

The Roles of Identity and Community in Information-Seeking
Among Alternative Farmers on the North Central Coast of California

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Abstract

This study explores the information-seeking habits of members of an alternative farming community on the North Central Coast of California. It seeks to characterize the strategies its members employ, the challenges they face, and the factors underlying both, through analysis of data from interviews with 25 community members – 20 growers and 5 individuals who were cited as information sources. Interviews were semi-structured and lasted on average 70-100 minutes each. Questions for growers focused on their educational and professional backgrounds, their information-seeking habits, and their relationships to and use of science in their jobs; questions for information sources focused on their backgrounds and their interactions with growers. Interview data revealed a strong influence of personal identity and self-conception as alternative growers on growers' willingness to interact with and attitudes toward particular information sources, a heavy dependence on interpersonal relationships, both personal and professional, as sources of knowledge and aids in question formation, and a preference for collaborative learning and knowledge generated from within the community. Subjects also revealed pervasive reliance on information about the contexts in which advice originated and has worked, which is likely related to these alternative growers' awareness of the uniqueness of their individual farms, and the frequency with which improvisation becomes necessary. These findings may be used to inform future efforts in Extension and outreach that target this group of alternative growers and others like them.

Introduction

This project arose out of my experience working and learning in a farming community on the North Central Coast of California. I happened into a summer apprenticeship at a farm in a young community of farmers that was at the time just beginning to take shape, in 2007. Inspired by the work and by the people I met, and enchanted by the tales they told of their experiences at a magical place called “CASFS,” I did some research and decided to add the Apprenticeship in Ecological Horticulture at the Center for Agroecology and Sustainable Food Systems (CASFS) to my list of things to do while I’m alive. I checked it off that list during the summer of 2010, then spent two more years on the North Central Coast, working full-time at the CASFS farm for a season, then part-time at a couple of other farms the following year.

Part of what brought me continually back to that North Central Coast farming community was the fact that I found kindred spirits there. I found friends who want, quite simply, to grow good food, but who are still trying to figure out what that means. They seem on some level to know at least what it doesn’t mean – impersonal factory farming, abuse of laborers, dependence on chemical herbicides and pesticides – and also to have a keen sense for what feels right – genuine relationships with consumers, respect for the land, minimization of off-farm inputs – but translation of those broader ideals into actual day-to-day decision-making on their farms proves challenging. In their pursuit of “better farming,” these growers frequently find themselves in uncharted informational territory. They have a lot of questions, and often “flail around,” as one grower put it, before they find their bearings, and even then regularly end up compelled to make farming decisions based on imperfect information.

It was that “flailing” that I hoped to understand better. These are smart, educated individuals, living in the age of information, and in a nation that has historically been proactive about supporting its farmers with information. So whence the flailing? When these farmers struggle, is it because the information they need simply doesn’t exist? Or is it there, but inaccessible? Or perhaps it is there and accessible, but invisible, hard to find, or unrecognizable or distasteful to these particular farmers. And then when these farmers do find themselves flailing, how do they respond? What, or whom, do they reach for, and why? I figured if we could understand the origins of the difficulties, we’d have a much better chance of addressing them, which will become increasingly imperative as this community and others like it develop and evolve.

I began the project with a particular interest in the roles that science and Extension would play in the equation. It seemed to me that in any question relating to informing farmers, there ought to be a role for Extension. But I had noticed that the growers I knew were rarely, if ever, consulting Extension, and I was interested to find out whether that was a habit that characterized the community as a whole, or just those particular farmers, and if the former, why, and what the implications might be. I'd also observed remarkable diversity among growers in how they related to and used science in their work, and wondered how their backgrounds and attitudes toward science might contribute to their information-seeking habits and to their relationships to Extension.

So it started as a project about science and Extension, but as I began to analyze my interview data, it became apparent that an even more compelling story was emerging, about the community itself, the structure of the networks these growers have formed, how knowledge evolves, is stored, and transmitted, and how these farmers' identities as individuals and as a community affect their attitudes toward potential sources of information. Those insights, more so even than the data I collected directly relating to farmers' use of Extension resources, will be useful in envisioning future roles for Extension in this community, as well as other ways to render the flailing unnecessary. Frameworks and ideas from authors like Bruno Latour (1987), Wolff-Michael Roth and Stuart Lee (2002), and Etienne Wenger (1998), who have thought and written about knowledge in practice, as well as from many others like Keith Warner (2008) and Neva Hassanein and Jack Kloppenburg, Jr. (1995), who have explored those concepts with specific regard to agricultural practice and Extension, offer insights into that discussion.

Methods

The data presented here are extracted mainly from interviews with 20 alternative growers who farm on the North Central Coast of California. My initial subject recruitment was through a posting I made to the Santa Cruz Farmers' Forum (SCFF), a Google Group to which many members of the community subscribe. It is a public forum, so anyone who searches for it can find and read posts online, though only members may submit posts. I explained my project to the SCFF's moderator, who kindly granted me membership to the forum so that I could email the group to introduce myself and my project, and to recruit participants. A few growers responded to that post, and by using snowball sampling I was able to expand my pool of interviewees to 20.

I should note here that my previous relationship to the North Central Coast alternative farming community quite definitely affected how growers received and responded to my requests. Because I had worked in various capacities on a few farms in the area, and had attended barn dances, teas, and potlucks, and because I had been a second-year apprentice at CASFS, my name and/or my face were familiar to many of the growers in the community already. And just in case they weren't, I introduced myself within the first few lines of my recruitment email as a former second-year apprentice at CASFS. Many of the growers in the community are CASFS alumni themselves, or are only one degree removed, having mentors or partners who are alumni, and feel a general spirit of supportiveness toward new generations of apprentices, and a desire to help them succeed. So situating myself as a member of that group afforded me not only a certain degree of credibility and trustworthiness as an insider of sorts, but it also positioned me and my research as a cause these growers were inclined to support.

My relationship to the community helped my recruitment effort, I'm sure, but it also likely affected how growers responded to me during the interviews themselves. I used a semi-structured interview format, with questions broadly grouped into three categories: (1) background about growers and their farms, (2) growers' information-seeking habits, and (3) growers' relationships to and use of science (see Appendix A). I had a list of questions in each group, but also asked a lot of follow-up questions, and encouraged growers to continue along tangents when they seemed particularly engaged, which happened often. Growers seemed generally very relaxed and comfortable with the process, and actually to be enjoying the conversation, which may have been in part because I was a familiar person, or at least I was a person who shared similar background and experiences, but also likely because I was asking them to talk about themselves in a context where there were not really any wrong answers, and no particularly sensitive or personally challenging questions. That they considered the questions, which often focused on instances in which they had needed more information because they didn't know what they needed to, not personally challenging is informative in its own right; it speaks to these growers' comfort admitting their ignorance, a theme that will return more than once in the discussion to follow. Further evidence of these growers' lack of need to disguise their inexperience arose when I asked them to sign consent forms that promised to protect their anonymity through use of pseudonyms in any reports; many told me such precautions were unnecessary and urged me to use their real names. I appreciated the sentiment, but do use pseudonyms here to adhere to approved protocol.

Interviews lasted in general 70-100 minutes, with outliers on either end of that range. I met growers on their farms, and though I offered to follow them around while they worked, only a few took me up on it, the majority preferring to sit and talk. Growers were across the board generous not only with their time but with their attention, engaging fully and openly with my questions, and expressing genuine interest in the topics we covered.

I audio recorded interviews, then transcribed them in their entirety for analysis. I extracted quantifiable data, mostly regarding farm background and a few other figures that could be reduced and represented quantitatively, for a first pass, low-resolution picture of the community and its characteristics. I then began my qualitative analysis, reading through interviews and sorting grower quotes into categories, ultimately ending up with forty, about half of which fell under the broader heading of “attitudes toward and use of science,” and half of which pertained more to information seeking habits. From there certain themes emerged, and it was through outlining and writing that they evolved into what follows below.

In the course of those interviews with growers, a few other community members’ names came up consistently, cited as sources of information, people whom growers consulted with questions. I sought interviews with them as well, and found their impressions of growers’ questions and habits, and the insights they offered proved useful in my analysis. I interviewed five information sources; four were people whom two or more, usually many more, growers had cited, and the last was a private consultant who is not employed by any of the growers I interviewed, but whom I included because one of the other information source interviewees had suggested him. For information source interviews, I developed a separate semi-structured interview with questions focused on interviewees’ backgrounds, circumstances under which they generally interacted with growers, and their perceptions about growers’ questions (see Appendix B). I used data from those interviews primarily to triangulate with what growers told me.

Archives of the SCFF were similarly useful for triangulation with grower interview data. The archives go back to the forum’s launch in March of 2009, and provide a clear record of questions posed and answers offered by members of the community, as well as insights into other uses for the forum, membership, and general patterns of activity. Though a more thorough analysis of the forum might produce many insights of its own, I focused my analysis on interview data, and used the forum only occasionally as supplemental evidence.

A final note on methods: This was an interview-based project, and our protocol did not include participant observation, but my past experiences with the community definitely altered the lens through which I viewed the resulting interview data. I hope it broadened and sharpened my insights, but must also recognize that it likely also tinted them, and perhaps distorted them. I've tried to base my analysis primarily on quotes that can speak for themselves, but have felt compelled on occasion to offer additional context or, on rare occasion, anecdotal evidence.

Reasons for Studying this Community

My personal history with this region and my fondness for the community that calls it home were certainly part of what made this project appealing to me. My familiarity with and relationships within the community meant that certain aspects of the project, such as subject identification and recruitment, as well as the interviews themselves, were easier for me than they would have been for an outsider, or than they would have been for me had I focused on a less familiar community.

