

Bird damage in tree fruits, 2013

Patterns and results from preliminary
deterrence trials

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SCRI Project, cooperators in several regions of the country

Pacific Northwest
Trinity Western
University, Oregon
State University,
Washington State
University

Colorado
USDA-APHIS: National Wildlife
Research Center



New York
Cornell
University

Michigan
Michigan State University
Center for Global Change and
Earth Observations

Objective of first project

To compare effects of using multiple deterrent devices on bird damage levels

Methods

Conducted in Leelanau and Grand Traverse
Counties, MI

2013

Methods

4 treatment groups

Control—no deterrent

Distress call box only

Kite only

Distress call box + Kite





Methods

4 replicates

Blocks within replicates were matched for damage levels, based on 2012 data

High group = > 20% damage

Intermediate group = 11-20% damage

2 Low groups = 0.01-.1% damage (one exception)

Methods

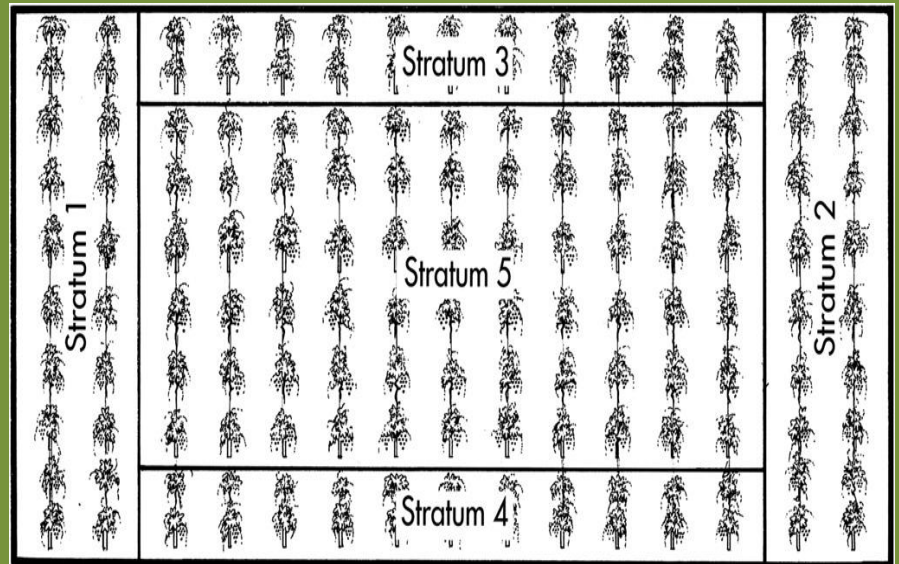
Devices used for approximately 3 weeks before harvest

Damage assessed in 2.5 acre blocks, bird abundance in 1 acre blocks.

Methods to estimate damage

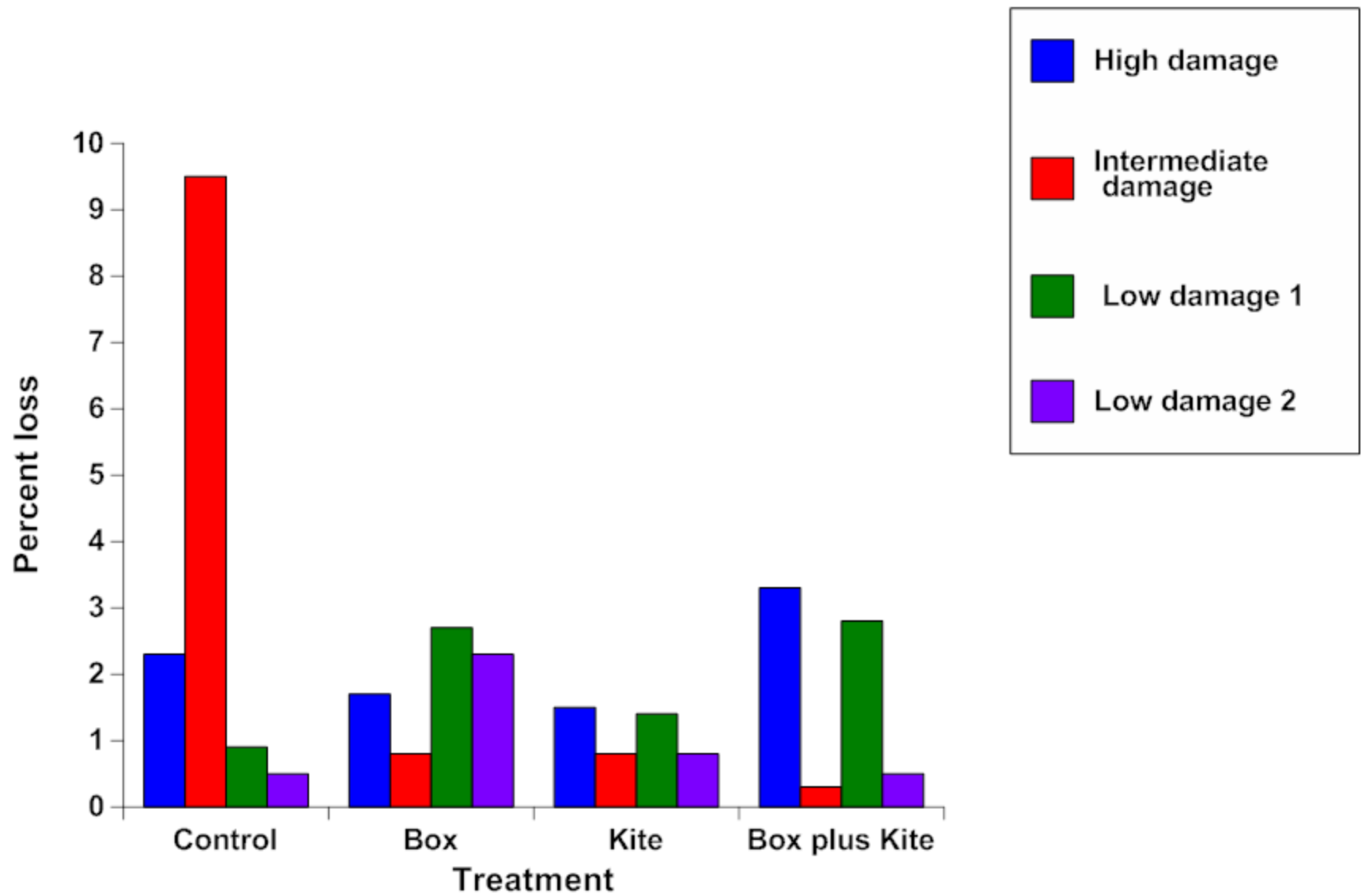
20 randomly selected plants per stratum

1 branch per plant,
facing randomly
selected direction



Tracey and Saunders (2010)

