

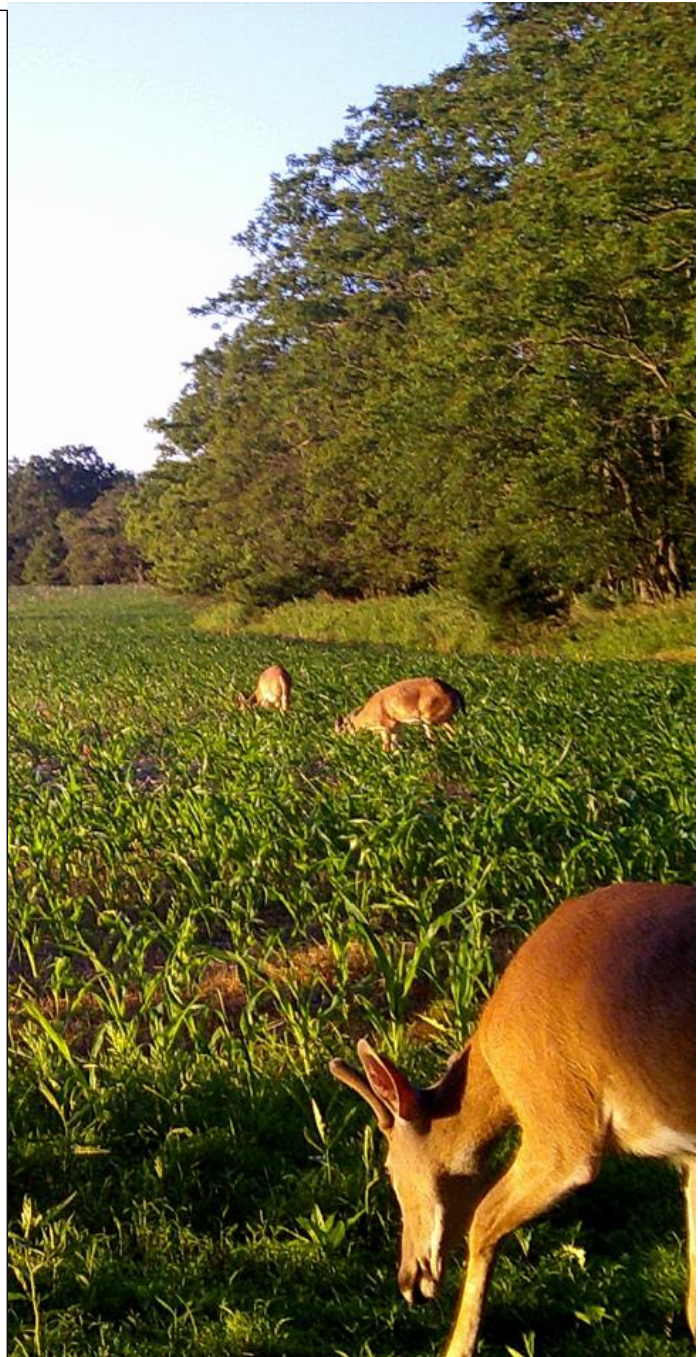
WE **R** HERE WHEN YOU NEED US

**White-Tailed Deer and
the Costs to Farmers'
Livelihoods: A Case
Study of New Jersey
Stories**

APPENDIX I

**What Farmers Want
You to Know –
Key Topics**

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RUTGERS

New Jersey Agricultural
Experiment Station

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APPENDIX I

What Farmers Want You to Know: Key Topics and Messages from Case Study Stories

Messages to Policymakers:

Farmers continue to state their desire to work together with policymakers, to effectively address issues relating to deer damage, that have spanned the past several decades. In addition to extensive crop damage and negative impacts on farmers' livelihoods; deer cause damage to native ecosystems, residential landscapes, and raise health and safety concerns such as approximately 25,000 deer-vehicle collisions in New Jersey every year.

- We want to work with the policymakers. Farmers don't usually ask for too much. If we do, there's a pretty good reason. If we can work together to help get things done, we can make it better.
- For years we've been talking about - what we are we going to do about the deer? Nothing has been enough. They're getting bad.
- We've been telling our story for a long time. I think the damage and risk to society as a whole has not been told. Deer are responsible for damage to property, public safety, and people's livelihoods. This is a real problem, and the politicians need to take action. Unless they take action, they're contributing to the problem.
- Policymakers need to take into account environmental impacts, residential damage, health and safety of deer collisions, and health of the deer population. There's a lot that needs to be considered. How long can you sustain this level of overpopulation without some type of detrimental effect to the herd?
- We need a comprehensive herd reduction program. Future deer management and development have to adapt together. Until the herd becomes manageable, we need to make it a year-round effort.
- Decision-makers should listen to farmers. We're not making it up. Sometimes our complaints fall on deaf ears. I think they care. They just don't know what to do. If we don't speak, we're not heard. Should have more deer hunting zones with unlimited deer hunting. Could use more deer processors to donate harvested deer at no expense to the farmer.
- There's a lot of land in the area owned by the township. They do little to no deer management. There's also green space that has little to no management. That's a problem.
- Some of our legislators need to take up the issue and gain public support.
- We're lucky the township has an aggressive deer management program.
- We need to get more people in the woods hunting. Look at increasing the length of the seasons. Make it easier for hunters to get out there.

