



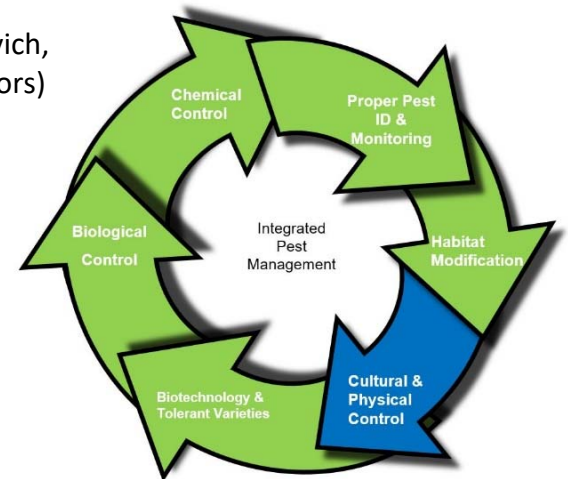
# Screenhouse Systems

## Environmentally friendly, non-chemical pest control

J. Sugano, J. Uyeda, J. Silva, S. Fukuda, K. Wong, R. Shimabuku, T. Radovich, P. Shingaki, R. Corrales, and K.H. Wang (October 2017 report to legislators)

A screen house is an effective tool to minimize pest from damaging crops which may result in reduced productivity, crop and financial losses. It serves as a non-chemical, physical barrier which puts the pest at a disadvantage. Building a screen house does not have to be costly. Construction of a screen house using home improvement store supplies may help minimize pest populations, reduce pesticide applications and increase production yields. A return on investment can be seen within a few crop cycles, depending on the crop and other external conditions.

USDA NRCS offers financial assistance for commercial grade, high tunnels through the Environmental Quality Incentives Program (EQIP) to growers who qualify for the USDA NRCS conservation cost share program. ***Replicated and observational field trials have shown screened units provide excellent control of pest such as birds, fruit flies, Chinese rose beetles, Lepidoptera (worm type) pests.*** Added benefits may include, increased production, heightened quality, reduction of nutrient and pesticide transport; improved air circulation and quality (i.e., vog, acid rain, etc.).



## Excellent Pest Control

- ***Birds***
- ***Fruit flies***
- ***Chinese rose beetles***
- ***Lepidoptera (worm type)***

## Results (Head Cabbage Trial at Kula Agricultural Park)

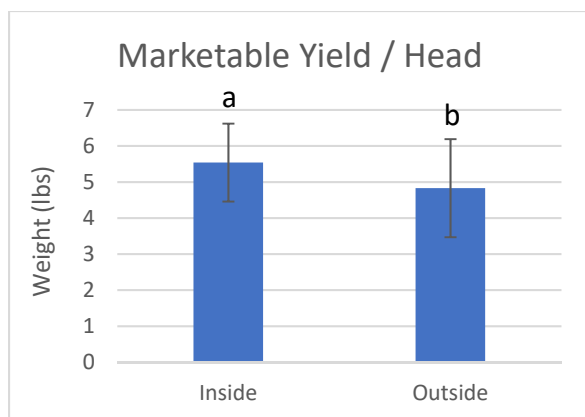


Figure 1. Average Marketable Yield per Head

Field trials in Maui and Oahu confirmed that the mesh 17 & 40 screen **significantly reduced *Lepidoptera* pest damage and reduced the number of pesticide applications**. However, use of the screen was not effective in reducing damage caused by small insects such as aphids, mites, white flies, etc.

Small insect pests were able to move in and out of the screen and/or were transported into the screened units at transplant.

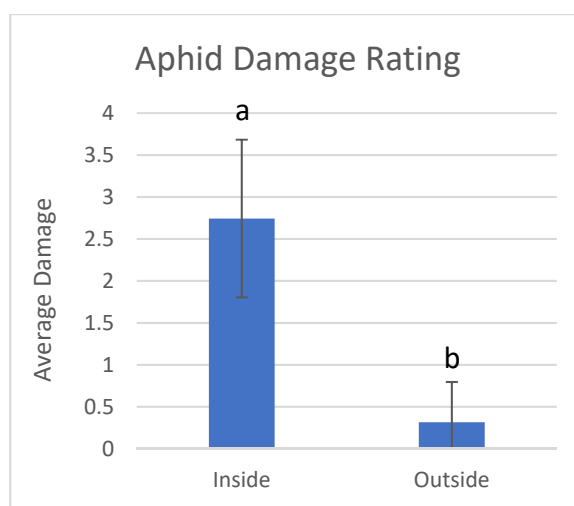
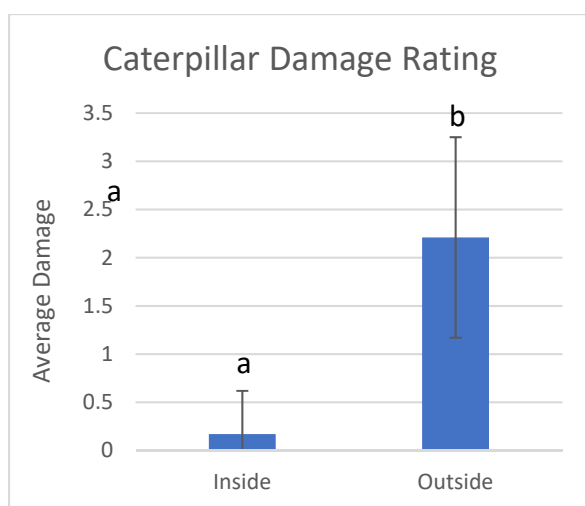


Figure 2 & 3. Damage rated using a modified Kemerait et. al. scale of 0=none, 1=trace to 5%, 2=6-15%, 3=16-35%, 4=36-67%, 5=68-100%.

## Future Work

We found that a weekly rotation of organic insecticides were not suffice in keeping aphid populations under economic injury levels. Therefore, we are currently evaluating new methodologies to improve the control of aphids on crops grown under screen culture by 1) increasing the frequency of organic insecticide applications and 2) evaluating different spray systems to achieve better spray coverage. Ultimately, we anticipate creating an organic & integrated pest management system that will maximize the benefits of the non-chemical screen system and integrated field tested, organic chemistries with better spray technologies.