Percent loss, Michigan cherries, 2013, box and kite trial



Objective of second project

To quantify differences on bird damage of moving deterrent devices versus keeping them stationary

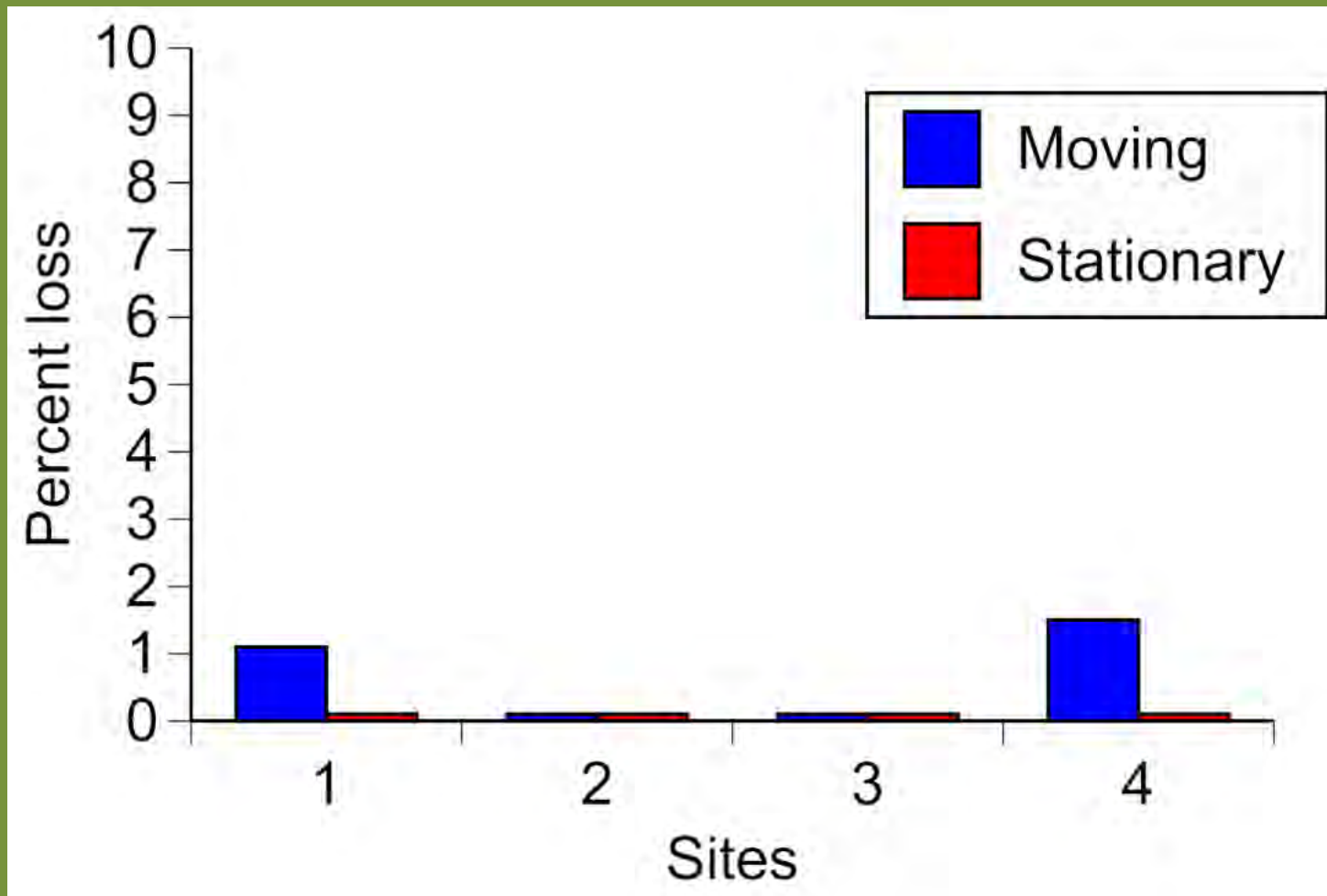
Methods

1-acre plots were delineated at opposite ends of a block, separated by at least an acre.

One plot had devices (air dancers and kites) that were moved at least 15 m every couple of days, the matched plot had devices that were stationary

Damage assessments and birds counts conducted as usual

Results, 'honeycrisp' moving vs. stationary trials with boxes and kites, Michigan 2013



Considerations with boxes and kites

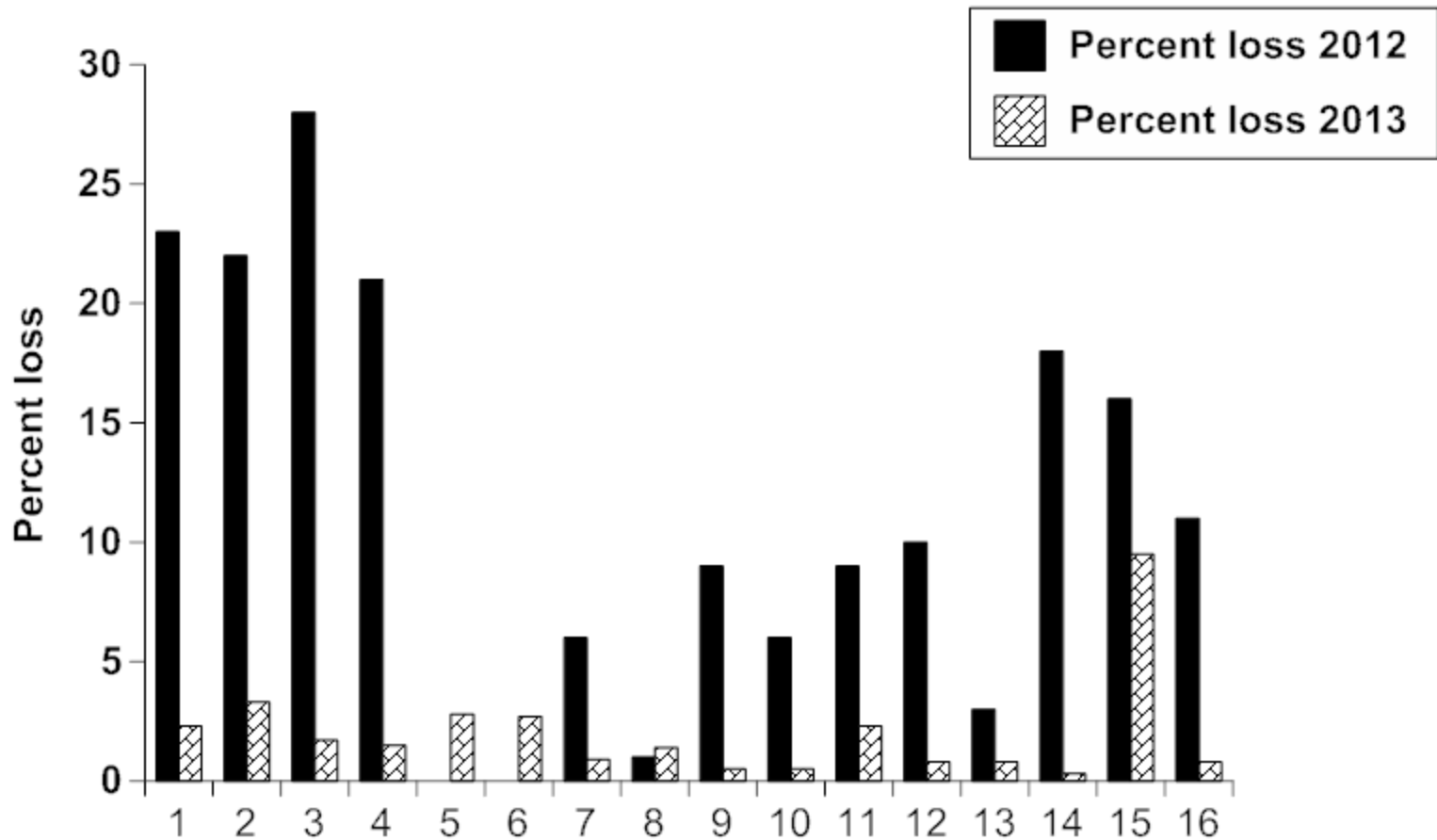
Boxes produce noise which sometimes bothers neighbors

