

How Farmers Learn: Improving Sustainable Agricultural Education

This project examines how farmers in Louisiana, Tennessee, and Virginia prefer to learn and what that means for agricultural education, especially Cooperative Extension educational program development and delivery. Extension agents and specialists use a variety of methods for teaching content and processes that enhance farmer learning and adoption of new practices. This research project specifically looked at farmer learning preferences and Cooperative Extension agents and specialists instructional methods. The term “sustainability” was defined widely in this research to address economic, environmental, and social sustainability of agriculture. However, the alternative agriculture, value added, and organic focus groups included farmers carrying out organic or strong environmentally sustainable agriculture while the other groups were less focused on environmental sustainability and more on economic and/or social/cultural sustainability of agriculture.

Research Project Objectives

1. Farmers, Extension agents and specialists, and project staff, as a group, design and carry out an assessment of how Louisiana and Tennessee farmers prefer to learn and compare it with data from year one in Virginia.
2. Farmers, Extension agents and specialists, and project staff assess Extension agent perceptions of how farmers in Louisiana and Tennessee prefer to learn and determine how these perceptions are similar to or different from farmer’s stated learning preferences.
3. Farmers, Extension agents and specialists, and project staff recommend how Extension educators should change or reinforce teaching methods and educational experiences to align with farmers learning preferences for more successful educational programming.
4. Farmers, Extension agents and specialists, and project staff analyze and interpret the data with stakeholders, write summary reports, and begin to disseminate findings to farmers, Extension agents and specialists, and secondary audiences.

Research Team

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Dr. Richard holds an MS in Extension Education and a Ph.D. in Vocational Education and Public Administration, from Louisiana State University. He serves as Department Head and Professor with the Louisiana State University AgCenter. He works with Extension professionals and administrators on program development, evaluation, and reporting. He has worked with Extension for 35 years at the local, multi-county and state levels.

Methodology

A steering committee of farmers and Cooperative Extension specialists and agents guided the research in each state. They helped determine research methods and assisted with focus group participant recruitment, logistics, and data collection, analysis, interpretation, and dissemination. The Collegiate Young Farmers Club at Virginia Tech also piloted the initial focus group questions and written survey. In the first year, data collection began with a survey of Extension agents and specialists on learning methods they use with farmers. This survey helped shape the questions used with 15 focus groups of 94 farmers and 21 Extension agents/specialists in Louisiana, Tennessee, and Virginia (Table 1).

Table 1. Research Focus Groups by State and Topic

State (n=3)	Commodity/Group (n=15)	Number of Participants (n=115)
Louisiana	Extension Agents	4
Louisiana	Organic Fruit and Vegetable Producers	4
Louisiana	Rice Producers	4
Louisiana	Young Farmers	7
Tennessee	Beef and Forage Producers	9
Tennessee	Extension Agents/Specialists	7
Tennessee	Organic Fruit and Vegetable Producers	10
Tennessee	Tobacco Producers	9
Tennessee	Value-Added (Clients of the Center for Profitable Agriculture)	11
Tennessee	Women in Agriculture	9
Virginia	Alternative Agriculture	11
Virginia	Dairy Producers	6
Virginia	Extension Agents/Specialists	10
Virginia	Women in Agriculture	6
Virginia	Young Farmers	8

Each focus group was facilitated by a Project Investigator. Data were analyzed by noting common themes within and across focus groups. Focus group participants were given a written survey partway through the interview about their learning method preferences. Observations of focus group participants were recorded by steering committee members, the graduate student on the project, or other project staff. An additional survey was conducted the first year to determine the value of the steering committee experience in participatory action research. These themes were compared with the results of the agent/specialist survey, the focus group participant's surveys, and other data. Data from focus groups will continue to be triangulated with other sources of data about how farmers prefer to learn and agents/specialists prefer to teach farmers.

Findings

How do Farmers Prefer to Learn?

Eighty-six of 94 farmer focus group participants completed a survey and discussed the ways they prefer to learn. The top six preferred learning methods by participating farmers were:

1. hands-on (99%),
2. demonstration (96%),
3. farm visit (94%),
4. field day (88%),
5. discussion (87%), and
6. one-on-one (85%).

