



Nursery Growers Research Study Report of Findings

Prepared For:

East Multnomah Soil and Water Conservation District

Written by:

PIVOT

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Study Overview

Introduction and Primary Research Objectives

This report presents the findings from the 2016 Nursery Growers Research Study. Pivot conducted this study in order to help the East Multnomah Soil & Water Conservation District (EMSWCD) better understand the behaviors, values and needs of land owners and land managers of the region's nursery growers when it comes to soil and water conservation. The ultimate goal was to:

- Identify any barriers keeping nursery growers from implementing erosion prevention practices; and
- Identify what methods, messages and communication channels will be most favorable and effective for increasing implementation.

Pivot worked with EMSWCD in designing screening questions that identify the most qualified land owners/managers for the research. Through one-on-one telephone interviews, the Pivot team was able to complete surveys with 60 nursery growers in the month of March 2016. Interviews lasted 15-30 minutes and respondents were each offered an incentive of \$75 to complete the survey. This research mode was ideal for obtaining a level of trust and openness necessary to gather the information needed.

Sampling

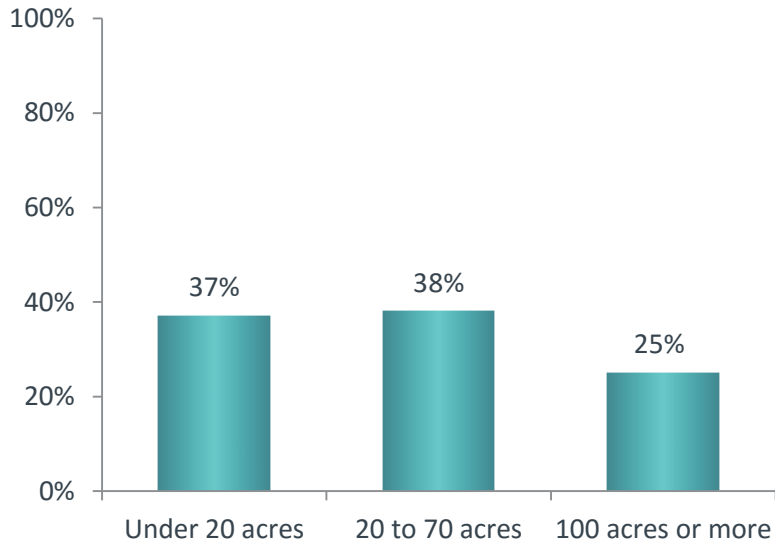
EMSWCD provided three district-specific lists of contact names and phone numbers. The table below shows the total number of interviews completed per list/district, the number of contacts on the original lists and the resulting response rate for each of the three. The response rate turned out to be on the high end of what we initially had expected for a study like this. This allowed us to achieve twice the number of completed surveys than we had expected from the list counts provided.

County	Completed Interviews	Number of Contacts on List	Response Rate
East Multnomah	13	50	26%
Washington	18	122	15%
Clackamas	29	243	12%
Total	60	415	15%

Respondent Characteristics

A range of nursery grower sizes are represented in this study. Twenty-five percent (15 growers) oversee or manage 100 acres or more, 38% (23 growers) oversee or manage 20 to 70 acres, and 37% (22 growers) oversee or manage fewer than 20 acres.

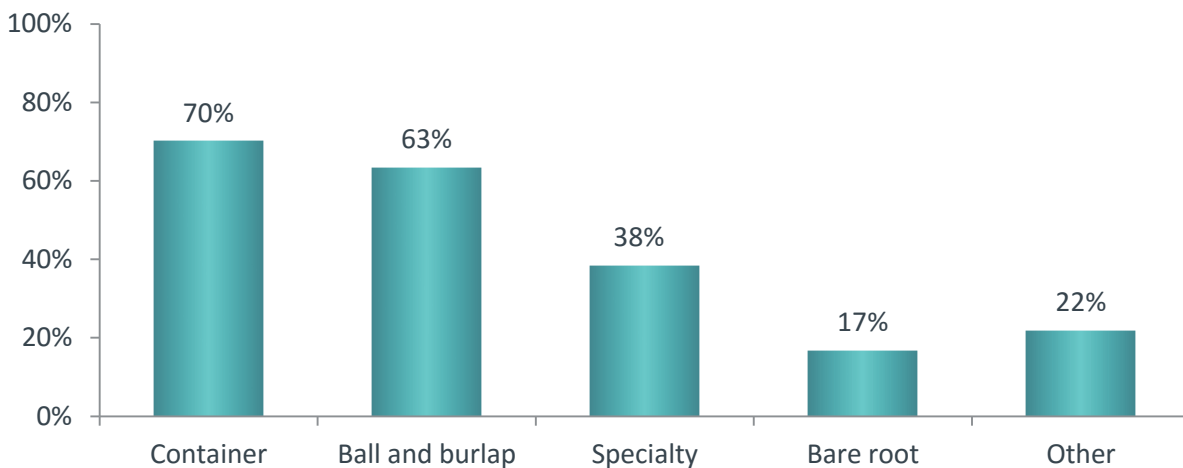
Property Size (n=60)



The most common types of crops produced are container (70%) and ball and burlap (63%), followed by specialty (38%). Crops that fall into “Other” include Christmas trees, conifers, pine trees, fir trees, hay and oats, plug seedlings, clover seed, and vegetables.

Crops Produced (n=60)

(Percentages don't sum to 100% because multiple responses were allowed.)



Executive Summary

The Executive Summary concisely summarizes the main findings from the study. For more detailed findings including open-end verbatim response and data displayed in graphs, tables and charts, the reader is encouraged to review the main body of this report.

Soil Erosion Experience and Concern

When asked to specify their level of concern about the effects of soil erosion, two respondents (of all 60 interviewed) say it's "a major concern" and 15 say it's "somewhat of a concern." Combined, this equates to 28% overall who say it's of some concern at least. Only two of those concerned are in the Clackamas district, while the rest are split between East Multnomah and Washington districts (eight and seven respondents, respectively). When asked to describe their main concerns, most say it's simply the soil loss due to run-off. Clackamas respondents are likely to say they have few issues due to having flat land.

"I make a living out of this soil, so it is always a concern. That is why the farmer should do what he can to protect soil from being taken away."

Use of Soil Erosion Prevention Practices Today

The vast majority (88% or 53 nursery growers) said they have taken steps to deal with soil erosion. Notably, 17 of the 53 are the same nursery growers who expressed at least some concern about soil erosion. Thus, all who've indicated concern are also likely to have taken some action in the past.

Among all respondents, field borders (58%) and cover crops (57%) are the most commonly used practices today.

Among the seven respondents who have not taken any steps, two are primarily "container" operations, two say they have no need due to having such flat land, one said his nursery might benefit from cover crops, and another said he has natural protection in place already: "I have a natural cover crop and a forested border, so there is no need. I have clear cut alder all around me for 80 acres."

Feasibility of Installing Soil Erosion Prevention Practices

Respondents were asked: "How feasible would it be for you to install any of these practices?" Of all respondents, 22% say it would be easy and/or very feasible and 17% said feasible, although not necessary. This equates to 39% overall who say it would be feasible for them to install at least some of the soil erosion prevention practices.

All respondents were asked what keeps them from implementing any practices, or keeps them from doing more. Aside from lack of need, cost and time are by far the two most significant reasons for not doing more to prevent soil erosion.

Interest in Receiving Assistance

When asked the open-ended question, “Would you be interested in receiving assistance in implementing erosion prevention practices?” 45% or 27 of 60 respondents said yes. Nursery growers from East Multnomah (62% of those in this district) and Washington (56%) districts showed much stronger interest than those in Clackamas County (31%).