Kites would sometimes get wrapped around the poles, if the swivel apparatus at the top was too tight

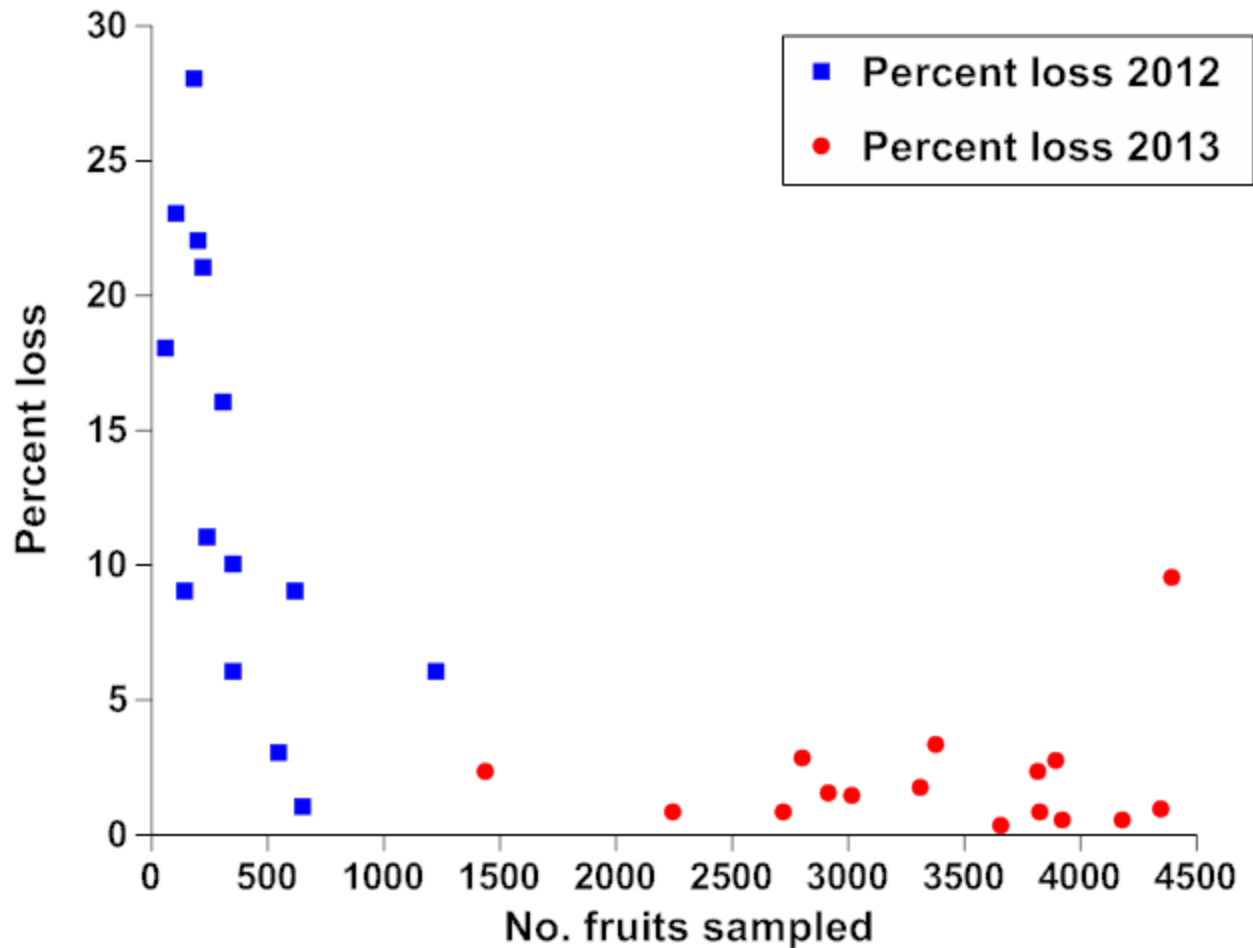
Kites showed wear and tear by end of season