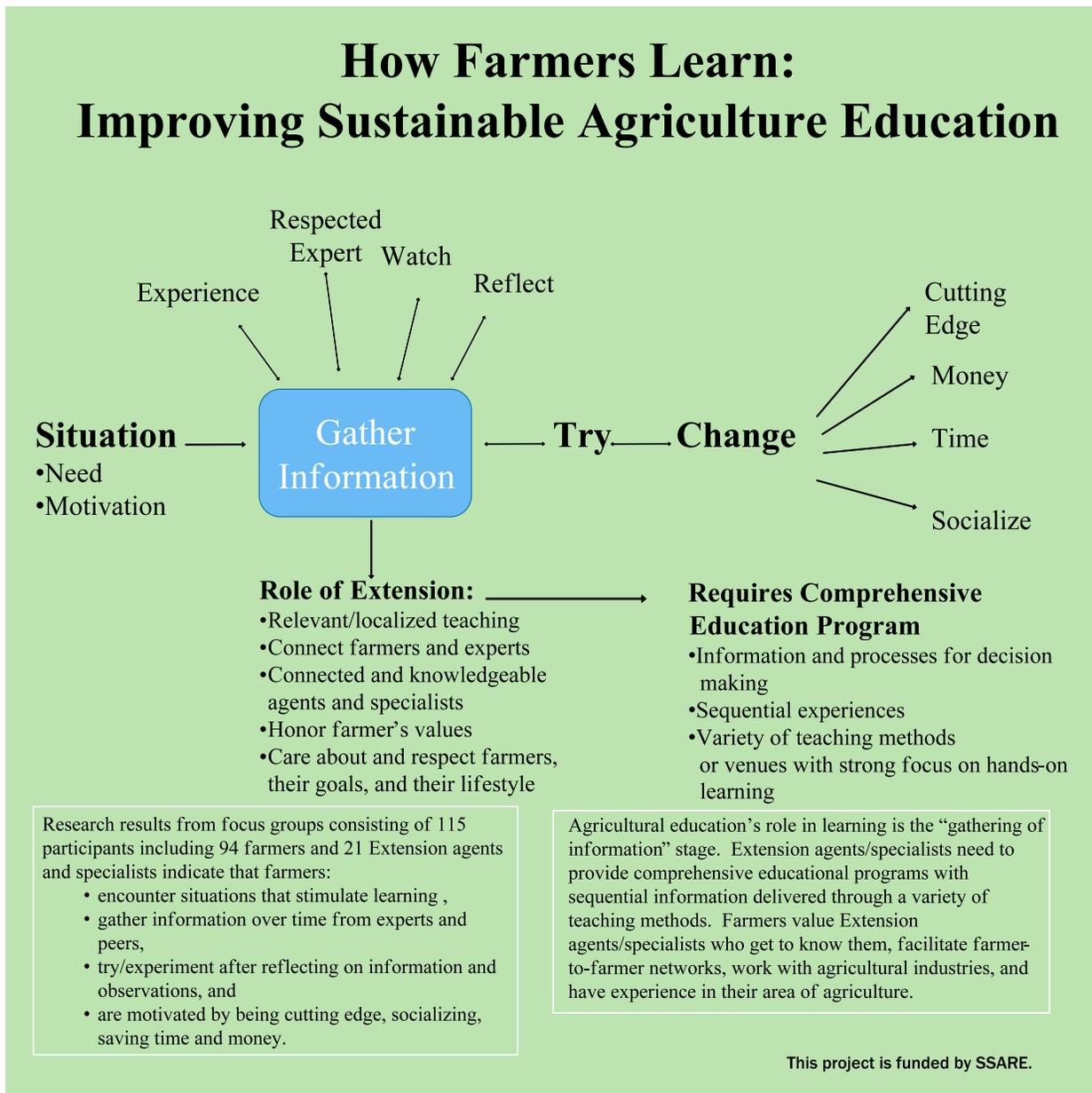
Farmers had mixed preference for online-web, newsletters, books/manuals, on-farm tests, meetings, and lectures. Finally, four ways these farmers do not prefer to learn are:

1. games (80%),
2. comics (78%),
3. role playing (77%), and
4. radio (63 %).

All focus group participants discussed ways farmers prefer to learn and how specific situations or events lead the farmer to learn which in turn motivates the farmer to “gather information” over time from many sources (see Figure 1). During the “gather information” stage the farmer seeks evidence to support their decision, ensures the costs and savings of the decision are sound, discovers any pitfalls of the decision, and then applies it to their situation. The “gathering information” stage can lead to making change or not making change to save time and/or money.

Farmers also mentioned being motivated to attend educational events due to socialization with peers and experts and learning about the latest research in their work. One focus group agent commented, “Farmers learn well either one-on-one or as a part of interactive peer groups. Establishing farmer-to-farmer relationships is normally fruitful as well. These exercises build a sense of community trust among farmers and lend credibility to the Extension agent.”

Figure 1. Farmers Learning Process, Motivations, and Role of Cooperative Extension



Preferred Learning Methods

Hands-on

Many of the focus group participants agreed hands-on learning was the most preferred method. Participants commented, “I’ve learned the most from hands-on, people showing me things.” and “I just think that when you do something yourself, you retain it better.” Focus group members wanted someone to come to their farm and show them new practices, to see a skill demonstrated, and then try it themselves. They wanted to be observed trying a new skill and then given feedback. One farmer said, “I never lived on a farm but I watched them milk. You think you know what they’re doing and you can do it. And when he got hurt, it was a whole different ball game when you’re doing it yourself.” Another said, “You feel like you have one-on-one when you are talking to somebody about your computer program, and your money, or whether you are talking about seeds or chemicals, you feel like you’re the focus. You are getting that immediate feedback.”

Almost all of the focus group participants mentioned they used trial and error as a preferred learning method. Some focus group participants stated that if they knew their peers had used trial and error to learn about something and it was a success for them, then they would also try it. One participant stated “Trial and error. And then get with somebody with experience.” Another said they only use trial and error, “if it doesn’t cost too much money for that trial and error.”