A dozen respondents said they would be interested in receiving funding or a government grant to implement erosion prevention practices. Another nine desire some form of guidance, consultation or technical assistance, and three said they’re interested in both funding and guidance or technical assistance.

The total sample size limits statistical precision in projecting this study’s findings to the actual population of nursery growers. However, with a directional interpretation, we believe one third to one half of all nursery growers across the three county districts would be open to exploring the types of assistance the EMSWCD offers, whether monetary or in the form of education or guidance. Of course this interest is stronger (around half) in East Multnomah and Washington county districts.

Among the 33 respondents who said they aren’t interested in receiving any assistance, the majority (23 of 33) claim it’s simply not applicable to them because they have no erosion problems and don’t see the need for assistance of any kind. Another four say they don’t like having government involved, and three respondents feel they are already doing enough erosion control now.

Having no need stems primarily from the three situations described below, along with a verbatim response as a supporting example:

Reason Have no Need	Verbatim Response Example
Smaller operations, such as those with fewer than 20 acres, aren’t as impacted by soil erosion problems and therefore are hard pressed to rationalize any expense toward prevention practices.	“I would have to be much larger.”
Most nursery growers with flat land say they just don’t have enough run-off or noticeable erosion issues.	“Not needed, my property is flat, if it was hilly then maybe.”
Some nursery growers are “container-only” operations or they manage greenhouses and aren’t tilling or managing soil in a large-acreage natural environment.	“I see no need based on what we grow and how we grow it.”

Gauging Interest via Project Scenario

The nursery growers were presented with a scenario of having a project designed to prevent soil erosion that would cost them \$10,000. They were told “Assume that it was successful at reducing soil erosion on your property, and it had no adverse effect on your operation or staff time.” Then they were asked “How likely would you be to spend that much to curb soil erosion on your property?” Overall, 17% say they are very likely to do this and 32% say somewhat likely.

Respondents were then asked, “If you were able to be reimbursed for half of the \$10,000, how likely would you be to proceed with the project?” Overall, those saying they’d be very likely increased from 17% to 27% after the reimbursement offer. Combining very likely with somewhat likely, we find that 62% say they’d be likely to proceed if half was reimbursed, significantly higher than the 39% before the offer.

Information Sources and Preferred Ways to Receive Information

Two-thirds said they get information on new practices at industry trade shows or conferences, or through friends or colleagues. Just under half say they get information online, and 40% said they get information from their conservation district.

Regular mail is the preferred way by most (57%) to receive information about services offered by their conservation district. Email is next most preferred, as stated by 48%. Only two respondents prefer to receive the information by telephone or in person.

Conclusions and Recommendations

Relatively strong interest in soil erosion prevention is evident among a significant number of nursery growers that were interviewed. We believe this includes at least half of those overseeing or managing land in East Multnomah or Washington county districts. Enthusiasm to take more action than they have in the past is tempered primarily by perceived obstacles of time and cost.

Based on this study’s findings, Pivot submits the following recommendations to the East Multnomah Soil and Water Conservation District:

Develop messages targeting land owners and managers who manage or oversee 20 or more acres that include hills.

Messages should convey offers of friendly guidance, with convenience, simplicity and brevity being key components of any potential consulting engagement. Examples might be “Top five things you may not know that could help you better manage your land and top soil erosion.”

Messages should also mention potential financial assistance: “Funding may be available to reimburse you in implementing soil erosion prevention practices and other conservation projects.”

Case studies of true life stories on how practices have been implemented among peer landowners would instill much credibility and trust. This is further supported by the results of the \$10,000 scenario in the interview, where reactions were positive even before the reimbursement offer.

Messages and case studies would reach the most highly engaged and targeted audiences at trade shows and conferences, as these are places where most nursery growers say they get such information. Another method for reaching them is by sending brief and attention-getting messages through both regular mail and email.

Research Findings

Soil Erosion Experience and Concerns

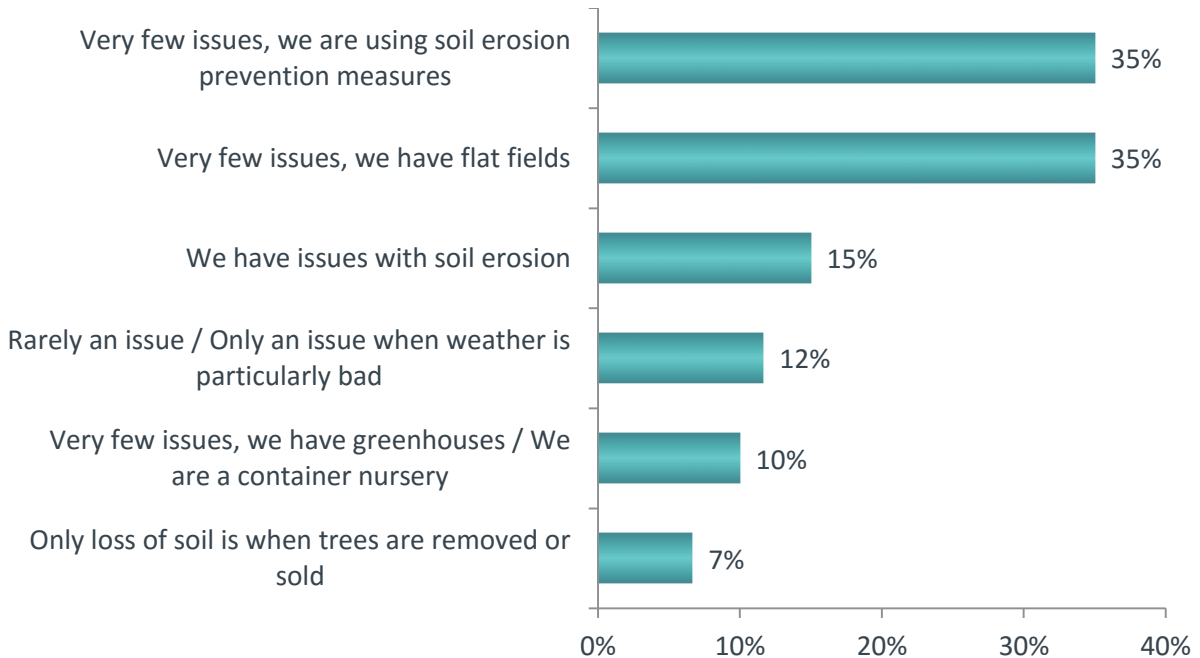
The first question of the survey was purposely broad, designed to gather top-of-mind thoughts about their experience with soil erosion.

“What has been your experience with soil erosion from fields on your property?”

A total of nine respondents, or about one out of six (15%), say they have soil erosion issues (2 of whom are in the East Multnomah district). Note that all nine oversee or manage 20 or more acres in their nursery operations. Just over one-third say they are already using soil erosion prevention measures or they have flat land, or both.