- How many Deer Management Zones do we have now? I realize different areas need to be treated differently, but it's too many permits. It can get expensive. It's why a lot of guys are getting out of it now.
- Liability is an issue. You can't just let anyone come hunt on your farm. The state should pay for it or make it a law that we can't be liable if people come on the farm and hunt. Pass legislation that the farmers aren't held liable.

Food Security:

The United States Department of Agriculture defines food security as the ability to access enough nutritionally adequate and safe foods for an active and healthy life at all times (Coleman-Jensen et al. 2020). New Jersey farmers play a critical role in this process for people throughout the state. Many New Jerseyans enjoy locally grown fruits, vegetables, and products made from corn and soybeans. Farmers want communities to know that deer-related crop damage is jeopardizing their ability to provide safe and healthy food.

- Local farms had a major impact in us surviving COVID-19. People need to look at agriculture as essential to them and not just a business. A farm is part of the essential infrastructure around them that puts food on their tables. When you preserve a farm, you're preserving the future of your food source.
- Understand that not only is it jeopardizing my ability to provide safe and healthy food, but it's also impacting the community around you, your health and safety.
- There has been opposition to hunting by special interest groups. People don't understand the impact of these animals on the property and our lives. They want to be able to eat the products made with corn and soybeans. They're not making the connection with where the food comes from. People need to work together to come up with some type of solution that is productive for everybody.

Venison Donation:

Venison donation programs benefit foodbanks and those in need throughout New Jersey. Facilitating opportunities that connect hunting, implementation of farmer depredation permits, and suburban deer management programs, with efforts helping to feed those in need, can enhance deer management throughout the state. An example of a successful statewide venison donation program is the Hunters Helping the Hungry Program <http://www.huntershelpingthehungry.org>. Since 1997, the program has provided over 2,000,000 servings of healthy protein to those in need.

- Find avenues to public good through processing and feeding programs to get protein to the needy so it doesn't go to waste. Incentivize doe harvest and donations to food banks. No cost to the hunter and not counted against the hunter's limit. Increase funding for programs like Hunters Helping the Hungry. Figure out ways for donation through depredation permits during the summer months. Use sharpshooters in suburban areas where you can't hunt and donate the venison.

- If there are people out there that don't have food on the table, that should be a priority. The meat is healthy and good. There needs to be a comprehensive program to facilitate shooting, transport, processing and giving meat to people that need something to eat. There should be some coordination that provides jobs for people. It needs to facilitate butchers to do it on a larger scale. It could be a year-round thing. We don't need hunting year-round. You can process the deer taken under the depredation permit.
- We need to facilitate more ways for hunters to donate to foodbanks. Make it easier. A no-cost option to get the deer from the hunter to the foodbank.
- I'd like to see more programs for donating deer to people in need.
- There should also be more advertising for venison donation programs like Hunters Helping the Hungry and more butchers.

Environmental Impacts:

All of New Jersey's forests are over-browsed and, in many areas, it is severe (Baiser et al 2008). Kelly (2019) noted impacts from increased densities of white-tailed deer of concern to forest managers in northern New Jersey that included declines in seedlings, saplings, trees, herbs and shrubs and a shift from mostly native to exotic species. Deer take refuge in neighborhoods and forested areas not open to regulated hunting programs and cause damage to adjacent lands including agricultural fields.

- If we are going to see agriculture succeed near residential areas of New Jersey, we need to take into account for a balance of people, nature, and an appropriate amount of wildlife. We need to find a healthy balance for our forests and our roadways.
- I always enjoyed seeing deer. Now that I own a farm it's tough. The deer just eat everything. Nothing can even grow in some places. Nothing comes up, even after replanting. We're trying to make a living. I don't mind if they eat some of it, but they eat too much.
- The park in the area implements a controlled hunt. Unfortunately, not all of the park. The deer were removing the understory of the forest.
- I have land enrolled in a golden-winged warbler conservation project for forest regeneration. The deer damage is getting bad enough that it may not be suitable for golden-winged warblers.

Changes in Deer Population Over Time:

Farmers shared stories of how the deer population has changed in New Jersey over their lifetimes. Several farmers noted that when they were young, back in the 1960s and 1970s, it was rare and exciting to see a deer. Deer numbers increased to levels where crop damage started to become a problem for farmers in the 1980s and 1990s in north and central New Jersey.

- They're beautiful, majestic animals. There are just too many of them. They're not wild anymore.
- When I was a boy, it was a treat to see a deer. You didn't want to shoot it. You wanted to shoot it with a camera.

