

Quail, the Conquering Hero

JAPANESE QUAIL AS ORGANIC PEST CONTROL IN TRAP CROPPING SYSTEM



Trap-crop pens adjacent to cash crop rows. The pens housed quail with blue hubbard squash plant to lure pests such as squash vine borer and squash bugs.

At Westport Commons Farm, Cultivate KC explored the use of the domesticated Japanese quail (*Coturnix japonica*) with trap-crops to eliminate the use of pesticide and the need to replant with the added benefit of providing meat, eggs, and fertility to a small organic farm operation.

THE PROJECT

The quail were housed in 5'x5' pens on the edges of the cash-crop area. The trap-crop (blue hubbard squash) were planted within each pen. The intent was for pests lured to the trap-crop to be eaten by the quail. While others have experimented with the use of chickens in similar applications, we believe quail have the advantages of being small, less destructive, and less prone to eat vegetation. Quail can be housed continuously with the trap-crop, eliminating the need for pesticides or to replant crops damaged by pests or larger fowl.

PROJECT OBJECTIVES:

1. Successfully control the spread and impact of common pest insects using quail and trap-crops.
2. Produce marketable cash crops adjacent to and protected by the trap-crop quail system.
3. Produce marketable quail eggs, and meat.
4. Educate hundreds of visitors to the farm on sustainable farming methods.
5. Keep data on all parts of study to aid in development of best practices & to assess profitability of the system.

WHY QUAIL?

Unlike chickens, Japanese quail don't consume a lot of vegetation, don't scratch significantly, and aren't large enough to trample the crop. They also don't take up much space, and are ideal for an urban setting such as ours. Finally, they produce marketable eggs throughout the growing season, adding value beyond pest management.

WHAT IS TRAP CROPPING?

Just like most animals do, insects have a preference for certain types of foods. Given a choice, insects will likely select their preferred food.

If no option is given, they will be happy feeding on the type of plants that are available.

Trap cropping means using very attractive plants growing in the perimeter of the garden or cucurbit field. These attractive plants pull the pest away from the cash crop.

Insects congregated on trap crop plants can be more easily killed with insecticides or by other means. Research conducted by the Lincoln University Integrated Pest Management program since 2011 indicates that Blue Hubbard squash is an excellent trap crop plant since it is very attractive to squash bugs and to squash vine borer.

In addition, Blue Hubbard squash is also attractive to spotted and striped cucumber beetles, so farmers and gardeners can actually control four insect pests using Blue Hubbard as a trap crop.

Pinero, Jaime. 2017. Trap cropping: A simple, effective, and affordable Integrated Pest Management strategy to control squash bugs and squash vine borers [Online]. Available at https://ipm.missouri.edu/MPG/2017/3/Trap_cropping/

PROJECT SET-UP

We hatched the chicks at home in the incubator from eggs we purchased from a farm in El Dorado, Kansas. (Photo 1)

The whole group of quail were raised in one cage until they were mature, while the other cages were growing the trap crop of blue hubbard squash. At around 6 weeks of age, the quail began laying vigorously, and the eggs were collected daily. (Photo 1)

In each cage we planted two blue hubbard squash to attract the common curcurbit pests. Two weeks following this planting, we planted two rows of cash crop, approximately 400 row feet. We waited until the squash plants were large and robust, thinking that the quail wouldn't be able to damage them (Photo 2).

When the pests began to arrive, we introduced the quail into the cages with the blue hubbard squash. To our surprise the quail **relished** the flavor of the squash vines, and ate them aggressively. Within a couple of days, the trap crop was destroyed (Photo3). We chose the quail because we thought their diminutive stature, and their light scratching would prevent them from harming the squash plants. This proved not to be the case at all. They were just as destructive, if not moreso, to the squash than the chickens in the previous SARE grant we researched.

PHOTO 1



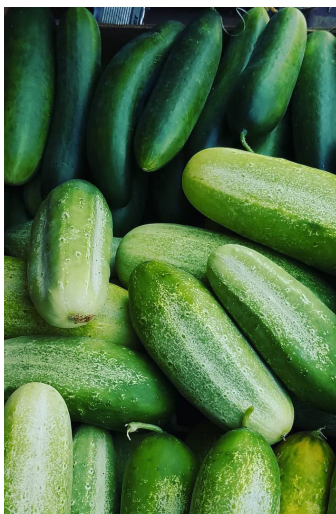
PHOTO 2



PHOTO 3



PROJECT OUTCOMES



We have not heard of anyone adopting this practice as of yet, but we have heard from many farmers that inspired them to experiment with similar principles and applications for pest management on their own sites. We produced hundreds of quail eggs, and hundreds of pounds of squash from this project.

The presence of nonconventional farm animals on the site also drew visitors to the farm in a surprising way. Many would not have considered the value of the nontraditional poultry as a food product or pest manager. It was an engaging topic during tours for nonfarmers to learn about livestock and for farmers to consider alternative sustainable methods for pest management.

RECOMMENDATIONS

If explored further, we would like to see the same method applied with Brassica crops to see how quail manage pests drawn toward those plants. We would also recommend a design that prohibits damage to the trap crop from the quail while still allowing them access to pests on the plant as well as within the pen. Those who choose to implement or explore this method should take caution against quail predators particularly those capable of digging or tunneling into the pen from underneath.