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**Economic Impact Assessment and Management of Feral Hog Damages on Small, Socially, and
Economically Disadvantaged Farmers**

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Economic Impact Assessment and Management of Feral Hog Damages on Small, Socially, and Economically Disadvantaged Farmers

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INTRODUCTION

- Feral hogs have spread to at least 39 states since they were introduced for sport hunting in the United States.

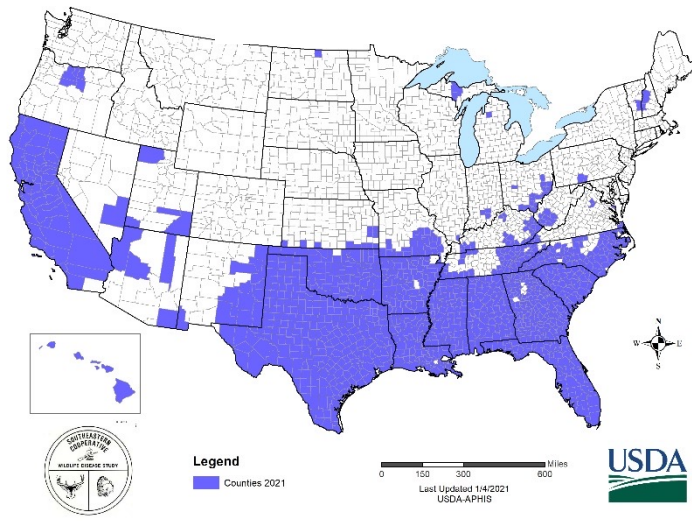


Fig. 1. Feral Swine Population 2021 by County

- Within the United States, feral hogs cause \$1.5 billion in damages and control annually.
- In Alabama, feral hogs have been present in all counties and estimated to cause over \$55 million in damages.
- Diseases of concern feral hogs can carry and spread include: swine brucellosis, pseudorabies, and tularemia (USDA NIFA, 2019)
- Feral hogs are a nuisance to ecosystem and landowners.
- Feral hogs directly impact crops, pasture, livestock, horticulture, infrastructure, etc. See figures below.

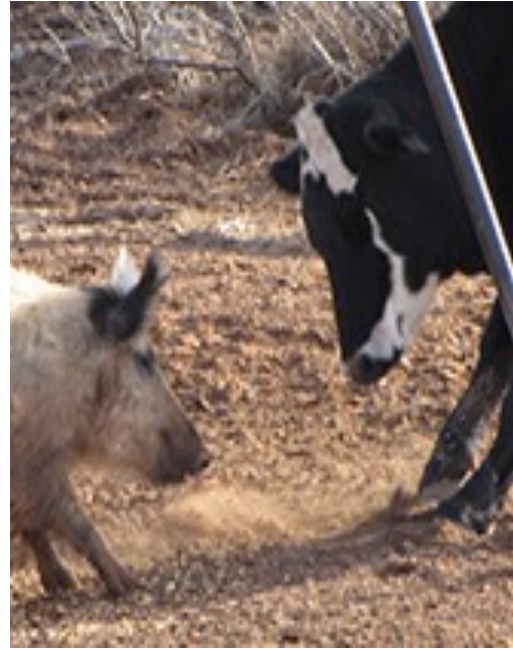


Fig. 2a. Feral Hog Crop Damage Fig. 2b. Feral Hog Pasture Damage Fig. 2c. Feral Hog Disease Transmission Fig. 2d. Feral Hog Property Damage

MOTIVATION

- 79% of Alabama farmers are considered small farmers with a sale value of less than \$25,000 (USDA NASS, 2017).
- The drastic spread of feral hogs and their survival has been devastating for small, socially, and economically disadvantaged farmers (Tanger, Guidry, 2015).
 - Purchase of unexpected exclusionary fencing and devices
 - Allocate viable production land (feed plots) to deter feral hogs from eating the main production crops
 - Unpredictability of this species behavior, limited resource farmers must have a management plan
- Lack of feral hog management areas across the Alabama Black Belt Region. See the right figure.
- Per requests from local farmers across Alabama Black Belt Region. Agents reported receiving frequent complaints about species/species-groups of wildlife.

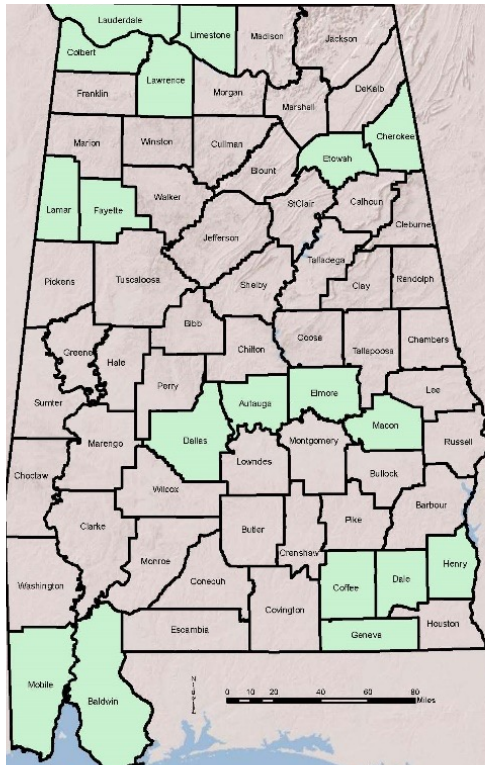


Fig 3: Feral Hog Management Focus Areas 2016
Data Source: USDA NRCS

OBJECTIVES

The purpose of this research is to economically quantify feral hog damage to small, socially, and economically disadvantaged farmers and landowners.

