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Penn State Extension Services and Plain People: An Inside Perspective on a Trust-based Relationship

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Abstract: This perspective on Penn State Extension Services and plain people is based on my personal experiences as a plain person, in which I interacted with Extension Services first as a farmer, and then (while working on a doctorate) as a part of the Extension system. Penn State Extension started over a century ago and was deliberate in reaching out to plain (conservative Anabaptist) farmers since the beginning, which led to a history of trust-based cooperation. For all these successes there remain challenges to effective cooperation with certain plain individuals and subgroups. I suggest these challenges are broadly similar to those experienced in other cross-cultural interactions, such as those that span broader cultural divides within the United States, and I discuss them within the categories of personal and social, technological, and philosophical differences. In general these differences are less problematic in typical Extension work that is well-defined in scope, such as management of specific insects or diseases, while successful cooperation on more open-ended topics, such as food safety, agricultural runoff, and (especially in the early years) the Extension System itself, relies heavily on trust-based personal relationships that arise from commonalities and mutual understandings that extend beyond the subject matter. More broadly, building on the history of trust-based cooperation, I present a vision of farmers (both plain and non-plain) and the scientific community as collaborators in the production of nutritious and affordable food, with Extension personnel as key communicators in that farming-science interface. [Abstract by author.]

Keywords: Old Order Amish; Groffdale Mennonite Conference; agricultural extension; outreach communication; conventional agriculture; government subsidies; trust

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PERSONAL BACKGROUND

My personal experiences with Penn State Extension Services began on my family's farm in New Holland, PA. My parents owned and operated a 50-acre farm with a 100 sow farrow to feeder operation, 25 steers or heifers, and a 28,000 head broiler chicken house on contract with Tyson Foods. Our crops were mostly corn with some hay and small grains, about an acre of pumpkins, a few dozen fruit trees, and large garden.

I helped out with all aspects of the farm, but plants and soils interested me the most. As a teenager, I worked on my uncle's dairy farm for a year. Then I worked for a neighboring organic dairy farm for five years. On the organic dairy farm I worked closely with their soil consultant and agronomist to help plan the crop rotation and produce feed for the cows. I also managed the home farm for a few years while my father was being treated for a brain tumor. While working on these farms, I attended and gained valuable information from seminars and field days put on by Penn State Extension Services.

My parents were members of a congregation of the Groffdale Conference Old Order Mennonites and I was raised within that culture and faith practice. Our primary language at home was Pennsylvania German, although I also learned English from a very young age. My primary formal education was eight years in a private one-room parochial school with other Old Order Mennonite and Amish children. As is customary with the Groffdale Conference Mennonites, our home did not have any television, radio, or internet, and we used horse and buggy for our transportation and tractors with steel wheels for the farm work. Wanting to be part of a local Christian Church and with a deep appreciation for the culture and practice of the Old Order Mennonites, I joined the Groffdale Conference when I was 18.

Throughout my young adulthood I continued to pursue my interests in plants and soils and explored the world around me. A three-year stint in new home construction gave me valuable skills but convinced me that I would prefer working in a farming related field. My curiosity about other cultures and places led me to take several long multi-day bicycle trips throughout the United States with some of my friends. In 2010, with a fellow Canadian Old Order Mennonite, my travels culminated in a 12-week backpacking and cycling trip to Europe and the Middle East, which introduced me to a broad range of cultures and gave me new perspectives on my own culture (Martin 2018).

In a typical American setting, I likely would have completed high school and pursed my interests in college; however, as an Old Order Mennonite, I pursued my interests through my work, reading, and traveling. This strategy came to a head, however, when in order to better understand soils, I tried and failed to teach myself chemistry. I realized that I would have to either resign myself to never learning those things, or I would have to find a teacher. I considered college but didn't know where to start, and besides, college is just not something one generally does as an Old Order Mennonite. I explained my dilemma to a salesman we had worked with and was advised that I should consider taking classes at the Lancaster campus of Harrisburg Area Community College (HACC). It was affordable, close enough that I could commute by bicycle, and would give me an opportunity to test the waters to see if college was for me.