Experience with Soil Erosion (n=60)

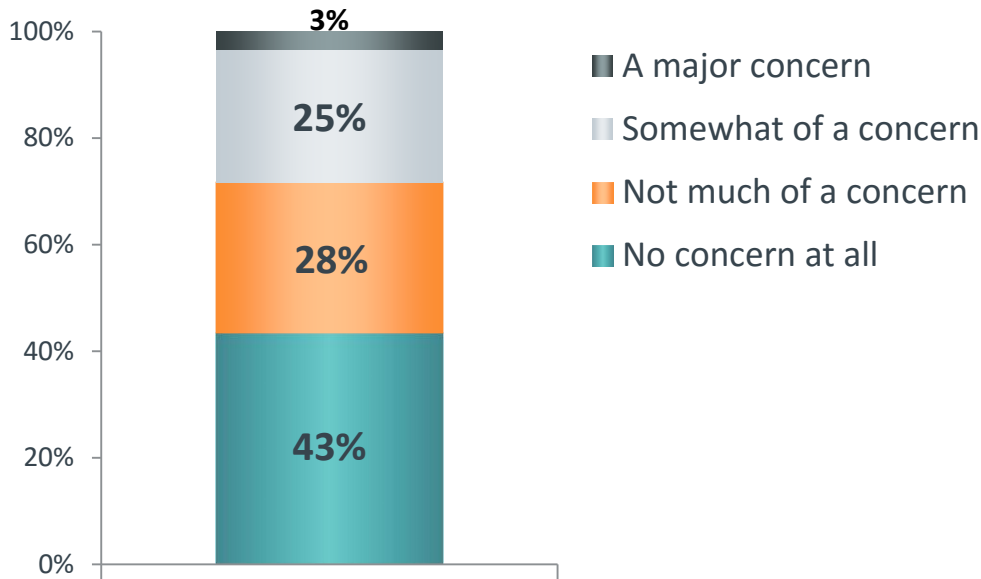
(Percentages don't sum to 100% because multiple responses were allowed.)



Clackamas respondents are more likely than those in other districts to say they have few issues due to having flat land (52% of Clackamas vs. 22% Washington and 15% East Multnomah). Those from the Washington county district are more likely than others to say they have greenhouses or are a container operation (5 respondents vs. 1 in Clackamas and none in East Multnomah).

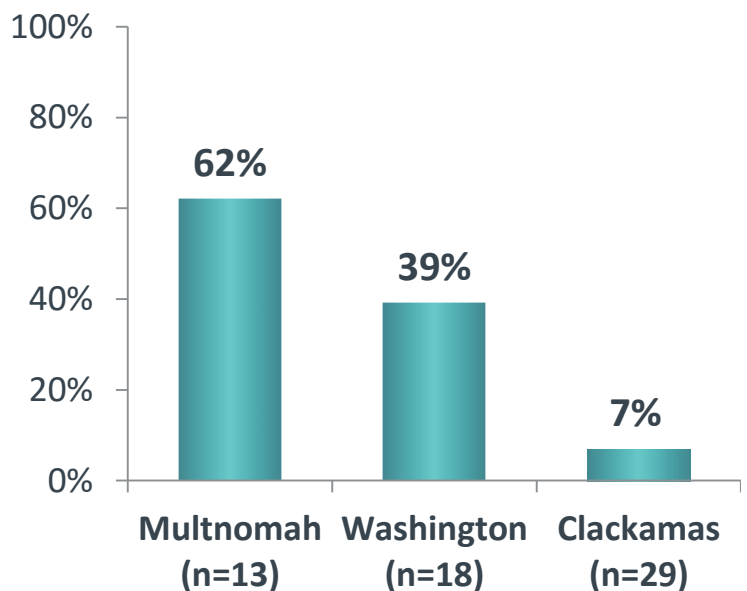
When asked to specify their level of concern about the effects of soil erosion, 28% (17 of all 60 respondents) say it's either "a major concern" (2 respondents) or "somewhat of a concern" (15 respondents). Less than half (43%) say it is no concern at all.

Level of Concern about Effects of Soil Erosion (n=60)



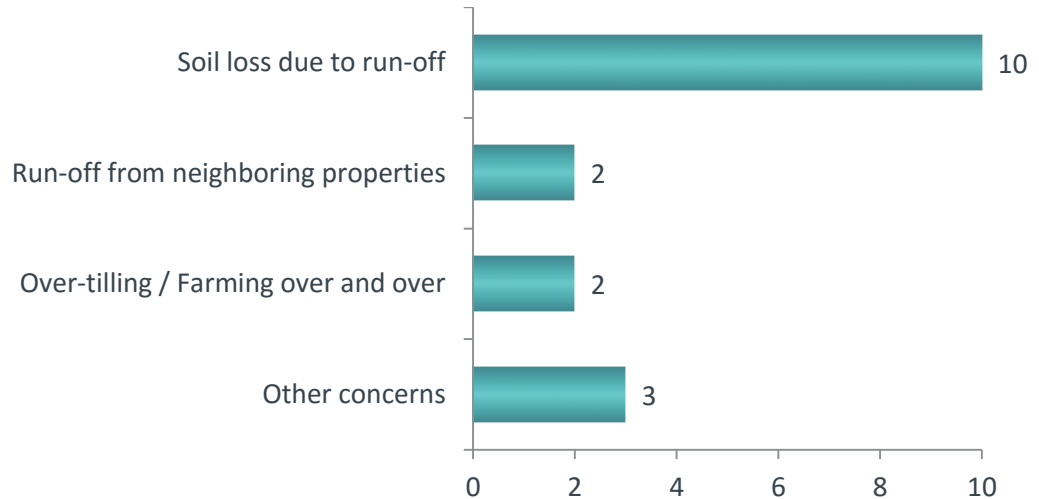
Concerned About Effects of Soil Erosion by District

The chart to the right combines "Major" and "Somewhat" of a concern and displays the percentage of those concerned by district. Almost two-thirds (62% or 8 of 13) in East Multnomah have at least some concern, while only 7% (2 of 29) in Clackamas have any concern.



Respondents were asked to describe their concerns. 16 of the 17 who indicated some level of concern had a response to the open ended question. The most common response is related to soil loss due to run-off (10 respondents).

Specific Concerns with Soil Erosion (n=16)



Below are a sample of open ended verbatim responses to the question: “What concerns do you have about the effects of soil erosion?”

