Eastern Pennsylvania Farmers' Perceptions of the Factors Most Responsible for Farming Success

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Abstract

Eastern Pennsylvania farmers show strong similarities with respect to what factors are viewed as causing an operation to be successful. On the other hand, there are some differences in the extent to which they think they can control their farming success. While weather is critical and regarded as uncontrollable, differences stem from farmers' abilities, or lack thereof, to cope with price fluctuations for their field crops. Much of this probably reflects inter-individual differences in what social psychologists call *locus of control*, but it also reflects prior investment and marketing decisions, such as buying expensive grain-drying equipment so they can wait for prices to improve or developing relations with direct-retail customers. Farmers also differ in the role they attribute to luck and/or God. Based on preliminary and qualitative data, this paper reviews similarities and differences in farmers' causal thinking.

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1. Background.

Fieldwork Setting.

The Lehigh Valley is located in east-central Pennsylvania about 100 miles west of New York City and 65 miles north of Philadelphia. The study area itself is about 50 miles (E-W) and about 40 miles (N-S) with approximately 750,000 people living in the region. The settlement pattern is mixed, i.e., about a third of the population lives in three small cities (Allentown, Bethlehem, Easton) and the rest live in suburban tracts and smaller towns surrounding the three cities.

The region was first settled by Europeans in the 1700s, and for at least a hundred and fifty years the economy was primarily agricultural. Beginning in the mid-1800s and lasting through the late-1900s, the economic base shifted to heavy industry (e.g., Bethlehem Iron Works, Bethlehem Steel, Mack trucks, and other manufacturing industries). Since the 1980s, the economy has shifted once again, becoming much more diversified (e.g., warehouses, electronics, biotech, health care, education, etc.).

The net effect of population growth and changes in the economic base is that open spaces for farming are being "developed" at a rapid pace, leaving only smaller plots of non-contiguous farmlands. And, because of the complex geology of the region, these open spaces are situated on a variety of soil types. As a result, within the relatively small study area, there are at least eight kinds of farms, categorized on the basis of their primary products and sources of income.

- Commercial grain farms … corn, soybeans, hay, wheat
- Beef farms [small-scale]

- Dairy farms [small-scale]
- "Educulture" farms … income mostly from student and tourist visitors
- Poultry farms … turkey, chicken
- Exotic animal farms … llama, alpaca, buffalo
- Orchards … apples, pears, berries
- Organic vegetable farms [small acreage and/or greenhouses]

Goal and Methods.

The primary goal of this pilot study was to explore Eastern Pennsylvania farmers' understandings of what factors, both human and non-human, affect their livelihood. (This was how the project was explained to potential participants in the Informed Consent Form and why they were willing to participate.) Of course, notions of causality with respect to farming rest upon and reflect more general conceptions of Nature and natural processes. But, people's conceptions of Nature are often implicit and difficult to talk about, whereas farmers find talking about farming both easy and 'natural.'

Being exploratory research, the methodology was qualitative and geared toward exploring the range of variation. The plan was to conduct audio-recorded, semi-structured interviews with a small sample of farmers, and then do gist analysis of the transcripts to identify common themes as well as areas of disagreement. The four-page interview guide (see Appendix) covered a wide range of topics, organized under six categories: personal background, work rhythms and job satisfaction, business aspects of current farming operation, the 'head game' of farming, perceptions of longer-term changes and trends, and the meaning of "Nature" and "natural." In addition, I collected some free-listing data and persuaded participants to complete sets of five randomized presentations of the 'animals-in-a-row' task.[7] In what follows, I summarize results from gist analysis of select parts of the interviews and focus mainly on grain farmers.

The Sample.

Given the qualitative nature of the pilot study, purposive sampling to explore the range of variation is appropriate. But, finding farmers willing to spend two to three hours talking with a stranger is difficult. And, simply knocking on farm house doors or cold-calling folks will not necessarily recruit participants across the spectrum of variation. For these reasons, I asked for assistance from Penn State Agricultural Extension officials.

In mid-June 2014, I met with a local Extension agent and explained the purpose, approach, and sampling needs of the project. He thought the research sounded interesting – might produce findings of interest to farmers and to his agency – so he agreed to help me make initial contacts. Staying within his agency's confidentiality agreements, he spoke to a variety of farmers about the research project and asked if they would be willing for me to contact them. If yes, he passed along names, phone numbers, and telegraphically succinct descriptions of their farming operations to me. This indirect recruitment took about six weeks, but by the end of July, I had a list of 28 potential participants, which was a few more than the anticipated sample size of 20.