- When I was young growing up here you didn't really see deer.
- When I was young there really weren't many deer. In the early 1960s you really had to go to the Pine Barrens.
- When I was a kid, you couldn't even find a deer. Now, I can sit on the porch and they walk right up.
- Deer started becoming a problem in the late 1980s and early 1990s.
- The deer started becoming a problem in the 1990s. It was never really a problem before that. It didn't seem like there were that many deer around.
- About 20 years ago deer were not an economic problem. We had what we thought were too many, but damage was acceptable. I started having problems about 10 years ago in sweet corn. I haven't grown it since 2016.
- I've always enjoyed hunting, been doing it since I was 10 years old. I've hunted on this property for over 50 years. The deer population has increased over time. I really noticed an increase around 2000.
- When I was young it was exciting to see a deer. You'd call everyone out to see them. Now it's common to see 25 deer at a time running across the field.
- I don't know what happened. They're just more of them.
- People don't realize why a deer population explosion has been happening. The does are having twins and triplets and there are less people hunting.
- There's just way too many deer.
- I've always had problems with deer, more in the last 10 years.
- I don't know what happened in 2018. It seems like there were more does.
- Years back we lost 60% of the deer herd when there was EHD [Epizootic Hemorrhagic Disease]. That was the only time losses were acceptable in many years. The deer bounced back in 3 years.

Livelihood Impacts:

Farmers noted significant impacts to their livelihoods that can affect several generations. For some farmers, this works out to financial losses from 10% to 25% of their gross income every year, sometimes more.

- The deer are at such high numbers that farms can't be sustained.

- Most people probably don't think about financial losses to farms because they see green fields when driving down the road. People don't realize when they're looking at damage and how much of the crop has been eaten by the deer. It's not coming out of their pockets. You have to come up with the money from somewhere to cover the costs. Even when you have losses. The bills still have to be paid.
- My wife and I used to say if we lose less than \$10,000 per year it would be a good year. We haven't had a good year in over 10 years.
- We all need to make a living. I'm not against wildlife. I love it. There needs to be some type of program so the deer are not overwhelming to farming and nature. The deer do a lot of damage.
- People don't realize that this affects several generations. There will be no more farm. You have to preserve those livelihoods.
- It's fun to watch the deer and all that, but not when it's your livelihood they're eating up. It's not profitable and hurting the farmers and everybody that depends on them for food. Deer just eat everything up. There's just way too many deer. I can go out and plant 10 acres of tomatoes and only harvest 5 acres. Farming is what pays my bills. That's what puts money in the bank. I can't have deer eating up all my profits.
- They're ruining my income.
- I grow a lot of hay where I can't grow anything else. Hay pays the bills, but it takes more time and people and you don't make as much money. To farm in New Jersey costs a lot of money. If I was able to actively grow without the deer problem, I wouldn't have to grow as much hay. It takes all summer long to do it. If I could grow row crops I could do it cheaper and by myself, but I'd be out of business in about 15-minutes.
- In 2019 I lost 25 to 30 acres of soybeans. That's \$16,000 worth of beans.
- I don't want to kill all the deer, but they have to be managed. How would you like to take a 10% pay cut because of deer? It's not that we want them all dead, the damage is just too much. It has to be reasonable. I don't mind feeding some. I just can't feed them all.
- What I tell nonfarmers – if you want us here, we can't be here with all the deer. Imagine taking 10 to 15% of gross income every year and feeding it to the deer. Some farmers lose as much as 40% per year. A lot of us are disappearing.
- Many people have no idea that deer destroy Christmas trees. I'm going to stop growing Christmas trees entirely. That's a loss of \$35,000 per year.
- Deer funnel to us in the summer and go to the neighborhoods in winter where people are feeding them. I can go take pictures of beautiful bucks laying right in the backyard under a feeder. By

people in the neighborhoods harboring these deer, it costs me about 25% of my paycheck every year.

- Before you fault me for doing what I have to do to manage the deer, come see what I'm dealing with.
- I'm overridden with deer here. If you pull into my farm at night, you can easily see 30 to 40 deer. My income should be substantially better. My yields are \$150,000 to \$200,000 less per year than they should be with my acreage. Each year, the deer can make the difference between a profit and a loss.

Hidden and Emotional Costs:

Costs go well beyond financial losses. These costs can often be hidden and take a toll. Several farmers have noted these costs, especially after putting time, energy and money into producing a crop that is starting to thrive just to watch the deer eat it down to the ground in a matter of weeks. Crops are so severely damaged that fields have to be replanted or are not worth harvesting at the end of the growing season. Having to change crop rotations in response to deer pressure can result in damage to the soil, having to use more chemical herbicides and major expenditures for additional fertilizers. Increased competition from weeds can result after deer start eating a crop. Farmers are also forced to spend a significant amount of time on deer management.

- The deer issue is devastating!
- I can accept some damage, but this is too much!
- There's not a field I farm where there's not deer damage. I'm starting to give up. Farmers like deer just as much as anyone, but they eat everything. I just want to survive.
- I love seeing them, but you get mad when 6 rows of corn are gone on the edge of the field.
- We all need to make a living. I'm not against wildlife. I love it. There needs to be some type of program so the deer are not overwhelming to farming and nature. It gets frustrating at times. The deer do a lot of damage.
- I would like the neighbors to know about the damage to the crops and the costs. It's emotional for the farmer. Things are looking good, I'll be able to pay my bills, and then you come across the deer damage. You see how much you're going to lose. Talk about taking the wind out of your sails. It's very emotional. It's a big letdown.
- Things would look good at the beginning of the season and by the end it wouldn't even be worth harvesting.
- From August through late October, it's brutal, that's the worst of it! If the crops are still in the field, they'll tolerate me. Once the crops are harvested a lot move on. You just do the same thing you do every year and hope for the best.

