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Limiting Bird Damage to Fruit Crops in New York: Damage Assessments and Potential Management Strategies for the Future

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ABSTRACT: Fruit-crop losses due to birds are a longstanding and costly problem throughout the US. Although many deterrent techniques (e.g., acoustic scare tactics, netting, Mylar streamers, and chemical repellents) have been tested in the past, there is a lack of a systems approach to bird management. This study integrates economic and consumer impacts, as well region-specific information and landscape-level effects on bird foraging behaviors. This project integrates professional and landowner opinion to ensure long-term productivity, profitability, and environmental sustainability of fruit crop production.

Our primary long-term goal is to provide fruit producers with cost-effective and environmentally-sustainable strategies for bird damage management, based on robust field testing and clearly identified costs and benefits. We have completed one season of field work in central New York State in sweet cherries, blueberries, Honeycrisp apples, and Pinot Noir wine grapes. It has been proposed that birds forage more heavily on the outside edges of crop plantings. In order to test this, crop rows were split into two distinct categories: Edge (outermost two rows on all four sides), and Interior (inner rows >50m from exterior; where applicable).

In summer 2012, preliminary bird surveys were conducted in order to assess which bird species were responsible for fruit damage. Observed birds were classified in three categories: actively foraging, non-foraging, and flyover. Visual damage assessments were completed on 60 randomly-selected plants, 12 in each of the 5 strata (N, S, E, W, and Interior). Bird damage was identified and recorded. Specific sampling techniques differed in each of the four crops based on plant growth form and logistics. Project staff assessed 81 sites in New York State; 23 sweet cherry, 12 blueberry, 24 apple, and 22 wine grape plantings. Weighted overall bird damage estimates were as follows: Honeycrisp apples had average 2.3% damage, wine grapes had 3.6%, blueberries had 22% and sweet cherries received the most damage from bird species at 26.8%.

Web-based, mail, and telephone surveys were conducted in New York, Michigan, Washington, Oregon, and California during 2012, and we targeted growers of all four fruit crops, as well as tart cherries. Questions covered many different aspects of bird damage and fruit production. Based on the New York growers who responded to the economic survey, the current cost of bird damage in NY is more than \$6.6 million, yearly for the four crops. In New York State, 65.5% of grower respondents take action to prevent or reduce bird damage in a given year. Fifty percent state that bird damage is one of several significant factors affecting their profit in a particular year.

This information from the 81 New York sites is currently being integrated with: 1) analyses of fruit losses and economic consequences for producers, consumers, and local economies; 2) grower responses to different management techniques; and 3) landscape-scale habitat relationships associated with bird activity and damage. During summer 2013, our second field season, we will pilot test different bird deterrent strategies. These studies will focus on selective use of distress calls, and the relatively new technology in hawk-effigy models (ornithopters) and kites, as well as intensive foraging bird surveys.

This research in New York is part of a USDA SCRI-funded collaborative project to evaluate bird impacts and economic losses in major fruit-producing regions of the United States, including Michigan and the Pacific Northwest. Preliminary results may be complicated by severe frost damage which occurred in early 2012.

Key Words: bird damage, fruit crops, management strategies, New York

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