Demonstration

Several focus group participants prefer to see and learn new practices through demonstrations. A number of farmers mentioned that networking opportunities and social aspects of demonstrations and other events were a reason to participate. A number of farmers believe, “Seeing is believing.” Many focus group participants mentioned that not attending demonstrations reduced opportunities to get information from their peers. The following comments from producers illustrate these preferences: “I just think when you do something yourself you retain it better.” and “Once someone shows me I can basically do it.” and “I bore easily... without the demonstrations, hands-on, and visuals, (lectures are) just not effective.” and finally, “I like someone showing me and then me allowing to do it and being told about if (what I did was) right or wrong.”

Farm Visit

Many farmers enjoyed visiting other farms to see new practices and equipment and to socialize. Agents and specialists in one state noted that hosting a farm day or demonstration could be a burden to the host farmer. One participant stated, “We used to do tours and go all over. We went to four states, you know to the different orchards and things and see how they were doing things, their equipment that we can bring back and that’s how...I got into the asparagus business.” Another shared, “I like farm visits, going to see other people. As a lot of us get older we kind of get set in our ways. We want to do things one way but a lot of people have a lot better and easier and a more profitable way.” Other farmers said, “You know about eight or nine years ago when we converted from water planting to dry planting. We did take tours of other farms.”

For some farmers, the biggest value of the farm visit is the interaction with the host farmer. One producer said, “A couple of years ago I went to North Carolina with LSU to go on farm tours. It was an organized thing. And we went up there and the farmers were out there telling us about their operation and how they did it, and what went on. And how they managed this, and how they managed that, and if you wanted to know how much they put of this and that, and you know they answered the questions with no hesitation. That was a tremendous learning experience for me. Because if you had a question about what he was saying, you could stop him and he would be more than happy to tell you about it.”

Field Day

Many farmers preferred learning by attending field days sponsored by specialists or agents at university agricultural research centers. They indicated this helped them gain information on cutting edge research and to discuss their situation with experts and peers. One farmer said, “when we have field days or when we have a rice school every year, it’s good.” Another farmer said, “A lot of the field days is the personal interactions you have. You go there and meet people face to face that you know. And it’s kind of amazing some of the times you are riding on the wagon through the fields and you start talking to the guy next to you and he is starting up a new harvest program or something. And it’s kind of the personal interaction is a lot, even with the field days.” One participant stated, “then you have field day, and you have the Parish field day, and then you are invited to the area Parish field day, and you got one here at the experiment station. I mean going out to them, they have come a long ways in getting information out to us and if you want the information, all you got to do is go.”

Discussion

Many focus group participants preferred to learn through interaction or discussion, especially situations where they could ask questions and get immediate answers. They especially liked interaction mixed with other learning methods (hands-on, demonstration, and small group). They often believe the best situation involves learning with someone they view as an expert. One participant stated “I tend to get more out of the hands-on demonstrations and the interactions. If it’s a farm tour you’re out walking around looking at certain things on the operation and then interacting, asking questions. I tend to get more out of that than somebody just up givin’ a lecture.”

Some farmers found value in the focus group format for discussion. They said, “This format here seems to be fairly useful. And there is a lot of wisdom that’s been through around and a lot of us are growing different things but if we could groups some of us...so we get in the same room, we can swap spit and get some ideas.” “I like to synergize with people that have those specific problems or interests. (We) can be helpful to one another.” and “Then you can get down to the nitty gritty because there are a lot of things you’ve learned that somebody else might be interested in.”

One-on-One

The vast majority of farmers valued the expert who took time to work with them one-on-one to help them solve problems and explore new practices. Farmers said, “It’s pretty much pairing an individual

with an expert, then you really have something to talk about.” “I mostly talk to dealers or ...county agent(s) about specific problems.” “People pointing you in the right direction is always a good start.” “That’s why I go back and I think it’s good to find good people that have experience and get your information from somebody that’s been doing it for a long time...That can save so much trial and error.” One farmer stated, “If I have questions to ask, I can ask you know right then and if I have problems that’s just the best way for me.”

Learning Methods With Mixed Preference

Online/Web

Focus group participants indicated a broad range of Internet use ranging from using the Internet several times a day to not owning a computer. Connection access and speed issues were mentioned by some focus group participants. Some farmers use the Internet through friends, a spouse, or the local library. Seventy-three percent of the farmers in the focus groups preferred to use the Internet to find information or communicate. One farmer commented about the Internet, “There’s a huge community of people out there that have knowledge. It’s diverse, it’s spread out. It might be Australia, it might be in England wherever. But there’s somebody out there who likes to rattle on about their problems and... the knowledge that they have and it’s just a matter of in the past you had to be there close you know to get in that network, but now it’s just, it’s basically everywhere.” Another farmer said, “In my case I’ve kind’ve gotten away from the internet. I was on the Dairy Elf, the Dairy Forum for a long time and I finally got to the point where for time I would spend on the computer, I wasn’t getting enough information off of it to make a worthwhile use. So...I’m down to once or twice a week at the most cause I don’t have time to sit down.” In contrast, other farmers said, “I like to play on the Internet. I’ve got a laptop and I put it on my lap in the evening.” “You know universities use webcast. I think that is a pretty neat thing. You can do that at your home. Especially if it’s a taped thing you can access it anytime you want.”

