

How Farmers of Old Controlled Insects Better--Without Pesticides

"Before pesticides were in use, we didn't have a problem with insects," said Amuel Whitaker, 82, who farms in Haleyville, Alabama.

Statistics show this was a widespread phenomena. In the 1940s, only 7 percent of crops were lost to insects, whereas today, 13 percent of crops are damaged - almost double the amount, according to Dr. David Pimentel, a professor of ecology and agricultural sciences at Cornell University in New York.



To control insects, they relied on birds and other natural predators. About 190 of the 200 species of nongame birds found on farms are potentially very helpful in controlling insects, said Dr. Kathryn Sieving, an associate professor in the Department of Wildlife Ecology and Conservation at the University of Florida's Institute of Food and Agricultural Sciences in Gainesville.

A 1939 Georgia Department of Education bulletin says there are 66 kinds of birds that feed on cotton boll weevils.

"All kinds of publications like this were written before 1940 but after Pesticides came into widespread use, the work almost stopped," said Dr. Greg

Jones, a wildlife ecologist with the Santa Fe Community College in Gainesville who does research with Dr. Sieving.

In his research, he found that there are 10 species of birds that eat caterpillars that chew up kale and other leafy crops. "The birds love those caterpillars," Dr. Jones said.

But to use birds and insect predators to control pests, "you have to first restore the landscape," said Dr. Sieving, adding that "Biodiversity is the main ingredient." She

explained that most pre World War II farms, which controlled insects so well with natural controls, were small with a diversity of crops, forest patches, hedge rows laden with blackberries, seeds and insects and other forms of natural habitat where birds could feed, hide from predators and build their nests.

Farmers often planted rows of mulberry trees near the orchard, between grain fields and along roads and fences, as well as trees bearing crabapples, wild plums, wild black cherries, persimmons and hackberries.\

It is also significant that the typical farm field during World War II was small and close to the habitat where a bird cared for its nestings. This enabled

Why Monocrops Have More Pests

Today's large-scale farmers often go into debt purchasing expensive specialized equipment that is used with one crop, though rotating crops helps break up the life cycle of pests. Also, when one crop is planted rather than a diversity of crops, insects often run riot across an entire field. Thus, monocropping is pesticide intensive.

the bird to fly back and forth, out into the field to find an insect or worm, then a short distance back to feed its young, explained Dr. Sieving. "But on some of the really big-scale farms [of today], such as those with long distances of corn, there may be no native vegetation close by, so you don't have the numbers of birds or native predatory insects available for control. ... Thus, if these farms do not spray, they could get a lot of pest damage," she said.

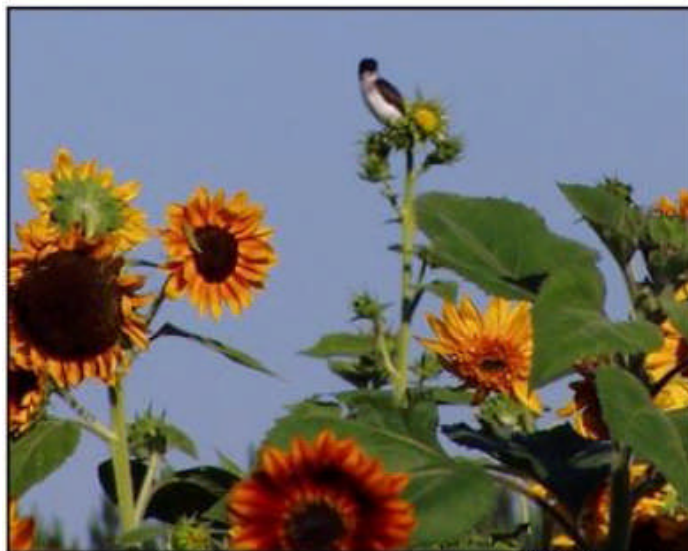


Photo Greg Jones

"The ultimate goal of our work," said Dr. Jones, "is to turn the clock back and put back some of the natural habitat on farms so that they are more bird friendly like the small traditional farms used to be."

In one project, Dr. Sieving, Dr. Jones and their colleagues worked with 20 farmers to plant rows of sunflowers in the fields near valuable crops to lure insect-eating birds to deeper parts of the field.

Sunflowers not only provide food for birds. "They also serve as a perch where birds can survey their surroundings and pounce down on insects that are foraging in the crop below, said Dr. Jones.

"The sunflowers also provide protective cover that the birds can hide in and feel comfortable," he said, adding that "many birds are sensitive to being out in the open; they don't like foraging for insects among low-growing crops such as

cucumbers and zucchini."

"The little cardinal," said Dr. Sieving, "is our most important consumer of insects in the system. It will go from the forest patch, out through the sunflowers--hopping from branch to branch eating seeds--then hop out into the field eating bugs before going back into the sunflowers for covering."

Birds at Work in the Winter

Birds bring many insects under control during the winter months.

Insects pass through the winter either as eggs, in the chrysalis stage, or as caterpillars. Oftentimes the eggs and chrysalis are frozen into bits of ice and are very brittle, then come to life when warm weather arrives. But birds searching for food find them hidden in the trunks of trees, sticking to walls or on the ground.

"We were able to get significantly more insectivorous bird activity in the crops," said Dr. Jones. "They were feeding on insects on crop vegetation. ... We also measured beneficial insects and found that they were attracted to the sunflowers as well."

In the fall, when the project was over, some of the farmers let the sunflowers go to seed to provide food for birds, while others sold the sunflowers at local markets.

The U.S. Dept. of Agriculture has since cut off funds for the project, but researchers from Holland, Germany, Pakistan and Algeria have contacted Dr. Jones, wanting to see reports about the study.

In another study, Dr. Jones tried to increase the number of blue birds on farms by putting up blue bird houses donated by the American Blue Bird Society.

He put between five to 15 houses on each farm, depending on its size, and

later determined that populations of blue birds increased on about half of the farms.