Farmer and Landowner Focus Groups to Better Understand Barriers to Buffers

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Executive Summary

Vegetative buffers along crop fields are highly efficient at offering benefits to farmers and landowners such as helping reduce soil erosion, preventing ditches from becoming clogged with sediment, and reducing sediment pollution in streams and rivers. Buffers also provide ecosystem services to the broader public that protect water resources from nutrient runoff and provide wildlife habitat. This project aimed to gather information from farmers and landowners in Kentucky and Tennessee to increase understanding of barriers to implementing buffers so that The Nature Conservancy can use the information to work with partners to improve programs that support farmers and remove hurdles to implementation for landowners interested in trying buffers.

Three row crop farmer and two non-operating landowner focus groups were held in January 2025 in northwestern Tennessee and western Kentucky to help inform The Nature Conservancy of the perception and key benefits and barriers to field buffer adoption in the region. Farmers identified benefits of buffers as financial (e.g. reducing "yield drag"), conservation, and operational (e.g. access by equipment). Non-operating landowners cited conservation and access as top benefits of buffers. Financial concerns (e.g. establishment cost, return on investment, lost income) and maintenance (e.g. lack of time, lack of proper equipment, weed control) were identified as the top barriers to buffer adoption by farmers. Financial concerns and program specifications were the top barriers identified by non-operating landowners. Still, post-event surveys indicated a high likelihood for increased adoption of buffers from both groups.

Farmers and landowners identified key elements of an ideal support system for increasing vegetative buffer adoption. An ideal program would include 1) financial incentives competitive with commodity markets; 2) technical service providers to give site-specific guidance; 3) contractors available for installation and maintenance; 4) face-to-face educational opportunities backed with printed/electronic educational materials; and 5) flexible program options. Programs promoting vegetative buffers may see greater success with facilitated communication between farmers and non-operating landowners that addressed clear expectations of both parties. Further, farmers may see financial advantages of using buffers in the form of input cost savings on areas that produce yield drag as well as an overall increased actual production history (APH) for fields with buffers installed.

Recommendations

An ideal program supporting vegetative buffers would have the following characteristics:

- Financial incentives competitive with commodity markets
- Technical service providers to give site-specific guidance
- Contractors available for installation and maintenance
- Face-to-face educational opportunities backed up with printed/electronic educational materials
- Flexible program options

Further, programs promoting vegetative buffers may see greater success if they provided facilitated communication between farmers and non-operating landowners. Unknown expectations, fear, or assumptions were reported by both groups, leading them to assume the other did not support the use of vegetative buffers. A third-party facilitator could assist with clear communication, goal-setting, and development of contract specifics.

Introduction

Photo: Lynn Betts, NRCS

The Nature Conservancy, in partnership with the Soil and Water Conservation Society and the Meridian Institute, engaged with conservation experts in 2020 to analyze efficacy of edge-of-field (EoF) practices that improve water quality, reduce flooding, conserve soil resources, and support wildlife habitat on working lands. This work resulted in a set of recommendations for increased adoption of practices and a call to action for agricultural and natural resources stakeholders (The EoF Roadmap) (TNC, 2021).

One EoF practice included in the Roadmap is vegetative buffers. Vegetative buffers along crop fields can help reduce soil erosion, prevent ditches from becoming clogged with sediment, and reduce sediment pollution in streams and rivers. Further, vegetative buffers provide broader public benefits, often referred to as ecosystem services. These myriad ecosystem services include reduced nitrogen and phosphorus losses to water bodies that reduce algal blooms; water temperature regulation from streambank shading that supports healthier aquatic food webs; wildlife habitat that supports bird and pollinator populations; carbon storage from root turnover that improves structural stability and filtering ability of soil; and water storage that reduces flooding and recharges aquifers (Agouridis et.al, 2010). Buffers can be trees, shrubs, or grasses (or a combination of vegetation types), and may be referred to as conservation buffers, filter strips, or stream/riparian buffers. Many farmers use buffers as part of their conservation program, while others remain hesitant to adopt them.

This project aimed to gather information from farmers and landowners in Kentucky and Tennessee to increase understanding of barriers to implementing EoF buffers. The Nature Conservancy contracted with Dr. Amanda Gumbert, University of Kentucky Cooperative Extension Service, and Olivia Vogel, Marble Creek Consulting, to facilitate a series of focus groups in January 2025 involving row crop farmers and non-operating landowners in the northwestern Tennessee and western Kentucky region. Through the focus groups, the project facilitators gathered information to help inform The Nature Conservancy of the perception and key benefits and barriers to field buffer adoption in the region. This information will inform the design and

adaptation of voluntary conservation programs and hopefully increase utilization of conservation EoF practices.