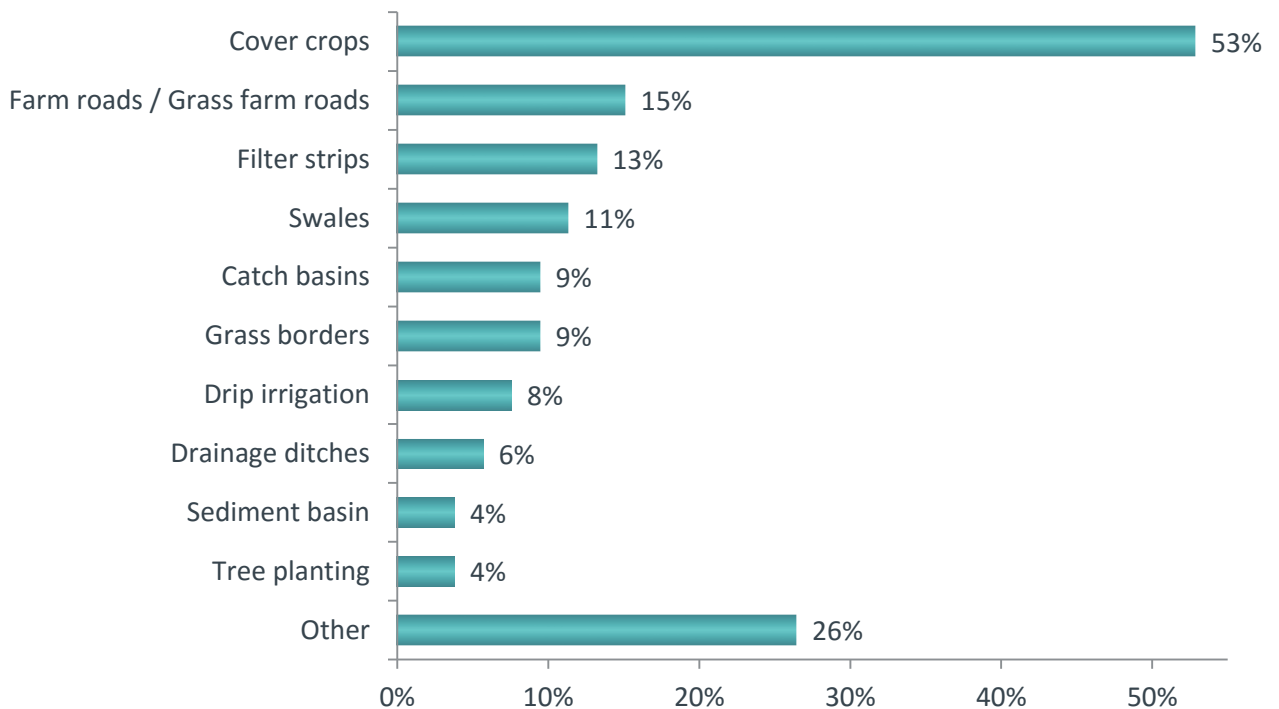
- “I make a living out of this soil, so it is always a concern. That is why the farmer should do what you can to protect soil from being taken away.”
- “Soil loss and keeping creeks and canals clean.”
- “We harvest trees when they are dormant, after November when the rains come. We have a field that is downhill from other properties so we get more water draining down on to our property that we can handle at times. Sometimes even the culvert we have can't keep up and we wind up with standing water.”
- “The only concern I have is neighbors growing wheat and clover and the soil from these neighbors washing down in to my pond, I have practices in place on my property doing a great job preventing soil loss. I protect MY soil.”
- “My biggest concern is being prepared for something that I cannot be prepared for. Having measures in place that protect the fields. They don't happen often but getting unexpected thunderstorms.”
- “I can't answer this question. I know that it happens, but it would take some professional help with looking at the possibility of erosion.”

Use of Soil Erosion Prevention Practices Today

The vast majority (88% or 53 nursery growers) said they have taken steps to deal with soil erosion. 17 of those 53 are the same nursery growers who expressed at least some concern about soil erosion. Thus, all who've indicated concern are also likely to have taken some action in the past.

The 53 who have engaged in specific steps to deal with soil erosion on their properties were asked to describe what exactly they have done (an open-ended question). Cover crops are the most common answer with 28 people, or 53%, mentioning that. Other common responses include farm roads or grass roads, filter strips, and/or swales.

Specific Steps Taken to Deal with Soil Erosion (n=53)
 (Percentages don't sum to 100% because multiple responses were allowed.)

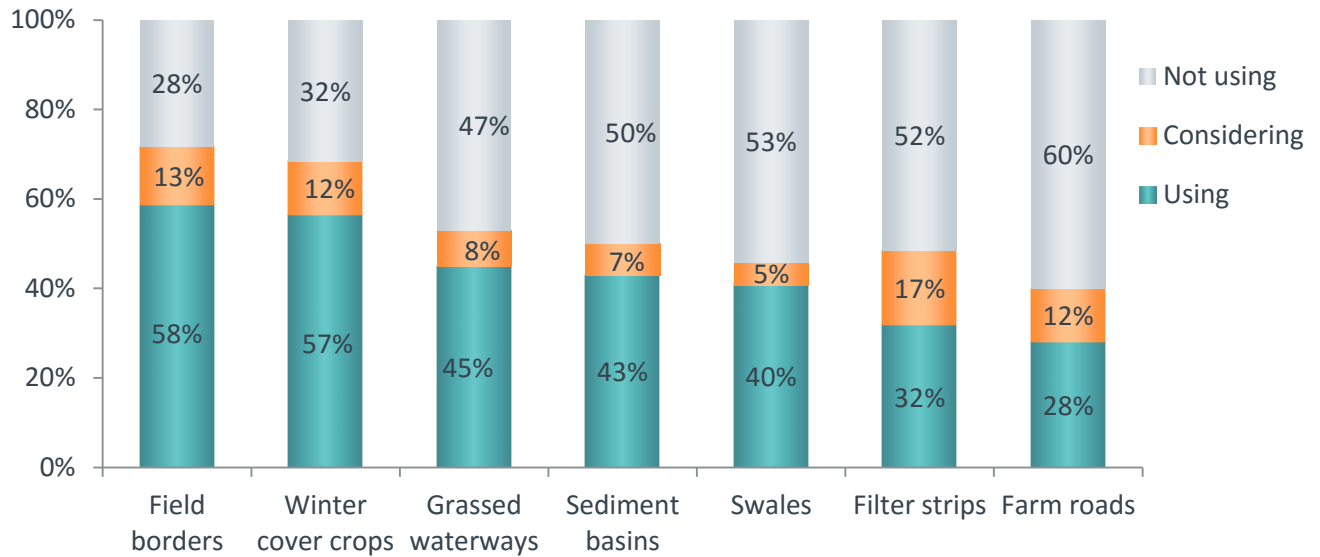


Seven respondents admitted they have not taken any steps to deal with soil erosion on their property. They were asked “Do you feel your property would benefit from soil erosion prevention?” Five say they would not benefit or would have no need. Note that two of the five are primarily “container” operations and another two say they have no need due to having such flat land.

One said his nursery might benefit from cover crops, and another said he has natural protection in place already: “I have a natural cover crop and a forested border, so there is no need. I have clear cut alder all around me for 80 acres.”

The next series of questions were designed to understand whether the nursery growers are using specific erosion prevention tactics, and if not, whether they're considering using them. Field borders (58%) and cover crops (57%) are the most commonly used today. Farm roads are least used as a prevention practice (28%). Only 32% are using Filter strips but 17% are considering using them.

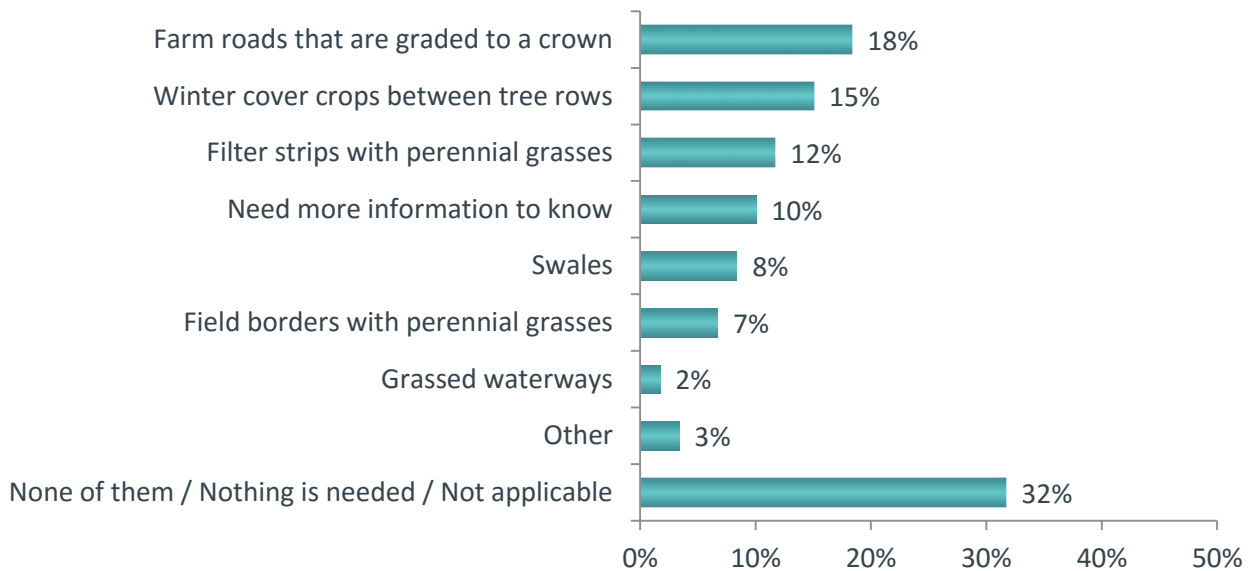
Use of Specific Soil Erosion Prevention Practices (n=60)



Everyone was asked, “Which of them do you think would be most effective or beneficial on your property?” Each option was chosen by at least one person, showing that a variety of approaches appeal to different property types and owners/managers.