[7] Farmers thought the free-listing and animals-in-a-row tasks were very strange and quite unrelated to why they had agreed to speak with me. However, by acknowledging the *non sequitur* nature of the tasks upfront, I was able to cajole almost all the participants into doing the tasks. Indeed, I used them as "now for something completely different" breaks in the long interview session: free-listings about halfway through, and animals-in-a-row at the end.

I decided to work through the list of potential participants beginning with grain farmers (they are not as busy in August as other months), then a few other kinds of farmers during the fall months (beef, dairy, and educulture), and end with organic vegetable farmers during the winter months. As matters turned out, the small amount of grant money ran out before I got to any vegetable farmers. Thus, the pilot study's sample consists of 14 interviews with people involved in four of the eight kinds of farming in the region, and most were with commercial grain farmers.

The interviews were done at the farmer's home, sometimes with spouse present and participating, and lasted from 2 – 3½ hours. All together, the interviews produced 400+ single-spaced pages of transcripts

2. Variations among Grain Farmers.

All commercial grain farms grow "field crops," most commonly (hard, feed) corn and soybeans with wheat and hay usually less important. Some farms in this category augment their field crops with a few dairy or beef cows, and a few also grow Christmas trees. The mixture of products, as well as acreage devoted to each, generally follows from the soil types one owns or leases. Better soils are usually planted with corn or soybeans. Hilly or "shale" soils are for wheat, hay, trees, or pasturage.

Table 1. Diversity among Nine Grain Farm Operations

Farmer	Number workers	Acres worked	Acres owned	Products	Soil quality	Annual profits
Peter	8	4,000	2	"Custom" hay & field crops	Variable	$100k
Dan	6	3,000	550	Field crops	Mostly good	$150k
John	17	3,000	1,000	Field crops, Xmas trees, & trucking	Poor	$100k
Don	3½	2,800	200	Field crops	Good	$100k
Kyle	5	1,775	280	Field crops	Good	$100k
Hank	2½	1,015	215	Field crops & 20+ beef cows	Variable	$20k
Bill	4	650	250	Field crops & 47 dairy cows	Good	$70k (?)
Keith	3	325	13	Field crops & 40 dairy cows	Poor	$9k
Arnold	3	200	150	Field crops, trees, & 13 beef cows	Variable	$10k

Pennsylvania farms are small compared to those in Midwest. Those in the sample ranged from 200 – 4,000 acres being worked (or 81–1,619 hectares). And, farmers lease most of the land they work from multiple owners; hence, the total acreage a grain farmer works is usually scattered in small plots (e.g., 10 to 100 acres) distributed over several miles.

Table 1 provides a few statistics to illustrate the diversity among grain farms in the study area. There are two caveats with respect to the information presented. Firstly, the farmers' names in the table are pseudonyms. Secondly, the figures in the rightmost column (average annual

profits) are by no means exact. Even though all but one farmer[8] answered my questions pertaining to this, virtually all had to do some mental arithmetic on the fly, and I do not think they were calculating "profits" the same way. Thus, the annual profits are rough estimates, not precise accountings.

3. Factors Believed to Influence Farming.

This topic was the principal focus of the pilot study and was how I explained the purpose of the study during my initial telephone contact with prospective participants. On the other hand, as evident from the structure of the Interview Guide (see Appendix), I thought it best to work up to the topic in a variety of ways. Thus, participants' thinking about the causal factors influencing their operations came up in bits and pieces during their interviews, not from responses to a single direct question.

Some participants tended to describe causal factors in rather general or categorical terms; others responded with specific examples; and yet others were vague on some points but quite specific on others. Analytically, however, the widely shared views fit rather easily into five broad categories, and most participants mentioned or gave at least one example for each of these.