I enjoyed the college classes I took. As I went to sign up for more classes, the academic advisor recommended I apply for a scholarship for a four-year degree. I figured it wouldn't hurt to try and was delighted to receive a full tuition two-year scholarship from Bucknell University. Not only did Bucknell have good academics but it was also just down the road from an Old Order Mennonite settlement. A preacher from the local congregation implicitly blessed my decision by welcoming me to live with him and his wife while I took classes at Bucknell. I graduated with a degree in biology and a minor in chemistry. I now had a solid science education to go with my practical farming experience but not much experience in combining the two. I therefore applied and was accepted to the graduate school at Penn State University in the department of Plant Pathology and Environmental Microbiology. My advisor was Dr. Kari Peter, who has a research and Extension appointment at the Fruit Research and Extension Center in Biglerville PA, which once again was conveniently located within cycling distance of an Old Order Mennonite settlement.

My dissertation focused on the biology and management of bitter rot of apples, a topic chosen

to address farmers' reports of increased losses to this disease. This research involved close cooperation with apple growers and included presenting the results at various Extension events, including field days and winter meetings. Post-graduation, I am working for a contract research organization, a position that is especially attractive because it is close to my Old Order Mennonite church settlement. Throughout my higher education, I made a committed effort to stay connected to my church and have been blessed by the level of support I received.

Obtaining a doctorate while a member of an Old Order Mennonite Church was perhaps less challenging than one might imagine. I did not so much "go to" college; rather, I lived with my parents, with the preacher, or off campus and attended classes at college to learn more about plants, soils, and agriculture. This distinction was not mere rhetoric; it got to the heart of how I approached higher education while addressing both my own concerns and those of my church, which were not primarily with higher education per se but with the social and philosophical environment in which it occurs. I was also not the first Old Order to obtain higher education; the Groffdale Conference has a long history of women obtaining nursing degrees. It is perhaps noteworthy that numerous non-Old Order people have expressed surprise and astonishment that I attended college as an Old Order Mennonite, while my fellow church members ranged from indifferent to curious about what I was doing.

It is from these perspectives that I write the following pages on Penn State Extension Services and plain people. I understand that my experiences are unique and that my opinions are not necessarily shared by other people who have been involved in Extension or by other plain people. I welcome critiques and responses to the perspectives I present here.

BRIEF HISTORY OF EXTENSION SERVICES AND PLAIN PEOPLE IN PENNSYLVANIA

University Extension services in Pennsylvania began in 1910, with the appointment of the nation's first county Extension agent in Bedford County (Zettle 1986). The number of Extension agents dramatically expanded with the passage of the Smith-Lever Act in 1914, which provided federal funds for agricultural Extension work. By 1920, each county had an agricultural agent to help its farmers (Zettle 1986). These agents were generalists, advising on everything from animal husbandry to vegetable production to food safety. As agricultural practices became more advanced, Extension educators became more specialized and began covering multicounty areas. Penn State Extension currently has seven administrative units that focus on 4-H Youth Development; Agronomy and Natural Resources; Animal Systems; Energy, Entrepreneurship, and Community Development; Food Safety and Quality; Horticulture; and Food, Families, and Health.

The plain people, which include Amish, Conservative and Old Order Mennonites, and Brethren, have lived in Pennsylvania since emigrating from Europe in the eighteenth and early nineteenth centuries, when they settled in the southeast Piedmont region. They have historically been an agrarian people, with a strong sense of separation from the world and an avoidance of involvement in military or government service. For reasons related to their history as well as a reaction against rapid social changes, plain people have resisted many modern-complex technologies that could disrupt the social order. This ranges from the rejection of the personal use of tractors and automobiles by the Amish and some Old Order Mennonite groups to similar rejections or restrictions on computers and the internet by many plain churches.

The increase in the population of plain people in Pennsylvania, many of whom continue to be farmers, coupled with the overall decline in the number of farms, means that an ever increasing number of farms in Pennsylvania are owned and operated by plain people. In 1920, the first census after Penn State had Extension services across the commonwealth, Pennsylvania had 202,250 farms, while 100 years later, in 2020, it had only 52,700 farms, a drop of nearly 75% (USDA 1920; 2020). During the same 100 year time-frame, the population of Plain Anabaptists grew considerably, and they moved into most of the farming regions of the state.

Because of these population trends, Penn State Extension educators have been increasingly working with plain farmers. In the early years of Penn State Extension, there would have been fewer dif-

ferences in farming methods between mainstream society and plain people, as most farmers would have used horses. The technologies that plain people came to reject were not yet invented. Rapid technological and social change have been key features of the past century, and the twin trends of population changes and cultural divergence mean that not only has Penn State Extension been increasingly working with plain farmers, but the differences between mainstream society and the plain people have grown larger in many ways.