But other characteristics of the community make it interesting and relevant from a more objective academic standpoint. These growers are distinctive among the broader American agricultural scene, in ways that I will catalog in coming sections, but they are also part of a growing back-to-the-land movement that is bringing more growers like them into the picture. Growers with backgrounds, attitudes, farming methods, and demographic characteristics similar to those in my study will likely become a larger, perhaps more influential, segment of the farming population in coming years, so an understanding of how they learn and make decisions will have applications outside of this North Central Coast alternative community, and growing relevance as the agricultural scene evolves.

Perhaps as intriguing as the prospect of wider applicability was the sense I had that my questions would be interesting, and my results of use, to the community. I knew from my experience working in the region that quests for farming-related knowledge in this particular context are hardly straightforward, and that these growers routinely struggle to find the information they need. I knew that in conducting this study, I'd be learning about and describing the community's habits and attitudes, but that I'd also be bringing to light some of the challenges it faces. While my goal here is not to critique any of the information sources that currently exist, or to make normative suggestions regarding specific changes or improvements, illumination of gaps and

redundancies may lay groundwork for more effective allocation of resources toward future Extension and outreach efforts aimed at alternative growers. Also, the fact that growers were so responsive and forthcoming in interviews may be because we were touching on subjects that were of personal relevance to them; I was asking them to talk about problems that had been plaguing them for years, and they appreciated the chance to be heard, and offered remarkably rich accounts of their experiences with minimal prompting by a researcher entirely new to interview technique. Much of what I report here sat not too far below the surface, and readily bubbled up when the opportunity presented itself, which I take as an indicator that these were questions worth asking.

Finally, returning to the logistical considerations, this community was a good one to study because interviews with growers would not be the only window into the questions growers ask and the sources they trust. The SCFF, which counts among its members many of the farmers in the community, is remarkably active. The archive of the SCFF is a useful record of questions asked and resources and advice offered by members of the community, and was a useful contextual reference for me. The forum also provided an easy avenue of communication for initial subject recruitment – with a single post to the forum, I introduced my project to most of the key members of the community. And because of the relatively extensive network across the larger community, growers who aren't on the forum or who wouldn't reply to a broad recruitment call were often named by the growers I did interview, so snowball sampling was particularly effective. So for personal, logistical, and academic reasons, the North Central Coast alternative farming community was an ideal place to base this research.

Characterization of the Region and the Community

Agriculture on the North Central Coast.

The community studied here is based on the North Central Coast of California, in San Mateo and Santa Cruz Counties. The region is bordered on the west by the Pacific Ocean, on the north by San Francisco County, on the east by Silicon Valley, and on the south by the Salinas Valley, known for its roles in John Steinbeck's oeuvre, as well as for being one of the most productive agricultural regions in California. Those diverse surroundings are contextually important, contributing heavily to the social, cultural, economic, and climatic environment these growers face.

San Mateo and Santa Cruz counties are not primarily agricultural. San Mateo, especially, is largely suburban, somewhat densely populated, and beginning to reflect the influence of Silicon

Valley; Facebook built its headquarters there, and other tech startups have followed. Though historically much of the county's land was cultivated or grazed, today it is mostly developed, leaving only 17% of the county's land in agriculture (United States Department of Agriculture [USDA], 2012). That farmland is located primarily on the coast, west of the Santa Cruz Mountains that bisect the county longitudinally. Large swaths of coastal farmland in San Mateo County have been in continuous production since the turn of the last century, managed by conventional producers growing mainly nursery stock, cut flowers, and Brussels sprouts, but other pockets of specialty production, small diversified farms, and agri-tourism destinations also exist. Agricultural production in San Mateo County in 2012 totaled \$140 million, 81% of which came from nursery crops, 12% from mixed vegetables, and the remaining 7% from livestock, forestry, fruit and nut, apiary, and field crops (USDA, 2012). The 2012 US Census reported 334 farm businesses in San Mateo County, on 48,160 acres.

Just south of San Mateo, Santa Cruz County is less densely populated and more semi-rural than suburban (35% of county land is in farms) (USDA, 2012), but most still recognize it more readily for its tourist-attracting beaches and boardwalks, and for the University of California at Santa Cruz (UCSC), situated in its county seat, than for its agricultural productivity. But its agricultural history is rich; its northern regions were grazing land for dairy and beef cattle, with some timber harvesting in the mountains, and its southern end is prime cropland that has been farmed since those Steinbeck days. And because it's a bit farther from San Francisco and Silicon Valley, it hasn't felt quite the same magnitude of development pressure that plagues its northern neighbor, so many of those prime farmland acres are still under cultivation. In 2012, there were 667 farm businesses in the county, growing on 99,983 acres (USDA, 2012). Production totaled \$566 million in 2012, 65% of which came from berry crops, 20% from nursery crops, 10% from mixed vegetables, and the other 5% from orchards, vineyards, livestock, timber, and field crops (USDA, 2012).

The region as a whole is quite diverse; farms take many different forms depending on microclimate (irregular topography and the influence of the Pacific Ocean and the Monterey Bay create climatically distinct subregions), land tenure history, access to markets, and grower preferences, so generalizations are problematic, but it may be nonetheless informative to consult a few pieces of US Census data. The average farm size is about 150 acres in both counties, but variation in farm size is wide (USDA, 2012). About 40% of farms in the region are smaller than 10

acres; the medians are 20 acres in San Mateo and 11 in Santa Cruz (USDA, 2012). These are small farms, reflecting the aforementioned development pressure and associated land prices. They are not, thus, commodity growers. Only one farm in the region delivered vegetables under a production contract in 2012. These growers market instead primarily through regional grocery stores, farmers' markets, farm stands, and sometimes CSAs, of which there were 32 in the region in 2012 (USDA, 2012).

The average age of growers in the region is around 60, which is only a few years older than the national average (USDA, 2012). Across the region as a whole, most farm operators have been at it for a while; the average grower has been at his or her current farm for 20-21 years (USDA, 2012).

As it is across the nation, organic agriculture is becoming increasingly common in the North Central Coast region. In 2012, there were over 100 organic farms in the region, growing on close to 4000 acres, and accounting for \$68 million in sales (USDA, 2012). Though organic acreage still makes up less than 3% of the region's farmland, it accounts for nearly 10% of all agricultural sales because those farms tend to focus on high-value crops and receive price premiums, and to pocket more of that income themselves because they also tend to market directly. It should also be noted that the numbers from the US Census reflect only those farms that are certified by an accredited third party and registered with the California Department of Food and Agriculture; many small organic growers choose not to certify, so more exist than are included in the above statistics.

Climate, soil, and topography.

Proximity to the ocean moderates the climate on the North Central Coast, keeping both winters and summers relatively mild, which has a few consequences significant to these growers. Perhaps most obviously, it extends the growing season and shrinks the off-season. Growers can keep crops in the ground longer into the fall and get in earlier in the spring. Interestingly, the short winter off-season may also play into these growers' information gathering strategies. Many remarked that they viewed winter as a time for more in-depth research into topics they'd neglected during the growing season, but that those intentions didn't always lead to actions. Of course many factors may explain that failure, but the short window of down time certainly doesn't help matters.

The mild summers also affect how these growers farm. Even at the height of summer, temperatures rarely exceed 80°F, and even if they do, those 80°F afternoons tend to follow damp,

foggy mornings. Many growers, especially those in the northern end of the region, told me that they can't grow tomatoes or peppers, or at least that they can't grow them well, in those mild conditions, and that the persistent fog and dampness provide ideal conditions for mildew and other fungal pathogens. More than a third of the growers I spoke to included local climate among the challenges particular to their farms.

Almost as many noted that their soils were less than ideal. Silt loam is not a natural occurrence on the North Central Coast; clay and sand predominate, and bring associated drainage and fertility challenges. Salt intrusion into water sources also presents a problem, as does general water scarcity. I conducted most of my grower interviews in the summer of 2013, before the winter of no rain began and set off one of the most severe droughts in recent history, but even before the threat of serious drought had materialized, water scarcity plagued the minds of a third of the growers I interviewed. Slope, too, is a problem for a few (3) growers. The Central Coast lies at the feet of the Santa Cruz Mountains, and the hills, gentle as they may be, complicate irrigation, drainage, erosion control, and tractor navigation.

But that mild climate, those mountains, and the coastline also make the Central Coast a uniquely attractive place to live, which has a few important consequences for growers. It means they have access to a very large local consumer base that, for specific reasons to be outlined in later sections, is particularly supportive of Central Coast farms. But it also means that land prices are phenomenally high, driven up not only by competition from other agricultural interests, but from real estate developers as well. So while farmland prices in the lower 48 United States average around \$3000 per acre, in California as a whole, the average is closer to \$6300 per acre, and on the North Central Coast the average is \$11,300-12,400 per acre (USDA, 2012). Many of the growers I interviewed cited land prices or related land tenure arrangements as a challenge. So perhaps it's not surprising that farms on the North Central Coast tend to be smaller, and to focus on high-value crops and direct marketing to maximize profit margins in a low volume scenario.

Alternative growers.

This study focuses on a subset of the North Central Coast farming community, which I'll refer to here as the alternative growers. I struggled a bit to identify a term that would accurately describe this diverse group of growers, who seem by nature to resist definitions and labels, without

introducing inapt connotations or aligning them with groups to which they weren't related, and landed on "alternative" for a few reasons.

There are certain norms related to how farmers tend their crops in conventional agriculture in the United States, what inputs they use, where and how they market their produce, how they procure and pay for farm labor, how many acres they manage, and which crops and livestock and varieties and breeds of each they raise. Those norms are often established and reinforced within the agricultural system at large, through government regulations, contracts with large agribusinesses, and consumer expectations. All of the growers I spoke to deviate from those industry standards more often than they align with them, usually in ways that they deem preferable by environmental or social standards – the type of agriculture they practice is an alternative to the norm.

So I refer to these growers as alternative because they practice alternative agriculture, but also because they themselves exhibit some of those alternative characteristics. These growers tend to come from relatively affluent backgrounds where the social and family expectations for their careers mostly did not involve agriculture. In choosing to farm, they were making an unorthodox choice and diverging from their peer group. And they don't fit the mold of the new group with which they aligned themselves either, in terms of background or demographics, as we'll see shortly; they are an alternative version of the traditional American farmer.