Objectives:

- Quantify damages and loss of crops due to feral hogs;
- Geographically assess the distribution of feral hog reports/damages across the Alabama black belt region (wait for the IRB approval);
- Evaluate the effectiveness of feral hog traps by comparing the cost and benefits of trapping;
- Feral hog trap set-up and deployment training.

MATERIALS AND METHODS

Trap

- Pig Brig mesh trapping system (Fig. 4)
 - *Lightweight mesh trapping system
 - *Cost-effective
 - *Easy to transport
- Net is connected to t-posts which allows feral hogs to enter but not exit (Bethany 2022).

Materials: Mesh trap, camera traps, T Post , zip ties, bait.

Bait: whole corn , scrapes/slop, sour grain, grains + commercial hog attractant scents



Fig. 4. Pig Brig trapping system

Trap Set-up and Deployment Timeline

Trap Setup	Trap Deployment	Check feral hogs
Day 1 Morning	Day 4	Day 5 Moring

ECONOMIC METHODS & DATA

- Extend McKee, etc. (2020)'s method, the estimated value of lost production in dollars:

$$Loss_{js} = \frac{(Percent\ Loss_{jt})Production_{js}}{100 - Percent\ Loss_{jt}} \text{ Or } (Percent\ Loss_{jt})Production_{js}$$

- Where $Production_{js}$ is from National Agricultural Statistical Service (NASS) Quick Stats.
- Yield Loss Percent is from USDA NASS survey (McKee, etc. 2020) or Tanger etc. (2015)'s survey

- Following Tanger etc. (2015), we estimated the production loss using the following equation:

- Production Losses = Acres Impacted * (Expected Yield * Yield Loss Percent) *Market Price**
 - Where Expected Yield=The average yield per harvested acre of Alabama

Nonproduction costs are calculated according to:

- Non-Production Losses = (Total Acre / Total State Acres) * Per Acre Non-Production Losses**
 - Where the survey data is under review by the university IRB

Data and Data Source:

- Production (in \$)of Hay, Pecan almonds, sweet potation, and cotton from NASS Quick Stats
- Estimates of acres affected and percent yield loss from the survey (McKee, etc. 2020) and questionnaire (Tanger, etc. 2015)

RESULTS

Table 1. Monetary Estimates of Feral Hog Damage to Crops in Alabama (2019)

	Hay, haylage	Pecans almonds	Sweet potatoes	Cotton
% of Acres Damaged	4.46%	6.95%	5.17%	0.89%
Production Measured in \$	152,250,000	2,366,000	11,770,000	297,544,000
Total production losses in \$ (McKee estimates)	\$9,834,000 ^a	\$271,000 ^a	\$642,000 ^a	\$2,746,000 ^a
Total production losses (Tanger etc. estimates)	\$6,790,350 ^b	\$164,437 ^b	\$608,509 ^b	\$2,648,141.6 ^b

Where ^a means estimated by McKee etc. (2020); ^b means estimated by the author(s)

Table 2. Monetary Estimates of Feral Hog Damage to Crops e in Louisiana (2013)

	Hay	Pecans almonds	Sweet potatoes	Cotton
% of Acres Damaged	14%	21%	-	3%
Production Measured in \$	100,425,000	10,270,000	-	122,680,000
Total production losses in \$ (McKee estimates)	\$14,059,500 ^b	\$2,156,700 ^b	-	\$3,680,400 ^b
Total production losses in \$ (Tanger etc estimates)	\$9,967,049.53 ^a	\$416,397.23 ^a	-	\$621,146.39 ^a

Where ^a means estimated by Tanger etc. (2015); ^b means estimated by the author(s)

DISCUSSION AND CONCLUSION

- Tables 1 and 2 show that the monetary estimates of feral hog damage differ significantly, and the wild hog brings much economic loss to farmers in Alabama and Louisiana;
- Two different estimating methods produce significantly different monetary estimates of the Feral hog damages to cops in Alabama and Louisiana;
- The costs of removing the first 99% of the wild hogs are estimated at an average of \$50 per head (Fischer et. 2020). The monetary estimates of the feral hog damages are much greater than the cost of removing them, and it suggests that wildlife traps are cost-effective for removing feral hogs.

EXTENSION ACTIVITIES

- Fact sheets contain the monetary estimates of feral hog damage and the benefits of trapping, and deployment technics;
- Minority student training about wildlife management in the field;
- Demonstrate the Pig Brig setup and deployment system;
- Educate on feral hogs, their impact, identification, and environmental impact on the small, socially, and economically disadvantaged farmers in Alabama Black Belt Region.

SELECTED REFERENCE

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