

Farmers' Opinions about Bird Conservation and Pest Management on Organic and Conventional North Florida Farms¹

Susan K. Jacobson, Kathryn E. Sieving, Greg Jones, John McElroy, Beida Chen, Mark E. Hostetler, and Sarah W. Miller²

Over 9.2 million acres of land are farmed in Florida. Farmers produced crops worth \$2 billion in 2007 (USDA 2009). With increasing population and development in Florida, agricultural lands also are becoming valuable wildlife habitat. Farm management could help increase wildlife numbers and diversity, especially for birds. Not only might farms benefit birds, but also birds might aid farmers. Insect-eating birds could help lower insect pest populations on farms. Thus, bird-friendly farming practices are of interest to farmers, biologists, consumers, and politicians.

Farms can provide good habitat for birds. However, some practices used by conventional farmers do not help sustain birds. These include increased use of pesticides and herbicides, and a shift toward specializing in one or a few crops. In contrast, organic agriculture in Florida includes certification that farmland has been free of synthetic pesticides for 3 years. Organic farms rely on biological interactions for pest control (called Integrated Pest Management, or IPM). Organic farmers usually grow many different crops. The Florida Certified Organic Growers and Consumers Inc. must approve a management plan for each organic farm.

Despite these differences, both farm types could be managed to enhance bird habitat (Figure 1). Certain farm practices could help promote bird diversity. One strategy is to reduce pesticide use. While studies have shown bird species richness and abundance are higher on organic farms than conventional farms, farm management is not considered the ultimate factor in determining bird communities on farms (Geiger 2010). Another strategy is to increase the number of different types of plants on a farm (Figure 2). Jones et al., (2005) showed that bird species' richness correlates with crop diversity and Geiger (2010) associates it with a more diverse landscape. Also, farmers could include perch sites in fields for foraging birds. All of these practices could increase numbers of insect-eating birds. However, farmers must be willing to take action. This requires an understanding of the knowledge and attitudes of farmers toward bird conservation (Jacobson et al. 2003).

We surveyed conventional and organic farmers about bird-friendly farming practices and pest management. We also wanted to better understand farmers' backgrounds. We included questions about demographic variables, such as sex, age, education, income, and farm size. We asked about farmers' social networks. For example, which organizations

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2. Susan K. Jacobson, professor; Kathryn E. Sieving, professor; Greg Jones, associate professor; John McElroy, associate professor; Beida Chen, associate professor; Mark E. Hostetler, associate professor; and Sarah W. Miller, Department of Wildlife Ecology and Conservation; UF/IFAS Extension, Gainesville, FL 32611.

have they joined? What are their extension and media contacts?



Figure 1. Farms can provide good habitat for birds as long as certain practices are adopted.
Credits: UF/IFAS



Figure 2. Organic farmers usually grow many different crops and rely on biological interactions and IPM strategies for pest control.
Credits: Greg Jones

Survey Methods

We targeted farmers in northern Florida growing multiple vegetable and/or row crops. For our **organic farmers** sample, we obtained a list of certified organic growers in Florida from the Florida Certified Organic Growers and Consumers, Incorporated (Gainesville, FL). Thirty-nine organic farmers residing in 15 counties fit our criteria. All farmers were surveyed.

For **conventional farmers**, we obtained a list of 310 conventional farmers in 14 counties. This list was obtained from University of Florida Cooperative Extension agents in northern Florida counties. We randomly surveyed 105 farmers from this list.

Surveys were conducted by phone. Each survey lasted about 20 minutes. We completed a total of 76 survey interviews. Twenty-six organic farmers completed the survey. Fifty conventional farmers completed the survey.

Survey Results

Demographic Factors

Conventional farmers were primarily male (Table 1). They were older, had fewer years of formal education, and earned a higher income than organic farmers. The average age of conventional farmers was 53 years. The average age of organic farmers was 46. Past researchers have found that younger farmers with higher education levels are more likely to recognize harmful environmental effects. They were more willing to adopt new technologies that have less impact on the environment. Farmers with a higher income may show increased adoption of conservation techniques. This may be due to greater financial stability.

Farm Characteristics

Size. The average size of organic farms was 44 acres. This was smaller than conventional farms with an average of 786 acres. Almost one fifth of the conventional farms were more than 1000 acres. See Table 1 for more information.

Ownership. Considering all the survey participants together (conventional and organic), the majority of farmers owned their own farms.

Crops. Conventional farmers grew an average of 11 different crops. Organic farmers grew an average of 25 crops. Fifty percent of the conventional farmers grew 5 crops or less, and only 6% grew more than 15 crops. In contrast, 42% of the organic farmers grew more than 15 crops (Figure 2).

Income generated. Almost one half of all the farmers generated over 75% of their incomes from their farms.

Farm and family. About one third of the farmers had obtained their land from a family member. Only 25% of the farmers planned on their children farming their land. Forty-two percent did not plan on their children farming the land. About 27% were unsure (Table 1).

