in the netted vineyard. In 2005, the netted vineyard had, once again, the least damage (2%), followed by the conventional + broadcast vineyard (6% damage), and the conventional vineyard (13% damage).

In conclusion, even though alarm/distress broadcast calls were not as effective as netting, incorporating them with conventional methods was able to reduce bird damage in this study. The authors calculate that, assuming average yield and price for the Pinot noir vineyards in the study (6.7 ton/ha, \$2200/ton), and considering the cost of the broadcast units (\$230 per unit), the estimated savings for adding broadcast calls to conventional methods would be \$700 per ha.

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