Methodology

This project was geographically focused in western Tennessee (TN) and Kentucky (KY) due to high concentration of row crop agriculture in both states. Further, watersheds identified as receiving significant agriculture-related nutrients (Red River, Obion River, Bayou de Chien, Lower Green River) were prioritized within that geography.

The project facilitators aimed to engage with both farmers and non-operating landowners to identify benefits and barriers to adoption of vegetative buffers from both perspectives. Facilitators planned separate farmer and non-operating landowner focus groups in three regions of the targeted geographic area for a total of six focus groups. The event locations were selected based on prevalence of row cropping, anticipated distance participants were willing to travel, and availability of meeting space. Farmer focus groups were conducted in Martin, TN, Russellville, KY, and Owensboro, KY. Non-operating landowner focus groups were conducted in Russellville, KY, and Owensboro, KY; no non-operating landowner focus group was held in Martin, TN due to low interest. All focus groups were conducted in January 2025.

Participant recruitment included mass email to farmers and landowners in the targeted geography, direct outreach by project team members and Quail Forever field staff, and advertisement through county Extension outreach channels. Recruitment of farmer participants was most successful via informal networks and direct personal outreach. Online/virtual participation was not allowed. Participants were offered and received a catered lunch or dinner and a $200 gift card incentive for their participation.

The focus group opening script (Appendix A) was developed in cooperation with TNC and affiliated social scientists to follow proper Institutional Review Board (IRB) protocol. A focus group outline was drafted by the project team in collaboration with TNC's Director of Agriculture for Tennessee and Kentucky, a TNC social scientist, and Quail Forever field staff. The project team received feedback on the draft outline and key questions from the Wilson Environment, Risks and Decisions Lab (WERD-L) (https://u.osu.edu/wilsonlab/) at The Ohio State University. The final focus group outline and key questions (Appendix B) incorporated revisions, suggestions, and methodology to maximize participation and feedback from participants.

Focus groups were facilitated by a lead facilitator (Dr. Amanda Gumbert), one primary notetaker (Olivia Vogel), and one secondary notetaker (local Quail Forever field staff). Participants received a printed handout of the key questions (Appendix C) to aid in discussion and capture any handwritten notes by participants; handouts were collected at the conclusion of the focus groups. Focus group conversations were recorded with portable audio recorders and post-event surveys (Appendices D and E) were distributed to all participants.

Key Questions:

- **Introduction**
  - Name
  - # of years farming
  - If/what kind of conservation practices are currently used
- **Ice breaker**
  - Why do you farm?
- **What does "buffer" mean to you?**
  - Are they something you ever think about?
- **What are some of the benefits when it comes to buffers?**
- **What are the barriers that keep buffers from being more widespread?**
- **What would an ideal support system for buffer implementation look like?**
  - Who would be involved?
  - What types of support?
  - When (would you need that support; timing)

Participant Profile

Farmer focus group participant size ranged from 6 to 8, with a total of 21 farmers participating. Non-operating landowner groups ranged from 5 to 6 participants, with a total of 11 non-operating landowners participating. Farmer participants were generally row crop farmers with some conservation experience. The facilitators observed that the focus group participants ranged in age from 30s to 70s. The farmer participants predominantly operated multi-generation farms (observed via introductions). Many participants had previous experience with at least one of the three facilitators, which helped create a more relaxed, trustworthy atmosphere. However, a couple of participants expressed skepticism about the intent of the project. In these cases, the lead facilitator reiterated the purpose of the project and encouraged honest feedback from participants. A few participants also seemed unfamiliar with the vegetative buffer terminology, which required additional explanation.

Acreage planted, owned and rented by farmer participants across all three focus groups is reported in Table 1 (range: 0-9,000 acres). Farmer data was segmented to represent potential divisions of part-time farming (<500 acres), full-time farming (>500 acres) and operations with employees or multiple households financially supported by the farm business (2,000+ acres). There is almost equal represen-

Acreage	Planted	Owned	Rented
0-499	7	13	14
500-1,999	6	6	5
2,000+	7	2	2

Table 1. Acres planted, owned, and/or rented (reported by farmers).

Percent	Mentions
0-25%	4
26-50%	3
51-75%	4
76-100%	9

Table 2. Household income provided by farming (reported by farmers).

Conservation Practice	Mentions
Regular soil tests at least every three years	19
No till or strip till	16
Following a nutrient management plan	12
Buffer or filter strips along waterways, or saturated buffers	11
Sidedress nitrogen application	11
Multi species cover crops	10
Variable rate fertilizer application	9
Single species cover crops	8
Conservation tillage (ex: mulch or min tillage)	4
Pre-sidedress nitrate tests (PSNTs)	4

Table 3. Conservation practices used on 50% or more of crop acres (reported by farmers).

tation across the three divisions of acres planted, suggesting diverse farm operation types were represented in the farmer focus groups.