When farmers were specifically asked what they preferred about the internet, they said, “It’s on your timescale. You do it when you’ve got time to pay attention and it’s at your pace. And you can go back to it and back to it and back to it if you need to.” “You can do it 24/7.” and “Your book is going to be outdated so quickly and you can get the website updated with information.”

Newsletters

Half the focus group participants prefer newsletters as a learning method while the other half prefer them sometimes or not at all. Some farmers were strongly opposed to newsletters. One said, “I hate newsletters.” and then others in the group said, “Pretty useless.” and “I’m not going to read them, we get so much mail I don’t waste my time with it. I gasp over the bills and throw the rest out.” Some focus group participants mentioned they used newsletters if the content directly related to them or their agribusiness. One participant stated, “I get a little bit of usefulness out of newsletters but I wouldn’t rely on it as my main source of information.” In contrast, another said, “These crawfish newsletters and stuff, I found that pretty helpful.”

Books/Manuals

Farmers have limited time and short attention spans for reading, according to some of the focus group participants so they tend to scan headlines and bullet points for content that meets their needs. Book learning in experts is not valued unless they can relate it to hands-on experience. Some focus group participants said that reading was a preferred learning method as long as it directly applied to their agribusiness or context. One focus group participant commented, "I read everything I can, books, newsletters, seed catalogs. I probably get ten seed catalogs in the mail. I go through them over, and over, and over again. Today you have to read a lot, you've got to keep the reading in front of you because tons of information are available. And ah whether it's reading articles on the Internet, or pamphlets, or like I said seed catalogs."

Some farmers like to combine reading with hands-on application. One farmer said, "I like to learn by reading but the way I learn the best or most effectively is by doing things in real life and watching what happens. Maybe reading and then go out and do it so I will have some information to start off with. The way I retain the most information is by actually doing something and seeing what happens with it."

On-farm Tests

Some farmers liked to host on-farm tests since it often includes free supplies for the project. One farmer said about these tests, "It's been no cost to you out of pocket, to actually see on-hands how something works." Others felt these tests were not a good use of their time. One farmer said, "That's the closest thing you can get to a scientific experiment is seeing somebody else do it on their farm. So, I say I learn best from another farmer because they have a story to tell from beginning to end."

Meetings

Some farmers were motivated to attend educational meetings based on the incentives, content provided, and opportunities for networking. They want content to fit their immediate needs and circumstances. One farmer said, "Give us something we want to learn, I mean that's the most important thing." Meals and free materials offered at meeting can boost attendance according to some farmers. One producer said, "I am a workshop person I think that if you have a good program and good participants, you learn a whole lot from workshops and networking." and another said, "I just go because I want to see the people." Referring to the focus group meeting one farmer said, "If they weren't buying lunch, we probably wouldn't come to this meeting."

Farmers indicated they have many demands on their time that makes it difficult to attend meetings. One farmer said, "You got so many irons in the fire, so many obligations to do that when you have a discretionary hour at your hands, how do you choose to spend it? I meant there's a chance to spend time with family, to actually catch an hour of sleep...and in all brutal honesty, getting up and going to a meeting that you may or may not have something that meets your desire for learning is pretty low on the list of priorities." Another farmer said, "They can have two meeting every day. You just have to back away from it after awhile. I've got to make a living. Sure, I'd like to do all that stuff but no one pays me

while I am there. I only get paid back on the farm. So I have to focus on that as my priority... I know every meeting is so important. It still doesn't bring anything to the bank for you."

Lecture

Focus group participants often agreed they do not prefer lecture as a way to learn unless it is combined with a preferred learning method such as a hands-on demonstration. Focus group participants mentioned they would attend a lecture if there was a dynamic speaker, well known expert, or hot topic. Farmers said, "Some lectures you can be attentive all day and you've got others that can lecture and two minutes into it you're going 'how long since [I've] been sitting there?'" "If we're going to have to sit through a lecture we better have a payoff at the end, plus some hands-on kind of thing." "Someone just dictating to you their perspective on things...I can't stand to see that." "I find that they are giving a speech as if they are giving a thesis or dissertation...it's a 30-minute speech and they go through a lot of data. And I would assume the farmer would want the five-minute (version)."

Networking

Some farmers feel isolated in their work or simply enjoy interactions with other people. They look forward to catching up on news, business, and socializing with each other and the experts at educational events. Farmers said the value of networking was, "So, you can learn from I call it stupid attacks, you can learn from other people having stupid attacks and don't have to do it yourself, I think the networking is a big part of (it)." "Sometimes you can find particularly if you're a smaller...when you're networking, getting together with other growers or farmers, sometimes they need some of the same things that you need and you can get a better price by combining your orders. Some, some suppliers don't want to ship small amounts." "You know this works out really well to network because you don't know who else is out there...even maybe right in your own county that's doing the same thing. "I think what puts more of us at a disadvantage is that we all have other jobs usually."

Learning Methods Not Preferred

Games

The vast majority of farmers do not like to learn through games. They said games were uncomfortable. "And the game stuff, I don't like games when I try to learn something and stuff like that, I don't have to be entertained, I rather be informed and shown properly...it's like you are at somebody's shower or something." Some farmers felt games were foolish. One said, "(I) think of it more as entertainment...if I've got a problem involving my business you know it's not time to play games."