- It used to get kind of depressing. A few weeks before Christmas bucks would come in rubbing right before you were about to sell the trees. The recovery period for the tree can be 5 to 7 years after rubbing. It takes longer than replacing the tree. You spend a lot of extra time pruning to try and make it look nice in hopes you can sell it.
- It's something that strikes home around here. I really feel for the guys with large operations.
- I had a conversation with a neighbor once who saw a deer stand on the property. Their little girls said – you're a hunter? You murderer! I said, no girls, I'm just trying to protect my crops. Their mother said, that makes sense. She said they were dealing with landscaping being devoured and the deer were eating her flowers.
- We're always concerned about a deer running out in front of you while you're in harvest or planting.
- Unfortunately, with age, we tend to lose our patience and energy. The expanding deer population has tested that patience left, making you wonder if it's still worth the effort.

Soil Health, Erosion, Grazing, Replanting, Fertilizer and Herbicide Use:

- I haven't heard anyone talk about deer damage as a soil health issue. I have deer problems where they basically leave bare ground. It's just like overgrazing a pasture. If you put a cover crop out like clover for a nitrogen return, they eat it right to the ground. You get no return.
- There's a problem with soil fertility. I can't keep fertility up because of the depleted organic matter. We're losing organic matter. There's no residue that would naturally fertilize the soil for the next year. This isn't a short-term problem. I've been dealing with it for 20 years. I can see it in the soil and other crop response where the deer pressure is bad. I can't get as much cover or organic matter to grow back.
- There are long-term environmental impacts from overgrazing. Soil erosion and impacts to the water supply. You have to use more fertilizers and herbicides.
- Weather also affects deer damage. The later you get in the growing season, the more impact the deer will have. The deer will out graze the growing of the crop.
- In the summer months I easily spend over 200 hours replanting what the deer eat. I've replanted some fields 3 to 4 times in one season. That also means you're using a lot more herbicide than you want to use. It can also be a waste of time. If the deer eat the crop to the ground, it's not worth replanting. They're just going to do it again.

Crop Rotations:

- Crop rotation is an imperative part of any operation and is impacted by the deer. If you can't rotate crops through you end up with severely limited production for crops that have been grown on the land too long.
- You get an increase in corn and soybean production through rotation. It makes it easier for weed control. We are losing those benefits by not being able to rotate the crops the way we need to.
- My crop rotation is limited. I can't offset the damage by just changing crops. I can only un-diversify the crops so much. I can't handle 500 acres of hay.
- I've switched rotations, should have been soybeans, but switched to corn.

Financial Losses from Field Abandonment:

There are also many costs that often go unnoticed such as the financial costs of having to abandon a field entirely because of the pressure from deer in the area. These costs can also lead to significant financial losses. In 2019, nearly 40% of participating farmers reported having to abandon a field. Several farmers found losses difficult to estimate.

- I've entirely dropped whole farms because of deer damage. The only reason I started growing sorghum at all was because deer don't like it as much as other crops.
- We haven't entirely stopped farming a field because of deer damage, but have restricted going to new areas until we can get a fence up. We could have farmed tomatoes, squash and other vegetables. The estimated loss is about \$5,000.
- Starting next year there will be fields that I stop farming because of the deer damage. That will be a loss of another \$7,800.
- We lost 2 fields last year and a couple fields we couldn't even plant.
- I never entirely stopped farming a field because of deer damage, but I should have.

Financial Losses from Crop Abandonment:

When a farmer can't grow their preferred crop that would generate more income. Many farmers are not able to plant preferred crops that will generate higher profits. In 2019, nearly 60% of participating farmers reported abandoning crops like corn, soybeans, alfalfa, oats, vegetables and Christmas trees.

- There's 12 acres where I would be growing vegetables if not for the deer damage. That costs \$15,000 to \$20,000 per year.
- There are 28 acres where I would grow corn and oats, but I won't plant there anymore except for hay because of the deer pressure. If I plant corn down there I don't make any money at all. The financial loss is \$7,800 per year.

- I stopped growing pumpkins because if I don't fence it's a total loss. When I grew 10 acres of pumpkins I was making an additional \$20,000 just on the weekends. Now I have to get pumpkins from other farmers to sell.
- The land that I own I put in a cover crop or field corn. It's not what I prefer or want. Something is better than nothing.
- If we know we have susceptible fields we have to constantly change production. We switched to hay, they even damage that, mow it down.

Time Spent on Deer Management:

Farmers often spend hundreds of hours each year on deer management activities. For many, it is difficult to quantify the true cost of these activities in terms of time and money. Management can include deer fence installation and maintenance, harassment techniques, state regulated hunting, and farmer depredation permits.

- It's hard to put a number on the hours spent every year on deer management because it's just incorporated into management period.
- For deer management, there is hunting about 4 hours per day most days from mid-October through January. There is a couple of days of cutting wood for the fence and repairs. I never add it all up. It's just something that you do. It's definitely 100s, maybe 1,000 hours per year. That's a lot of hours, especially in the summer.
- I spend about 90 days per year on hunting and deer management. The family hunts the main property. I lease land to a hunting club. The same people have hunted every year for about 20 years.