Finally, the term "alternative" comes with certain connotations that suggest nonconformism, and even subversion, which characterize these growers well. Their departure from the norms described above is decidedly active, not passive; these growers are resisting convention and often seeking nonconformity, as became apparent through many of their comments.

While on the subject of terminology, it is pertinent to address my use of the terms "grower" and "farmer." Subjects at various times used both "grower" and "farmer" to describe themselves and their peers, and both terms can be considered accurate, and to some extent interchangeable. "Farmer" comes more heavily loaded with culturally-derived connotations, which aren't necessarily constant across diverse audiences; "farmer" evokes slightly different overtones in Kentucky versus Vermont, or Wisconsin versus California. I find "grower" to be slightly more neutral, if perhaps more clinical, and thus use it as my default in this paper, though at times "farmer," with its associated connotations, seemed appropriate, and so the alternative term appears on occasion as well.

Grower backgrounds.

These alternative growers are as a group highly educated; all of the participants in my study have significant college education, 18 hold bachelor's degrees, 4 have master's degrees, and 2 earned other post-graduate certificates. None majored in agricultural sciences, though one studied environmental science with an agroecology focus. Some began farming during or right after college, but most (15) began careers in other areas before switching. Five of those developed those non-farming careers significantly, spending more than 5 years in their fields, and three of those five still work part-time in their alternate careers.

So these are growers who came to farming from disparate backgrounds, with education and experience in fields other than agriculture. As growers, they are largely beginners; only 3 of the 20 I interviewed have been farming for more than a decade, with most having been at it for 4-7 years. And those years were often accumulated at multiple farms, some on the Central Coast, but many elsewhere, where they apprenticed, labored, or managed before coming to their present farms. They are also generally on the young side; while I didn't ask interviewees to disclose their ages, I can say with relative certainty that most were in their late 20s to late 30s, with a few older outliers. So they are not the typical North Central Coast growers described above, 60 years old and beginning their third decade on their farms. They are, again, alternative.

Census data don't offer insight into farm operators' reasons for entering agriculture, so I can't generalize regarding the most common factors behind North Central Coast growers' decisions to farm, but I can report on the alternative subset. I asked interviewees to tell me how they had come to farming, and the stories they told offer valuable insights into their motivations. Many talked about lifelong personal affinities for gardening, nature, or the outdoors, and of farming as a way to be outside every day and close to nature. Some had worked for nonprofits that introduced them to food system issues, while some came from the consumer end, explaining their desire for "cleaner" sources of meat or vegetables as motivating factors. Quite a few (7) had majored in some sort of environmental science, and had identified farming as a way to have a positive impact on the environmental systems they'd studied. Many were able to pinpoint specific influences; in a few cases it was "hippie parents," while others credited authors like Joel Salatin, Michael Pollan, and even Jon Krakauer for having inspired their agricultural endeavors. Wendell Berry, of course, made that list as well; quotes from him peppered one memorable interview.

Livelihood vs. Lifestyle.

Unsurprisingly, no one mentioned the income as a reason they chose to farm. These growers have the resources and education to pursue more lucrative careers, and many, as mentioned, have, but now they've opted for a different path, even though they have at least a general understanding that, at least for the first few years, and probably for longer, they will struggle to make ends meet. Despite their families' affluence and their own previous years in the workforce, most of these growers don't start out with much liquid capital to invest in their farms. They often come to farming from jobs at nonprofits or as teachers, or fresh from college or stints in the Peace Corps, and many spent a few financially draining seasons as apprentices on other farms, paid primarily in education and produce, before they were ready to manage their own endeavors, so financial reserves often start low. But optimism is generally high, sometimes blindingly so, as Ethan told me. I had asked about where he saw gaps in the information landscape, or on what topics growers could use more or better information, and he pinpointed money and financial planning as an area where these alternative farmers were surprisingly uninformed:

The traditional growth curve is that you really don't see much of a realistic profit until after year five. So does that change the strategy in terms of how you enter this business? Do you have a part-time job, something that can provide you health care? Do you have a partner that has those types of benefits that will allow you as a whole person, more than just a farmer, to survive years 0 to 5 when you're probably not going to be making any money – maybe you're just covering your costs, so that you can get to that level of profitability, rather than having an unrealistic expectation that, "I'm gonna start and after year one I'm gonna be making enough profit to live off the farm"? Because it's just not – nobody's done that.... So really why do you think that you can do that?... Like look at that at year five, and if you can't live off of \$30,000 for five years, or less than \$30,000 for five years, you need to figure out another way to keep again your personal self afloat during those years.

Ethan clearly felt strongly that beginning growers ought to be more aware of the financial implications of the ventures they are undertaking than they tend to be. By his estimation, the alternative farmers in his community too often enter the business ignorant of the financial commitment they are assuming, and with unrealistic expectations for the first few years. Interestingly, Ethan identified failure to account for the needs of their non-farming selves as one of the primary factors contributing to the problem. Alternative growers, eager to adopt the identity of

“farmer,” forget to understand themselves as “whole people” as well, and fail to acknowledge the associated less charismatic, subsistence-related personal needs, focusing on the lifestyle and neglecting the livelihood.

Another area where the edges of farming as a business and as a lifestyle blur is in growers’ accounts of how many hours per week they spend working on or for the farm, which among these growers was never fewer than 40 except during the winter months (which in this part of the world are really only December and January), and generally averaged closer to 50 or 60, with a few growers admitting to 80-hour workweeks at the peak of the season. But many had difficulty nailing down specific numbers because the distinction between “work” and “leisure” wasn’t always crisp; browsing through seed catalogs, for example, may be part of the job, but some growers consider the catalogs evening pleasure reading. And many growers have homestead projects on the side, goats and chickens they raise for their families but not for market, or seed-saving or grafting experiments, or canning or preservation projects, most of which don’t contribute to farm income, but often overlap with farm projects. Again, this speaks to these alternative growers’ attitudes about farming as a lifestyle, rather than simply as a job.

Agricultural and marketing practices.

As mentioned, the type of agriculture these growers practice is alternative in many senses of the word. Most employ organic or related methods, though not all are certified by a third party. All are diversified, growing a dozen or more unique crops, often multiple varieties of each, and frequently integrating livestock. Some have modest wholesale accounts with specialty grocers, but for the most part they market directly to consumers through farmers’ markets, farm stands, and CSAs, or to restaurants in the greater San Francisco Bay Area. These farms are notable also for their small scale. Though I did speak to one grower who manages 300 acres total, that was a unique case that was an order of magnitude larger than most of the other farms, which averaged about 20 acres in total land area, with less than that in production. Compared to the thousand-plus-acre farms and orchards of California’s Central Valley, or even just a bit further down the coast in Monterey County, where the average farm size is 1,076 acres (USDA, 2012), these farms are miniscule. That combination – small scale, diversification of crops, organic and related philosophies, and emphasis on direct marketing – influences what actual information and knowledge these growers need in

order to manage their farms, of course, but also, I found, the types of questions they ask and the range of available sources that might possibly have an answer for them.

Political and social context.

The North Central Coast falls geographically within the greater San Francisco Bay Area, which leans decidedly to the left. All of the growers I spoke to clearly identify as pro-environmental, though they may not use that awkward term exactly. When I asked what was important for me to know about the way they farmed, all used words like “sustainable,” “conservation ethic,” “regenerative,” “minimal impact,” and “stewardship.” All but three are certified organic, and the three that aren’t chose not to because they are too small to make it economically feasible and they direct market anyway, so have less need for third party certification. Many growers drew a distinction between “big O,” or certified, and “little o,” or uncertified, ideologically based, organic, noting that, while they take certification standards seriously, their approaches to farming are governed primarily by a broader “little o” ethic based on responsible stewardship of the land and respect for the natural environment rather than by substitution of OMRI-approved sprays for conventional ones. This group of growers takes environmental stewardship seriously and counts it as an essential component of the job. Many have taken advantage of NRCS conservation grants, and a few have been formally recognized by local land trusts and environmental organizations for their efforts. Conservation and stewardship, therefore, are not only part of these growers’ personal value systems, but part of the more public images of their farms as well.

The San Francisco Bay Area is a place where an image that emphasizes environmental stewardship can translate into increased sales or price premiums. The Bay Area consumer base is in general very environmentally conscious, willing to pay more for food it knows was grown organically or with minimal environmental impact. Consumers also tend to be particularly health conscious, which again translates to higher willingness to pay for organic, fresh, local produce. Various social movements related to food, from environmental, political, health, or social justice angles, have found sympathetic audiences in the Bay Area, and campaigns like the USDA’s “Know Your Farmer” and the California Alliance for Family Farmer’s “Buy Fresh, Buy Local” have been particularly successful there. Thanks to those campaigns, and to authors like Berkeley-based Michael Pollan, the dialogue around local food and farming has been significant. In recent years,

the general public has begun to take a greater interest in where its food comes from, and farmers and their farms have become more visible and sought after by consumers who are learning to treat farmers' markets as social events and CSA memberships as status indicators, and who will happily bring friends and family to farm-sponsored potlucks, barn dances, or fundraising dinners.

So Bay Area residents are inclined to care where their food comes from for social and environmental reasons, but there is also a subset whose interest in food has more hedonistic roots. The Bay Area also has a long history of "foodieism" – it is the birthplace of Chez Panisse and its various posh cousins and offspring, and it's a short drive from Napa Valley, a mecca for wine enthusiasts and epicureans. A few of the farms in this study have accounts with "fancy schmancy restaurants," as one grower put it, that feature farm names on their menus and describe dishes using specific heritage or heirloom variety appellations, and that pride themselves on sourcing the best, freshest, ingredients, then showcasing them with minimal adulteration. Growers may use terms like "schmancy" to describe these establishments, an effort, I think, to distance themselves somewhat from the associated expense, pomp, and formality, but they do appreciate their relationships with those restaurants for the income and advertising they offer, and they happily collaborate with chefs to customize salad mixes, harvest produce slightly less mature, or pack produce according to restaurant specifications.