Opinions About Pest Management

Pest management was a greater concern to conventional farmers than to organic ones (Table 2). More conventional farmers reported that pest control is an important issue. More thought that insect pests cause considerable damage to their crops. They reported that leaf-eating insects are

a serious problem. They stated that pest control costs a considerable amount of money. Jones et al. (2005) observed more unique species of birds on organic than conventional farms. But the ten most common bird species observed capturing invertebrates were identified on both organic and conventional farms, and bird species richness was related to the type of field border and crop diversity. (Jones et al. 2005).

Both conventional and organic farmers reported trying new pest management practices. Each looked for pests regularly, usually every day (Figure 3). However, more organic farmers looked for pests daily than conventional farmers. Organic farmers typically used Integrated Pest Management (IPM) principles. IPM is a strategy that uses multiple management techniques. IPM supports regular scouting for pests to reduce pesticide use (Figure 3).



Figure 3. A farmer scouts for insect pests by sweeping a net through a portion of the crop. Regular scouting is one of multiple techniques in the Integrated Pest Management (IPM) approach to pest management. Farmers can reduce pesticide use by using techniques in IPM for pest control.

Credits: UF/IFAS

Further, the majority of all farmers thought their current pest management strategies did not affect the environment. Most were willing to use alternatives to pesticides. Most would spend more money for pest management that might benefit the environment.

Opinions About Birds

Conventional and organic farmers' opinions toward birds did not differ significantly (Table 2). Almost all farmers reported recognizing most of the bird species on their farms. About one half of the farmers reported seeing 10 to 20 different bird species on their farms. About 12% had observed more than 30 species of birds on their farms. More organic farmers than conventional farmers reported

observing *more* than 30 bird species on their farms. These participating farmers' perceptions echo past research.

Past studies have shown more birds and an increased diversity of wild birds on organic farms. The reason for these differences is currently being studied by UF researchers. Organic farms may offer more suitable habitat and shelter for birds because of greater variety of vegetation; thus offering more food for birds.

Most farmers thought that birds could help lower insect populations on their farms. They would like to attract birds to their farms if they could lower insect pest populations (Figure 4). A third of the farmers reported already using methods to attract birds to their farms. These practices primarily included bird houses (Figure 4), feeders, and water sources.



Figure 4. A Great-crested Flycatcher with insect in beak, perched on a nestbox. Insect-eating birds might aid farmers by helping to lower insect pest populations on farms.

Credits: Karl E. Miller

Bird damage to crops was reported by 38% of all farmers. Crows were the primary culprits, damaging corn and watermelon crops. Conventional and organic farmers did not differ in reports of bird damage. They did not differ in actions to attract or repel birds. Only 12% of all farmers used methods to control bird damage to crops. These methods included noise cannons, use of netting around berry crops, and early picking of a crop.

Incentives and Barriers for Bird-Friendly Farming

In this study, most farmers were willing to attract birds to their farms. In past studies, farmer attitudes towards the environment have often been reported as negative in the U.S. In our survey, almost all of the farmers reported they

do not object to having birds on their farm if they do not cause crop damage. These positive attitudes suggest opportunities exist to improve bird habitat on farms.

Certain factors could influence whether a farmer wants to attract birds. The following factors were explored to understand the barriers and incentives to establishing bird-friendly farms. One possible factor is that farmers would be more likely to want to attract birds for pest control if they had reported considerable pest control costs. Another was whether farmers who had experienced crop damage by birds would still want to attract birds to their farms. We also compared farmers who reported spending a lot to farmers who reported spending a little amount of money on pest control. Finally, we examined farmers' knowledge about insect-eating birds and birds on the farm. Our results showed that none of these factors influenced the participating farmers' willingness to attract birds to their farms.

More than 93% of all participating farmers thought that their farms already provide good habitat for birds—regardless of farm type. Other studies suggest that there is a general tendency among farmers to over-rate the quality or efficiency of production or of a particular farming practice. Thus, farmers' high ratings of their farm habitat for birds suggest they may perceive only a limited need to change their practices. It makes little sense to expect a landowner to adopt new practices before recognizing a need. This must be addressed directly before introducing any new bird-friendly practices on farms.

Social Participation and Communications

Conventional and organic farmers obtain information in different ways. They also belong to different organizations (Table 3). Most of the conventional farmers in our study obtain their information from chemical companies. They also obtained information from UF/IFAS Cooperative Extension offices and Extension publications. Organic farmers obtain the majority of their information from the Florida Organic Growers Association. They also obtained information from various organic agricultural publications and Internet Websites. If we are to make any changes in current farming practices to benefit birds, information must be made available to farmers through these channels.

Currently, specific information on how to enhance farms for birds is limited. However, we suggest that some simple practices could enhance bird habitat on farms. First, farmers can provide foraging perches, such as tall plants, watering devices, or other tall objects in fields. Second, farmers can manage for more natural vegetation on the farm.