Direct Crop Damage and Reduced Yields:

Financial losses that farmers experience from deer damage to crops and reduced yields is significant and can be challenging to quantify. Many farmers believe true losses from deer damage are often underestimated.

- It's been so long that we've been having deer damage, my expectations for the yields are a lot less than they used to be. I'm probably underestimating the damage.
- All crops are affected by deer damage. They eat the corn stalks down to about 6 inches, sometimes right down to the ground. It is very hard to determine yield potential and actual loss. I don't know what kind of yield I would get if I didn't have deer damage.
- Over time, deer grazing on soybeans, it's going to kill you. I've had it grazed right to the ground. Some graze can help increase production in the beginning of the season. A little grazing in soybeans can be beneficial, but more often than not because of the size of the deer herd, they're detrimental. They never just lightly graze, always over graze.

Other Wildlife Causing Damage:

In addition to losses suffered from white-tailed deer, most farmers are also experiencing significant financial losses from other wildlife. Depending on the crop and wildlife species, losses ranged from less than \$1,000 to \$35,000 per farm. Species causing crop damage included blackbirds, red-winged blackbirds and crows, black bear, Canada geese, coyotes, fox, groundhogs, raccoons, squirrels, and various bird species such as blackbird, red-winged blackbirds, crows, Cooper's hawks, owls, red-tailed hawks, and turkeys.

Black bear damage included rolling around in cornfields and creating "crop circle-like" damage to eat corn. Bears also broke branches on fruit trees while feeding, and damaged chicken coops, beehives, fences, and animal feed.

Canada geese damage included eating and trampling crops. Crops affected included soybeans, rye, wheat, straw, and corn.

Black Bear:

- I've farmed the land since the 1990s. I don't recall seeing bear damage back then or hearing guys talking about it. The year the state opened the early bear season bow hunt, saw damage go way down. Since the hunt closed on state land, saw bear damage getting worse since then. It's not on par with deer damage yet, but it's getting there. When the early season opened, I didn't see as many bears. There wasn't as much damage. There were not as many problems around homes.
- We have bears here, but not doing me a lot of damage to hay. We saw more bears before they started the season.
- There's lots of bears in the area. The bears damaged the coop by ripping off the door and pulled out a 50 pound bag of corn. Sometimes a bears will grab a chicken. We lost about 100 feet of electric fence that was dragged off by a bear. Bears also damage fruit trees by breaking branches and eating the fruit.
- The bear damage is a lot worse than it's been in the past. They roll around in the corn. There used to be just a couple spots. Now it's 20 to 25 spots. It's hard to tell how much it's worth. What about public safety? That's my big concern.
- Bears up in north Jersey are getting bad in the cornfields. They roll around and knock down all the corn and eat it.
- Black bears cause an additional \$1,000 to \$2,500 in corn damage.
- The black bears roll around in the corn and eat it.
- A bear tore up the beehives on at my place last year. It happened while I was in the process of having electric fencing installed around them.
- We're interested in getting depredation permits for deer, bear and coyote.

Canada geese:

- Canada geese damage is in the thousands every year.
- The Canada geese damage to rye is at least \$1,000 to \$3,000 each year. The fall and winter are the worst time of year.
- Geese, mostly resident geese, cause about \$1,000 damage per year from eating the straw.
- The geese, there's just too many of them. They pollute all the ponds, eat all the crops. They're getting out of control. You know what they're doing all over the fields and the kids go play in it. It's terrible.
- It's harder to quantify resident and migratory Canada geese damage. They eat and trample the crop. When they leave a field, it looks like there wasn't even a crop there.
- The geese will walk right down the rows and eat the soybeans when they're coming in. Then they have to be replanted. It takes time and it screws up the maturity of the crop and timing if you have to keep replanting.
- There is also a local golf course with lots of Canada geese and deer. There are weed seeds in the goose droppings.
- If you add in damage from other wildlife, mostly Canada geese, that can be another \$2,000 to \$16,000 lost.

Coyotes, Fox, Hawks, Raccoons, Groundhogs and Owls:

- The coyotes eat our chickens. The coyotes and fox will take a hit on the electric fence to get a chicken. We've also had Cooper's hawks, red-tailed-hawks, fox, bear, raccoons, and sometimes owls eating the chickens.
- I see more coyotes around the farm, right next to the buildings. There's a lot of them. I can hear them all night long.
- We're getting more coyotes in the area this year.
- Coyotes are helping take care of the groundhogs. We used to have problems with the groundhogs before the coyotes.
- From 2000 to 2005 we used to see a lot of groundhogs. I don't know if it's the coyotes, but we only have 2 to 3 spots now where we see them and there doesn't seem to be as many holes in the field. We farmers need the coyotes.
- Groundhogs cause damage, but not as much now because there are more coyotes.
- Groundhogs do as much damage as the deer.
- I've also had problems with raccoons getting into the chicken coop.