Comics

Very few farmers were drawn to comics as a way to learn. Some of them saw comics useful for teaching youth. "The comics...[I] do not prefer and anybody who is trying to live with \$7.50 corn and \$5.00 diesel fuel, there is nothing funny about it. You know everything has a place. Depending on your market, people who you are appealing to maybe to a 4-H type kid or younger people coming into

farming something like that... might have a place.” Another participant stated, “ Most of the comics and cartoons that I’ve seen in agricultural publications are...not very funny.”

Role Playing

Most farmers did not like role playing and indicated that it was not enjoyable. One farmer said, “When somebody says let’s do a role play, I just want to do away. I hate that. I’m not an actress. I don’t like pretending.” However, they enjoyed learning through case studies if they were relevant and featured local people and situations. One farmer said, “If there is some sort of really complicated situation that I’m trying to learn about, role playing can be helpful.” One participant said, “We’re going to have to set-up a situation, you pretend you’re the counselor and I pretend I’m the – you know. I don’t like that pretending.”

Radio

Very few farmers said they listened to the radio to learn. They said, “I don’t care for somebody talking to me, just over and over.” and “There’s nothing visual. I have to close my eyes and just totally concentrate and start thinking about something else.” One farmer said, “ I started to say I am not a radio person because you catch part of it or you’re in the middle of it and they only present part of it again...I am not sure that’s a good way to get information across, it is for a quick announcement.” Another farmer stated, “It’s a scheduling deal cause I want to learn on my time when I have time. It may be midnight or 10 o’clock. I am up about four in the morning. I’m usually on the computer looking and checking stuff but that’s my schedule and what’s on TV and radio is not on my schedule,”

What are Extension Agent/Specialist Perceptions of how Farmers Learn?

Twenty of 21 agents/specialists who participated in focus groups completed a survey, and discussed the ways they believe farmers prefer to learn. The top five preferred learning methods by farmers, as perceived by agents/specialists were:

1. farm visits (100%),
2. one-one-one (100%),
3. demonstrations (95%),
4. field day (90%), and
5. on-farm tests (90%).

Mixed preferences were discussion, networking, question and answer, workshops, experiment, and hands-on. Agents/specialists indicated that farmers least often preferred:

1. comics (80%),
2. role-playing (80%), and
3. games (75%).

One group of agents felt the type of learning preference changed depending on the agricultural commodity. One agent said, “With rice he is very dedicated to come to the field days, to the producer meetings, reading emails and newsletters about rice. (If he has) cattle he will probably talk to his neighbors and occasionally look at the Extension publications. For crawfish they will run something by me. But they will spend most of their efforts or base a lot of their management on what the neighbors do or what they have done in the past. So that same person is going to react differently across different commodities. And in general you can say with the different commodities you get different attitudes toward their learning.”

How are Agent/Specialist and Farmer Learning Preferences Different from Each Other?

In focus groups, farmers’ top preferences for learning methods did not totally match agent/specialist perceptions of how farmers prefer to learn (see Table 2).

Table 2. Comparison of Agent/Specialist Perceptions of Farmer Preferences and Farmer Learning Preferences

	Agent/Specialist Perceptions of How Farmers Learn	Farmer Response
Prefer	<ul style="list-style-type: none"> • Farm visit (100%) • One-on-one (100%) • Demonstrations (95%) • Field Day (90%) • On-farm test (90%) 	<ul style="list-style-type: none"> • Hands-on (99%) • Demonstration (96%) • Farm visit (94%) • Field Day (88%) • Discussions (87%) • One-on-one (85%)
Not Prefer	<ul style="list-style-type: none"> • Comics (80%) • Role-Playing (80%) • Games (75%) 	<ul style="list-style-type: none"> • Games (80%) • Comics (78%) • Role-Playing (77%) • Radio (63%)

Methods used by agents and specialists often depend on the individual agent and specialist, the context, or the farmer’s type of business, as shown in this comment from an Extension Agent, “You cannot talk about pruning over the phone. Ok, you cannot tell them how to prune...do a demonstration and come out and do a hands-on demonstration...hands-on show them exactly what they need to do, explain, and let them go through a demonstration, and then also let them do it.” Another agent said, “We all know what is best for teaching farmers, but we don’t always do what is best because of the constraints on our time.” One farmer noticed changes in the agent’s context and resulting changes in teaching methods when he said, “You know the agents have been dealt more and more duties and obligations over the years. There are fewer of them. They have to take multiple crops and they are handling all kinds of things in their office...if you call they will address your issue, but they’re not going to get out of the office.” One agent had a similar observation about his work when he said, “In my experience they call agents because they want hands-on help. They want the agent or specialist there on the farm showing them how to fix the problem. I think they want you there, which is hard for us because of budget and travel. But, unfortunately that’s the way it is.”

This difference between farmers and Extension professionals was also noted in a survey of Virginia Extension agents/specialists. The survey revealed that agents and specialists most often used the following with farmers:

1. demonstration (96%),
2. lecture (88%),
3. field trip (71%),
4. experiment (67%), and
5. problem solving (58%).