This cultural environment, and the demand and associated prices it generates, make it possible for small farms on the North Central Coast to survive even with their relatively low production volumes and associated efficiency ceilings. It also affects the way these growers interact with consumers. I started interviews by asking growers to describe their farms and share what they thought was important to know about how they raise food. Often the answers were remarkably well-organized and concise, in part, I'm sure, because this group of growers happens to be on the whole well-spoken and articulate, but also in large part because those answers were rehearsed. It was as though I had pressed the "recite spiel" button, and they were simply pulling their practiced discourses from a file they kept close at hand. Talking about their farms and their values is something most of these growers do with surprising frequency, at farmers' markets, with CSA members, and with visitors to their farms, of which there are quite a few. Requests from foodies, school groups, and families to visit farms in the region are so commonplace that many farms specifically address the question on their websites, either welcoming visitors or deferring them. Many do entertain requests for farm tours. The importance of conversing about farming practices

with the public affects the way these growers think about what they do, and the type and depth of information they seek. A few growers remarked that they see those conversations as a way to build trust and credibility among their consumers, implying that being able to provide accurate, articulate explanations was important not only for their own personal knowledge, but for the success of their businesses as well.

A final note about these farms: Many of them view education, of the public and of the next generation of growers, as an important part of what they do. Nine of the 20 devote specific attention to education, partnering with schools, hosting workshops, or offering apprenticeships or farm incubator arrangements for new growers. This emphasis on education also affects growers' relationships to and use of information. Some growers mentioned that when they were planning to teach a given skill or topic, they tended to research much more thoroughly, turning sometimes to textbooks or manuals that they otherwise wouldn't consult, and seeking deeper, more complete conceptual understanding than they tended to when simply trying to inform their own farming decisions.

CASFS influence.

An introduction of the community studied here would be incomplete without discussion of CASFS. Commonly pronounced "cass-fus," CASFS is the Center for Agroecology and Sustainable Food Systems, an academic institution based at UC Santa Cruz. Housed within the Division of Social Sciences, it supports interdisciplinary academic research in agroecology and food systems, but it also administers the Apprenticeship in Ecological Horticulture, a 6-month residential experiential education program that trains apprentices in organic agroecological practice. Nicknamed the Harvard of Horticulture, and variously referred to within the community as the UCSC Apprenticeship, the Farm and Garden Program, and simply CASFS or "the apprenticeship," the CASFS apprenticeship has become a mecca for aspiring farmers, gardeners, and food systems activists from across the States and the world, and each year the selection process for the assignment of its 39 spots gets more competitive.

CASFS network and affective influence.

Upon completion of the program, it's not uncommon for CASFS apprentices to stay in the area, and as a result alumni make up a significant portion of the North Central Coast alternative

farming community. Nine of the 20 growers I interviewed were alumni, which is likely close to the ratio in the community as a whole. Of those interviewees who hadn't done the apprenticeship program, many were only one degree removed, being close friends or neighbors with, working for or employing, or being otherwise socially or professionally connected to apprenticeship alumni. The UCSC campus, at which CASFS is based, is near the geographic center of the North Central Coast, and events like biannual plant sales, a harvest festival, a fundraising dinner, and workshops draw in the community – consumers as well as growers. CASFS staff are frequent contributors to the SCFF, and are generally known within the community at least by name, and more often personally, as authorities on organic farming and gardening. The program is generally known, and its graduates respected, among the community, and its overall influence quite pervasive, which is why it bears more in-depth discussion here.

The apprenticeship and the associated CASFS network often sit very close to graduates' hearts. To call it a technical education program would be accurate, but for most apprentices, the experience is much more, an inflection point in their life trajectories. For some, it marks the first official step away from their day jobs or non-farming lives. For all, it's an intense, whirlwind, hands-on educational experience, and, importantly, an immersion in farm life and communal living. Most alumni agree that the advantages of participation in the program are social as much as educational; 47% of respondents to a survey of alumni cited the living experience at the CASFS farm as one of the most important components of the program, and 72% said that the CASFS network had contributed "significantly" or "a lot" to their post-apprenticeship work (Perez, Parr, & Beckett, 2010). Apprentices often build lifelong friendships and partnerships with their fellow learners. Bonds between alumni from the same year are of course strongest, but CASFS maintains a strong network of alumni, and often social and professional ties cross cohort generations.

Participation in the CASFS apprenticeship also has important effects on growers in the affective domain. Seventy-nine percent of respondents to the Perez et al (2010) survey said that doing the apprenticeship had helped confirm their values "significantly" or "a lot." In open-ended questions, one respondent said, "Living in such an amazing setting in which the infrastructure was set up to allow us to live our values to an extreme degree was extremely inspiring, and encouraged me to pursue a high level of sustainability and food justice elsewhere in my life and work" (p. 117). The apprenticeship facilitates a lifestyle that epitomizes what many of these growers aspire to, one that emphasizes sustainability and food justice, and the practical experience of actually living that

way reaffirms those values and empowers graduates to continue to pursue them in that extreme degree, not only in their work, but in life generally. Again, we see the blurring of lines between lifestyle and work.

One final note on affective domain effects of the apprenticeship: The title “apprentice” takes on a very positive connotation for those who assume it for those 6 months. Apprentices proudly identify as such; it’s a social marker that distinguishes its bearer in a positive light. So graduates begin their farming careers with no shame in being learners; quite the contrary, in fact, and that approach to learning carries over into post-apprenticeship life for many.

CASFS history.

Part of the inspiration that apprenticeship grads talked about in the Perez et al survey likely comes simply from the fact that apprentices spend those 6 months surrounded by other energetic apprentices with similar passions and goals, and tend to feed off each other, but part may also be attributed to the program’s history, which reads a bit like a Back-to-the-Land, countercultural parable whose characters become familiar to every apprentice through repeated recitation over the course of the apprenticeship. The main protagonist is Alan Chadwick, a British master gardener and sometime Shakespearean actor, whom the university hired in 1967 to head up a garden project intended to give students a “sense of place” (Lee, 2013, p. 18) on a campus that was at the time still largely under construction, and in a broader national context of political and social unrest. The university got more than it bargained for; Chadwick was a wildly charismatic leader who soon developed a loyal following among students, some of whom quit attending class to devote more time to the garden. As Chadwick’s popularity grew, so did concerns among some faculty that his methods, which he characterized as “French intensive biodynamic,” and which emphasized a “craftsman-like approach to soil care,” were not based enough on science (Allen & Brown, n.d.). Chadwick had studied Shakespeare and the arts, not science, and had been hired as a gardener, not as a faculty member, and as such “lacked the proper credentials from the university’s point of view” (Waters, 1997). But student enthusiasm won out in spite of tepid faculty support, and the program continued to expand, even after Chadwick left in 1972. The apprenticeship was formalized in 1975 into a full-time program offered through UC Santa Cruz Extension, funded primarily through tuition, produce sales, and the fundraising efforts of the Friends of the UCSC Farm and Garden (Allen & Brown, n.d.).

Though it was officially recognized by Extension, the Apprenticeship continued to operate largely independently from the rest of the university. Apprentices lived in tents on the farm in a self-governing community. They took initiative on construction of facilities such as a shared kitchen and living space, a library, solar showers, and an equipment barn. Education was largely informal, with apprentices learning by working alongside instructors, with broadly defined learning goals and little in the way of formal classes. In 1981, Environmental Studies started the Agroecology Program, the precursor to CASFS. The apprenticeship was included under the CASFS umbrella, and has been ever since, though not without some chafing. The apprenticeship is a unique program that doesn't always fit the mold of other university-affiliated programs, and apprenticeship staff and CASFS administration have clashed repeatedly over the years over budget issues, apprenticeship housing, and regulations and codes related to campus facilities. When news of these incidents reaches apprentices, it usually arrives via apprenticeship staff, who hold an understandable bias toward the apprenticeship, and tend to paint CASFS administration as unreasonable, inflexible, and unsympathetic to the mission and goals of the apprenticeship. So the culture of the apprenticeship idolizes Chadwick and the past apprentices who took matters into their own hands and literally built the home they wanted, and it demonizes the institutional powers that attempt to regulate them.

It should also be noted, though, that there have been many positive collaborations between the CASFS apprenticeship and other members of the university faculty and staff, primarily those in the natural sciences. Acreage on the farm is used primarily for production and education related to the apprenticeship, but significant plots are also devoted to university-sponsored field trials, and to an annual undergraduate field course in agroecology. Historically, management of trials and class plots has been a collaborative effort between researchers, professors, and the apprenticeship field site manager. Apprentices are often invited to assist in data collection in their spare time, and each year a few take the opportunity to get a taste of on-farm research.

So the apprenticeship has historically had a complex relationship with the university, and that history colors the experience of apprentices. CASFS apprenticeship grads bring with them a countercultural hero, a respect for activists and initiative-takers, a taste for questioning institutional authority, inspiration and motivation to live and work according to values, and an invaluable network of friends and colleagues pursuing similar goals. These are all pieces that prove relevant to

the discussion of how growers understand themselves and identify in relation to information sources, and of how the community creates, stores, and transfers knowledge.

Findings

As mentioned earlier, after collection of background information, my interviews consisted of two distinct sections: what sources growers consult and when, and the role that science plays in their research strategies and their decision-making. Growers were on the whole so open, self-reflective, and insightful on all topics that the resulting data set was rich beyond what I could have hoped for or even imagined, and I couldn't begin to do it justice within the confines of a humble master's thesis. I've instead decided to confine my focus here to that first section, on source consultation, with a particular concentration on the influence of growers' conceptions of themselves and of the community on their information-seeking strategies.