Examples include more trees, shrubs, and natural meadows. Such vegetation provides cover and food for birds. These two steps may increase populations of insect-eating birds on both conventional and organic farms.

In addition, more research is needed on how other physical, chemical, and biological elements of crop management affect bird populations. New farming methods are needed that sustain rather than reduce bird diversity. However, these practices must be relevant to ecological, economic, and social realities of farming.

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Table 1. Comparison of sociodemographic backgrounds and farm characteristics of conventional and organic farmers in north central Florida.

Variable	Conventional Farmers	Organic Farmers	Variable	Conventional Farmers	Organic Farmers
Sex			Number of crops grown**		
Male	98%	69%	5 or less	68%	19%
Female	2%	31%	6–10	22%	19%
Average age			More than 10	10%	62%
55 and older	40%	15%	Expect children to farm		
40–54	38%	65%	Yes	28%	22%
40 and younger	22%	19%	No	39%	57%
Income level			Don't know	33%	22%
Less than \$25,000	11%	27%	Person from whom land was acquired/ leased**		
\$25,000–\$50,000	38%	45%	Family/Father	28%	19%
More than \$50,000	50%	27%	Neighbor/Friend	39%	19%
Education level			Realtor/Unknown person	33%	61%
High School and below	46%	24%	Belong to an environmental organization **		
Some college/ 2 yr degree	48%	36%	Yes	8%	36%
4 yr college degree/ postgraduate	6%	40%	No	92%	64%
Farm size			Belong to an agricultural organization **		
Less than 250 acres	44%	96%	Yes	68%	100%
More than 250 acres	56%	4%	No	32%	0%
Tenure status			Attendance at agricultural meetings **		
Own	70%	88%	2 or less a year	30%	77%
Lease	8%	11.5%	3–8 a year	43%	11%
Both	22%	0%	More than 8 a year	29%	11%
Percent of income from farming					
25% or less	22%	41%			
25–75%	17%	18%	** indicates <i>significant</i> differences between conventional and organic farmers (as shown in statistical tests of these data).		
75% or more	61%	41%			

Table 2. Opinions of conventional and organic farmers about pest control and birds. (Survey based on responses from 50 conventional farmers and 26 organic farmers.)

OPINIONS	CONVENTIONAL FARMERS (%)			ORGANIC FARMERS (%)		
	Agree	Neutral	Disagree	Agree	Neutral	Disagree
Pest control is an important issue for me.**	100%	0%	0%	73%	8%	19%
Insect pests cause considerable damage to my crops.**	94%	0%	6%	46%	23%	31%
I spend a considerable amount of money on pest control.**	76%	16%	8%	27%	4%	69%
I am satisfied with my current pest management strategies.	74%	14%	12%	62%	15%	23%
I consider leaf-eating insects a serious pest problem.**	80%	6%	14%	38%	12%	59%
I look for pests regularly.	94%	2%	4%	96%	0%	4%
I sometimes try new pest management strategies.	64%	12%	24%	81%	0%	19%
I think my current pest management strategies do not affect the environment.	88%	8%	4%	89%	0%	12%
If there were effective alternatives to using pesticides I would use them.	90%	6%	4%	92%	4%	4%
I would spend more money on pest management that might benefit the environment.	76%	18%	6%	88%	4%	8%
I recognize most of the different kinds of birds on my farm.	94%	2%	4%	96%	0%	4%
Birds cause damage to my crops.	38%	18%	44%	23%	12%	65%
Some birds do not cause damage to my crops.	98%	0%	2%	96%	0%	4%
I do not mind having birds on my farm that do not cause damage to crops.	96%	4%	0%	100%	0%	0%
Some birds eat only insects.	90%	8%	2%	81%	19%	0%
Birds could help lower insect populations on my farm.	90%	6%	4%	92%	8%	0%
I would like to attract birds to my farm if they lowered insect populations.	84%	10%	6%	100%	0%	0%
I think my farm provides good habitat for birds.	92%	4%	4%	96%	4%	0%
** indicates significant differences between conventional and organic farmers (from statistical tests)						

Table 3. Communications and social participation of conventional and organic farmers.

Results for Survey Questions about Communication and Social Participation		
Primary Sources of Pest Management Information**	Conventional Farmers	Organic Farmers
University of Florida Cooperative Extension Service Agents	68%	4%
Internet	0%	15%
Publications	28%	46%
Chemical Dealers or Labels	20%	0%
Other Farmers	2%	31%
Farmers' Membership in Agricultural Organization	Conventional Farmers	Organic Farmers
Florida Farm Bureau	48%	19%
Florida Organic Growers Association	0%	88%
Cattleman's Associations	16%	0%
Peanut Producers Associations	16%	0%
Farmer's Membership in Environmental Organization	Conventional Farmers	Organic Farmers
Belong to one or more environmental organizations	8%	35%
** Surveyed farmers were allowed to list more than one source.		