- Raccoons were a problem in sweet corn. Groundhogs too, but the population seems down in the past few years.
- Raccoons cause a little corn damage. It's not terrible, the first two rows by the woods.

Squirrels:

- Squirrels used to cause damage on the corn.

Beaver:

- Beaver have been a problem blocking ditches and creeks that flood the lower fields.

Turkey:

- There's a lot of turkey. The turkey pull up the corn when it's a few inches. They also eat the kernels.

Other Birds:

- Black birds are also causing damage to corn. Black birds have always been a problem. They eat the top inch or two off every ear of field corn. Specialty corn, I have to throw away if 2 to 3 kernels are pecked.
- There is \$8,500 to \$10,000 lost per year from crow damage to the crops. Cannons and scarecrows don't work for long. They get habituated. I plant in plastic mulch with drip lines. The crows walk right down the rows and take the seeds out of the holes. They were taking watermelon seeds right out of the ground. At first, I thought I had bad or old seed that didn't germinate. It's harder for them without plastic. They have to search.
- Red-winged blackbirds cause a lot of damage. We tried repellents. They haven't worked. We've used cannons. They just fly from one end of the field to the other. You have to be there in the field to keep them out.
- The red-winged black birds caused up to \$8,000 damage to the sweet corn.
- Bird sanctuaries create good bedding areas. Deer like the standing grass to bed in.
- Black birds used to cause damage on the corn too, in the whole field, not just the edges like some other species.
- There's small black birds, crows maybe, eating the corn. It causes bad or moldy kernels.
- We witnessed a black headed vulture taking a baby fawn on our farm this year.

Management Challenges – Areas Surrounding Farms

Residential Development and Refuge Areas:

Farmers noted that as development increased in the state, starting as early as the 1970s, pressure from deer has increased. Many farmers have noted that adjacent neighborhoods, woodlands and open spaces that are not suitable for doe-focused hunting, or where hunting is not allowed, are serving as refuge areas for deer that will damage their crops.

- The late 1980s and early 1990s, that's when it started being a problem and we started using fencing. As development went up, pressure started getting worse over the years. I see as many as 25 to 30 deer at night on the farm. I've seen does with 3 fawns this spring.
- When developments started going in the 1980s and 1990s it got worse. The deer would feed in the farm fields that were left. Where guys could hunt it wasn't so bad.
- The impact of deer from the 1970s to now has really increased. It's affecting the homeowners and drivers too.
- It's not just affecting the farmers. It's affecting the neighborhoods too. They're eating all the plants. Everybody in the neighborhood is affected.
- There's too many houses now. Development gives the deer a place to hide.
- There are a lot of refuges in neighborhoods and private lands around the state that are next to farms. The deer use them during the day and feed in the farm fields at night.
- The suburban neighborhoods are definitely acting as refuges.
- Residential areas definitely act as refuges. Deer come from the backyards and around the houses. They go where they know they're safe and eat the plants around the houses. The houses are too close sometimes to be able to hunt.
- Deer stay in the neighborhoods during the day and come out in the evening and feed in the fields.
- The deer know where to find refuge. When the hunting season starts the deer all leave the park and move into the patches around the neighborhoods. Residential areas are absolutely acting as a refuge area for the deer.
- Developments have been built up a lot over the years. The deer hide out there during the day and come out to eat in the fields at night. They're acting as deer refuges.
- Some people feel deer habitat is being destroyed with development and don't realize that it is actually creating deer habitat.
- I see more deer in residential neighborhoods than on my farm. Because we have woods, they can disappear during the day and come out at night and feed on the farm.

- The problem exists on neighboring properties where the deer use as a refuge without consequences. It got worse since all the housing developments were built. The deer hangout in developments during the day and feed in the fields at night.
- Some of the surrounding areas are off limits to hunting. Areas big enough to hunt, but don't allow hunting. They are acting as a refuge to an extent.
- People on the neighboring lands are getting damage to their landscaping.
- Some of the ground that's been preserved won't allow hunting. The deer know where to go.
- The surrounding areas, easily hundreds of acres, are serving as a refuge for huge herds of deer. These deer know where to go. They know where they're safe.
- Most neighbors know deer are a problem. There's lots of deer vehicle collisions. The deer eat the bushes in the neighborhoods.

Public Lands (Access and Management):

Public lands near farm fields can act as refuges for deer causing crop damage. Farmers promote expanding coordinated regional deer management programs where municipal and county representatives can work together with each other and the state partners to enhance the effectiveness of deer management activities on public lands. Farmers recommended that public lands should have wildlife management plans to reduce negative impacts to neighboring farms, forests, residential areas and decrease deer-vehicle collisions.

- I think the property that the state owns should be for everyone. Everyone should be allowed to hunt on all state properties. We need to kill more does. There should be some kind of incentive program to kill more does. There should also be more advertising for venison donation programs like Hunters Helping the Hungry and more butchers.
- Challenges in the area include trying to get public grounds open to bowhunting. Hunters have had issues with neighbors in the area against hunting; harassing hunters and making noise while people were hunting. I haven't experiences issues on my own property, but had a neighbor scream in my face while hunting with my son – how can you teach him that? Later they wanted me to kill coyotes that were eating their cats.
- The county is making an effort to allow hunting on ground they rent out to farm and allowing farmers to apply for depredation permits. I'm not sure hunting alone is a remedy. I don't know if we can kill enough to make a difference.
- The park in the area implements a controlled hunt. Unfortunately, not all of the park. The deer know where to find refuge.