Percentage of household income provided by farming is reported in Table 2. Most farmer participants derived more than 75 percent of their household income from farming.

Many farmer participants had previous experience with conservation practices, as shown in Table 3. The most reported conservation practices farmers employed on a majority of their acreage included regular soil testing, no-till or strip till, and nutrient management planning. Half of farmer participants reported previous experience utilizing vegetative buffers.

The non-operating landowner participant groups were diverse in age, acreage owned, and conservation experience. Not all landowner participants were familiar with vegetative buffers, as opposed to farmer participants who seemed familiar with buffers.

Landowner age spanned a wide range, although most seemed to be either older participants who had inherited land or retired farmers (observed). A couple of landowner participants were young professionals who purchased land for the lifestyle, rural living, and investment, but did not actively farm their acreage (observed). Table 4 below shows tillable acres owned as reported by non-operating landowners (range: 12-400 acres) and Table 5 shows acres with buffers installed (range: 0-250 acres).

Acres	Tillable acres owned
0-99	4
100-299	2
300+	1

Table 4. Tillable acres owned (reported by non-operating landowners).

Acres	Acres with buffers installed
0-9	3
10-49	3
50+	1

Table 5. Acres with buffers installed (reported by non-operating landowners).

Findings

Photo: Lynn Betts, NRCS

The facilitators developed individual summaries for each focus group session with unique and similar findings across the five focus groups. This document summarizes overall findings

Benefits

Financial

At all three farmer focus groups, the financial benefit of buffers was emphasized. Farmers told how the use of buffers increased their Actual Production History (APH) by taking “yield drag” areas out of production at field edges, as seen in the photo below. As a background explanation, APH is an important factor in crop insurance offered through the USDA Risk Management Agency. APH policies insure producers against yield loss due to natural causes. APH is calculated on individual fields' 10-year yield history. So, if a farm’s APH increases, the potential insurance benefit payment would increase as well.

Conservation

Both farmers and non-operating landowners found conservation to be an important benefit of buffers. Soil erosion and nutrient runoff prevention were common benefits mentioned by both farmers and non-operating landowners. Non-operating landowners were especially interested in wildlife habitat, as wildlife adds to their enjoyment of their land whether through observation and/or hunting. One non-operating landowner who valued aesthetics and beauty (self-reported) found flowering pollinator habitat especially enticing.

Operational

Access

Both farmers and non-operating landowners mentioned year-round field access as a primary benefit provided by buffers. Farmers value access for scouting purposes and non-operating landowners value being able to access and enjoy more of their property, no matter the time of year. Buffers also can provide easier equipment turnaround and reduced compaction at the field edges.

Image 1. Edge of field corn crop with accompanying harvested ears of corn reflecting decreased size of ears as rows get closer to tree line. (Photo shared with permission from Quail Forever Tennessee).

Example

As an example, suppose that a farmer installs 5 acres of buffers around a tree lined 50 acre field (roughly a 30 ft buffer around this particular field). The buffers replace cropland that on average yielded 30% less corn than the remaining interior cropland. The remaining 45 acres average 175 bushels of corn over ten years, whereas without buffers, the 122.5 bushel/ac yield drag from the 5 acres now in buffers would reduce the entire field's 50 acre average to 169.75 bushels/ac. The 45 acres of higher yielding acres over time would result in a higher APH. All else being equal, in bad years, this higher APH would result in higher insurance payments.

In addition to removing the "yield drag" for APH calculation, farmers can also see improved profitability from installing buffers around field edges or other lower yielding field areas. Using the same simple example as above, assume total cost per acre for a corn crop in 2025 is approximately $670/ac, not including any land rental cost (Halich, 2025). With $4.75/bushel corn, this results in a gross return of $161/ac over 45 acres with the buffers ($7245). Without buffers in this example, the yield drag from including the 5 acres at the field edge creates a gross return of $136/ac over 50 acres ($6800). Including land rental may complicate the calculations, especially if the farmer has to continue paying rent on the ground put into buffers. However, in situations like this, incentive programs such as CRP or EQIP would improve the economics of buffers for the landowner as well, offsetting or partially offsetting any lost rental payments as a result of the buffers. While factors that impact these financials can change daily, such as the price per bushel of corn and price of inputs, this example should illustrate what the farmers in the focus groups may have had in mind when referencing the financial benefit of buffers.