Most Effective or Beneficial Soil Erosion Prevention Practices (n=60)

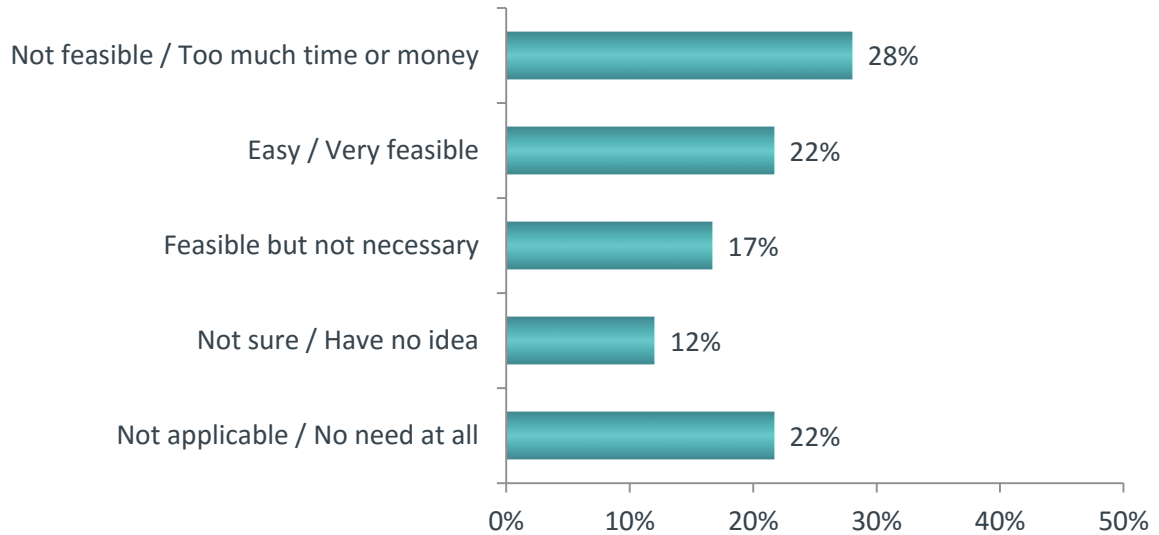
(Percentages don't sum to 100% because multiple responses were allowed.)



Feasibility of Installing Soil Erosion Prevention Practices

Respondents were asked: “How feasible would it be for you to install any of these practices?” Of all respondents, 22% say it would be easy and/or very feasible and 17% said feasible, although not necessary. Combined, this equates to 39% overall who say it would be feasible for them to install at least some of the soil erosion prevention practices.

Feasibility of New Erosion Prevention Practices (n=60)



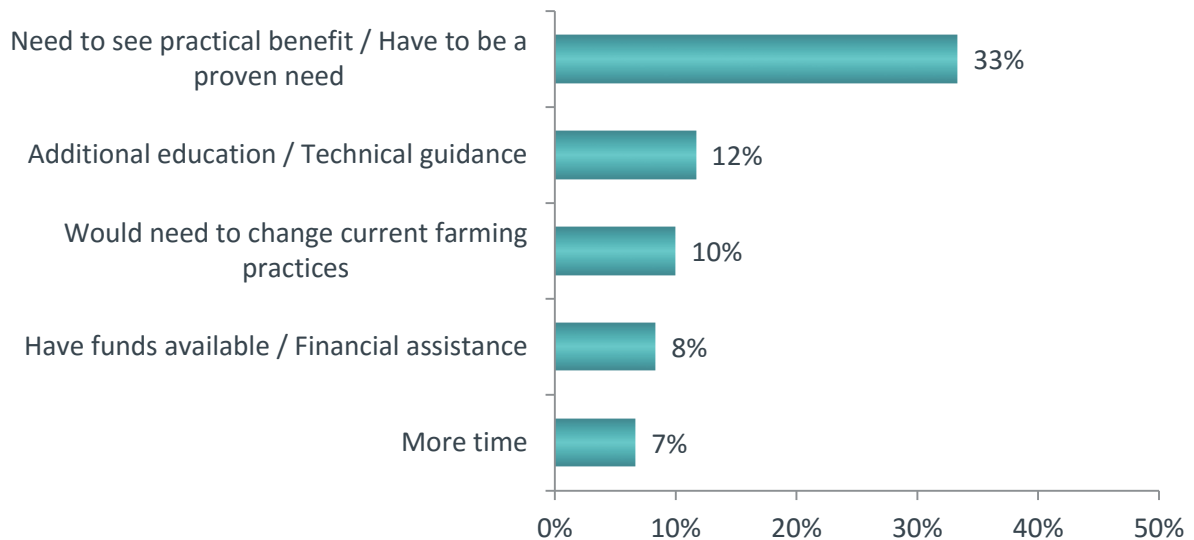
All respondents were asked to identify the number one thing that keeps them from implementing any practices, or keeps them from doing more. Lack of necessity is the top reason, as indicated by 58% (35 respondents) and the majority of them (23) are in the Clackamas district. The second most popular reason is funding / money. Twenty-three percent (14 respondents) named money as the top reason for not implementing more or better erosion prevention. All 14 of them have already taken some step in the past to manage erosion, but see funds as the main barrier to continuing with additional implementation.

A follow-up question was asked: “What else stands in your way, if anything?” Responses were combined with the “number one reason” and the results show that, aside from lack of need, costs and time are by far the two most significant reasons for not doing more to prevent soil erosion.

Respondents were asked what specifically would need to happen before they would put any (or any more) soil erosion practices in place. One-third (20 respondents) said they would need to see a practical benefit or a proven need. Another 12% (7) needs education or technical guidance on installing any of the practices.

What Needs to Happen Prior to Implementing Erosion Prevention Practices (n=60)

(Percentages don't sum to 100% because multiple responses were allowed.)



Below are a sample of verbatim responses to the question: “What specifically would need to happen before you would put any of these [or any of the other] soil erosion practice(s) in place?”

Need to see practical benefit / Have to be a proven need:

- “Would have to be a serious concern to me, this is not where I want to put my money first, would be down the list of concerns or areas where I want my money going.”
- “I would have to be shown that this would be something necessary on my property and then given assurance that time would not get in the way of my business putting it in.”