In spite of the potential challenges that come with working across cultures, Penn State Extension services have generally had excellent working relationships with the plain people. In the following sections, I will discuss some reasons why I think they have this good working relationship, some areas where they lack credibility, and thoughts on how the existing relationships can be maintained and improved.

A HISTORY OF COOPERATION

Penn State Extension personnel have a long history of building and maintaining personal relationships with plain people. The first Extension agents in counties with large populations of Pennsylvania Dutch (German) speakers, which would also have included many Lutherans and other non-plain farmers, were required to be fluent in the Pennsylvania German language (Zettle 1986). This helped alleviate fears that the county agents were politically motivated. Floyd S. (Dutch) Bucher, the first county agent in Lancaster County reported that "There is a general opinion held in some sections of the county that the County Bureau is an institution organized for political ends. This idea was originated and stimulated by one or more articles in one of the local papers." Bucher goes on to say,

> In order to secure a hearing the county agent has found it all together advisable to demonstrate first of all that he is able to do a man's work if the opportunity presents itself. This together with the use of the German tongue proves the most effective means of securing confidence. When you have once made a friend, you have a man with whom you can work even though it may be on the slow but sure plan (Zettle 1986, 22).

Speaking of the first generation of county Extension agents, Zettle (1986) writes,

> I had the feeling these were hand-picked persons, not only for their subject matter, but also for other special talents. Bucher was the only candidate for Lancaster County who could speak Pennsylvania Dutch, and the *Allentown Morning Call*, in announcing Al Hacker as the first agent in Lehigh, said nothing about his qualifications except, 'New County Agent Speaks Pennsylvania Dutch. (Zettle 1986, 101).

The first Extension agent in Berks County, Charles Adams, said,

> […] we have been steering clear of the Word 'agent' in connection with our work. Many farmers look with great suspicion to anyone who calls on them if he introduced himself or is introduced by someone else as an agent of some kind. Since we are working among a very conservative Pennsylvania Dutch element, we must exercise great care in meeting farmers for the first time. The title which I prefer to use in my work is County Agriculturalist" (Zettle 1986, 22)

W. L. Bollinger, who passed away in 1938, reporting on an incident in 1916, said, "County Agents in Dutch Counties" were required to be able to speak Pennsylvania Dutch "at that time" (Zettle 1986, 99), indicating that the language requirement only applied to the first generation of Extension agents who needed to assure the farmers that they were not agents of some political campaign, build trust with farmers, and establish the reputation of the Extension Services.

In my personal experience talking with retired plain farmers, many will recall working with specific Extension agents during their farming career, and most describe the experience in neutral to positive terms. Penn State has had many capable Extension educators over the years, many of whom had the advantage of growing up in rural farming communities, sometimes with plain neighbors. After years of experience in Extension, I suspect some of them were nearly as familiar with the plain people as plain people themselves.

Penn State Extension has taken numerous steps to accommodate and include the plain people in their outreach efforts. As more and more communication has moved online, Penn State Extension has continued to provide print forms of

publications, such as their *Fruit Times* newsletters. Extension-authored articles regularly appear in print publications such as the *Lancaster Farming* and the *Pennsylvania Vegetable News*. Penn State Extension operates an IPM telephone hotline (1-800-PENN-IPM) where anyone can call in and receive updates on diseases and insects of various fruits and vegetables. As produce auctions have become more popular among plain people, Penn State Extension has put up kiosks at each produce auction with posters and print publications on various crop management topics. They have even assisted with transportation to educational events. At the annual Mid-Atlantic Fruit and Vegetable Convention in Hershey, PA, Penn State Extension has incentivized plain non-car-driving farmers to attend by reimbursing the cost of hiring a van and driver as long as they were able to fill a van with farmers.

Penn State Extension has also actively included plain people in on-farm research trials and demonstrations. For example, Penn State Extension worked with a conservation district and a local Amish fabrication shop to build a no-till tobacco planter to be rented out at reduced cost to plain farmers (Graybill 2018). Plain people often cooperate with Extension services on U.S. Department of Agriculture (USDA)-funded Sustainable Agriculture Research and Education (SARE) grants, although they almost never apply for and receive those grants themselves. Examples of plain people as cooperators on Extension led projects include research on flowers (Bogash 2011), cheese making (Kaylegian 2019), and onions (Hoepting 2009). Plain people have also been the explicit targets of SARE projects lead by the Pennsylvania Department of Agriculture, in which the project leaders worked with numerous plain farmers to adapt IPM practices (Bingaman 2006; Thomas 2012). It should be noted that the success of both of these projects was facilitated by working relationships between the leaders or cooperators and plain farmers, and then approaching farmers who they already knew would likely be open to this type of participation.