Michigan sweet cherries

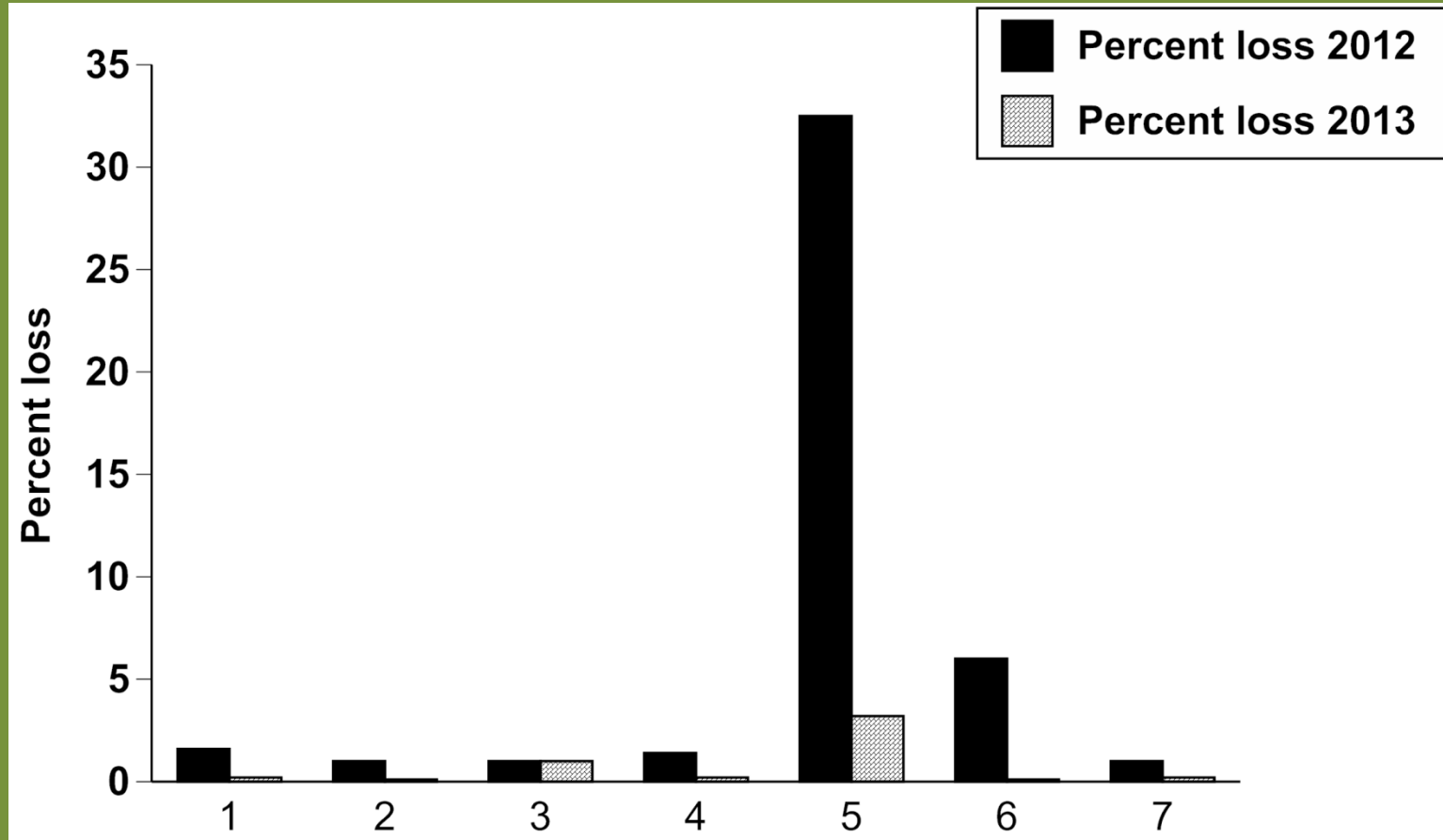
Percent loss, Michigan cherries, 2012 and 2013, box and kite trial sites



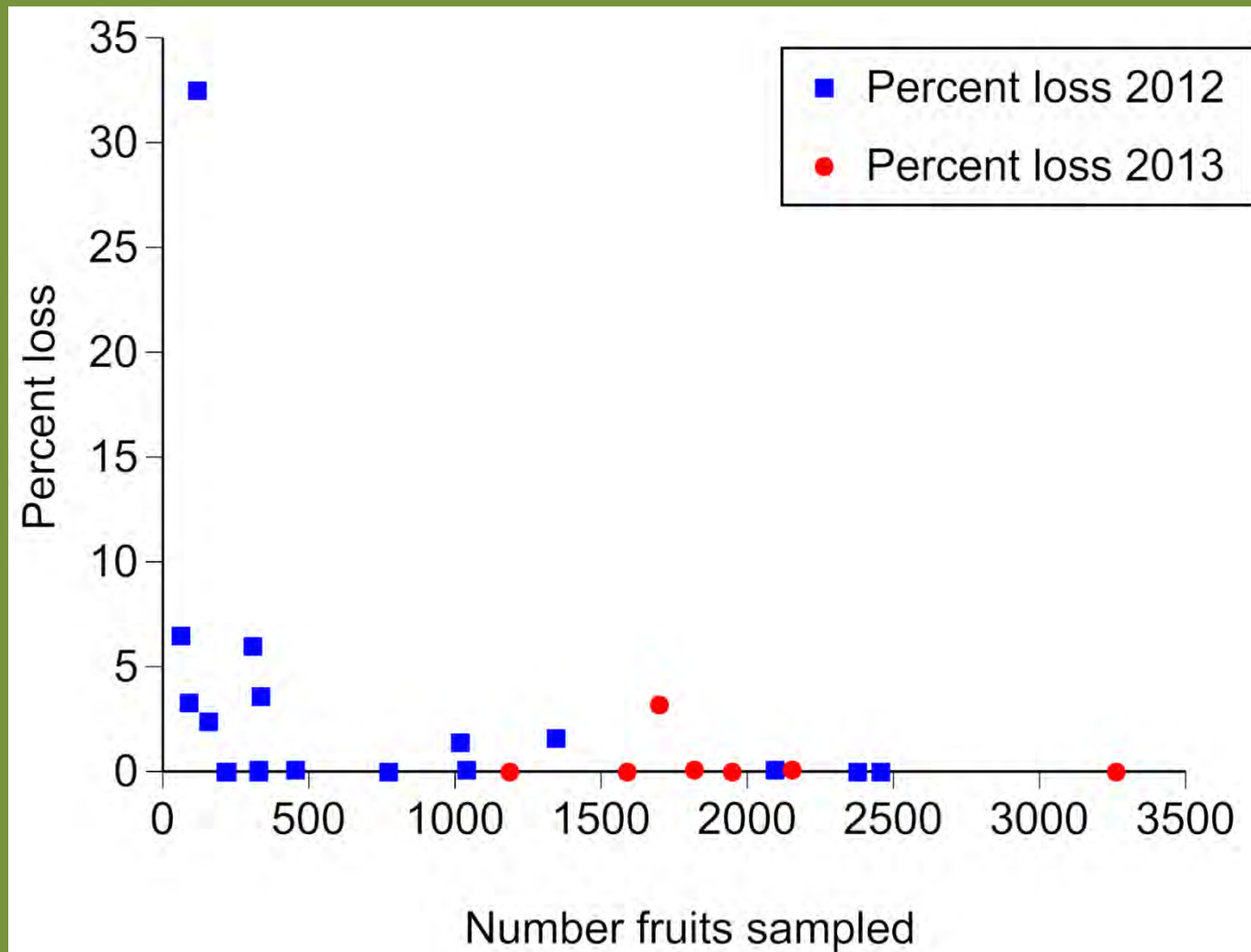
Percent loss and no. fruits sampled, Michigan cherries, 2012 and 2013, box and kite trial