Leased Lands (Access and Management):

Farmers lease many acres of farmland around the state. In some cases, farmers do not control access to the properties and are not allowed to implement deer management options such as hunting and depredation permits. It was recommended that landowners receiving Farmland Assessment, or who rent land to farmers for crop production, should be required to allow deer management activities or be required to develop a wildlife management plan.

- Landowners that lease should have to allow hunting or be required to create a wildlife management plan. Some don't allow any hunting and the land is a deer refuge. People that have properties that are refuges should have to develop a wildlife management plan or be assessed a fee or penalty if their land is a refuge for deer causing damage to farms.
- Farmers need to be able to hunt on properties that are leased and use depredation permits. Areas where I can control hunting it makes a big difference for damage.
- As a farmer licensee, you get free hunt tags. If you're a non-occupant, you still have to buy a hunting license for farmland that is rented. For someone that rents 95% of their farmland, it limits the area that you hunt.
- Hunters can't take enough deer. Some hunters that hunt rented properties are not hunting does. Some landlords don't allow hunting. Landlords control hunting rights, but some landlords don't allow hunting, or they lease to gun clubs.
- If the land is not owned by the farmer, they may not be able to control access for hunting.
- Around 2015 I started taking on more land that the landowners leased to gun clubs. I didn't have the ability to hunt. The gun clubs are going after bucks. Other hunters are not shooting enough does to make a dent in the population.
- Some of the farmed properties that are rented, the rights are leased out to hunting clubs that only take a few deer. The majority are bucks, that hurts. One club on one of the properties weren't shooting does. The deer just got worse and worse.

Management Implementation and Effectiveness:

Farmers often spend hundreds of hours each year on deer management activities. For many, it is difficult to quantify the true cost of these activities in terms of time and money. Management can include deer fence installation and maintenance, harassment techniques, state regulated hunting, and farmer depredation permits.

- For deer management I've tried it all, scare them, scarecrows, repellents, harassment techniques. Nothing works for long. For time spent on hunting, harassment, depredation permits, and fence maintenance - it's at least a couple of thousand dollars per year.

Fencing:

High-tensile woven wire fencing at least 8-feet tall was one of the most effective management options used. This option was typically used for high-value crops such as vegetables. Although one of the most effective management options, it was too expensive for many farmers.

- I'm fortunate that I can fence, but some growers can't fence. It's too expensive.
- We fenced in the property about 5 years ago. It was either stop the deer or stop farming. You can live with some of the damage, but it just got to be too much.
- It cost \$6,000 to install deer fencing. I've seen deer jump over a 7-foot fence with my own two eyes. They break through electric fence. When they want in, they get in.
- I've had to fence in every field to make it profitable. Once I started fencing things in, I started harvesting a lot more crops. There's a very big difference of harvestable crops with and without fence. It's expensive. I've spent over \$40,000 on fencing.
- If you're not going to hunt, there's not a lot else you can do other than high-fence the field to keep the deer out. I never used fencing. It would cost about \$100,000. It's too expensive to fence the fields.
- It would be impossible for us to fence growing grain. It's not cost effective. Rented land you can't always fence. Where you can, it pushes the problem to the neighbors.
- We deal with the deer and add fencing as we expand. I've been trying to reduce losses, but because we are continuously expanding, there's not enough time to fence off more of the area.
- The damage has been acceptable the last 10 years, but only because I use fencing. It's just getting to the point where putting the fences up, moving them, time and labor, it's just too much.
- I see financial incentive to fence. I just can't afford it. We don't always have authority to put it up or manpower to maintain it. I have leases for most of my crops, but I don't control it. If it's my own land it might be cost effective, but not for all the fields. You don't see a hay or grain farmer ever put it up. I've seen increases in damage because operations around me are putting up fence. They divert the deer to me.
- I have to move the fencing every 3 to 4 years when I rotate the fields.
- The way my farm is laid out I can't just go and fence the whole farm. We rent from several different landowners. It's near impossible with all the roadways. The costs would be huge. I'm pretty much out of options other than to take a beating.
- Deer are getting into the fence [electric fencing]. They were getting in every night. Although not 100%, still effective. The fence goes about four and a half feet straight up. They break the strands and I have to repair them. It's usually young deer in the latter part of the summer or early fall. Fall is the busiest season on the farm. Once they get hit they respect it.

Hunting:

All farmers either hunted or allowed hunting on farmed properties. Hunting was seen as one of the most effective management options. Adjacent properties where hunting was not allowed or practical, acted as deer refuges that created challenges for deer management. These areas included public and private lands, leased farmlands, county parks, corporate parks, schools, golf courses, nature preserves, and residential neighborhoods.