Penn State Extension educators with strong connections with plain people have published guidelines for other Extension educators to follow when working with plain people. In the publication, *Working with Plain Sect Growers,* Extension Educator Jeffrey Stoltzfus, who lives among the plain people and is a part time farmer himself, provides insights into successfully working with plain farmers, including tips on how to establish relationships, navigate technology restrictions, and utilize the informal "Amish internet" of word-of-mouth social networks within communities (Stoltzfus 2019).

CHALLENGES TO EFFECTIVE COOPERATION

For all the successes that Penn State Extension has had in working with plain farmers, there are still sub-groups and individuals that have negative or even hostile perceptions of the University Extension System. Some of these perceptions stem from negative experiences individuals have had with Extension personnel or the Extension system, but many are more broadly rooted in philosophies and viewpoints that view the Extension system with suspicion. Potential challenges to effective cooperation can occur on personal and social levels, technological levels, and broad philosophical levels. I discuss each in greater detail below.

Challenges on Personal and Social Levels

Various writers have, correctly, stressed the importance of personal relationships when working with plain people (e.g. Brock, Ulrich-Schad, and Prokopy 2018; Stoltzfus 2019). What might be implied from these recommendations is that strong personal relations are a unique feature of the plain Anabaptist religion and culture. I would suggest that personal relationships are important in all intercultural interactions, especially those that lack rapport-building commonalities. Consider two non-plain Extension educators who might build rapport with each other by discussing the universities they attended, the football teams they support, and their favorite podcasts. This would have absolutely no connection to plain farmers whose analogous points of interest might be their relatives and if they would know any of them, the church group or congregation they are part of, the current prices of produce, milk, and so forth. An Extension educator who has many things in common with a plain farmer is likely to have an easier time building rapport.

Cultural barriers between plain people and those outside their communities can also be un-

derstood in the context of the cultural and societal divisions within the larger American society. Plain people do not live in a vacuum. Although plain people do not run for public office and tend not to vote in political elections, the predictors of political affiliation offer a view into societal divisions in America, to which plain people are not immune. *The Economist* magazine and the pollster YouGov found that the biggest predictors of political party affiliation were, in order of declining significance, religion, race, sexual orientation, education, rural/urban, and gender (The Economist 2018). These predictors of political affiliation are indicators of broad societal and cultural divisions within American, and Extension educators will often be crossing one or more of those divides when working with farmers, irrespective of whether those farmers are part of a plain church.

A more specific and probably more important cultural divide is simply between farmers and non-farmers. The differences between farmers and non-farmers may appear small and nuanced, but collectively, they can have a strong impact. On the 225th anniversary of Stumptown Mennonite church (a non-plain congregation in Bird-in-Hand, PA), the deacon, Ivan Lehman, noted that the biggest changes in the church's history came not with the American Revolution or the Civil War but in the previous 25 years as congregants quit farming and moved on to other occupations (Buescher 2006). A car-driving Old Order Mennonite who created nutrient management plans for other plain farmers recounts meeting an Amish farmer whose first question was, "Do you speak [Pennsylvania] Dutch?" When told that he did not, the second question was, "Did you grow up on a farm?" An affirmative answer to that question created the necessary rapport for a productive working relationship (Davin Martin, personal communication). The rapport that a farmer has with someone who is or was also a farmer is likely because such a person is perceived to have an intimate and realistic view of the challenges farmers face.

With all this said, these personal and social barriers are less of a problem in typical Extension work where Extension services have an established reputation and the focus of cooperation is well defined in scope. For example, a farmer may have questions about how to identify and manage the insects that are damaging his vegetables and will readily cooperate with an Extension agent in working towards that goal, irrespective of how far apart they are on other issues.