Consulting Other Growers – Who, When, Why, and How

Other growers are clearly a key source of information for this group of alternative growers, cited more consistently than any other source besides the Internet. All of my interviewees said they ask other growers when they have a question, and eight said they do it before consulting any other sources. The array of topics growers mentioned having asked about was wide; many said they'd go to other growers with just about anything, while others pinpointed regional soil and climate, sourcing of products or services, or things they're trying for the first time as topics they were most likely to take to other growers. But even those who said they'd go to other growers with most questions did mention a few circumstances in which they wouldn't ask, which mostly seemed to stem from a desire to respect and maintain their relationships. The explanation that came up most often was simply not wanting to trouble other farmers; there seems to be a minimum threshold of importance below which growers won't bother to ask. As Aiden put it,

I try not to bug other people any more than I need to. So yeah, sometimes I won't call so-and-so just 'cause I know that they're busy and I don't wanna bother them and it's probably something I can figure out on my own through trial and error.

Trial and error, I learned, is a very familiar, comfortable method for these growers, and often emerges as the more appealing course of action when growers weigh their options. The other reason growers gave for not asking other growers was competition – when they believed their

questions might be perceived as attempts to gain a competitive advantage, or to chip away at the advising grower's advantage, growers sought answers elsewhere. Sometimes that meant consulting internet sources or other types of resources, but often it meant seeking growers who didn't share their markets – people who sold primarily in the wholesale market, for example, or who are growing in a different part of the state.

They're careful about the latter, though. Growers are understandably discriminating regarding whom to ask for advice, and many factors play into their advice-seeking decisions, the most commonly cited of which was geography. These growers have a logical bias toward other growers farming on the North Central Coast, simply because those people are more likely to be familiar with the regional peculiarities, and their advice tends to be more readily applicable, without translation from a different rainfall pattern or region-specific variety, or consumer base. Other growers from within the community also often share overall approaches – their farms are of similar scale, they're growing similar arrays of crops, and they likely also use organic or related methods – so they tend to be optimally positioned to advise. And though growers mostly call or email each other, many also mentioned that sometimes they visit each others' farms or find each other in person, both of which are of course made easier by geographic proximity.

Growers said they call, email, text, or find each other in person depending on the type of question and their relationship to and the preferences of the other grower. Often the growers they consult are neighbors or other farmers they happen to have met along the way at conferences, workshops, social events, or farmers' markets, though a few mentioned that they sometimes seek advice from growers they hadn't otherwise happened to meet, reaching out for the sole purpose of learning from them. Some growers told me that when they first started farming in the area, they made a point of introducing themselves to other growers early on, for social reasons certainly, but also to get a sense of who was growing what and how, and to assess how they might be able to learn from each other. Many of these alternative growers actively cultivate and maintain relationships for the purpose of sharing knowledge and learning from each other.

The SCFF: Contributing to the Greater Knowledge Base

Another way that growers consult each other is through the Santa Cruz Farmers' Forum. Seventeen of the twenty growers I interviewed said they use the SCFF regularly. Of course, I used the forum as my initial subject recruitment avenue, so it may not be surprising that most recruits use

the forum. It should be noted, however, that only four of the twenty growers I interviewed had responded directly to my forum post; the other sixteen were the result of snowball sampling, so would not have necessarily have had to be members of the forum to be recruited.

Of the seventeen interviewees who said they use the SCFF, all had very positive opinions of it, and seemed to value it quite highly. They appreciated its emphasis on practical rather than theoretical advice, and its particular local relevance – they could be assured that advice from the SCFF would be specific to their climate and markets, and wouldn't require the same winnowing and tailoring process that sometimes made outside searches onerous or fruitless. And because it is locally based, growers also often have personal offline relationships with others on the forum, and so have the contextual knowledge about the advising parties that, we'll see, is of particular import to these growers. Many growers told me that knowing who was on the forum made a big difference in how they interacted with it; some specifically said that they liked emailing the forum because they knew educators with the time to answer were on it. Bernard told me,

I read some of it and I saw that Ken Wilder posted the response to it. So if he's on there, then I'm like, well I would ask him something, because if it's something he might respond to, ...then I would tend to trust what he would say because I actually know him.

For Bernard, the SCFF was another way to connect with a grower he knew and respected, and use of the forum became a more appealing proposition once he knew that a grower he was familiar with was likely to answer. Another grower cited a recent string about side-dressing broccoli, to which another grower, a farm advisor, and a USDA researcher had all contributed, each offering a different perspective and different solutions, as an example of the forum at its best.

In some cases, growers said that emailing the forum had taken the place of emailing individual growers directly. Many noted that it was more convenient to compose and send one email and know that it would be seen by everyone than it was to send separate emails to multiple people. Emailing the forum, some noted, also meant they weren't calling out a specific grower or advisor; though growers often had predictions or hopes regarding who in particular was likely to answer a given question, in emailing the forum instead of the individual they created an communal opportunity rather than a personal obligation to answer. And they also opened the question and response to the entire community, which is perhaps the most valuable outcome of that decision. As Paul put it, "I think [emailing a question to the forum] adds something – to have it be something that other people can read I think is really... When it's just two people corresponding, it doesn't really

add anything to the greater knowledge base.” It’s such a generous perspective that Paul took, and it shows a consideration of the community as a whole that many of my other interviewees shared. Emailing the forum often gets individual growers the information they’re seeking, but it also opens the dialogue to other growers on the forum, and really to anyone who cares to search the archives, which are publicly available online. Users are conscious of the fact that they are building a repository of North Central Coast-specific knowledge that will persist and grow through time, with luck evolving into an increasingly useful resource for this community and others. Many growers told me they already turn to the archives when they have a question, either for answers or to find out who else had faced similar issues. So “adding to the greater knowledge base” is a motivator for at least some of the growers I spoke to, which indicates a strong orientation toward community and a view of farm-related learning as a joint endeavor.

Importance of Context

Growers highlighted their familiarity with other growers on the SCFF as a key reason they found the forum useful. I found that knowledge about advising growers’ practices was hugely important to these alternative growers because it allows them to assess how applicable it will be to their farms. As mentioned earlier, while they prefer to ask local sources, growers do seek advice from mentors in different geographic regions if they’re familiar enough with how those growers farm. Brooke justified her decision to ask former mentors in Massachusetts simply: “Because I have experience in both Massachusetts and California I can, I guess maybe even subconsciously, think a little bit about what’s similar and relatable.” She also told me that her knowledge of how that mentor grows was a key factor in how she applied his advice. She had asked him about how to control cabbage loopers, and recounted his response for me:

He was saying [to spray] basically as soon as they start to head up, and then once a week. And I also know what kind of grower he is, so I can take it with a grain of salt because I know that he tends to spray more than less. So I was like, “Okay, well then I might not do every week.”

That “grain of salt” that Brooke mentioned is a common ingredient in growers’ decision-making recipes. Growers are constantly translating and tweaking information for application to their specific circumstances. But they can only effectively tweak if they can accurately compare their own context to that under which the advice originated, so they’re constantly seeking contextual

information that they can use to gauge how applicable advice will be for their own farms, or how they might need to modify it in order to make it work within their own systems. That craving for context may be part of the reason why alternative growers hesitate to consult conventional growers for information, as we'll see later. While the actual required translation from conventional to alternative might not differ much in magnitude or complexity from the translations they regularly apply to advice from mentors on the East Coast, or who grow for different markets, they might not feel equipped to recognize the relevant contextual differences or what those differences imply for them. As Brooke put it, "I wouldn't call someone in the middle of the country in a place I've never grown and wouldn't have experience, even though it may or may not be applicable. You know, I wouldn't call [someone] in Iowa and be like, 'What do you use for blah?' when I actually have no context." Information with context is useful; information without is not.

Informal Exchanges and Question Formation

Though growers said they do call or email each other with specific questions, their paths also cross in less formal circumstances, some professional, some social, and some in between (the merging of social and professional relationships is another manifestation of the blurred distinction between personal and professional realms introduced earlier), which growers cited as particularly valuable sources of information. This is a community where friendship seems to be the default among acquaintances, where neighbors check in with each other, and where social gatherings, often potlucks, are frequent. At one of the farms where I worked, the landowner brought down tea and cake every Friday afternoon for "field tea" with the farmers and apprentices on the nearby farms. Such rituals may seem trivial, but they serve an important function, not only building fellowship and trust within the community, but providing opportunities for the informal exchange of information. Those informal exchanges are key for these growers, and seem to be as important as more directed questions. Paul told me,

I have a good friend who works at the farmers' market in Mountain View... He's a really smart guy, and he has lots of really good ideas. Just in the course of conversing with him I pick up a lot of good ideas about how to do things.... You can bounce certain ideas out and it's more comfortable than just making the direct thing of calling somebody up to ask him.

Paul could call directly, but finds it more comfortable, and really quite fruitful, just to engage in casual conversation with another grower, who is also a friend. And among friends, the

dialogue can be less formal, and the ideas perhaps less constricted – Paul talked about “bouncing” ideas out, tossing suggestions out for mutual consideration, without necessarily committing himself to a particular viewpoint. The stakes are low, and the payoff apparently quite high, enough to make it worthwhile for other growers as well. Farmers’ markets, I learned, are an important site for information exchange among this group of growers. Many made comments similar to Paul’s, or the converse: Heidi, who now markets primarily through a CSA and an on-site farm stand rather than at farmers’ markets, remarked that she felt more isolated, and missed the weekly opportunities to talk to other farmers.

Another grower whose marketing strategies are similar to Heidi’s gets around the problem by routinely volunteering his time on other growers’ farms. He said that he knows that while he’s there, he’ll not only get a sense of the overall context and observe the workings of the farm, like bed spacing, interplanting patterns, wash station setup, etc., but he’ll have an opportunity for informal discourse with the other grower. The potential value of such an interaction is great enough in his estimation to warrant the loss half a day’s work on his own farm to obtain it. That strategy works in this particular community because growers are open to this kind of collaboration, and also because this type of diversified organic farming is labor intensive, which makes the offer of half a day’s work all the more valuable to those other growers.