Agents and specialists responding to the survey least often used the following teaching methods with farmers:

1. online presentation (0%),
2. creative arts (2%),
3. debate (2%),
4. online tutorial (2%), and
5. simulation (4%).

Even though farmers and Extension agents/specialists ranked games low for learning, agents mentioned they used games in teaching. One agent said, “We give a weed identification deal where they come in and identify the different weeds and win a door prize...you can just see them get into that. They really like it so I think they have a preference for that.” In fact, one agent said he includes games in his teaching but doesn’t tell farmers that is what he is doing.

What Should Extension Agents/Specialists Change or Reinforce in Teaching Methods or Educational Experiences to Align with Farmer Preferences?

Focus group participants agreed that education is often not about the information being delivered but the agent/specialist relationship with the farmer. One farmer said, “I think a lot of people in the county don’t know exactly what their job is.” Another farmer said, “Get out of the office.” And another said, “That’s a large problem with Extension today...the bureaucratic [stuff] has got them tied to a desk instead of out where they are actually helping people in production.”

Overall, for meaningful educational experiences and opportunities, farmers in the focus groups indicated they want from Extension:

Help with Interpreting Information

- unbiased opinions,
- help translate information in lay terms,
- validate or disconfirm information from other sources,
- help farmers see how they can apply information to their operations,
- remember that farmers have a short attention span,
- realize farmers are kinesthetic learners

Knowledge

- research-based knowledge,
- knowledgeable agents and specialists,
- participation in and use of Extension/Land Grant research,
- technical assistance and advice to improve marketing
- expanded educational offerings in both content and process,
- cutting edge and relevant,
- farmers seek out trusted sources of information
- Extension is a valued information provider, but may not be the primary provider (industry reps, non-governmental organizations, cooperatives, government agencies)
- increase online learning resources

Relationship Building

- agents and specialists need to create networks between agricultural groups and service providers,
- agents and specialists need to build a relationship with farmers,
- organize farmer-to-farmer networks, as one farmer described, “So even if they don’t have the answer, at least they have a network of other people. Even if it’s just other farmers in the area...at least know who to send you to...at least be able to network you to other information avenues.”
- provide opportunities for socialization as part of educational events,
- the needs of female and organic farmers are not being met by Extension
- hire agents/specialists with people and group process skills

Support

- public service,
- one-on-one attention on the farm,
- agents who honor and respect farmer’s lifestyle goals and values,
- be available for immediate problem-solving (phone, email, in-person)
- increase support for Extension so that agents can spend more time with farmers,
- be sensitive to all types of agribusiness,
- know the audience they are working
- localize education (one size does not fit all operations),
- realize the agricultural industry is changing

Time and Money

- provide research results in a timely manner so farmers can quickly incorporate results into decision making,
- help farmers save time and money,
- provide educational programs that reveal the economic feasibility of practices

Agents/specialists want Extension to provide the following to support better learning for farmers:

Dynamics of Learning

- know that many people see information as learning, but learning is actually what you do with the information
- know that farmers collect information in a lot of places and ask the agent to check it
- know there are a wide variety of learners and ways they prefer to learn

Provide and Extend Resources

- technology resources for agents/specialists, including instructional technology
- have “master” programs to train farmers and/or volunteers to help deliver Extension education. As one agent/specialist stated, “Master Beef Producers... I keep referring back to, is probably one of the greatest things to happen to us in beef education. I am telling you this because it sure brings our producers to us.”
- set up strong mentoring programs for new agents

Recognize and Remove Barriers

- better communication between specialists and agents
- new farmers and farmers new to the area take up a lot of agent time
- eroding and fluctuating Extension budgets are compromising Extension’s ability to use farmers’ preferred learning methods
- streamline reporting requirements for agents/specialists
- agent turnover/age affects the ability to teach farmers because teaching competence comes from experience
- job demands from changing demographics (migration, pressure to serve new farmers, retirees, hobby farmers, homeowners, etc.)
- job demands from nature of the work (working multiple counties, for example)
- agents assigned to larger geographic areas compromise trust at the local level (social relationships are not as deep)

The Role of Cooperative Extension in Farmer Learning

Provide Relevant and Localized Teaching

The teaching methods used need to be relevant to the farmer by taking into account the producer’s experience with farming, their level of education, the scale of their operation, and their geographic location. Many focus group participants agreed that information to help farmers learn needs to be understandable regardless of education and experience levels, but also specifically tailored to their context. One participant stated, “There’s nothing that’s going to lose my attention more than if you give me some background information that I learned when I was nine years old. You’re wasting my time.” The farmers often mentioned that educators need to know their audience well to provide appropriate information. One farmer stated, “If you’ve got a master’s degree in dirt, but you don’t know how to [explain what you know] so people understand what you’re talking about, then what good are you to the

community?” another said he, “wants to know if this variety is good, this variety is bad, and that’s all. That’s it.”

Farmers were clear that their agribusinesses are not the same and a one size fits all approach to learning does not work. One participant stated, “Not even once did I hear a prescription from that [seasoned] farmer. You can’t go into that person’s situation and land and give them a system to do exactly as you were doing it.” Another said, “You call over here to the research station and they will tell you one way to do it but that’s not the way it really works in your situation.”

