

Round Lake
VINEYARDS & WINERY

Business Case Laser bird deterrent solution keeps birds away from wine grapes

Location:	Minnesota, United States
Application context:	Vineyard *(Agriculture)*
Problem definition:	Bird damage to wine grapes
Bird species:	Northern flicker *(Colaptes auratus)*, Northern oriole *(Icterus galbula)*, robin *(Turdus migratorius)* and starling *(Sturnidae)*
Bird behavior:	Pecking, foraging and roosting
Time of the year with bird problems:	From April to October
Time of the day with bird problems:	From dusk till dawn
Number of systems:	2 x Autonomic 500
In use since:	2019
Laser projection area:	The first laser covers 5 ha *(13 acres)* of the vineyard. The second laser covers 3 ha *(8 acres)* of the vineyard.
Number of birds before installation:	200
Number of birds after installation:	0-20
Bird reduction after the laser deployment:	90%
Yearly cost of bird damage to the farm before the laser deployment:	USD 5,000
Yearly cost of bird damage to the farm after the laser deployment:	USD 500

Round Lake Vineyards & Winery deploys laser bird deterrent solution to keep birds away from wine grapes

The start of bird problems at Round Lake Vineyard: In 2007 Scott Ellenbecker planted the first five acres of wine grapes to start Round Lake Vineyards. Seven years later, in 2015, he continued his passion for wine by opening a winery, and later a restaurant in 2017. Scott is a passionate writer on the topic of agriculture technology who found a hobby in winemaking. He knew that Minnesota was a difficult place to grow wine grapes because of the extreme climate, which can fluctuate between -40°F with an average snowfall of 39 inches annually during winter and +100°F with sunshine during summer.

When he first began his journey of growing grapes, people told him that birds would not eat white grapes because they usually don't like that type of grape. He soon found out that this was a false assumption and that birds enjoyed any variety of sweet grapes. He began testing the sugar level of the grapes and PH levels to try to get ahead of the problem but he realized that birds knew when the grapes were sweet before anyone else did. The vineyard is surrounded by large scale farms that produce corn and beans, but there are not many other farms that grow fruits, so his vineyard is the main target for birds according to Scott.

Round Lake Vineyard is below the Northern Flyway, which is one specific flight path birds choose to take during migration. A large number of birds migrate from the North of the United States to Mexico in the wintertime. In spring, they will fly back up using the Northern Flyway, which is federally protected; a committee discusses the matters of migratory birds and puts restrictions in place to protect them (e.g. preventing the use of shotguns). This makes it challenging for farmers to keep birds away using humane methods of bird control.



Effects of bird damage on wine grapes

Scott Ellenbecker explained that robins and starlings most commonly eat the smaller grapes; they eat the whole grape in one bite. The larger grapes are usually eaten by Northern flickers or Northern orioles because these birds have longer beaks than robins and starlings. They can eat the whole grape, but they can also suck out the juice of two or three grapes. As a consequence, the inside of the grape becomes exposed and begins to ferment, causing rotten fruit and increased damage from insects.

The grapes usually bud out in early May, and the harvest season begins in late August until some of the red grapes come out in early October. Table grapes typically begin ripening before other wine grapes that are grown in the vineyard; Somerset seedless is one of those table grapes that usually ripens first at Round Lake Vineyards. They turn very pink and very sweet and the birds usually get them before they are finished ripening. That was always an indicator the vineyard needs to be netted.



Grape loss before harvest season

Scott Ellenbecker recalled that he hadn't been able to produce his white variety of grapes for three years, which are very sweet and fragrant. This type of grape covers two acres of vineyard, and because of the bird damage he hadn't been able to harvest.

Scott stated "We use netting, but it takes many people to put it over 30 acres of grapes, and this can be very expensive". He also tried setting up propane cannons on a timer, but found that the cannon sounding pop only kept the birds away for a few days, and then they would have to move the cannons around.

The vineyard was also using electronic bird distress calls. They turned on a speaker with sounds of robins or starlings in pain and predator birds such as raptors and eagles. This warned other birds that the area was a threat. This method is a short term fix and not a permanent solution. Scott Ellenbecker explained that ultimately they had not found anything that worked to keep birds away.

That is when he saw an article on the laser bird deterrent system being used in farming operations, and in July 2019, he immediately bought two units. Last year one of the Autonomic systems was installed close to the somerset seedless grapes before these grapes began to ripen. In previous years this grape would have been eaten and damaged by the middle of August. However, last year they had no damage from birds in that part of the vineyard, after almost three years of bird damage.

Scott Ellenbecker emphasized that "the birds can get through the netting, the birds hang on the side, peck through them, and the birds can slip through the gaps in the nets." Birds will begin to migrate back to the north in April or May, and ultimately next in the Round Lake area. In the fall they'll gather before migrating south. There can be 200 or more birds in a flock. A flock of robins can eat 3-tons of grapes in two to three days.



Efficient and effective bird control method

Round Lake Vineyards found that the laser bird deterrent system was effective because it scanned over the area it covered, pushing the birds away. They can target places where birds fly to and land because of a choice of 16 different pattern systems. The lasers move at varying speeds and directions to keep birds away effectively. Even smarter birds do not get accustomed to the systems.

Round Lake Vineyards and Winery has won many awards for their high-quality wines. Due to the fact that the region is more challenging to grow grapes, it is even more satisfying for them when they have a successful harvest.





"We're open to trying new things to keep our vineyard from becoming a giant bird feeder. We don't blame them for wanting to eat our grapes - they're delicious! We just want to send them somewhere else."

Scott Ellenbecker, Owner of Round Lake Vineyards & Winery