Another source of fruitful informal exchanges for these alternative growers is equipment and seed dealers. The advantage of conversing with dealers is that they know a lot about very specific topics, which these diversified growers, whose knowledge is more generalized, often don’t. Many growers told me that just talking to someone who’s immersed in a particular realm can be very informative. Eva was a great example. She explained to me how she had learned to grow dahlias from the people who sold her the tubers. When they stopped by the farm to deliver them, she and they had gotten to talking, and ended up going out for beers and talking about dahlias. Recalling, she said,

They taught me exactly how to grow dahlias, which I didn’t know before. I was doing everything wrong. I was like, “Oh, okay, I’ll grow them with high fertility and water,” and turns out they like low fertility and water. [The dahlia dealers] taught me that, and then gave me a cd of them singing with a mandolin.

A few things are worth noting about the story. Perhaps what may be most surprising to a reader unfamiliar with diversified farming is the degree of ignorance Eva admitted to having

regarding dahlia cultivation. Such knowledge gaps are not uncommon among beginning growers who are still in the process of acquainting themselves with dozens of different crops. They often haven't had the time to develop thorough knowledge of the specific needs of each one, let alone each variety of each crop. So it's not surprising that Eva applied what she knew about cut flowers in general to her dahlias as well – often when faced with a lack of specific knowledge, these diversified growers default to broad concepts that they know to be generally true. And that strategy had mostly worked for Eva; while her dahlias hadn't ever been stellar, they'd never completely failed, or even exhibited any specific symptoms that would have compelled her to seek a diagnosis. When I asked her to elaborate on her information-seeking path in that case, she acknowledged that “seeking” wasn't really an accurate term:

It was just in the course of going out for a beer. Yeah. Because I made assumptions about why the dahlias didn't perform well that were incorrect... But there was just getting together with [the dahlia dealers] and falling into conversation. So I wasn't even really seeking information – it fell into my lap.

Eva wouldn't likely ever have thought to ask for the information she eventually got – she didn't know she needed it. But because she happened to accept an invitation to drinks from a dealer who specialized in dahlias, she stumbled into some very useful advice that she says she has since applied with great success. And she wasn't the only one to stumble as she did. Growers seem to recognize that sometimes placing themselves in situations where that kind of unsolicited but useful knowledge is likely to “fall into their laps” is a surprisingly effective strategy, especially when they are so new to something, as Eva was, that they aren't able to identify the knowledge they most need. And dealers who specialize are often prime sources of that kind of knowledge – growers mentioned having learned unexpectedly from dealers selling cover crop seed, vegetable seed, and biological pest control supplies as well. The strategy can, however, as many growers pointed out, be a bit time-consuming. Olivia weighed the pros and cons for me, referring to her interaction with a particularly verbose seed dealer who is known for tying up growers on the phone:

Rarely do I just feel like sitting down and hearing somebody expound on all the possibilities of X, you know? However, I can see the advantage of that formula, because you get information that you didn't ask about. In the other example [where an information source is more concise] you're only going to get information that you're clever enough to ask about.

Whereas I might not have foreseen that there's this whole other aspect of leek seed that I didn't even think about, and he's offering up that information without prompting.

In recounting their stories, both Olivia and Eva exhibited a keen awareness of the fact that answers to their initial set of questions, or the "questions they're clever enough to ask," constitute only a subset of all the information that might be useful in improving their outcomes. Often these growers find themselves in such new territory that they aren't even ready to ask the directed questions that will get them the most useful answers. Many of the information sources I interviewed said they had observed exactly that pattern in the growers who approached them with questions – more experienced growers tended to ask more specific, directed questions, while newer growers asked broader ones. Often they as advisors found they had to ask numerous follow-up questions to help navigate newer growers toward the appropriate answer, whereas more experienced growers better anticipated what other factors might play into the equation. That dialogue is likely why many of the young growers I spoke to prefer to ask humans rather than books or the internet; the latter will only give them answers to the questions they ask, while the former are likely to drop a few gems of wisdom that they'll be able to use if they're prepared to recognize and catch them.

That isn't to say that the internet has no place in alternative growers' information-seeking habits; in fact, it turns out to be an important component of their question formation strategies. Every grower I interviewed said he or she uses the internet often to inform farming decisions, and some even go to the web before they reach out to other growers. But those who do explained that they go there first not because they believe it will provide the most reliable or applicable information, but because its breadth, and the low investment required to use it, make it a good starting place, from which they can then refine their questions. As we saw earlier, these alternative growers are particularly respectful of their fellow farmers' time, and prefer not to bother them with trivial, or, as Michael explained, ill-formed questions:

The role of computers is such that you can bother them at any time of day or night with any kind of silly question and at least figure out what you're trying to ask. That's a big part of it, just figuring out what your question is. Sometimes you go and ask a computer a question and realize you're asking the wrong question, or you're asking in language that doesn't make sense, nobody talks about it that way.

He continued with,

Google just lets you know what's out there, and then if you wanna figure out the specifics of anything, you really have to drill down beyond that and start getting on the telephone and getting people out here to visit and that sort of thing.

Michael, like most of the growers I interviewed, expects that his ultimate answer will come from another person, but he also recognizes that he, like Olivia and Eva, might not be “clever enough to ask” that person at the outset for what he needs. But while Olivia and Eva's approach was to seek people who would answer even the questions they didn't think to ask, Michael's was to use the internet to enhance the “cleverness” of his question. He uses searches to help him refine his question, and to put it into terms that are more likely to get him the information he's after, so that when he does consult a person, he'll be able to ask a better question. Other growers, over half of those I interviewed, shared similar habits, treating internet searches as prerequisite to interaction with humans or other sources, talking about internet searches as “a way to get an idea of what's out there,” to develop a broad sense of the territory so they'd be better able to identify the relevant subsections to query. The internet is a way of exposing growers to the wide range of possibilities beyond the obvious few to which they might otherwise inadvertently limit themselves. Armed with that larger map, growers are better able to identify areas worth exploring and thus to navigate toward answers, and to make better use of other growers' time when they do consult them.

Collaborative Learning

So even when these alternative growers consult the internet, it is often as a step on the way to a human source. And those human sources, as we've seen, are most often other members of the community. These growers place particular value on knowledge generated from within their own community, and clearly recognize that it's through interaction with the holders of that knowledge, in formal and informal exchanges, that they can procure it. Sometimes, though, in this young community of beginning farmers, they find that the knowledge they seek doesn't seem to exist yet among their colleagues. In those cases, they may seek other novices to form collaborative learning experiences, as Sam did when learning how to slaughter his chickens:

Fortunately there was two other kids at two other farms, all the same age, all friends. We all decided to try this at the same time, and there was no one else doing it. So we kind of fed off each other.... We all built our own [pluckers] and kinda helped find things and source and figure it out, and then we all just went to each others' farms and slaughtered together...

we just went for it and it took us forever, and we learned tons. So really just kind of that finding similar, people doing the same thing, having a little community where we could really bounce things off each other and trial and error together, and that was really cool.

Sam hit on an interesting point, that, at least by his estimation, “there was no one else doing it,” which happens rather frequently in the alternative farming community, where the market rewards and geography often requires innovation and improvisation. The uniqueness, or their perception of the uniqueness, of their pursuits means that the range of sources that growers like Sam believe might be able to inform them is considerably narrow, and in this case did not include experienced mentors he could consult, at least not within the community. And Sam didn’t seem to have considered looking to outside sources, expressing a certain confidence in his cohort’s self-reliance and ability to figure it out for themselves. His information-seeking approach emphasized development of knowledge primarily from within the community through personal and shared experience.

Sam seemed really to enjoy the collaborative effort, highlighting the community of like-minded “kids” that grew out of it. His use of the word “kids” reveals a lot about the way he conceives of himself and his fellow growers in relation to farming knowledge. It emphasizes their youth and inexperience, and it also connotes a certain informality, and perhaps even play. And it places them distinctly outside of the realm of authority. They are essentially a team of rookies making their way through the world of poultry management through trial and error, comfortable with and frank about their inexperience, and thus able to share the learning endeavor in a way that is, as Sam put it, “really cool.” Interestingly, the first things Sam said in describing his colleagues were that they were his age (around 30), and that they were all friends. For him, the fact that the others with whom he embarked on this learning journey were people with whom he identified socially as well as professionally or intellectually was salient.

Sam and his chicken-slaughtering cohort weren’t the only ones to pursue that kind of collaborative learning; others talked about similar experiences, mostly ones that they’d shared with other growers, but some talked about collaboration with dealers, some of whom have become part of the community in their own ways. Eric Wallace, manager of Pajaro Valley Irrigation, is a great example. Though his background is in sports broadcasting, he found himself in charge of PVI about a decade ago, and has since developed a sort of specialty in supplying for alternative growers. Many growers said they appreciated his approachability and willingness to engage with their

questions and to learn along with them. When I asked Olivia whether Eric had ever been unable to answer her questions, she replied,

Oh certainly. That's a good teacher, is someone who is willing to admit that they don't know. But he, because he ran a business and is in the industry, he could quickly get to the person that would know the answer... He was a point of departure for networking with other people who did know.

Olivia's comment says a lot about what she values in a person who is helping her learn. She's not necessarily looking for an authority; what she wants is someone who will engage with her question and help her get to an answer. So she appreciated Eric's frankness about his own uncertainty, and used it as an indicator that he would be a valuable collaborator. And Eric's position within the industry made him even more valuable; it gave him access to some resources Olivia wouldn't have had on her own, so in reaching out to him, she was able to access an additional knowledge network.