One farmer described the difference between two expert opinions he had sought, and he summarized the importance of localized education by stating: “One of them is local and he knew what you needed to know.”

Connect Farmers and Experts

The nature of Extension work is changing. Agents and specialists must now be able to meet the needs of a wide variety of producers from conventional agriculture to alternative agriculture to part time farmers and those farmers who hire others to work their operation. Extension is no longer seen as the only source of information and education for farmers. Therefore, agents and specialists increasingly need to facilitate farmer-to-farmer networks and other group processes to help farmers and experts learn from each other. One farmer said, “The reason I was interested in coming here is not to run my mouth on what I already know but you know, try to soak up and utilize somebody...that’s been doing this for years, could tell me just one thing definitely not to do that could save me time or money or headache.” And “I just discovered that there are other go to people that I have to talk to and having a network would be great.” “Sometimes it helps just to bounce questions off someone that you know who is willing to talk to you.” Farmers also want Extension agents and specialists to set up these networks. One farmer said, “You know maybe the agent should say well maybe I don’t know...let me get to this gentleman, give him his number, and maybe he can help you field this question because that’s not really my expertise...I think the Extension Service sees there is a great need for this and they are pushing in that direction.”

Provide Connected, Trusted, and Knowledgeable Agents and Specialists

Farmers prefer that Extension agents and specialists be well-connected to agricultural groups, agencies, and resource people. They also need to know a wide variety of agricultural content and build deep and trusting relationships with a diverse array of farmers. These relationships are often based on the farmers trusting agents and specialists who have real experience in the field, not just academic training in a topic. One farmer said, “I never call the county agent unless there is a problem. Nobody else knows what’s going on.” One agent said, “If you consider education more than just gaining knowledge, you have to have that good rapport for them truly to take what you said at face value...because they are not going to trust you as much. They may read your newsletter or find your information on the internet. True knowledge, if you want to talk about true education where they truly appreciate what needs to be done.” Agents and specialists also build trust with farmers by helping them interpret information. Farmers indicated they got to agents as a neutral party to “check” the validity of information. One farmer said about his agent, “I like to get my information from somebody that’s not biased...I don’t want a drug rep

telling me that his drug's the only drug that's going to cure that sick cow. I like to go to somebody, get my information from somebody that's not going to make a profit off something he tells me." Another farmer summed up the value of the agent-farmer trust relationship when he said, "If you can trust them, you're more likely to listen to them."

Honor Farmers' Values

Even though agents and specialists have often been exposed to one type of agriculture or a specific set of values that guide agricultural production, they need to be willing to work with farmers who hold a wide variety of values and practice a variety of production methods. One organic producer stated that "There has been a reliance on academia upon spraying and chemicals. And that has been the paradigm that's been taught in the universities which permeated the agricultural process in teaching throughout the U.S., probably the world." In contrast to profitability, organic producers identified their major motivations as personal health and the health of their families, the desire for locally grown food and the desire for sustainable agriculture. Often a farmer's value system is based on economic success. One farmer said, "We've got to make a profit, so let's see where the profit line is drawn."

Care About and Respect Farmers, Their Goals and Their Lifestyle

Farmers appreciate agents and specialists who take the time to show they care about them as individuals, their profession, their dreams, and who they are in the world. Many of the focus group participants talked about the importance of educators understanding their agribusinesses before they are ready to learn from them. They often directed this at Extension agents. Focus group participants said their work ethic and values should be understood and respected before educators start teaching. One farmer said, "Well, I really like the Cooperative Extension websites. I think they are great. I go there a lot and look up things that I'm dealing with like how to grow certain crops. But I think it would be nice if there were more perspectives...it seems for a given topic there will be one farmer's or one grower's perspective on how to grow it or control the pests but if there were multiple people from multiple areas giving input it would be more well rounded."

Differences Between Farmer Groups

Alternative/organic farmer focus group participants share a lot with each other to enhance their success. Alternative/organic producers rely more on books and manuals to learn than other groups. Both alternative/organic and women's focus groups felt they received less attention from Extension than other groups. Both groups feel they have unique learning needs. Alternative/organic producers, for example, noted that they did not usually grow on a farm.

Female producers felt they learn and operate differently than their male counterparts. They specifically believe they more often multitask, are more organized, and are more adaptable to change. Female producers said, "I mean as women we are multi-taskers...cause it seems like I have a wonderful husband but it's like one thing at a time." "I just think women like change (and) are adaptable to change better than men. Men like the security of routine and they like to know what to respect." "I think a woman has more of an effect to get them (men) there (to educational events)."

Farmers Enjoy Teaching Each Other

Peer teaching and learning was mentioned by many of the focus group participants. This included apprenticeships with experienced farmers or helping a new farmer get started. Many participants commented on generational learning. One farmer said, “My learning began with my grandmother and my father and my mother and I’m still learning from my mother who is ninety one years old.” Another farmer said, “I had no agriculture background when I wanted to start farming. I found a farm and went and worked for them for two seasons.” And another said, “We did have a vineyard for several years and but before we really started on ours I basically apprenticed myself out to another vineyard.”