Additional education / Technical guidance:

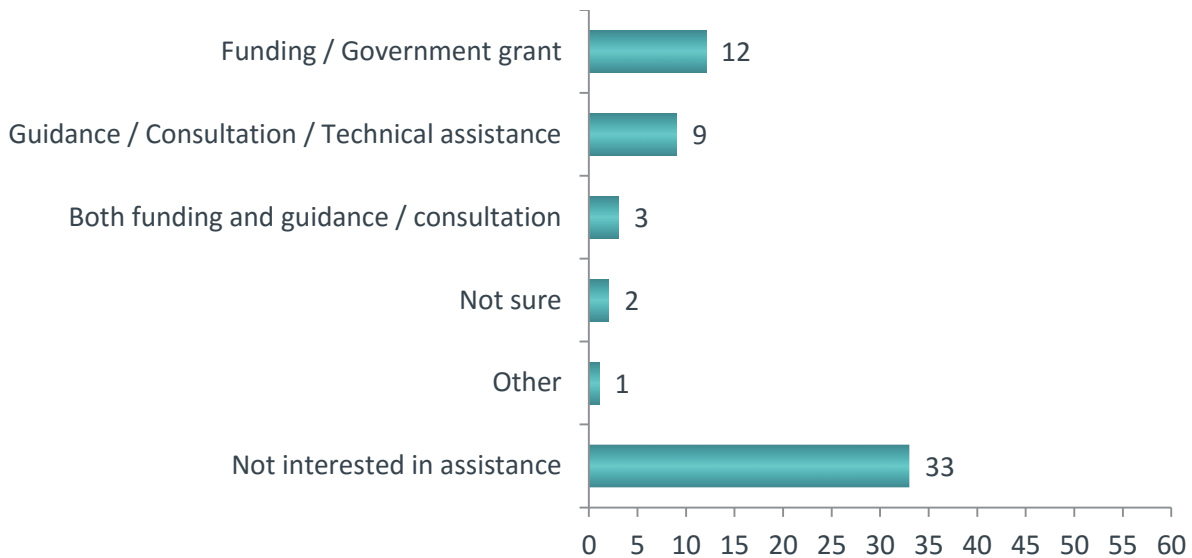
- “Would have to see a demonstration that would show the need for swales.”
- “Completing my first harvest and then with assistance looking at some of these and determining which ones will be effective.”
- “Would have to be educated on the practice, some assistance in showing me what works best and then how it can be put in place.”
- “In Terracing we would need some design help.”
- “Well I would have to get with the county, get their feedback and some technical guidance.”
- “If someone wanted to educate me on these practices and put out the money to put any of them in place I would be interested.”

Interest in Receiving Assistance

When asked the open-ended question, “Would you be interested in receiving assistance in implementing erosion prevention practices?” 45% or 27 of 60 respondents said yes. Nursery growers from East Multnomah (62% of those in this district) and Washington (56%) districts showed much stronger interest than those in Clackamas County (31%).

A dozen respondents said they would be interested in receiving funding or a government grant to implement erosion prevention practices. Another nine desire some form of guidance, consultation or technical assistance, and three would like both funding and guidance or technical assistance.

Interest in and Form of Assistance Desired (n=60)



The total sample size limits statistical precision in projecting this study’s findings to the actual population of nursery growers. However, with a directional interpretation, we believe at least one third of the nursery growers across all three county districts would be open to exploring the types of assistance the EMSWCD offers, whether monetary or in the form of education or guidance. And this could be about half of the nursery growers in the East Multnomah and Washington county districts.

Those saying they have no interest were asked “And what in particular keeps you from being interested?” The majority (23 of 33) claim it’s because they simply have no erosion problems and don’t see the need for assistance of any kind. Another four say they don’t like having government involved, and three respondents feel they are already doing enough erosion control now.

Why No Interest in Erosion Prevention (n=33)



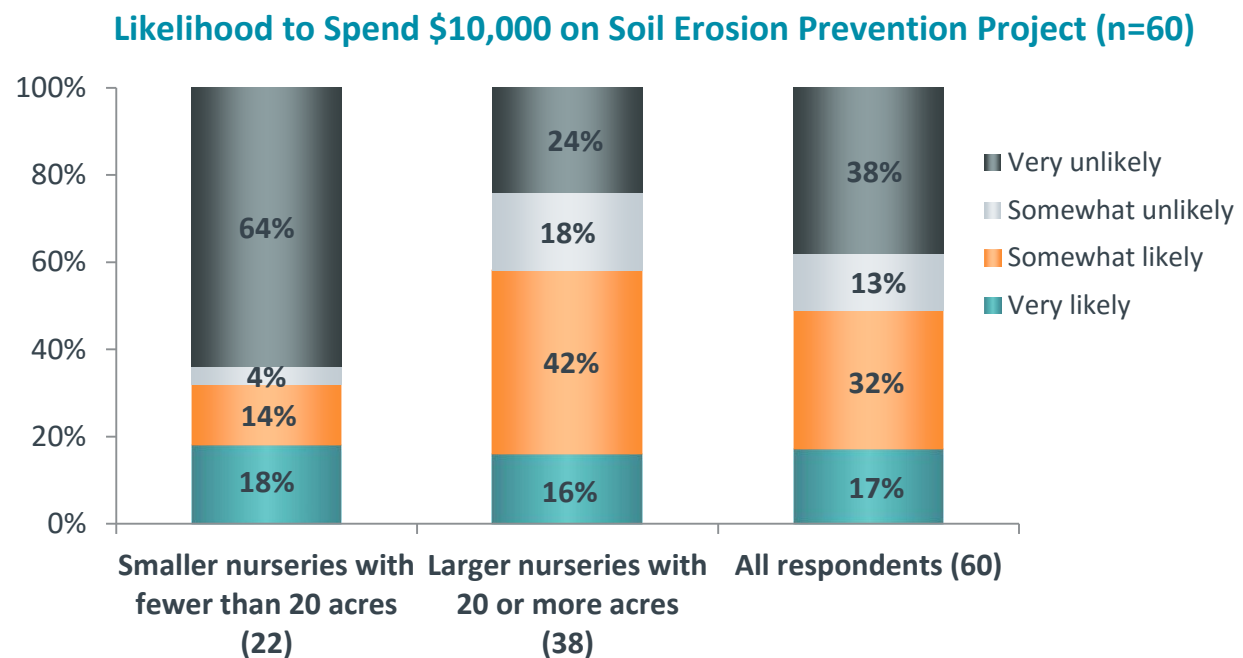
Having no need stems primarily from three situations. These are described below, along with a verbatim response as a supporting example:

Reason Have no Need	Verbatim Response Example
Smaller operations, such as those with fewer than 20 acres, aren’t as impacted by soil erosion problems and therefore are hard pressed to rationalize any expense toward prevention practices.	“I would have to be much larger.”
Most nursery growers with flat land say they just don’t have enough run-off or noticeable erosion issues.	“Not needed, my property is flat, if it was hilly then maybe.”
Some nursery growers are “container-only” operations or they manage greenhouses and aren’t tilling or managing soil in a large-acreage natural environment.	“I see no need based on what we grow and how we grow it.”

Reaction to Project Scenario

Nursery growers were presented with a scenario of having a project designed to prevent soil erosion that would cost them \$10,000. They were told “Assume that it was successful at reducing soil erosion on your property, and it had no adverse effect on your operation or staff time.” Then they were asked “How likely would you be to spend that much to curb soil erosion on your property?” Overall, 17% say they are very likely to do this and 32% say somewhat likely.

The difference between larger and smaller nurseries is significant. Based on our analysis, roughly 20 acres appears to be the dividing point. With a total of 58% saying very or somewhat likely, those with 20 or more acres are significantly more likely than those with fewer than 20 acres (32% are somewhat or very likely).