Reduced Equipment Damage

Tree-lined field edges pose some equipment damage risk, which buffers help mitigate. A buffer between equipment (such as a sprayer arm) and tree limbs is ideal to reduce equipment damage, which can be costly in both dollar expense and in repair time. Limbs can also fall from the tree line into the buffer zone, which keeps it out of the path of a combine head.

Safety

In some geographies, field edges may have steep slopes or sharp drop-offs. Buffers can help provide stabilization and/or distance from sloughing edges, providing safety for both personnel and equipment.

Chemical drift & non-target damage

Some restricted-use pesticides have label-specific requirements for buffers and/or setbacks from water resources. Vegetative buffers can help protect water resources and other non-target crops by capturing chemical drift applied to crop fields.

Barriers

In addition to discussion during the focus groups, participants received a post-event survey that asked them to list (short-answer format) the top three barriers to utilizing buffers on land they own or manage. Responses were grouped into categories and tallied by number of mentions (Tables 6 and 7).

Financial

Financial concerns were the most commonly mentioned barrier by farmer and landowner participants in the survey. Financial considerations were both a top mentioned benefit and barrier to buffer implementation for farmers and landowners, showing its importance. Specific financial concerns mentioned throughout the focus groups included lack of financial incentive, not being paid enough to implement, and variability on program payments. Participants mentioned how program payments could vary greatly from county to county, depending on soil types. Another barrier mentioned was the fluctuating commodity market, which highly influences yield per acre to break even and land rent values. Farmers suggested that buffer program payment should be between $200-300 per acre, competitive with the commodity market.

On rented land, participants mentioned unique financial barriers to installing buffers for both the farmer and the landowner. The landowner sees the benefit of buffers, but wants financial compensation for every acre of their tillable land. Farmers are paying rent for every tillable acre, so any buffer would be “self financed.” Farmers mentioned the investment of time and money that buffers require, noting that it is several years before the investment pays off. That is, it may take a few growing seasons for the farmer to realize savings from not farming marginal ground if the farmers were also to install buffers. Often, land rent contracts are annual, so there would be great uncertainty about recouping financial investment.

Maintenance

Buffer maintenance was an area of concern for farmers and landowners. Participants mentioned that freedom to manage the buffer areas is desired.

Farmers want to be able to mow the buffers and manage unwanted species.

Farmers also referenced difficulty spraying around buffers. One participant commented, “Our sprayer is 100’ wide, it’s an inconvenience for the applicator and there is the potential to damage more crops. The added time also adds more cost.”
On rented land, there is concern over who is responsible for buffer management, the owner or the farmer. The landowner may not have equipment to manage the buffer, requiring them to rely on the farmer for management. This may create an issue for farmers if they don’t have the time. One participant mentioned that some farmers may view managing a buffer for a landowner as a liability.

Implementation & Establishment

Implementation and establishment was a common barrier mentioned, especially at farmer focus groups. For participants with buffer program experience, specific frustrations were shared such as program-prescribed seed species versus farmer-desired species. One participant mentioned installing buffers without program assistance so they had the freedom to plant species and manage how they wanted. This example opened up group discussion about the potential to distinguish programs between erosion control and wildlife habitat with different program specifications, including seed species. The cost of seeding as well as germination variability were commonly mentioned barriers.

Participants suggested that contractors to install buffers (with experience seeding, the right equipment, etc.) would reduce the farmer or landowners uncertainty, risk, and time investment. An example discussed was that farmers would need to take a full day to calibrate their planter for seeding a buffer, a large time investment for a small amount of acreage. A contractor would be more efficient and effective. Landowners were even less familiar with requirements to establish a successful buffer and expressed interest in contractors to help implement.

Farmers also expressed general uncertainty around program compliance during implementation and establishment. They want to be certain they are establishing a good buffer and fulfilling the requirements of the program.

Cultural

Appearance

Buffers can be perceived as “messy” by other farmers, landowners, and the public, especially if they are not familiar with the concept and purpose of buffers. Appearance of fields mattered to some such that “clean” fields indicate a “better” farmer. Farmers indicated that “messy” fields could impact their reputations and standing with landowners. One farmer mentioned establishment challenges and poor germination leading to a non-uniform/undesirable appearance; this result decreased his satisfaction with the program because he felt the undesirable appearance reflected on his abilities as a farmer.

Education

Landowners mentioned “lack of simple education” as a barrier to buffer adoption for themselves and for farmer tenants. Farmers mentioned awareness and education of the benefits of buffers and/or programs that support buffers as a barrier. Farmer participants shared the “old” mindset to plant every row possible.