However, the less well defined the scope of interaction, the more important a trust-based personal relationship becomes. The early years of Penn State Extension were an example of this, as farmers did not yet know what Extension was about or what its real motives were. This is especially true for new initiatives that involve some level of government regulation, which was a key factor in the anecdote about nutrient management plans. Another example would be education about the new Food Safety and Modernization Act (FSMA). Education programs that involve new regulations always raise the fear that Extension agents are out looking for trouble and could be involved in enforcement efforts that could result in fines, or in the worst case, shutting down farms and destroying their livelihoods. In the uncertainty surrounding new regulations, it becomes crucially important for a farmer to know whether an agent is for them or against them. The primary basis for that determination is a combination of how much the farmer and agent have in common (such as if the agent has a farming background) and the personal relationship and rapport between the farmer and agent.

Penn State Extension's approach to FSMA education is a positive example of these principles at work. Educating farmers about FSMA and bringing farmers into compliance were always going to be challenging, as some FSMA rules, such as the separation of livestock and fresh vegetable production, was hugely problematic for plain farmers who used horses to pull their vegetable sprayers and harvesting wagons. Fortunately, Penn State Extension was able to hire someone who was well-trusted and highly respected among plain people to lead their FSMA education. Jeffrey Stoltzfus had a wealth of experience among plain people and filled the role as an educator, representative, and advocate. Stoltzfus and others involved in extension communicated with the relevant authorities about the challenges plain farmers had in complying with FSMA and were able to find solutions that satisfied both the food safety concerns and the plain farmers' lifestyles. Perhaps the biggest indicator of success was how un-controversial it was (or is). I heard people express annoyance at the new regulations but little to no sentiment that it is part of a government plan to control every

part of our lives, or anything along that line. I can only speculate, but I doubt it would have gone this well for someone lacking a strong trust relationship with plain people.

Challenges on Technological Levels

Restrictions on technology are the most obvious and well-known difference between plain people and mainstream society, but these differences are often more practical than fundamental. For example, the basics of IPM are the same regardless of whether a plow is pulled by two horses or a 200-horsepower tractor or whether a pesticide is applied with a self-propelled GPS-guided sprayer or a handheld backpack sprayer. Once enough plain farmers become convinced of the value of a certain practice, they can usually find a way to get it done. Consider no-till farming, which requires specialized planting equipment. The commercially available no-till planters were not designed to be horse-drawn, but once Amish farmers in Lancaster County saw the benefits of no-till, they were soon retrofitting standard no-till planters for use with horses (Stoltzfus and Mintz 2019). Another example is internet-marketed Community Supported Agriculture (CSA), which are programs where customers pay a subscription for regular deliveries of fresh seasonal food from local farms. Even though most Amish do not have internet access, they have worked with non-Old Orders to organize and run CSAs, of which *Lancaster Farm Fresh* (lancasterfarmfresh.com) and *Groundwork Farms* (www.groundworkfarms.com) are but two examples. There can be large differences in the willingness of any given set of plain people to adapt to a new practice. The examples above, which are largely from Lancaster County, PA, may not necessarily apply to plain people elsewhere.

The practical challenges of working with technology restrictions that plain churches have adopted can have indirect but far-reaching consequences. For example, if a plain farmer asks an Extension educator about the progression of cucurbit downy mildew (this disease moves up from southern states every summer) and is told that updates are only available via a smartphone app or email updates, not only will the plain farmer have additional hurdles to access this information (such as via a non-plain neighbor or crop consultant), the unwillingness of the Extension personnel to communicate via a culturally acceptable medium will mean that it is less likely that the plain farmer will be open to advice from Extension personnel in the future. A complicating factor is that technology restrictions vary widely across plain churches, and technologies used by one plain farmer will not necessarily be accepted by the next (Brock, et al. 2018; Stoltzfus 2019). There are books such as Scott (1996) that provide excellent overviews on this topic, but the nuances are best determined through personnel connections. Most plain churches will have a few unofficial experts who know exactly where they and all the neighboring churches are drawing the line on any given technology.

Challenges on Philosophical Levels

Challenges on philosophical levels have to do with differences between Extension services and farmers in the basic framework with which they approach farming and life in general. The two most common are differences between conventional and organic farming, and between local, community-based financial assistance and broader, government-based financial assistance. There are also differences between private companies and Extension services (for both plain and non-plain farmers), but these differences are usually more in the extent to which a practice should be followed than in the basic framework of the practice itself. For example, it is well known that fertilizer and chemical companies tend to recommend higher applications of their own products than Extension educators do, but under the right circumstance, these are products that Extension educators may still recommend.