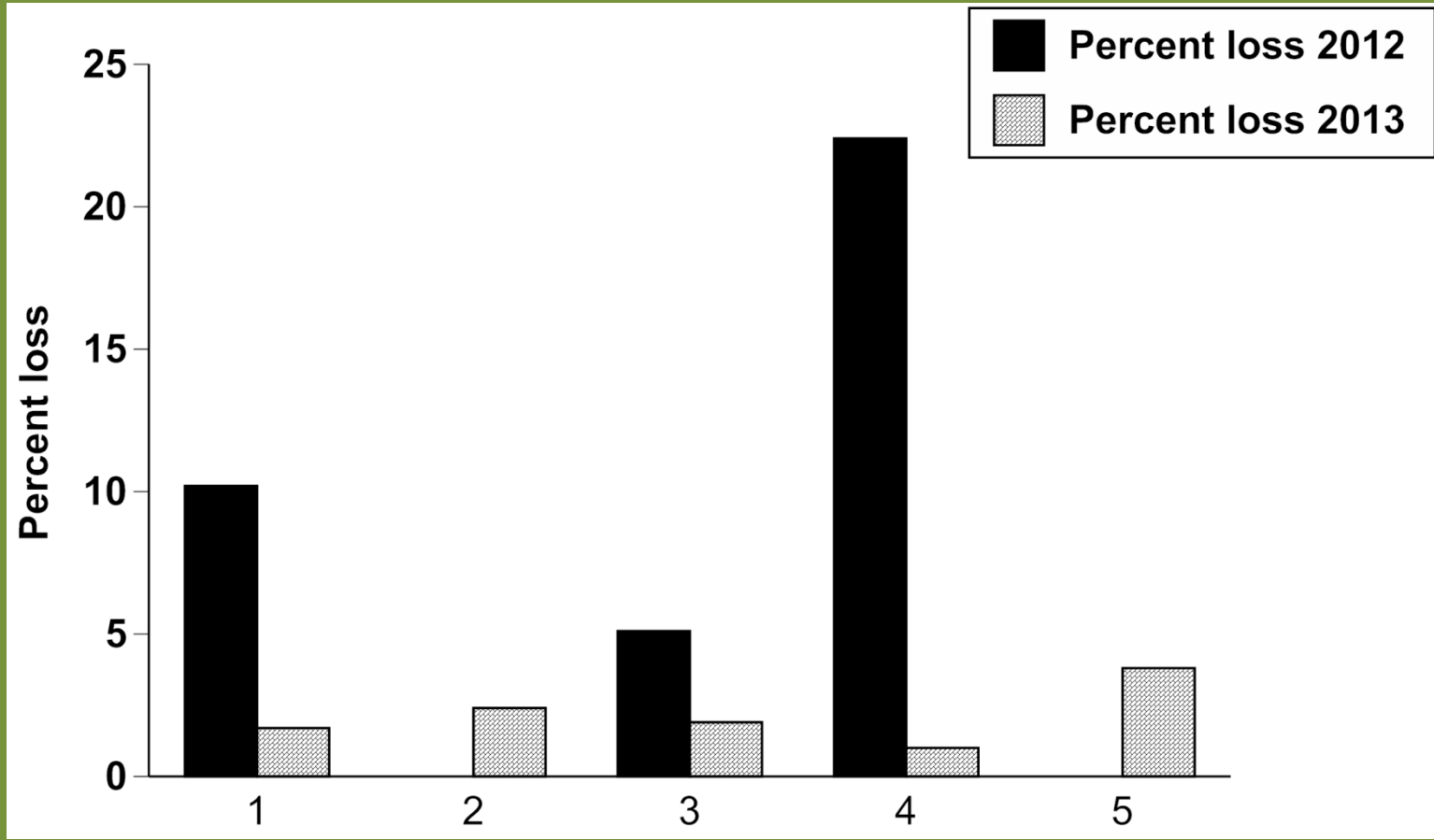
Michigan 'honeycrisp', percent loss, 2012 and 2013



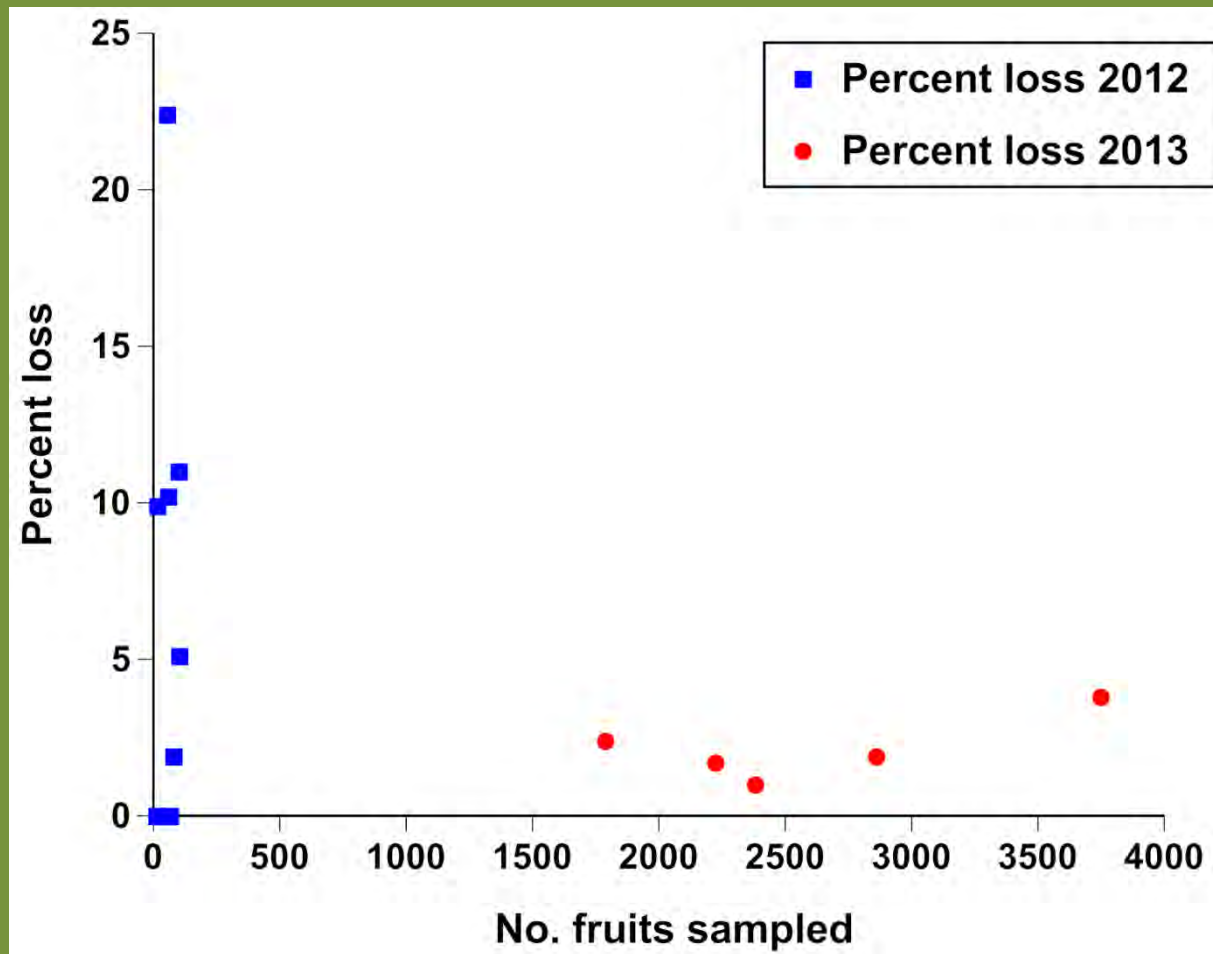
Percent loss and no. fruits sampled, Michigan 'honeycrisp', 2012 and 2013



