

MANAGING BIRDS IN BLUEBERRY FIELDS

by

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Blueberry plants produce soft, small, flavorful fruits that are attractive and easily eaten by birds and mammals. They evolved these characteristics so that their seeds would be widely dispersed to new locations as the animals consumed, moved and defecated. In cultivated situations, birds and humans compete for these flavorful fruits. Lethal controls are unacceptable for birds since they hold a special place in our society. As beautiful creatures, they provide enjoyable sounds and enhance the quality of our life. Yet some growers lose as much as 30% of their crop to birds. Nationwide, 10% of the blueberry crop is probably lost on average - at a cost of over \$10 million. Birds often will simply peck at a berry and break the skin, but will not consume it. The damaged berry can be harvested and enter the pack, then shrivel or become moldy. Recently, fresh food handlers have been concerned about the possibility of birds introducing *Salmonella* and other pathogens into the food supply. It is a great challenge to reduce the presence of birds without resorting to lethal means.

Growers have an option of putting up netting. Netting is very effective, but it is expensive and time-consuming to put up and take down. Netting can be draped directly over the bushes; however, removing the netting for harvesting often dislodges ripe berries. Some types of netting hold moisture and can contribute to fruit rot. Several advances have been made in netting technology such as rollers that lay out and roll up the netting. But regardless of how easy it becomes to put up and take down, one still has to build a support system for the netting if the nets are not lying directly on the bushes. In addition, netting precludes the use of mechanical harvesters, and pick-your-own customers prefer not to be within a net when they pick fruit. Most growers avoid netting. Netting is reasonable for a small grower, although many moderately-sized growers also are considering the use of netting where fruit loss is great.

There are few effective chemical repellents available to keep birds from consuming fruit in the field. Research has been done with methyl anthranilate as a chemical repellent, and formulations exist that are labeled for use in blueberries. Methyl anthranilate is used as a grape flavor additive in the food industry, and is an irritant for birds, much like hot peppers are for mammals. Spraying methyl anthranilate on blueberries will repel birds for a short time, but the volatility of this compound makes it difficult to retain repellency for long periods. For best repellency, apply methyl anthranilate as large drops rather than as a fine mist.

Sugar sprays also have been effective at deterring bird feeding. Many fruit-eating birds cannot digest table sugar, so these birds will avoid sugar-treated bushes. Humans cannot distinguish between the monosaccharide sugars found in blueberries and disaccharide table sugar. Applications of a concentrated solution of table sugar should be made just as the fruits begin to ripen to prevent birds from establishing a feeding routine. Reapplication is required after rain.

Audio tapes, cannons, shotguns, firecrackers, radios and other types of noise devices have been used for years to scare birds. Unfortunately, birds rapidly acclimate to these devices, particularly if their location is not changed every few days. These devices require constant vigilance. Many cannot be used during harvest season as they also frighten pickers.

A few growers have had success using a trained falconer to scare birds. Falcons can be trained to patrol a field and attack birds that enter. This approach is very effective, but is not available to many people. It is difficult for the falconer to remain in a field for long periods. However, there are examples of the successful use of falconry. One falcon from Air Superiority Falconry Services in California is purported to clear a 50-acre area of starlings in early mornings and early evenings when birds are most active.

Squawkers and audio tapes can be used to broadcast loud noises over the field, but birds quickly adapt to these. An electronic device (Bird-Gard) emits digitized, species-specific bird distress calls. The device can be programmed for certain species, and the calls occur at random intervals to reduce the risk of habituation. It is very difficult for birds to habituate to their own distress calls, so this device can be very effective. In addition, a hawk shriek can be incorporated into the collection of calls to enhance the impact. The Bird-Gard is more effective with species that feed higher in the bushes (e.g. robins, starlings) than with species that feed from the ground (finches, sparrows). Blueberries ripen over a long period of time, so birds have ample opportunity to habituate to the sounds. Furthermore, species composition changes over the season, so sounds that work early in the harvest may not work at the end of the season. Effectiveness can be enhanced when used in conjunction with a visual scare device.

Many visual scare devices are on the market. Mylar tape can be effective at frightening birds if it is strung over and around blueberry plantings. Scare-eye balloons are promoted as way to frighten birds, and are particularly effective when used together with falconry or the Bird-Gard. Hawk kites and artificial owls can be placed around the field to supplement audio scare devices. An artificial owl can be mounted on a bearing on top of a post to allow the owl to swivel in the slightest breeze. The owl emits a loud shriek at intervals, powered by a solar cell. Research has shown that a combination of audio and visual scare devices work better than either device alone. Other types of scare devices are on the market, but are not very effective at repelling birds. These include strobe lights, magnets, inflatable scare-crows, and artificial snakes.

The Bird-Gard, coupled with visual scare devices, has proven to be effective at reducing, but not preventing damage. However, this combination is not as expensive as netting, and appears to strike a good balance between effectiveness and economics.