- I don't hunt myself, but allow others to hunt on the land. Pretty much every place that can be hunted in the area is hunted, but some people only hunt bucks. We need to find ways to better expand hunting to harvest more deer, seasons and bag limits.
- I've been talking with the neighbors that hunt about the need to shoot more does.
- Some hunters need to be educated about the need to kill more does.
- Friends and family hunt every year during firearm season. We shoot as many does as we can on the property that we farm and adjacent properties we hunt.
- I hunt. I'm an avid sportsman. I don't kill anything I don't use and eat. The easiest way to control the deer herd is to hunt them.
- I have a pretty good gun club hunting the property.
- Maybe more could be done to recruit new hunters and promote eating wild meat. Several hunting clubs are good managers of the deer, but not all. Some just want to shoot bucks. That's the problem. We need to educate people that come in from the city that don't live here. The people that come and go, some in gun clubs. They need to see the whole picture, not just shoot a buck.
- The problem for farmers in southern New Jersey is that you can't shoot enough does to reduce the damage. You can only shoot 1 deer per season, doe or buck, and you have to buy both tags to shoot 1 deer.
- I have some fields that are in multiple deer management zones. Sometimes other people hunting the properties can only afford to buy permits for one of the zones. The permitting process needs to be streamlined, possibly regional permits.

Depredation Permits:

Farmers can apply for depredation permits to shoot deer causing crop damage. These permits are an effective management option and are often implemented outside of regulated hunting seasons. Permits can be obtained for year-round use when damage is extensive.

- It takes a physical toll after working in the field all day. Sometimes you have to go out at 1:00 am. Try doing that after working all day in 90 degree heat.
- I've been using depredation permits for years. In the summer, the last thing we want to think about after working in the 90 degree heat all day is shooting deer.

- I've used depredation permits in the past. I just didn't get one this year. It's just one more thing you have to do and there just isn't enough time.
- Some hunters don't like the depredation permits. I started showing them the damage the deer can cause.
- A lot of hunters won't shoot on a depredation permit.
- Neighborhoods are too close for depredation permits. The township has a no discharge of firearms ordinance.
- I've never used a depredation permit. I like to hunt and I don't consider depredation permits hunting. It's also a lot of work going out every night to do that. I don't want to use a depredation permit, but it might come to that.
- I haven't used depredation permits. I don't like to kill them and not use them. I will consider depredation permits in the future.
- Hunting and depredation permits has not worked well for our operation because of the neighboring safe zones.
- I haven't used a depredation permit in 20 to 30 years. I really don't believe in killing them and throwing them away. I don't have time to be out there all night long after working all day. It's too much.
- There have been neighbors in the past who have complained about hearing gun shots. I don't want to aggravate the neighbors. I start my day at 5:00 am. I didn't want to be out at 10:00 pm chasing deer, but what else was I going to do? Now that I have all these houses on top of me and I can't get a depredation permit anymore.
- I don't use depredation permits. I won't get them.
- Sometimes landowners are reluctant to let someone shoot deer on the property. Next year I'm going to ask the owners of the land I don't own to use a depredation permit.
- It's hard to get out. I don't have any employees.
- It's a challenge to implement after working all day.
- Depredation permits, years ago we used them. I've had issues in the past with homeowners, hunters, animal advocates and landlords. That's just part of the problem. I don't want liability because of kids trespassing all the time.
- We're interested in getting depredation permits for deer, bear and coyote.

Repellents:

Taste-based repellents are applied directly to plants to discourage deer from eating them. Area-based repellents or odor-based are applied near plants you are trying to protect and intended to discourage deer browse through smell. Other than temporary relief to landscape plants, farmers that had used repellents found them to be ineffective. Repellents had to be reapplied after rain and after several days deer would eat new growth that hadn't been treated yet. High deer densities can also lead to repellents being a less effective management option.

- Repellents, they don't do sh*t. They might do a little until it rains. It's too expensive for a crop growing from April to October. It has to be reapplied every time it rains. If you put them on, 5 days later there's new growth that it's not on. That's what the deer are eating.
- Repellents have worked on landscape plants until a heavy rain or there were too many deer.
- Repellents were pretty effective until it rained. I stopped using them at least 20 years ago. Fencing was more effective.
- Chemical repellents never worked for me, not even on landscape jobs. It just doesn't work.
- Early on we used repellents, chemical and cayenne pepper. Every time it rains you have to go out and reapply. I haven't seen anything worth the time in the long run.

Harassment Techniques:

These techniques are used in an attempt to scare deer or other wildlife, often Canada geese, out of an area. They include devices that make loud noises such as propane cannons, cracker shells, and sirens. Visual deterrents included scarecrows, flare guns, and strobes. Driving through areas to scare deer away was also reported. Farmers that reported using harassment techniques found them to be time consuming and ineffective.

- I've tried it all, scare them, scarecrows, repellents, harassment techniques. Nothing works for long.
- We've used cannons. They just fly from one end of the field to the other. You have to be there in the field to keep them out.
- Harassment is driving around chasing them off a bit. I just don't have time to chase deer out of a cornfield.
- I shoot flare guns every day to scare the geese. It's just another thing you have to do. They just keep flying from field to field.
- Cannons and scarecrows don't work for long. They get habituated.
- I'm not sure the neighbors would like cannons. Another farm in the area tried cannons and ended up in court.