Barrier	Mentions
Financial concerns (e.g. establishment cost, return on investment, lost income)	13
Maintenance (e.g. lack of time, lack of proper equipment, weed control)	9
Species selection/seed availability	5
Implementation	4
Time	4
Erosion/slope	3
Landlord uncertainty	3
Wildlife	2
Usage for livestock	2

Table 6. Top barriers to utilizing vegetative buffers on owned/managed lands (reported by farmers).

Communication

Farmers mentioned fear of losing land access while landowners mentioned fear of losing farmers to operate on their land. A general lack of communication between the farmer and landowner seemed to exist such that each group was making assumptions about the others' expectations.

Both farmers and landowners communicated a "get all you can" mindset about the other group; landowners with cash rent and farmers with acres planted. Landowners were adamant that the farmers' approach to farming was to farm right up to the ditch or tree line.

At every focus group, a lack of communication of expectations or general curiosities between farmers and landowners was expressed and obvious. Communication lacked in the following topics: rental contract certainty, fear of judgement, expectation of farming practices, and interest in field buffers, leading to unsuitable conditions for any "risk" associated with field buffers.

Program

Participants expressed frustration with buffer program requirements and experiences. From unhelpful administration staff to excessive program requirements, all were in agreement that the programs could improve. Some participants expressed generational hesitancy to participate in government programs due to poor experiences with prior policies and/or program staff. Participants also expressed that the onboarding timeline was too long between paperwork and funding availability. At two groups, participants gave examples of a person being denied an entire year's program payment because of accidentally cutting a small percentage of the buffer acreage due to miscommunication. They expressed a desire for a more reasonable solution, such as denying payment for the percent that was accidentally cut, instead of the whole payment.

The focus groups in Russellville, Kentucky, especially expressed frustration about the experience and long-term outcomes of the Conservation Reserve Enhancement Program (CREP) in the Green River area of Kentucky. Participants shared about the lack of

Barrier	Mentions
Financial	4
Program (length, option, specs)	4
Operational (Implementation, Planning, Maintenance)	3
Education	2
Time	1
Space	1

Table 7. Top barriers to utilizing vegetative buffers on owned lands (reported by non-operating landowners).

monitoring and information-sharing and watching a lot of acreage “grow up” in the program.

Program length was also a common problem. Because markets change rapidly, participants didn’t want to lock in acreage for too long, but they need it to be long enough to pay off some of the investment in buffers. Five years seemed to be the suggested sweet spot, with the option to keep adding years after that.

Implications

Photo: Lynn Betts, NRCS

Characteristics of an Ideal System

Although numerous barriers to greater adoption of vegetative buffers were identified by both farmers and non-operating landowners, post-event surveys indicated a high likelihood for increased adoption of buffers from both groups (Table 9). As expected, suggestions for an ideal system to support vegetative buffer utilization reflected potential solutions to the barriers mentioned.

Scale	Farmer Mentions	Landowner Mentions
0-2	2	1
3-5	2	1
6-8	7	2
9-10	9	4

Table 9. Likelihood to increase buffers on owned/managed areas, 10 being absolutely yes, as reported by farmers and landowners.

Financial

Farmers and landowners both emphasized the need for competitive program payments for conservation that more closely align with commodity market values of keeping the land in production. Several participants mentioned payments in the range of $200-300/acre to be competitive with the commodity market. Further, a financial incentive comparable to production compensation would be necessary to justify engaging a qualified contractor to execute installation and maintenance. Farmers also suggested compensation for wildlife damage to adjacent crops if an installed practice promotes wildlife enhancement, although quantifying damage due to the conservation practice may prove challenging. Another farmer suggestion was an incremental increase in payments (with a cap) for longer enrollment.

Implementation & Establishment

Farmers and landowners both expressed a need for additional technical expertise around programs

and practices (similar to roles currently filled by Quail Forever field staff). Both groups also suggested that having a list of qualified contractors to assist with buffers would increase their comfort level and likelihood of adopting vegetative buffers. Contractors would need to possess highly-localized technical expertise (e.g. soils, native plant species, growing conditions) and knowledge of the programs, be able to provide on-site recommendations, and be able to properly install practices that comply with program specifications.

Maintenance & Monitoring

Both farmers and landowners suggested that having contractors with technical expertise, time, and appropriate equipment available for maintenance would increase their likelihood of adopting vegetative buffers. Farmers also mentioned a desire to control unwanted species/noxious weeds (e.g. Johnson grass, Canada thistle) and woody species in buffer areas. Farmers wanted to know if they are making a difference and expressed a desire for research and long-term monitoring that would provide data related to the effectiveness of conservation practices.