Michigan tarts, percent loss, 2012 and 2013



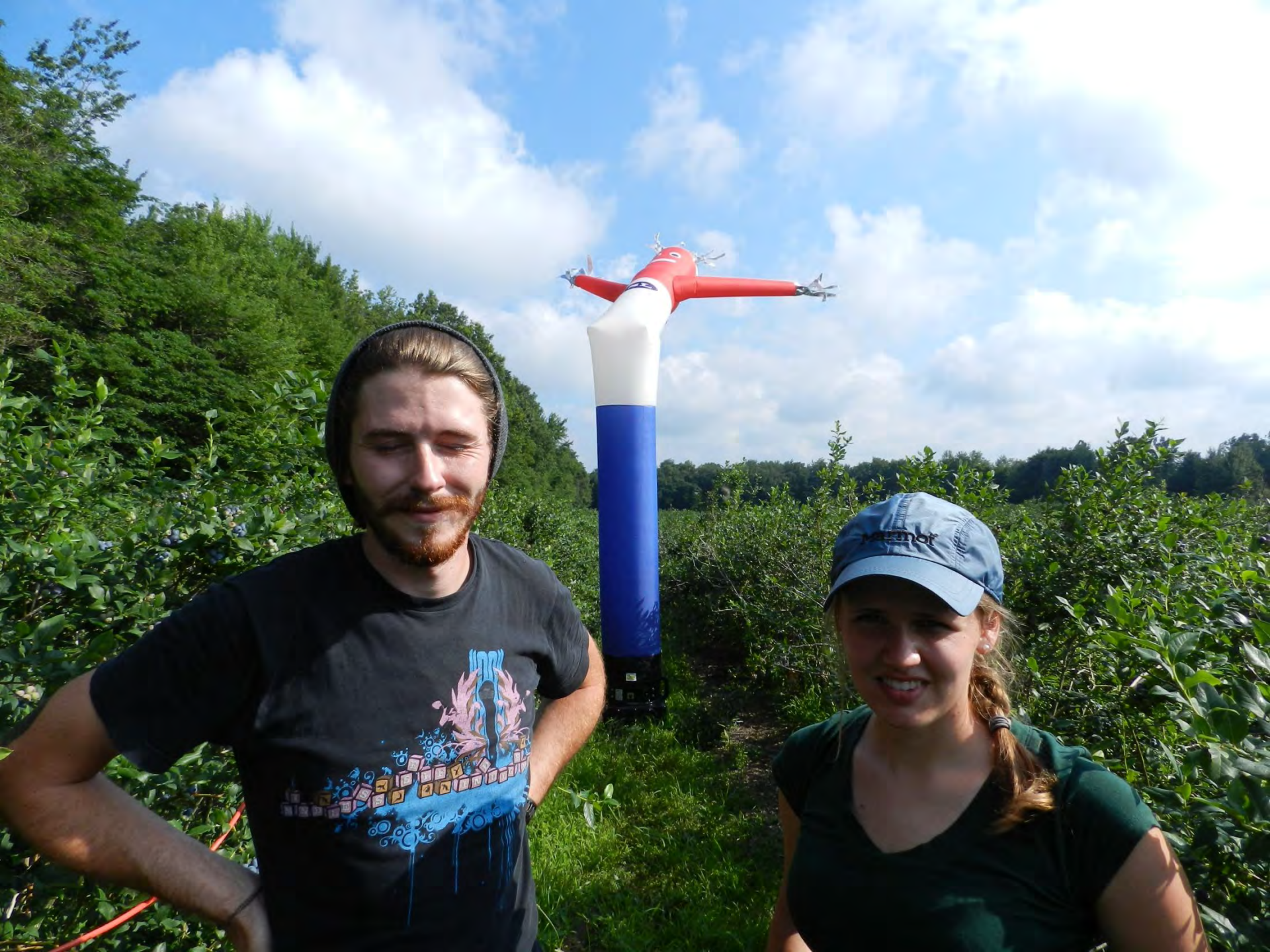
Percent loss and no. fruits sampled, Michigan tarts, 2012 and 2013



Conclusion

When natural and cultivated fruit abundance are higher, damage levels are lower and bird management will be less of a priority.

Because of high fruit abundance and low bird damage in 2013, bird damage differences between treatments in projects described above were small.