University Extension programs generally follow the broad scientific consensus of the agricultural topic they work with, including the safety and proper use of synthetic pesticides and fertilizers and the planting of GMO (Genetically Modified Organism) seeds. In contrast, organic farming practices strictly avoid the use of those things, and farmers who are true believers in the philosophy of organic farming are often deeply suspicious of any organization that might recommend the use of synthetic pesticides and fertilizers or the planting of GMO seed. An example of this sentiment can be found in the statement of the philosophy of

the (non-plain) organization *Acres U.S.A.*, which states:

> Ecologically sound agriculture exists, it produces superior food, and it is backed up by sophisticated research. For many years, extension services and agricultural colleges have coped with this annoying fact by ignoring it. With a few exceptions, they've refused to teach it ever since the great discovery was made that fossil fuel corporations have grant money. (Acres U.S.A. 2021)

In this view, Extension services are at the core of the problem, not the solution. It should not be a surprise that individuals that hold these views are reluctant to cooperate with Extension services. Penn State Extension also manages the continuing education for licensed pesticide applicators for the Pennsylvania Department of Agriculture, which might accentuate the perceived connections between Extension services and chemical companies.

While many of these "alternative" views on agriculture have adherents across the American cultural spectrum, it does seem that plain people are more likely than the general American public to be sympathetic to these viewpoints. Ideas about agriculture are closely tied to ideas about healthcare, and some plain people, especially those of certain settlements, prefer alternative healthcare to standard modern medicine, in large part because they prefer the advice of family, friends, and plain people's publications over the advice of non-plain medical professionals (Anderson and Potts 2020; Sauder 2020). Plain people are unlikely to have an advanced medical or scientific education, so viewpoints from the medical and scientific professions tend to be underrepresented in their trusted circle of personal acquaintances. The uncooperative attitudes that Extension personnel may experience with certain plain farmers may not have as much to do with the educator or the Extension system, as it has to do with the alternative views that a plain person may have adopted, which often makes anything affiliated with chemical companies, pharmaceutical companies, or the government as part of the problem.

It should be noted that rarely is any particular agricultural or health practice (outside of specific technological restrictions) endorsed or prohibited by official church teachings, so it is common to find wide variations in any particular plain person or plain community's enthrallment with a given practice or idea. I have further observed that these views tend to exist on a spectrum, and generally only the people on the alternative extreme will refuse to cooperate with Extension services. Many organic farmers recognize that the IPM-based approaches used by most Extension educators have a lot of value for them, and many Extension Educators are well versed in organic practices and have organic-specific recommendations for those growers.

Extension services are government funded, and while Extension personnel are not government employees per se, strong reluctance to accept anything perceived as government handouts can complicate the cooperation of plain farmers with Extension services. There is a perception among plain people that an unofficial agreement of sorts exists between plain people and the government. The perception is that, if plain people do not request or accept government assistance, the government will not require plain people to serve in the military or participate in activities that are opposed to their faith. Some plain churches have strict prohibitions on accepting government funds while others simply recommend against accepting them. Indirect assistance, where a conservation district may pay for improvements such as riparian buffers, barnyard improvements, and cattle stream crossings, have seen mixed acceptance by plain farmers, with one report from Lancaster County noting that Old Order Mennonite farmers were more reluctant than Amish farmers to join such programs (Gruber 2013). In the previously noted examples where plain farmers were cooperators on SARE grants, the plain farmers did not (to my knowledge) receive any direct payments; they simply cooperated in running experiments on their farms at little to no cost to them, and they were not reimbursed for the labor they put into the project. On a biodiesel project led by Wilson College, an Old Order Mennonite was listed as an "unofficial participant"; he did not accept any grant support for his project, but he did attend a SARE-funded hands-on workshop and sought out technical advice and support (Steiman 2009).

CONCLUDING THOUGHTS AND A VISION FOR THE FUTURE

Penn State Extension and plain Anabaptist people benefit from having a foundation of a century of cooperation on which to build future working relationships. The future success of these relationships is dependent on identifying successes in the past and adapting them to current challenges. I am of the opinion that, with the exception of some cultural nuances, technology restrictions, and avoidance of government assistance as discussed previously, the things that have made Penn State Extension successful with farmers in general are the same things that have made them successful with plain farmers.

The mainstay of the success of Extension services has been having skilled and trusted personnel deliver relevant and useful information to farmers, and then by taking relevant information back to scientists to keep research focused on addressing farmers' needs. Extension educators operate at the interface of the academic/scientific and applied agricultural worlds. They need to be familiar with both worlds to effectively interpret and communicate the information coming from either direction. There are no replacements for Extension educators having "boots on the ground"; ones who are personally familiar with the farms in their area and are trusted by both farmers and scientists.