Cultural

Education

Both farmers and landowners expressed a need for more education on the benefits of buffers and expectations of what buffers should look like at different stages. Participants suggested that Extension programs could play a role in facilitating educational opportunities for the general public, farmers, and landowners around buffer benefits and programs available. Specific examples of educational methods included peer learning (e.g. farmer field days and short videos) and exhibit booths at county fairs or farm trade shows. Both groups indicated a need to bring farmers and landowners together for more education about buffers. Farmers suggested engaging conservation district offices and local agricultural businesses (e.g. implement dealers, co-ops), and emphasized a need for trusted individuals ("boots on the ground") to provide one-on-one assistance to farmers.

There also seems to be room for education around the concept of "taking land out of production." Farmer comments reflected a clear understanding that buffers can be beneficial to overall productivity and ultimately provide a positive return on investment, but they expressed concern that landowners would object to removing areas from production and perceived profits.

Communication

Farmers overwhelmingly reported one-on-one contact with a conservation professional as their preferred method of communication about buffers (Table 8), with in-person local programs or meetings as the next preference. Landowners had a slight preference for in-person local programs or meetings. Clear communication between the landowner and farmer about expectations between owner and operator around vegetative buffers and other conservation practices is a key element to increased or sustained implementation. Based on comments from both farmers and non-operating landowners during the focus groups, there is an opportunity for facilitated discussions to not only educate both parties on the benefits of buffers and specifications of financial assistance

Preferred Communication Method	Farmer Mentions	Landowner Mentions
One on one contact from a conservation professional	15	4
In-person local program/meeting	11	5
Email/electronic communication	9	3
Paper mailing	7	3

Table 8. Preferred communication method, as reported by farmers and landowners

programs, but also to help parties reach mutually beneficial agreements on expectations related to implementation of conservation practices.

Flexible Program Options

Program flexibility was mentioned by both farmers and landowners. Farmer participants suggested an "a la carte" approach to conservation programs, such that they could start with easier to implement practices and then gradually add on additional practices as their confidence and knowledge increased over time. This could lead to a tiered system of incentives for added practices and effort. Farmers also suggested that programs should include some level of "grace" for unintended violations of program rules (e.g. entirety of program payment not withheld for accidental mowing/spraying of a portion of the land area enrolled). Farmers suggested continuous enrollment for programs, avoiding sign ups and paperwork required during planting and harvest seasons, five years as an ideal timeline for enrollment, and programs that last longer than government administrations.

Landowners expressed a desire for flexibility for buffer management (e.g. controlling unwanted vegetation) and flexibility within practice standards.

References

Agouridis, C., Wightman, S., Barton, C., and Gumbert, A. (2010) *Planting a Riparian Buffer.* Kentucky Cooperative Extension Service. https://publications.ca.uky.edu/sites/publications.ca.uky.edu/files/id185.pdf

Halich, G. (2025). *Grain Profitability Outlook 2025.* The University of Kentucky Department of Agricultural Economics. https://agecon.ca.uky.edu/grain-profitability-outlook-2025

The Nature Conservancy (TNC), Soil and Water Conservation Society, and The Meridian Institute. (2021). *Leading at the edge: A Roadmap to advance edge of field practices in agriculture.* https://www.nature.org/content/dam/tnc/nature/en/documents/EOF_Report_LORES_SPREADS.pdf

Appendix A: Focus group script

Hello and thank you all for taking the time to join our focus group today. My name is **{facilitator(s) introduction, names, position and role}**. If you need to communicate with us after the focus group today, our contact information is {**facilitators(s) states contact info or is written down for participants to see}.**

Our research purpose today is to better understand the barriers to on-farm adoption of vegetative buffers, and the way we would like to do that is to ask you some questions that we hope will guide some good group discussion. The open and honest thoughts and opinions of each and every one of you today is the ultimate goal. Because if we can better understand what types of barriers or problems currently exist for farmers and landowners with adopting buffers, the more likely it is that improvements could be made to current conservation programs that promote these buffers.

We do want to confirm everyone's understanding that you are all here voluntarily and that you do not have to participate in this focus group if you do not want to. We anticipate that this focus group session today will take approximately 2 hours. You may end your participation at any time by simply leaving the event. Aside from guided group conversations, we will collect some information from you in written form, and we may also break up into pairs or smaller groups for some side discussion. No information will be publicly reported that would identify any individual as a participant in the study.

As far as any risks to you, during the course of our discussions today, some things may be said or information may be recorded that are not public knowledge about participants. This can present a risk. However, we will take steps to ensure that any information or statements identifiable to a specific individual remain protected or anonymized. As far as benefits, we hope you enjoy {lunch or dinner} and of course at the end of today's session we will give each of you a $200 gift card as an expression of thanks. Also, we hope that the understanding that you are helping us to think critically about how we might improve existing conservation programs is of some personal value to you.