Air dancer methods

Conducted in Van Buren County Michigan, 2013

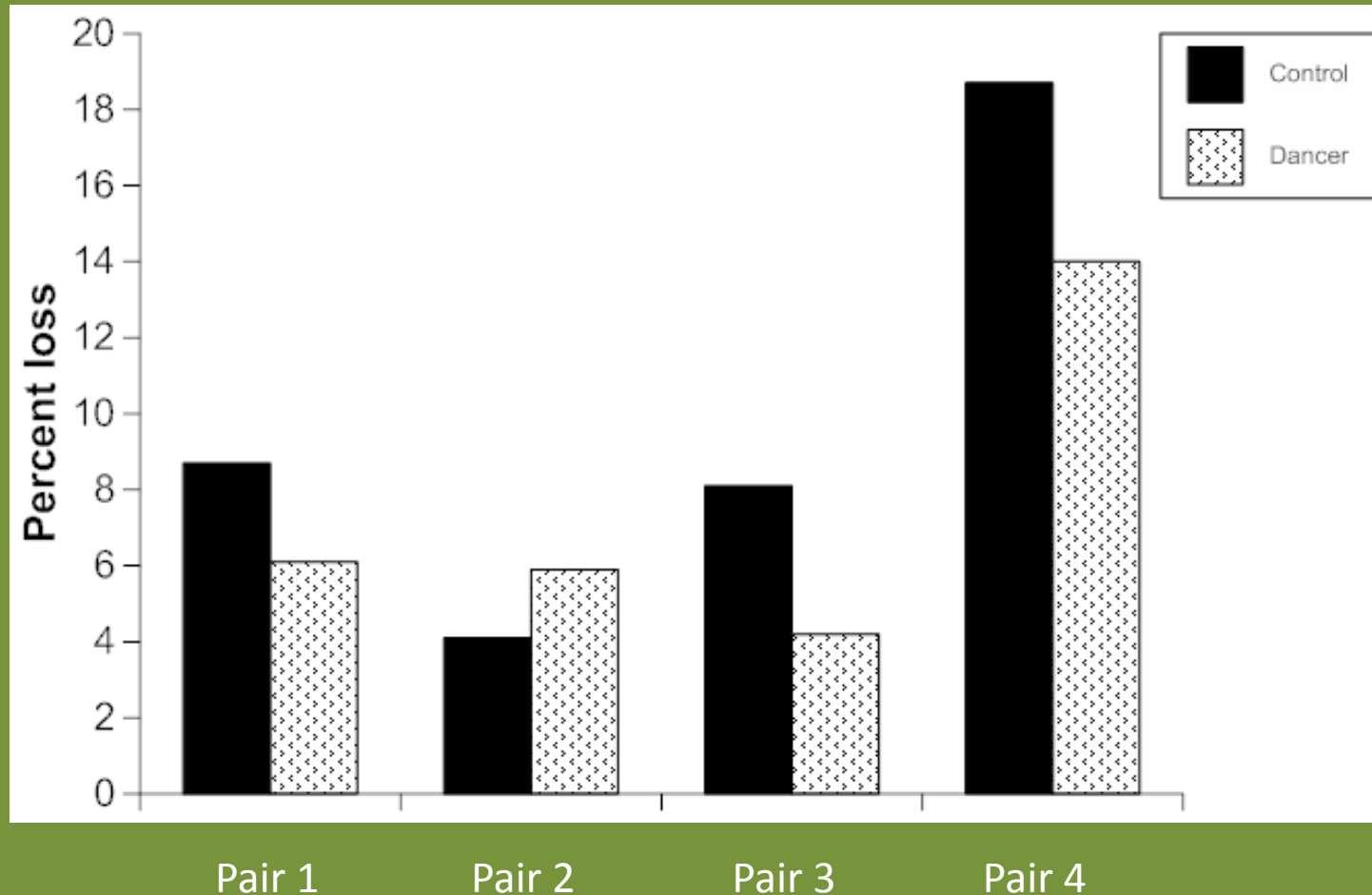
8 sites matched for damage levels from 2012, allowing for across-sites comparisons (with and without dancers) in 2013

Methods

Dancers ran for 2-3 weeks before harvest
approximately 10 hours per day

Preliminary data

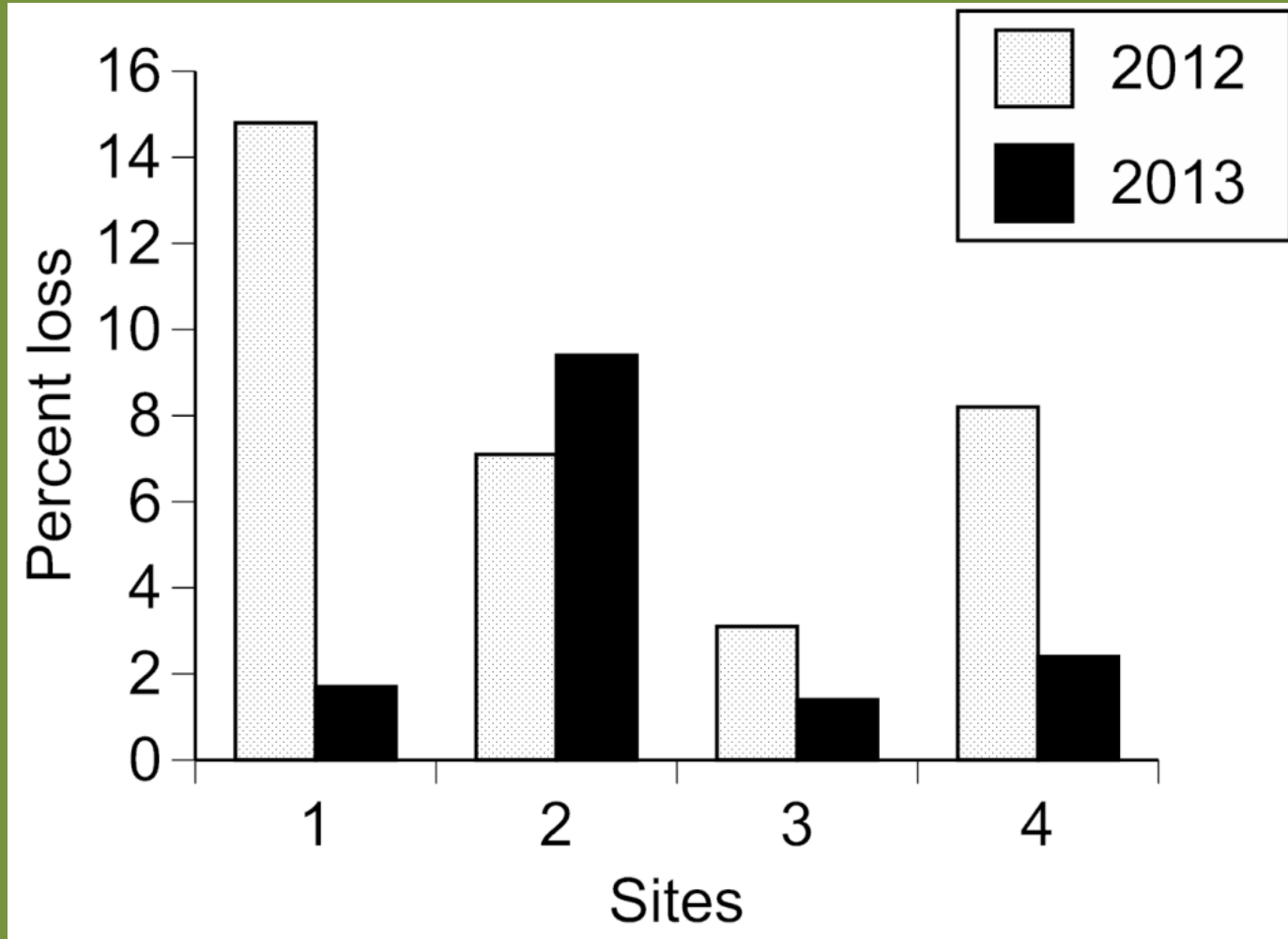
Four pairs of sites with and without air dancers,
Michigan Bluecrop, 2013