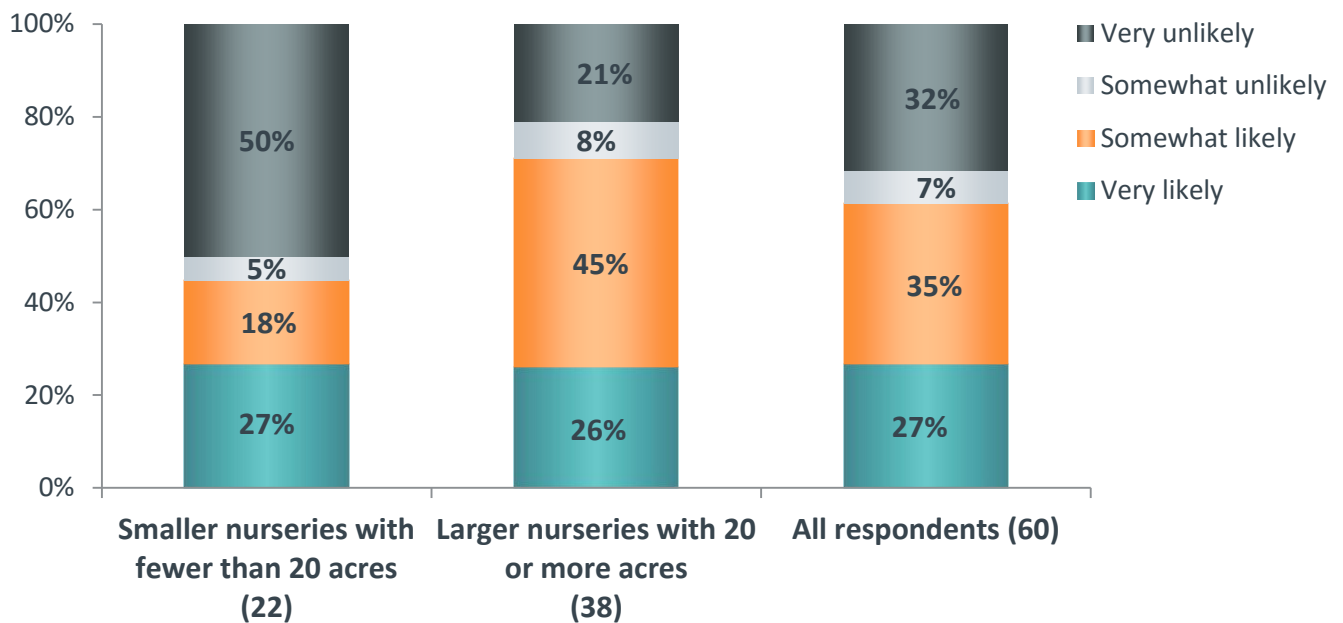


Respondents were then asked, “If you were able to be reimbursed for half of the \$10,000, how likely would you be to proceed with the project?”

Overall, those saying they’d be very likely increased from 17% to 27% after the reimbursement offer. Combining very likely with somewhat likely, we find that 62% say they’d be likely to proceed if half was reimbursed, significantly higher than the 39% before the offer.

Again, the larger nurseries show more interest, with 71% saying very or somewhat likely compared to 45% of smaller nursery operations. A large portion of even the nursery growers who earlier said they would not be interested in receiving assistance, say they are likely. Namely, 45% of those who said “no interest” (15 of 33 respondents) are somewhat (21%) or very likely (24%) to proceed with a \$10,000 project if half is reimbursed.

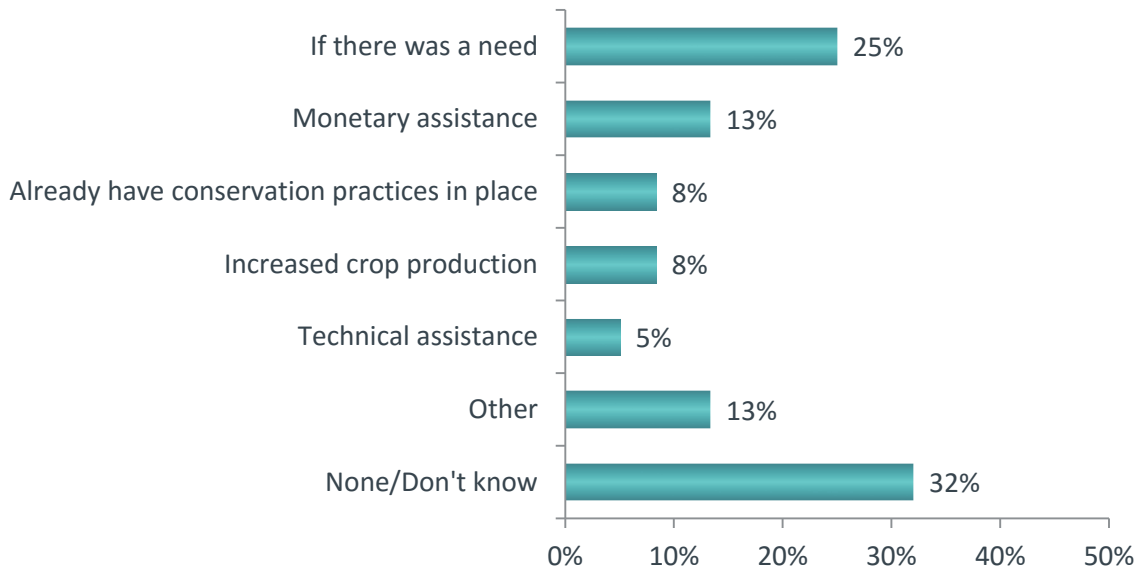
Likelihood when \$5,000 is Reimbursed (n=60)



In the event the \$10,000 project scenario wouldn't appeal to all types, respondents were asked (open-ended) what other incentives or benefits might compel them to install conservation practices. A quarter of respondents fall back to their core, initial reason, that they still need to understand the necessity, or discover and experience a clear issue that needs to be resolved before they see any need to take action.

Other Incentives for Implementation (n=60)

(Percentages don't sum to 100% because multiple responses were allowed.)



Other Soil Erosion Prevention Practices of Interest

At the tail end of these pointed and probing follow-up questions, we asked “Are there any soil erosion prevention practices that we haven’t discussed today, that you would like to employ or that you would consider?”

Most say “no,” but a few expressed some needs related to tiling:

- “I am currently developing a new property and would like to tile 15-25 acres of this land.”
- “Would like to know more about tiling, I know nothing about it, how to implement, costs.”
- “Yes. Would cost anywhere from \$5000.00 to \$10000.00 per acre to re-tile my fields. This would be very helpful for better drainage. Assistance with this from the district I would look at.”

Two respondents said their neighbors’ need erosion prevention assistance:

- “None for me, however people that need erosion prevention I would like to see some education programs for them.”
- “No but with that said I see property of others that could use a tree here or there to help prevent some erosion.”

Below are a variety of miscellaneous comments offered by respondents about additional practices they are considering or would like to explore:

- “Creek and canal cleanliness, these are both areas that prevention practices are of interest.”
- “I never hear about people filling in holes where they have removed soil when they harvest. Nothing is being talked about in this area. I would really be curious, are other growers doing this.”
- “Implementing something that would slow water down before it goes in to my pasture. With these heavy rains I have some deep water in my pasture.”
- “Not sure if this would apply: Invasive species to my crops.”
- “Quality of water. Catch ponds to reuse water. Would need pumps and pipe line, this is where getting some financial assistance would come in to play.”
- “There is a process, Flocculant. The use of safe chemicals that provides a faster filtration system in our sediment basins. This procedure settles the soil quicker so in the summer we can retrieve it and put it back on our property. By expediting this settling of the soil, keeps particles together, they settle to the bottom preventing soil from washing out of the top of the basin and winding up in the stream.”
- “Various plant intercropping. Providing a diversity of products, not just flowering trees.”