1. Soil type / nature of the land itself … given the complex sub-surface geology in Eastern Pennsylvania, there is a variety of soil types within short distances, and as noted previously, the nature of the land one farms puts significant limitations of how well different field crops will grow on it
2. Farmer's own work-ethic, knowledge, and skills … willingness to work and not procrastinate, how much the farmer knows about the crops/animals and what they need to prosper as well as mechanical skills to keep equipment working, and especially the farmer's business and managerial skills (such as detailed record-keeping, long-term planning, and investment decisions)
3. Modern technologies … wise use of soil science, plant genetics, computerized record-keeping, modern farm equipment (such as no-till planters with GPS systems), etc.
4. Marketing … both marketing-decisions (<u>when</u> to sell) and marketing-arrangements (<u>where</u> to sell, i.e., commodity markets or develop direct-retail customers)
5. Weather … local/regional weather, but also national and even international weather conditions

It is important to note that all of the above factors are viewed in mundane, secular, materialist terms. That is, they are understood as being just part of the way the material world and our economic system work. Another background understanding is that farmers do not believe they "make" their crops or animals grow. All that farmers can do is "help" their crops (or animals) grow by providing nutrients and conditions the plants need and trying to reduce the pests and diseases that jeopardize them. This sort of working with natural processes, along with wise business decisions, is regarded as the essence of successful farming.

[8] "Bill" and I were interrupted in the midst of the relevant question. Thus, $70,000 is my own estimate of "Bill's" average annual profits, not his. This corresponds to 10% of his average annual operating expenses,

Explaining Differential Success among Farms.

All the farmers interviewed regarded some farms (and farmers) as being more successful than others. Minimally, a "successful" farming operation is one that manages to stay in business over a significant amount of time (measured in years if not decades). Beyond that, some people are better farmers than others, in the sense that they get the most of the land they have to work. How much money one makes is only a crude measure of this "farming" ability, but to the extent that farming is a business, turning a profit is important else the operation will go bankrupt.

When asked why some farmers are more successful than others, participants in the study generally agreed about the factors most responsible:

1. Soil type / nature of the land itself
2. Farmer's willingness to work hard, knowledge, managerial skills, and long-term business planning
3. Wise use of technologies, such as soil scientists, plant geneticists, no till planters, computerized and very detailed record-keeping, etc.
4. Well-informed marketing-decisions (when to sell) and how products are sold (to whom)

But, since these four factors are more or less constant for an experienced farmer, they cannot explain year-to-year fluctuations *for a given farm*

Explaining Year-to-year Fluctuations for One's Own Farm.

All the study's grain farmers reported wide variations with respect to the financial aspects of their operations over the years. All had experienced good years and bad years, and there was general agreement about the factors most responsible for this sort of variation:

1. Market price volatility
2. Weather conditions, especially locally and nationally

Market prices are viewed as mostly uncontrollable – because they are thought to be determined by supply-and-demand at a much higher, aggregate scale than individual farms or even regions – and only slightly predictable. The prices farmers receive are, thus, highly volatile year-to-year and even month-to-month, and especially so if the farmer sells his or her products through *commodity exchanges*. The Chicago Board of Trade's prices (and this market sets the reference point for smaller, regional exchanges) are far beyond a farmer's control. Farmers can only decide when to sell, although those who have invested in grain-drying equipment can delay selling for quite some time, waiting for prices to improve. The alternative to commodity exchanges is *direct-retail* arrangements. Farmers who have invested the time and energy to develop direct-retail customers (including contracts with big companies for "seed") have much more control over the prices they receive for their products and, hence, do not have to endure as much price volatility.

Weather – especially as concerns the last frost in the spring, the timing and amount of rain during the growing season, and the first frost in the fall – is thought to be uncontrollable and only slightly predictable. One year, rain might fall at just the right times and in the right amounts, the next year could be a drought, and the following year could be a wash-out. As a result, weather is

seen as quasi-random variable over short time spans (hours, days), but a random variable over longer time periods (year-to-year, decades).

Factors about which Farmers Differ.

Despite the areas of general agreement just noted, there are some differences among farmers' understandings. A few farmers think the mundane, secular factors mentioned so far explain virtually *all* the important variations in farming – both long-term differences among farms and year-to-year fluctuations for any given farm. Most farmers, however, think the secular factors do not account for quite everything – there is residual variation the secular factors cannot explain. Thus, most believe there are additional, 'cosmological' factors at play that affect their livelihoods.