Motivation to Learn

The focus group members all stated that farmers are motivated to learn to save time and money to be on the cutting edge with research, and to socialize (see Figure 1). Most were interested in making a profit. This motivates them to learn and to make decisions about how to maintain or improve quality of life, preserve and continue a legacy for themselves and their family, and sustain their family in a rural economy. Many of the participants prefer to learn about something new if an expert can demonstrate how it will save them time and money. One farmer said, “Marketplace agriculture is now so global you have to be on the cutting edge or you are going to be behind all the time so you have to have relevant information presented to you in order to keep your operation on the edge.” Another farmer said, “you have to put a dollars and cents figure on it...don’t come up with new technology without putting any numbers behind your technology and what it’s going to do for our operation and how it can benefit us.”

Value of the Research Process to the Steering Committee

Farmers and Extension agents and specialists on the steering committees valued their participation in this research project through increased knowledge, networking, and other impacts reflected in these comments:

- “It allowed me to gain insight on how other farmers prefer to learn new information and to network with Extension agents/specialists to learn how they are trying to meet the needs of the agriculture community.”
- “It reinforces that farmers want to be helped individually and to learn by doing.”
- “I enjoyed being part of a process that will shape the information delivery to farmers.”
- “I’ve got a first-hand view of a participatory research project, and I’ve learned a lot about the life of farmers and their relationship with Extension.”
- “Developing a comprehensive educational program for diverse agricultural audiences with multiple teaching methods to improve the program impacts takes time and collaboration with the audience.”

- “For me, the value is in working with a team of people that are interested in program development and concerned about the ineffective role Extension plays in the sustainable agriculture community. It is also valuable in that it inspires me to think about new and creative ways that my work can influence change. Also, working on a project with [a researcher], who is very well-accepted and liked in Extension, had gotten me some "ins" with other Extension agents/specialists.”

Project Limitations

All but one focus group was organized by Extension agents and specialists, which may have biased the data in favor of Cooperative Extension. Steering committee members sometimes attended focus groups as observers which may also have influenced participant’s input. That is, discussion may not have been as rich, deep, honest, or open with Extension agents and specialists and steering committee members present. The focus groups were conducted in the fall and winter season and farmer’s responses may have differed if they were asked the same questions at a different time of the year due to the seasonality of some of their work. This research included a small number of farmers involved with certain aspects of agribusinesses so results should not be generalized to other farmers or groups. Finally, a downturn in the economy that took place during the time of the focus groups may have shaped the participant’s responses.

Implications

This project gave farmers the opportunity to voice their perceptions and positively influence the delivery of Extension educational programs. The data suggests the following improvements and changes for Cooperative Extension:

Administration

- New agents/specialists need people skills and not just a focus on sharing information.
- Extension needs to give new agents/specialists time to build relationships with key farmers.
- New agents/specialists need a deep local orientation with key contacts to be socialized into farmer networks.
- Agents need to be good generalists and trained in areas outside their specialty to meet a wide variety of farmer’s needs.
- New agents/specialists need to be freed from bureaucratic duties (what one farmer called “butt work”) for several months to build relationships and get to know the context.
- As State Cooperative Extension Systems have fewer agents and specialists, they need to work across states to share information and learning opportunities.
- If the goal of Extension is to build deep and long-term relationships with clientele, the organization needs to enhance incentives to retain agents and specialists long-term.
- Extension agents/specialists’ professional development needs to equip employees with the tools and experience necessary to meet farmer learning preferences and needs.

Agents/Specialists

- Extension agents and specialists should expand their role in building relationships with farmers and agencies that may require learning group process and facilitation skills.
- Extension’s educational program delivery should reflect farmer’s preferred learning styles. (i.e.: use interactivity more often and other methods less often)
- Farmers have many sources available to them for educational information. Agents/specialists can enhance the motivation for farmers to place a priority on Extension information by adding incentives to educational programs (i.e. pesticide safety credit, meals, have quality speakers, etc.)
- Farm visits made by agents/specialists are important to initiate and maintain farmer relationships.
- Extension agents and specialists should use the Internet for learning for the 73% of farmers who indicated they preferred this learning method.
- Extension agents and specialists need to facilitate on-farm research, farmer and industry relationships, and farmer networking.
- Extension should provide focused newsletters for specific agribusinesses rather than general “one size fits all” content.
- One-on-one and face-to-face educational delivery is highly-valued by agents and specialists. They have less time for field visits than in the past, so they need to develop volunteers to expand their work.
- Eroding Extension budgets are compromising the ability to meet preferred farmer learning needs, therefore new partnerships need to be built to maintain and expand farmer relationships and learning.
- Extension agents and specialists need to realize that farmers are not highly motivated to attend meetings unless their needs are directly and specifically addressed.

The overall lesson learned from this research is that Extension agents and specialists need to not only be experts but to be an architect of learning processes and environments that directly meet farmer’s needs.

Conclusion

The How Farmers Learn: Improving Sustainable Agriculture Education research project provided the opportunity for farmers to voice directly their learning preferences to influence and improve Extension educational program development and delivery. A farmer’s desire to remain viable and innovative can be met in part, through effective Extension agent and specialist professional development that results in educational programs, both content and processes aligned with farmers’ preferred methods of learning.