Sites matched for damage levels based on 2012 data

Preliminary data

NY vineyards with air dancers in 2013



Issues to consider with dancers

Power source

They frighten some dogs

When dancers are wet, their movements are slower and they bow lower, potentially catching in fruit

American kestrel









Cam1

2013/06/10
10:30:37

Results from Video Recordings

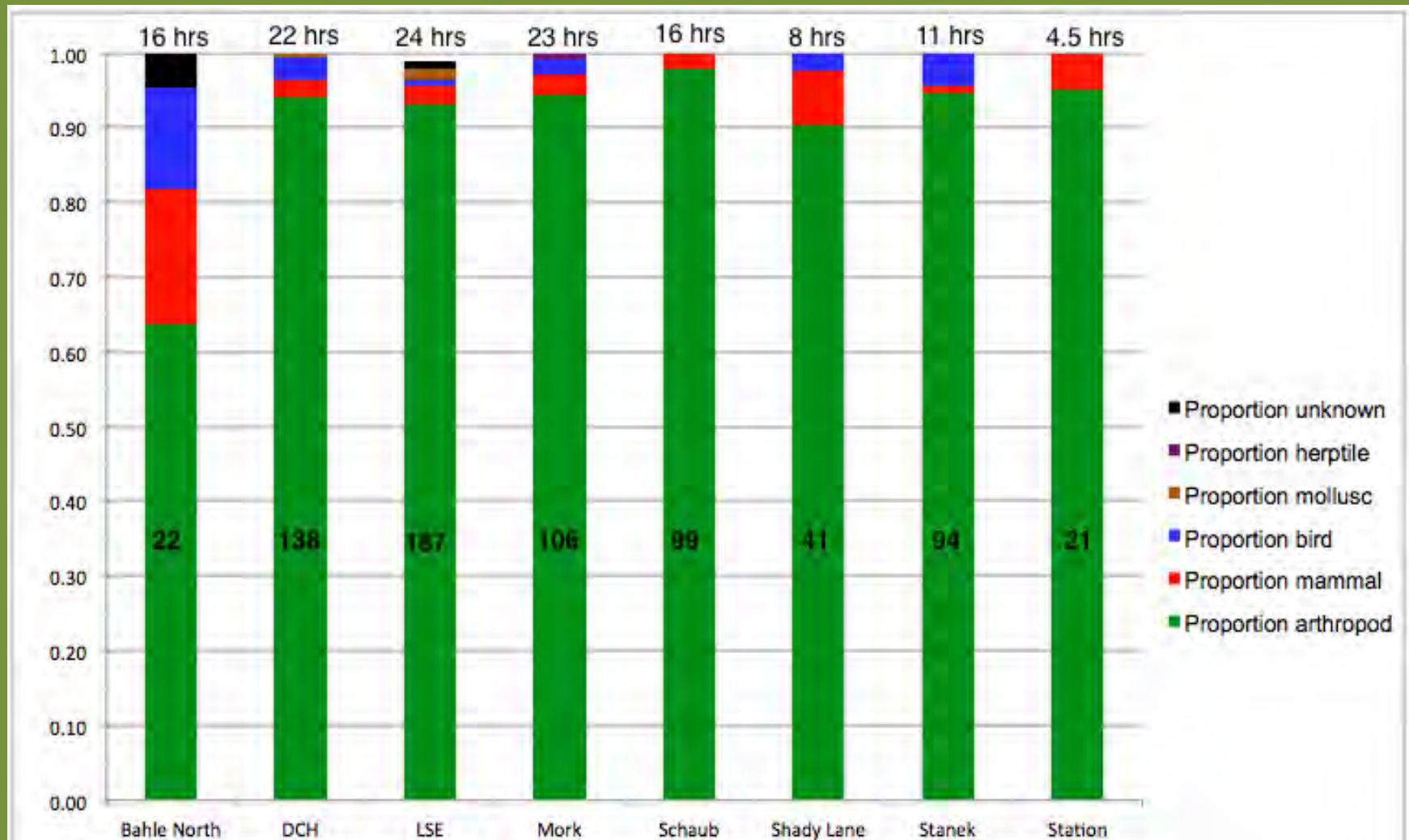


Figure 1. Relative proportions of different prey types among deliveries to kestrel nestlings. Numbers within bars indicate total number of deliveries for each box. Numbers above bars indicate total number of hours recorded for each box.

Examining Pellets & Prey Remains



Examining Pellets & Prey Remains



Most common types of insects delivered

Grasshoppers

Crickets

Click beetles (family Elateridae)

More specific identification of species
will take time

Kestrel boxes

A potential low-cost addition to pest management programs

For 2014

Field trials

Analyses of land cover effects on damage levels

UAVs?

Continued studies of consumer preferences

Acknowledgements

Crew at Northwest Michigan Horticultural Research Station

Among others...

Cherry Bay Orchards

Francis Otto

The Sends

The Grants

Fred Dohm

Dave White

Dean Johnson

Jim Bardenhagen

Steve Kalchik

Jim King

Ben LaCross

Jim Nugent

Rick Sayler

Tom Comfort

The Gregorys

USDA—Specialty Crop Research Initiative

Many growers

For more information

Limiting Bird Damage to Fruit Crops

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A Specialty Crop Research Initiative Project

Funded by the USDA

Limiting bird damage to fruit crops:

- integrating economic, biological, & consumer information to determine testable management strategies for the future

Fruit producers have identified bird damage as a critical issue that has received limited attention from researchers. A USDA study estimated that birds cost producers in seven states tens of millions of dollars through fruit loss and management efforts. Despite these costs, research has been uncoordinated and piecemeal, leaving producers with few affordable management options. Our transdisciplinary, multi-state team will address bird damage to blueberries, cherries, wine grapes, and "Honeycrisp" apples with a systems approach. Our long-term goal is to provide producers with cost-effective, environmentally sustainable bird management strategies.

<http://birddamagetofruitcrops.info/>