4. Explaining the Unexplained: Luck and/or God's Will.

Every participant's initial answers to my questions about the factors influencing farming success were of the secular, materialist sort, i.e., soil quality, farmer's skills, weather, etc. At different points in their interviews, however, about half of the participants *spontaneously* mentioned luck, God, or both as factors influencing their farming operation. (The rest did not mention these until I directly asked about such things, about two-thirds of the way through the Interview Guide.)

This 'reluctance' to mention more cosmological factors for an hour or more into the interview, or until directly asked, is interesting in itself. Perhaps it indicates the cognitive salience of different factors in participants' thinking, e.g., proximate causes are more salient than ultimate causes. On the other hand, I suspect it merely reflects the participants' presumptions about what sort of answers were expected by a stranger doing research about farming. That is, they were simply observing American social norms about appropriate topics to discuss with strangers – politics and religion being widely understood as potentially contentious subjects. And, indeed, once the topics were broached, whether after the participant felt comfortable with me or I directly asked, a considerable range of opinions about luck and God's role became evident.

Different Views of Luck.

Luck is a rather slippery concept. At a minimum, it seems to mean one has more fortuitous outcomes than would be probabilistically expected (good luck) or fewer fortuitous outcomes than would be probabilistically expected (bad luck, no luck). Although participants appeared to share this minimalist conception of what luck means, they showed a range of opinions concerning the importance of luck with respect to farming success:

- Those who simply don't believe in luck at all
  [Secularist version] "One makes one's own luck."
  [Religious version] "There is no such thing as luck – everything that happens is God's will."

- Those who believe in luck, but think it plays a relatively small role
  "Luck accounts for maybe 10%-30% of year-to-year variation, but just in those situations

where individuals have no control and timing is critical, such as rains at the right time and right amount or commodity prices going up or down at the right time."

- Those who think luck plays a very large role in farming success
  "Luck accounts for as much as 80% of farming success. You try hard to do the right things, but how much money you make depends mostly on things you can't control."

Different Views of God's Role.

As with luck, farmers showed a range of opinions with respect to God's role in farming success:

- Non-believers do not think gods cause anything

- Believers who think God, as Creator, is the ultimate cause of everything (including natural laws and processes), but not so much an active agent in the day-to-day workings of his creation
  Such farmers tend to agree with the adage: "God helps those who help themselves."

- Believers who think EVERYTHING that happens is a direct manifestation of God's Will and his active intervention
  A few in this category pray for God to intervene and assist with their day-to-day farming concerns, but most think it is simply inappropriate to ask for God's assistance in crass business affairs.

5. Summary

Eastern Pennsylvania farmers pretty much agree about the main things affecting their livelihood. And, for the most part, their understandings are multi-causal involving what are perceived as mundane, secular, materialist factors, such as soil quality, farmer's skills and knowledge, use of modern technologies, market prices, and weather.

Farmers differ from one another, however, in the degree to which they recognize other, more abstract causal factors. Most invoke notions of luck and/or God's Will to make sense of what they regard as (otherwise) unexplained variations.

Luck is a very subtle concept, but seems to refer to more or fewer instances of felicitous outcomes than would be expected just by chance. In farming, luck comes up in situations where farmers must take actions vis-à-vis fluctuating circumstances over which they have little or no control. And, this boils down to the hard-to-predict but critically important fluctuations in **Market Prices** and **Weather** … the same highly variable factors that some farmers believe God controls, whether through active intervention or as ultimate creator of nature and natural processes.

APPENDIX: Interview Guide

PERSONAL BACKGROUND

Where are you from?

How old are you?

How many years of schooling have you had?
(high school, college, post-graduate)

Are you married? – any children?

Do you have any relatives who are, or were, farmers? – What did your parents and brothers and sisters do for a living?

How many years have you been farming?

How did you get into farming?

What other sorts of work have you done, besides farming?

What proportion of your household income comes from farming?

WORK RHYTHMS AND JOB SATISFACTION

Does the farm work you do change much according to the time of year?

- If YES … Please describe the seasonal pattern – what are your work-days like as the seasons change?
- If NO … Please describe your 'typical' work-day.

What do you like and not like about the work you do as a farmer?

In terms of job satisfaction, how does farming compare with other work you have done?

If you had your life to live over, would you become a farmer again?

Would you like your children to become farmers?

Would you recommend farming as a career to young people? – why, or why not?

If you couldn't be a farmer, what other sort of work would you do?