Other Conservation Practices of Interest

All nursery growers were asked “Are there any other conservation practices that you would like help implementing?” Seventy-five percent say “no” or “not sure,” but five respondents had some ideas or requests:

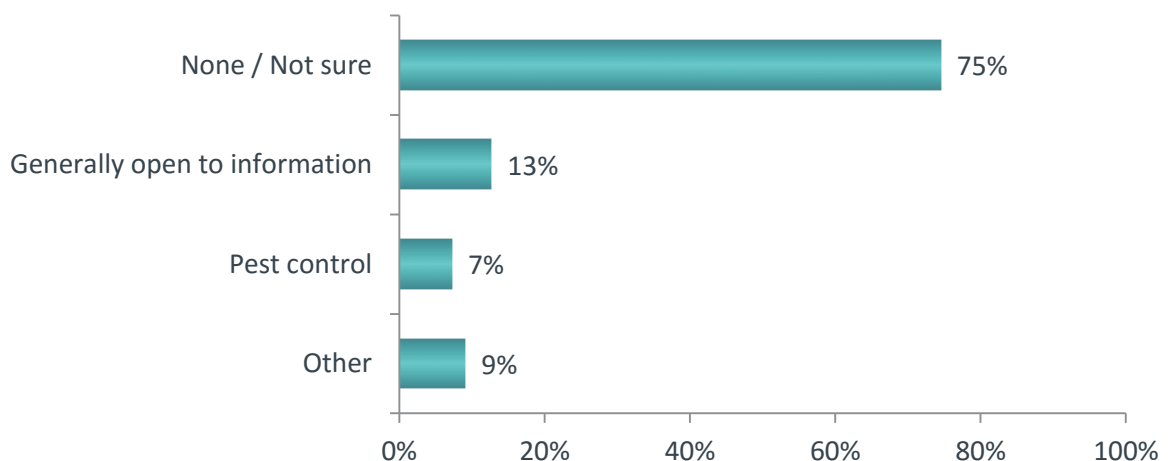
- “Any rodent assistance that could be provided. Ridding myself of gophers and squirrels. I am trapping some.”
- “Catch ponds.”
- “Maybe insecticide use. Fertilizers. There is always new fertilizers being developed and I like to stay well informed on these.
- “I go to the OAN if I have some other practice besides soil erosion to get knowledge or help.”
- “I have an orchard that I want to put in a cover crop, one that looks good, some flowers and grasses which will enrich the soil. That can also be used as a habitat for pollinators. A back up source for bees. Something that I may mow only once per year. I may call the district about this.”

Seven others (13%) are generally open to more information or help, and commented that they would happily take more information or advice.

- “I am open to hearing about any other practices that might help.”
- “I am open to the district, any way they can assist me and direct me to providing conservation practices, I would like to hear about. Sending me any information would be much appreciated.”
- “I would have interest in anything the conservation has to offer in guidance or assistance.”
- “Anything that would be helpful from the District.”
- “Not that i can think of however I would always be open to something new, looking at it.”
- We are open to whatever the conservation district would like to share.
- Would happily take some information, advice on Pest Management.

Additional Help Needed (n=60)

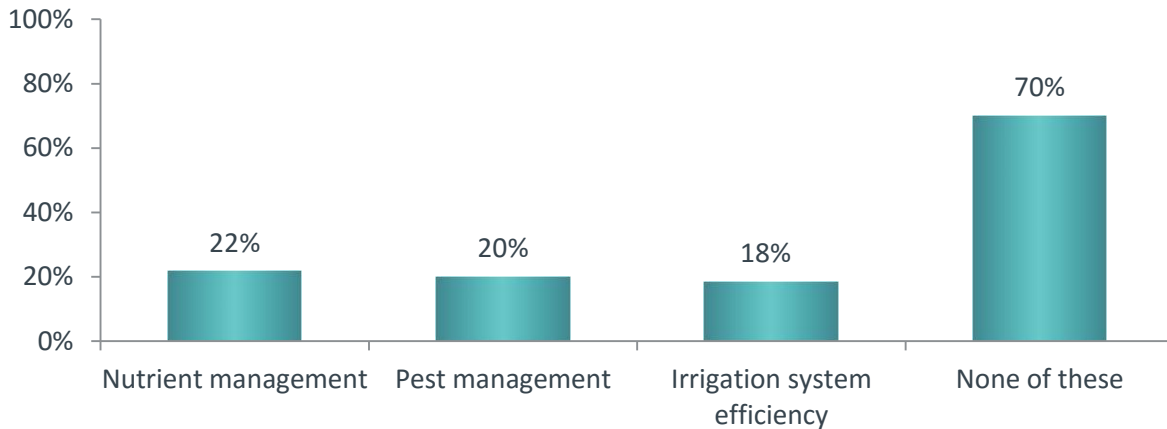
(Percentages don't sum to 100% because multiple responses were allowed.)



Regarding the specific practices of nutrient management, pest management, and irrigation system efficiency, eight respondents are interested in getting help for all three. The percentage selecting each is, 22%, 20%, and 18%, respectively.

Interest in Getting Help in Three Specific Areas (n=60)

(Percentages don't sum to 100% because multiple responses were allowed.)

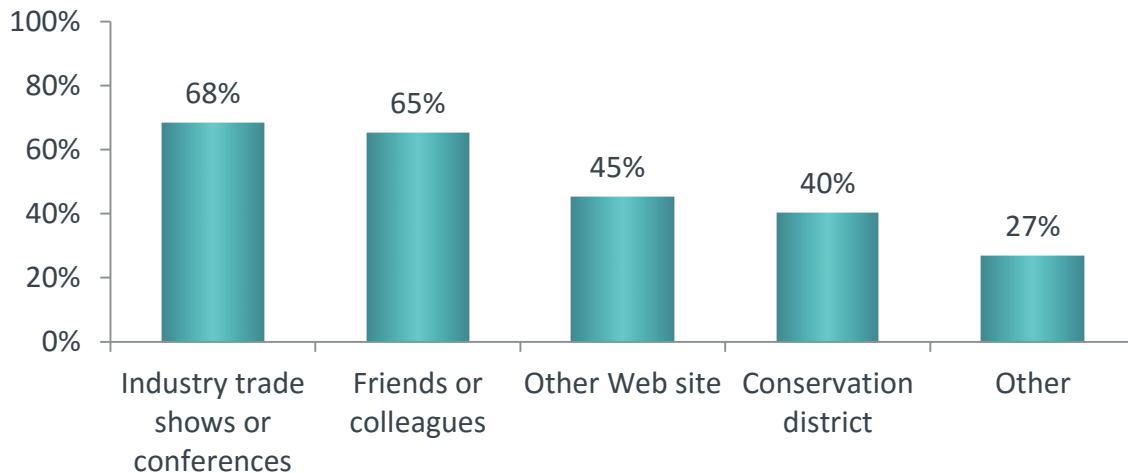


Preferred Ways to Receive Information on New Practices

Two-thirds said they get information on new practices at industry trade shows or conferences, or through friends or colleagues. Just under half say they get information online, and 40% said they get information from their conservation district.

Sources of Information on New Practices (n=60)

(Percentages don't sum to 100% because multiple responses were allowed.)



Regular mail is the preferred way by most (57%) to receive information about services offered by their conservation district. Email is next most preferred, as stated by 48%. Only two respondents are prefer to receive the information by telephone or in person.