Olivia also noted that the information exchange was two-way; growers learned from Eric's specialized knowledge of irrigation, and Eric made an effort to learn through the interaction as well, so that with each project he helped with, he increased his own knowledge and thus became a more valuable resource to growers. Olivia gave a good example, explaining that she'd tried using drip tape with a slower flow rate, and found that,

It took longer and it wasn't effective, and so you'd wind up having to return or exchange, and so you'd have to explain it to him. And so he started to... develop a bit of a specialty in working with Pescadero farmers, based on that feedback. So he was definitely open to it, and there was feedback in both directions.

And because Eric was receptive to that feedback, he was able to turn around and share that new knowledge with other growers in the community. Ethan was a grateful recipient of exactly that piece of expertise. He told me,

We could ask Eric, and because he's dealt with all of the other growers in the area, he's like, "A lot of the veg growers are using high flow – they use 5 mil and reuse it, or they use 6 mil," so he was able to give us that information.

Eric may not have started with the most extensive knowledge about irrigation, and growers knew that – he said he often jokes with customers about the incongruence in his career path, which may in fact have endeared him more toward this particular community of alternative farmers, whose

own paths are similar – but his attitude toward learning with his customers and his ability to take advantage of multiple knowledge networks make him a particularly useful resource. Eric is also now an active member of the SCFF, and is generous with his answers on the forum, and with offers to give workshops on irrigation. He has clearly become a trusted community member, and growers often turn to him because his knowledge is region-specific, and largely derived from within the community.

Eric is not the only irrigation supplier on the North Central Coast, but he is the one that most of the growers I interviewed go to. When growers identify a resource they find useful, they're generous about sharing that information – it's not uncommon for growers to ask for or offer recommendations regarding local businesses or services on the SCFF – so Eric's name quickly became familiar among alternative growers, especially because among the services he has honed for alternative growers in particular is working with NRCS engineers to develop irrigation systems that meet the specifications for the NRCS conservation grants that fund many of these alternative farms' projects. As a government agency, NRCS is prohibited from recommending PVI specifically, but Eric said word gets around anyway, spreading from grower to grower. When I asked Olivia how she had first found Eric, she told me, "Yeah, he came as a recommendation.... from our next door neighbor farm, and then I started to clue in, like, yeah, all the other farms are going to this guy too." But before that, she had, as she put it, "flailed around":

Whereas at [the other irrigation supplier] they were like, "You wanna do what?" and Eric was like, "Oh yeah, yeah, of course you want to do that. And here's what you might consider, and here's the best way to do it." And it was very obvious that I had just kind of been going to the wrong vendor and needed that linkup.

Olivia clearly felt understood when she got to PVI, and Eric helped her identify the important considerations that she as a novice might otherwise have overlooked. The contrast that Olivia drew between PVI and the other supplier is worth noting; not every dealer is a gold mine of information; some are just selling things. But the ones like Eric, whom growers refer to by first names, whose numbers they probably have on speed dial, whom they turn to with their business as well as with their questions, are the ones who engage genuinely with growers' questions, who build trust through honest assessments of their own uncertainty, who share their personal backgrounds, and thus the context in which their expertise was gained, and who interact with the community outside of the customer-vendor relationship. Again, the overlap between the personal and the

professional is important in this community, likely again in part because of the importance of context for these growers. The fact that the Johnny's seed representative for their region used to farm on the East Coast, is clearly relevant to these growers – two brought it up of their own accord in discussion – and that important piece of contextual information comes out not in the ordering of seeds, but in the less formal conversations that these growers seek.

As Olivia mentioned, not all dealers are like Eric. In many cases, growers don't have personal relationships with dealers, or even know their names – they refer to them as “the guys at C&N Tractors.” Those tend to be the dealers with whom growers interact less frequently – tractor dealers, or electric fence companies, for example, whose services they require only occasionally, as opposed to seed dealers or irrigation suppliers, with whom growers more regularly have cause to interact. That type of dealer often serves a broader geographic area and range of farm types, and so tends to be less specifically engaged with the North Central Coast community in particular, or with the needs of small-scale and/or organic growers generally. They are, as Olivia put it, “the wrong vendors,” and growers tend to view them as non-members of the community, and thus as less ideal sources of information appropriate for their farms.

Non-conformist Identity and Improvisation

Part of the appeal of working with Eric, Olivia suggested, was the fact that he wasn't an authority and never presented himself as such; he was a fellow transplant from another world, still learning the ins and outs of his new profession. The preference these alternative growers exhibit toward such relationships, their tendency to seek co-learners rather than authorities, might be a symptom of a larger predominant ethos that emphasizes self-reliance and independence, which surfaced repeatedly in interviews. Growers revealed marked independent streaks, and a general distaste for uncritically following convention. Many said things like, “I really don't like doing what people say – I have authority issues,” “I never do a recipe how it's written,” or “Sometimes you have to stop listening and just do.” As Maya told me,

I never like the answers [consultants] give me anyway, especially if I'm saying, “Do you think I can do this here?” and they'll look at it and they'll say, “No, you're on a 30% slope – that's crazy,” and then I'll be like, “No, I can actually do that, so I'm gonna do that anyway. But thanks.” So I just, I tend to just do what I think is really gonna work, regardless of getting advice against it or not.

None of the growers I interviewed said they had hired private consultants, often citing the cost or the fact that they didn't know of any who specialized in their type of farming as the main reasons, but a reluctance to submit to authoritative advisers probably underlies some of those justifications as well. Maya knows herself, and she knows that if advice she hears conflicts with what she believes or wants to do, she simply won't heed it. Others also struggled to imagine themselves in functional grower-consultant relationships, given their preferences for independence. Paul reflected, "I've never quite worked it out in my head how I would work with [a consultant].... I mean right now I do most everything myself as far as making decisions on pests and whatnot, and working somebody else into that, I don't know." And it's not just private consultants whom these alternative growers readily disregard. As Jason put it, "We definitely were flat out told by any number of people that we just wouldn't be able to hack it in this market climate, and I mean I'm pretty arrogant, so I kind of ignored that." These growers don't much like to be told anything; they chafe a bit against authority. But it's not necessarily because they think they know better. Maya didn't know she could handle a walk-behind tractor on a 30% slope, and Jason didn't know he'd be able to make his business work; neither had done those things before. But they both expressed confidence in their own abilities to figure it out, if not with support from consultants, then without. These growers tend to take a certain pride in that process, and are remarkably comfortable with trial and error, improvisation, and making things work "by hook or by crook," as one grower put it. Sam summed it up well: "I think a lot of farmers are like me too, really, where they really just wanna trial and error and just do it, and they're more loners and they're just doin' it."

That nonconformist attitude may explain why when they do seek advice, these growers so frequently turn to their peers before they turn to other sources; other growers in their cohort are knowledgeable but not authoritative, and tend to echo and support that nonconformity. And if they aren't more knowledgeable, they often are disposed, as Sam's chicken-slaughtering friends were, to play along in the trial and error game.

Another characteristic of these alternative growers that emerged and relates to that celebration of nonconformity and improvisation is their hyperawareness of all the factors that distinguish their own farms from others, how different their particular circumstances are from everyone else's. Sometimes those differences arise and intensify because of a cycle improvisation and specification, as Jason explained in describing his poultry setup:

It's also just gonna depend so much on what you have available and what your land is like. Our chicken tractors are completely different from Sam's, and they're completely different from [the neighbor farm]'s, but a lot of that is just what we had lying around that we could build them out of, and how we could not spend a lot of money.

Because he tailored his system based on his particular environment and available resources, rather than altering his farm to fit a more standardized poultry-raising setup, Jason ended up with a chicken tractor that was cost-effective and specifically suited to his circumstances, which included very limited land and a need to rotate with pigs. But the result was also markedly different from his neighbors' setups, which meant that the new context, on which he would base future farming decisions, was in many ways even more different from those his neighbors faced, so would again likely require him to improvise when addressing issues. With each iteration, the system becomes more closely tailored to his particular circumstances, but it also begins to deviate more from convention, to have less in common with other growers' systems, which makes it harder to apply their advice. In some cases, growers decide they've gone so far down that improvisation path that they can't make use of other growers' advice. Faye recounted a particularly frustrating example:

I have a lot of questions that I probably would ask other farmers, but there are so many details that go into why I did something in some particular way that got me into this pickle that it's exhausting to repeat it and then to explain what utilities I have or resources I have physically on the farm to enable me to use their suggestions. So he might be like, "Well why are all of your beds already shaped?" My answer to that is, "Well, because my tractor broke, and I wasn't sure we were going to have it for the rest of the season, so I had to bed up, so now I have all of these beds that are really, really weedy, and they're getting more and more weedy, and I can't flame weed all of them, and I have to direct sow into them in a month." I have no idea what I'm going to do to get rid of those weeds. And those are compromises, and they're situations where I don't necessarily feel like I can be like, "Heidi, if you had bed-prepped three months in advance, how would you deal with the weeds?" and then she might be like, "Well we might just cultivate them again and redisc it." And it's like, yeah, but you don't get it – my tractor – I don't have a tractor to use right now.

In Faye's case, the initial improvisation was a response not to her particular environment, but to a malfunctioning tractor, but the cycle it set off was similar. Uncertainty about whether her tractor would work in the future meant she had to diverge from the standard cultivation and bed

prep calendar, which brought on a whole new set of problems, the origins of which she found onerous to explain, and the common solutions to which she wasn't equipped to apply. Situations like Faye's are remarkably common among alternative growers, not only because of the uniqueness of the geography, climate, and markets discussed earlier, but also because of the limited capital with which most of these growers start. Jason improvised on his chicken housing to cut costs; Faye had tractor problems because she couldn't afford a newer one, or the repairs on the old one.