CURRENT FARMING OPERATION … the 'Business' Aspects

How big is your farm – how many acres of land all together?

Do you own the land, or are you leasing or renting it from someone else?

During a typical year, how many people work on your farm? Does the number of workers vary by season?

What crops are you growing? – what animals are you raising?

Where do you get your seeds for crops? – your breeding stock?

How many acres are currently planted with the (different) crops? – how many are being used for hay or pasturage? – how many acres lie fallow this year?

Which parts of your farm are the most and least productive?
WHY this variation? … what makes one parcel more productive than another?

IF the farmland were sold to another farmer [not to a 'developer'], what would be a "fair market price" for the land itself?
(not including houses or movable farm equipment, such as tractors)

What was your initial "start-up cost" to get your operation going the first year? And, how much money do you have invested since then in capital equipment and facilities?

In a typical year, approximately what are the farm's:

- total operating expenses?
- total earnings? (after all expenses)

Where, or to whom, do you sell your products? – what is your 'market'?
(local, regional, national, international)

What factors determine the price(s) you get for your products? … Do you have any control over these prices?

To what extent is your farming dependent on government-provided subsidies, insurance, or price supports?

On a 1-to-10 scale, how much does your farming operation depend on petroleum products, i.e., fuel for farm equipment and transportation, as well as petrochemical fertilizers and pesticides.

THE 'HEAD GAME' OF FARMING … Knowledge, Decisions, Causes

What are the essential knowledge, skills, and experience one needs to be a successful farmer?

What are the key decisions you have to make in order to be successful? – and what information do you need to make those decisions?

- [e.g., for CROPS]: How do you decide: … which crops to grow … when to plant … how much land to plant with each variety and in which parcels … when-and-where to sell?

- [e.g., for LIVESTOCK]: How do you decide: … which animals to raise … how large a herd to maintain … what to feed them … when-and-where to sell?

What are some of the constraints or problems you face as a farmer?

What makes plants and animals "grow"?

Why are there good years and bad years? – what factors cause this sort of variation? (RANK ORDER, if multiple factors)

Do government policies or agencies have much impact on your operation? – what are some 'positive' examples … some 'negative' examples?

To what extent is your farming operation affected by things like … the weather … other farmers … the national or global economy … supply of oil … wars / terrorist attacks … prayer and God's will?

All things considered, who or what affects your farm the most?

What are the worst things farmers themselves could do to their farm? – what are the best things they could do for their farm?

Why are some farms more productive than others? – what are the critical factors underlying farming success?

How much "luck" is involved in farming?
How much can farmers control whether they have good or bad years, whether they succeed or fail?
… Why are some people "luckier" than others?

LONGER-TERM CHANGES / TRENDS

Has the overall productivity of the land you farm changed over the years?

- If YES … Why are these changes occurring – what causes the longer-term trends in your farm's productivity?
- If NO … Why it that? … e.g., are you using more fertilizer / pesticide for crops, more antibiotics for livestock, to maintain the same level of productivity, or is there some other reason?

What changes have occurred in your farm's "environment" over the last several decades? (… e.g., fewer trees and shrubs, more wildlife, less wind erosion, more "development" encroaching on your land, etc.)

What effects does your farming operation have on the local environment?
(… e.g., soil quality, water drainage, the wild plants and animals in the area)

Are there any things you currently have to do in order to make your farming profitable but are perhaps bad for the local environment?

Have you noticed any changes in weather patterns over the last several decades?

- If YES …How have you accommodated to these changes?

In general, do you think human activities have an effect longer-term weather patterns? Can humans do anything to change weather patterns?

A hundred years from now, do you think people in this region will be able to farm the way you do now? – why, or why not?

MEANING OF "NATURE" / "NATURAL"

What does "Nature" mean to you?

Does "Nature" mean the same thing as "the natural world", or is there a difference?

If you were to say that something is "natural," what would you mean by that?

What contrasts with "natural"? – i.e., if something is <u>not</u> natural, then what words might describe it?

Specific EXAMPLES for consideration:

- Is it "natural" for weeds to grow in a field?… How about the field itself – is a field "natural"? … Is a tractor "natural"?
- Is it "natural" for birds to build nests? … Is it "natural" for humans to build houses?
- Is it "natural" for beavers to build dams? … Is it "natural" for humans to build dams?