We will be taking notes along the way as well as recording the audio of this focus group session. Are there any questions that anyone has before we get started?

Appendix B: Focus group outline

Farmer/Landowner Vegetative Buffer Focus Group Outline

IRB Opening: Disclaimer, purpose

Objective: Increase understanding of barriers to edge-of-field buffer adoption by farmers and landowners in Kentucky and Tennessee

Approach: Separate farmer/operator and non-operating landowner focus groups in 3 geographic areas, for a total of 6 focus groups. Number of participants anticipated to be 12 or fewer for each group.

Registration: capture # of acres, current production type, current level of conservation adoption

Duration: 120 minutes

Pre-meeting/ during arrival

Personnel: At least one facilitator and one notetaker
Materials: Flip chart pads, easel, markers, name tags/tents, pencils, paper, recording devices, handout with discussion prompts (to be collected at end)
Prep flip chart sheets with categories like barriers, opportunities, ideal systems, etc.
Activities: Meal/refreshments, make name tag

(20 minutes) Arrival and meal

(10 minutes) Introductions & opening questions

Method: Group Discussion
Depending on the willingness of attendees this may take longer than 10 minutes.
[Disclaimer about collecting handouts. Emphasize value of their feedback]

Facilitator introduction (2 min)

- Welcome and introduction/human research statement; Background on why we are gathering here today; Ground rules for the session
- Handouts: We're doing it so that if you have an idea capture it here - emphasize the value of their feedback.

Group intros (8 min)

- **Question:** Please tell us your name, # of years farming [for landowners whether actively managing property] and if/what kind of conservation practices are currently used.
- **Question:** Why do you farm?

(10 min) Perceptions around "Buffers"

("Buffer"—what it means to others; what it means to farmers/landowners)

Method: Group Discussion

[Talking Point] Buffers can have different definitions by different people and may invoke different thoughts.
We are broadly defining buffers as vegetated non-production areas along field edges or waterways, designed to capture field runoff and protect water quality.
USDA programs may call them filter strips, prairie strips, riparian buffers, field borders, or upland buffers.

- **Question (10 min):** What does "buffer" mean to you? Are they something you ever think about?

(30 min) Exploring possibilities and/or barriers for buffers

(Farmers identify benefits and barriers; some of this may bleed over from perceptions discussion)

Might use prior evidence from the literature as discussion prompts, and/or use these in ranking barriers question in post-event survey. (e.g. Some farmers have previously list x, y, and z as barriers - do you think these are relevant to this area/your farm?)

Method: Think-Pair-Share

- **Question (15 min):** What are some of the benefits when it comes to buffers?
    - **Part #1: Think-Pair-Share** Participants take a moment to individually write down benefits of buffers on a sheet of paper. With a partner, list benefits separately on Post-it notes. Partners share their results with whole group.
    - **Part #2:** Group sorts Post-It notes (placing on large sheets of paper hanging on wall) into groups of who receives the benefit and rank by importance of the benefit (e.g., Low, Med, High).

[Talking Point] We just identified a list of benefits to buffers. But we don't have buffers in every field and next to every waterway.

- **Question (15 min) :** What are the barriers that keep buffers from being more widespread?
    - **Part #1: Think-Pair-Share** Participants take a moment to individually write down barriers to buffers on a sheet of paper. With a partner, list benefits separately on Post-it notes. Partners share their results with whole group.
    - **Part #2:** Group sorts Post-It notes (placing on large sheets of paper hanging on wall) into groups

    If participants are resistant to Think-Pair-Share switch to open discussion; if trouble generating ideas, can go through the list of commonly understood barriers (e.g., technical, financial, timing, other).

    Facilitator Note:

    - Are there any permanent or seemingly unchangeable factors that are getting in the way of farmers/landowners who are working towards implementing buffers?
    - Are there any variables that could be changed/removed that get in the way?

(40 min) Overcoming barriers and creating an ideal support system

Ideal support system (support system: individuals, entities, peers, tools, or systems to break down barriers mentioned – how/when/where/what/why/who)

Method: Group Discussion or Think-Share

- **Question (10 min):** What would an ideal support system for buffer implementation look like?
    - **Who would be involved?**
        - Conservation orgs, government agencies, farmers in the area, outside labor, general public, etc.
    - **What types of support**?
        - economic, technical, equipment, labor, information, etc.
    - **When** (would you need that support; timing)?
        - **Method: Flipchart with who/what/when across the top** Open discussion to pull out initial ideas

Who?	What?	When?