There is a temptation to view Extension services as one-way streets, with educators obtaining information from scientists and passing it along to farmers. This is admittedly the direction in which most of the information flows, but it is a mistake and a huge missed opportunity to view the Extension services-farmer relationships in this way. This runs the risk of viewing farmers merely as somewhat ignorant information consumers and Extension educators as information salespeople, instead of viewing farmers and scientists as collaborators in the production of nutritious and affordable food, and Extension personnel as the key communicators in that farming-science interface.

It is this collaborative framework that has the greatest opportunity to maintain and improve the relationship between Extension services and plain people, and, quite frankly, between scientists and plain people. There is a huge amount of intellectual capital in agriculture among plain people. In mainstream American society, similarly talented people might become doctors, lawyers, and scientists, while plain people are more likely to be farmers. These people make important contributions to the cultivation of nutritious and affordable food. There are synergistic benefits to having them in close communication and collaboration with scientists.

The key ingredient in all collaborations is trust. As a doctoral student, I have been involved in several collaborations among scientists and have seen how trust in as important in science as it is in farming. I have been warned by some scientists not to collaborate with certain other scientists or risk being taken advantage of. I have seen how scientists will often distrust a research article if it runs counter to their current opinion and is published by scientists they do not know in a journal they have never heard of. I have seen the value of scientific meetings where scientists can personally meet with one another to build and maintain working relationships. All this to say that the ingredients that make a successful collaboration or working relationship are not that different, whether they occur within or between the scientists and farmers.

Not all farmers, plain or otherwise, are interested in collaborating with scientists. However, the farmers that are willing and able to do so tend to be influential in their communities and are the ones on whom Extension personnel should focus. I know of no way to identify them other than by building personal relationships with farmers and then using that network of connections and established trust to determine which ones have an interest in the topic at hand and would be willing to collaborate or piggyback on someone who has already established those connections.

Collaborations with farmers do not have to be lengthy and time consuming to be successful. In my dissertation research, we asked apple growers to send us apples with bitter rot and fill out a detailed questionnaire, where they estimated the percent of the crop they lost to bitter rot that year for each cultivar they grew, their fungicide application program, and the patterns of bitter rot distribution in their orchards. Over 30 farmers responded, including several plain people. Not only did research on the fungi we isolated from those apples form the core of three peer reviewed scientific papers, results from the questionnaire were included in each of those papers and greatly

strengthened our conclusions (Martin, Krawczyk, Khodadadi, et al. 2021; Martin, Krawczyk, Pierce, et al. 2021; Martin and Peter 2021). Each farmer that participated received a report with details about the fungi from the apples they sent, including how sensitive they were to commonly used fungicides and notes on how it compared with fungi from other orchards. The information was used to update Extension publications and was presented to growers at orchard meetings and conferences. There is no doubt we as scientists benefited from this collaboration. Based on informal feedback from apple growers, most of them felt the same way. It did not take a lot of the apple growers' time or effort, but they would not have shared their records with us had it not been for the trusting relationship that existed between them and the Penn State Extension personnel.

One of the most important aspects to producing high impact scientific research is starting with a good hypothesis. Especially in applied research, the observations, experiences, and questions of perceptive farmers can go a long way in winnowing out mediocre ideas and setting a research project on a productive path. The determining factor for impactful research is not just statistical significance but biological and economic significance within an agricultural context. Farmers can provide that context. The benefits of having farmers and scientists work closely together to produce nutritious and affordable food are not always obvious or easily quantifiable, but they are real, and Extension personnel are ideally situated as mediators and interpreters that can facilitate these relationships.

The ideas presented here are not original to me; they have been the modus operandi of many excellent Extension personnel over the years. I have simply recorded what I have observed and experienced to work well. Those Extension personnel deserve a lot of credit for the trust they have developed and the impacts they have made on Pennsylvania agriculture. Scientists deserve credit for the tremendous increases in knowledge about agricultural systems. Similarly, plain people also deserve credit for maintaining and developing innovative farming methods and farming cultures that have allowed their family farms to flourish even though family farms have declined nationally. These groups of people, which are by no means mutually exclusive, have had great success, and with a carefully cultivated culture of communication and trust can look forward to a bright future of working together in the production of nutritious and affordable food.

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