- **Question for when re-grouping (10 min):** Let's pause before we come back to generating more ideas. Let's look back at the barriers we identified.
    - Let's think about what would make your life easier/ what can be done to get over "[barrier]"?
    - What needs to change to eliminate or reduce the challenge of "[barrier]"?
    - Let's see if we can go a little deeper into it, let's try to come up with some almost "wild ideas," things that might almost seem too-good-to-be-true. But imagine that the groups of people who are going to offer support and the types of support are going to be fully available to you. What would an ideal set up look like?

- **Questions about ideas generated (10 min):**
    - What are the most important things that have come up in our idea-generating process?
    - What are the most critical areas of support?
    - Which entities are most important for supporting your adoption/ expansion of sustainable practices?
    - What timing of support is most critical?

Re-ask question – ideal support system? If we remove all of the barriers named, would you install/utilize buffers? To what extent?

- **Question (10 min):**
- Are you familiar with any programs that offer cost share or other incentives for buffers? Which ones? Have you ever sought out their help or used their resources? Are there others? Why did you seek out those resources?
- What did you (dis)like about that experience? What worked or didn't work? Why?

(10 min) Hopes and concerns moving forward

Method: Round Robin

- **Question (4 min):** Based on today's conversation, what do you believe the single best opportunity would be for increasing buffers on nearby/your farms?
- **Question (4 min):** Based on today's conversation, what do you believe the single biggest challenge would be for increasing buffers on nearby/your farms?
- **Question (2 min)** Any final thoughts?

Conclude

Thank participants for joining, sharing their thoughts. Resource person there if they want to talk more program details.

Appendix C: Focus group discussion guide handout

Focus Group Discussion Guide

Buffer definition:
Vegetated non-production areas along field edges or waterbodies, designed to capture field runoff and protect water quality.

1. What are some benefits when it comes to buffers?

2. What are the barriers that keep buffers from being more widespread?

3. What would an ideal support system for buffer implementation look like?

    a) Who would be involved?

    b) What type of support is needed?

    c) When is the support needed?

Appendix D: Focus group post-event survey, farmer

Buffer Focus Group Survey

Thank you for your participation today! Your candid feedback is appreciated.

1.

How many acres do you typically plant?	How many tillable acres do you own?	How many tillable acres are you renting or crop sharing **from** others?	How many acres do you currently have buffers installed on?
_____ acres	_____ acres	_____ acres	_____ acres

2. On a scale of 0 to 10, with 10 being absolutely yes, what is your current likelihood of increasing buffers on your owned/managed acres?
3. Please list your top 3 barriers to utilizing vegetative buffers on your owned/managed acres:
    1.
    2.
    3.
4. What is your preferred way to receive information about buffers and/or incentive programs that support using buffers? (Circle all that apply)
    a. One on one contact from a conservation professional (e.g. extension agent, Quail Forever private lands biologist, NRCS personnel)
    b. Paper mailing
    c. Email/electronic communication
    d. In-person local program/meeting
    e. Other: _____

(Over)

5. Thinking about last year's season, which of the following practices **did you use on 50% or more of your crop acres?** (Check all that apply)

    - Single species cover crops
    - Multi-species cover crops
    - No till or strip till
    - Conservation tillage (ex: mulch or min tillage)
    - Following a nutrient management plan
    - Sidedress nitrogen application
    - Pre-Sidedress Nitrate tests (PSNTs)
    - Variable rate fertilizer application
    - Buffer or filter strips along waterways, or saturated buffers
    - Regular soil tests at least every three years

6. Approximately how much of your household income is provided by farming?

    - 0-25%
    - 26-50%
    - 51-75%
    - 76-100%

Appendix E: Focus group post-event survey, non-operating landowner

Buffer Focus Group Survey - Landowner

Thank you for your participation today! Your candid feedback is appreciated.

1.

How many tillable acres do you own?	How many tillable acres are you renting or crop sharing **to** others?	How many acres do you currently have buffers installed on?
_____ acres	_____ acres	_____ acres

2. On a scale of 0 to 10, with 10 being **Absolutely Yes**, what is your current likelihood of talking to your tenant about increasing buffers on your owned acres?
3. Please list your top 3 barriers to utilizing vegetative buffers on your owned acres:
    1.
    2.
    3.
4. What is your preferred way to receive information about buffers and/or incentive programs that support using buffers? (Circle all that apply)
    a. One on one contact from a conservation professional (e.g. extension agent, Quail Forever private lands biologist, NRCS personnel)
    b. Paper mailing
    c. Email/electronic communication
    d. In-person local program/meeting
    e. Other: _____