Alternative Growers and Conventional Information

So the specificity of their situations, whether resulting from, contributing to, or independent of improvisation, is prominent in growers' thoughts. Every single grower I interviewed cited the specificity of his or her circumstances as a reason for not consulting certain sources, or for not applying advice other sources had offered, and with most growers, the theme arose more than a few times. Phrases like, "doesn't apply to me," "not relevant for us," "geared toward a different type of farming," "doesn't translate," "doesn't make sense for our system," or just "completely different" came up repeatedly. The objective reality of these growers' distinction from more conventional growers is undeniable, and will factor into our discussion of Extension resources later, but growers also might be inflating the significance of those differences, possibly as a symptom of that non-conforming self-conception. They understand themselves as separate from conventional farmers, often defined more by their differences than by their similarities, and thus may overlook commonalities that would otherwise allow them to see uses for information that is "geared toward" more conventional growers. As it is, they sometimes categorically disregard certain sources, writing them off as "not for them."

Interestingly, I seem to have caught at least a couple of growers just as they were beginning to become aware of the opportunities they might miss by adhering too strictly to that attitude. A few are beginning to realize that, with some translation, they can apply information from more conventional growers with whom they don't believe they have much in common. The growers who think that way are still in the minority – only three of those I interviewed mentioned conventional growers as a source of information, and many more specifically said they wouldn't go there – and they also mostly haven't yet forged paths for themselves into those corners of the information landscape. Diana is a great example. When I asked her whether there were sources she considers consulting but doesn't, she responded,

The main one would be I'm starting to think that the livestock trade association could be more useful... Our system is so different than the conventional systems that I don't think farmers in this community really think of joining like an egg producers' association or a poultry association, but I actually think that by doing that we would get all kinds of leads on like equipment that we could get at a price or that would add some efficiency to what we're doing... But I think so many people around here think of themselves as like, "Oh no, we're doing a different kind of agriculture from those guys – we're not going to join their associations." But I actually think there could be some value to it.

Diana pinpointed that tendency of alternative growers, herself included, to think of themselves as practicing "a different kind of agriculture," and thus to decline to associate with growers they identify as conventional, and, by extension, other. The desire to separate themselves conceptually from conventional growers isn't surprising; many of them came to farming because they perceived flaws in the conventional system and they wanted to grow food better – the whole point was to do things differently. When they told me what was important to know about the way they farm, they proudly used terms like "minimal-impact," "sustainable," and "environmentally conscious." In using those terms, they define themselves positively by what they are or strive to be, but also implicitly by what they are not. And as Diana pointed out, sometimes defining themselves by their differences causes them to overlook the ways in which they're similar, and thus to miss opportunities to learn from conventional growers in those associations. Ethan shared a similar sentiment when I asked him the same question. He told me,

I am of the mind that there are certain things that larger scale growers are doing that make their operations highly efficient, and those are things that I think the small organic movement could learn from. And that doesn't mean that we have to adopt their systems wholesale, but I see no reason why we shouldn't understand, especially given the amount of research and resources put toward developing those systems, whether it's nutrient management or just cultivation system setups, or yeah, harvesting implements. You know, things like that, we should be able to learn from those and adapt them again to our scale.

Ethan's comment echoed Diana's, pointing out again how growers' self-conceptions emphasizing their uniqueness can get in the way of their utilization of information resources that could prove valuable with some translation. He highlighted the fact that the research in support of more mainstream large-scale, conventional agriculture dwarfs that devoted to farms like his, which

means that there is a vast and growing repository of well-supported agricultural knowledge ready to be tapped. Though off the shelf it might not be an obvious fit, the underlying concepts and principles are solid, and may be applicable, with some tailoring, to alternative farms. While Ethan, like most other growers I interviewed, lamented the dearth of institutional resources devoted to research specifically supporting small diversified growers, he also assigned some responsibility to small growers themselves to find ways to make use of the research that is happening. The fact that the research wasn't conducted with them in mind shouldn't mean that the results it yields can't be useful to them.

Of course he also qualified his statement – some conventional agricultural knowledge will be more readily applicable to alternative farms than will others. Some pest and weed control methods, for example, might be too fundamentally different to be useful. But many other aspects of conventional agriculture may cross over. Both Diana and Ethan identified efficiency as a particular strength of conventional and large-scale growers, and as an area where alternative growers had opportunity to improve.

Alternative growers' relationship to farming efficiency is somewhat complex. They entered this world of organic, diversified, small scale farming knowing that they would never achieve the same levels of efficiency that their larger conventional counterparts would, but also believing that in the bigger picture that sacrifice was worth it, that it was reasonable to compromise some efficiency in favor of other ideals that were part of a broader vision – “alternative” as not just different, but preferable. That vision often includes respect for the environment, genuine relationships with consumers, and participation in a sustainable, inclusive, socially just food system. While efficiency is clearly a component of many of those ideals – resource use efficiency as a way to maximize output with minimal use of environmental resources, and economic efficiency as a way to offer good food at fair prices – and while in the course of conversation growers did frequently reveal the high value that they placed on efficiency in general, it wasn't ever among the defining features of their farms as they conceived of them. When at the outset I asked what words they would use to describe their farming methods, or what was most important for me to know about their farms, they never once used the words “efficient” or “efficiency.” What was most important, in their minds, were the broader ideals on which they based their farms.

And steadfast adherence to those ideals and consistent principled approaches to farming are part of what make these growers special and unique. But it can also create blind spots when it comes to decision-making. As Ethan pointed out,

Too often I think we as a group of beginning smaller growers grow on a vision, or with an ideal, right? There's this "I wanna look out and see a patchwork farm that is pretty and that people come and tour.... I'm trying to create some pastoral vision," when really that can lead to, if you don't have a keen sense of what's actually making you money, you won't have that economic viability to keep that vision going.

The idealistic vision is a wonderful motivation, but it can also blind growers to some of the more pragmatic considerations necessary to realize those visions, and again, if growers let the vision narrow the way they understand themselves, it can influence the questions they ask and of whom they ask them. Because they see their vision as fundamentally different from those of more conventional growers, they tend not to seek advice from them.

Of particular note is that realistically, the type of translation that alternative growers would have to apply to make use of knowledge from conventional growers isn't necessarily prohibitively complex. In many cases it might merely be a question of scaling it down, modifying it to use organic inputs, recalibrating to accommodate heirloom varieties, or simply extracting the broad transferable concepts about pest population dynamics or effects of daylength on flower or egg production. And that kind of tailoring is an exercise with which these alternative growers are particularly familiar. They unanimously agreed that in no case had they ever simply applied advice exactly as it was given, no matter what the source. Even other growers who share these growers' overall farming-related values generally have different established systems or frameworks within which they work, or simply take slightly different attitudes or assign different priorities to aspects of marketing, pest control, or weed management. That constant need to adjust is part of the reason why knowledge of the other grower's farming practices is so hugely important to alternative growers seeking advice, as discussed earlier.

And lack of familiarity with conventional growers' contexts may in part explain why alternative growers steer clear of them in their information-seeking endeavors, but the aforementioned attitude and need to separate themselves identity-wise from conventional growers may play a larger role. Gretchen told me, "I wouldn't call Fresno [a Central Coast farming community dominated by large-scale conventional farms] to find out what they're doing about – I

know what they're doing." For Gretchen, it's not that she doesn't know how those growers are farming; it's that, in her estimation, she knows enough to determine that their insights will not apply to her. Alternative growers are remarkably game to improvise and adjust based on advice from certain sources, but readily reject other sources as inapplicable, based in large part on how they understand themselves in relation to the larger agricultural system. It may be in part because they take a certain joy in being pioneers, in forging their own paths across the information landscape through trial and error and improvisation, and so prefer their own, trails, indirect and rugged as they may be, to the more clearly defined, established paths that were built by people outside their community.

CASFS – Mentors and Network

But they aren't necessarily averse to all established paths. Though interviewees clearly valued relationships with other growers whom they considered peers, who are at similar points in their agricultural journeys, they also did look on occasion to more experienced mentors, who have been at it longer and have more years of growing to draw on. Perhaps surprisingly, alternative growers seemed to consult the former group more consistently, in part because the latter are fewer and farther between, and are often farming in different geographic regions. Among those who talked about consulting more experienced mentors, a few said they call previous employers, the growers on whose farms they had apprenticed, often citing familiarity, with the grower and with his or her methods, as a key reason for turning to that particular person, as Brooke did with her Massachusetts mentor. But because those mentors are often farming on the other side of the country or in otherwise different contexts, the range of topics on which they can give applicable advice is limited, so North Central Coast alternative growers often seek other local sources. But because the community is so heavily populated with beginning growers, it can be hard to locate and pin down those experienced growers. Interviewees often remarked that experienced growers are busier than they are, and might not have time for them, as Aiden told me: "Sometimes the best advice I could get from somebody is a farmer with more experience than me, and there are plenty of those farmers around, but they're more busy than I am."

By Aiden's estimation, the more experienced growers are busier, but I have to point out that the relative busy-ness of growers isn't a value he was likely in a position to measure objectively. That he *perceived* their greater busy-ness, though, is telling in itself. The fact that older growers

give that impression might indicate differences in priorities among older versus younger growers, and a greater inclination among the latter to engage with their fellow growers' questions. It stands to reason; other young growers are more likely to empathize with their colleagues' situations, and will likely gain more from reciprocal knowledge sharing later, and thus may take a greater interest in cultivating those relationships. For older growers, participation in that exchange may seem slightly less crucial. Many of the older alternative growers do seem to fall more to the periphery of the community, at least as far as information sharing goes. The vast majority of the traffic on the SCFF is initiated by growers who are in their first decade of farming. Though older growers do contribute, they do so much less frequently, and generally respond to existing conversations rather than starting their own. They also showed less interest in participating in this study; though growers I interviewed did suggest quite a few more experienced farmers as potential additional subjects, very few of those farmers responded when I reached out. It is also worth noting that many of the more established growers in the region, those 60-year-old growers who have been farming for 20 years, don't identify as alternative – they're growing fewer crops on larger pieces of land, and may not identify as closely with this new young group of alternative growers. To beginning growers, then, those more experienced growers may seem more like outside sources than like community mentors, which may contribute to their attitudes toward asking them.

There are, however, a few very experienced local growers whose roles as community mentors are well-defined and even semi-official, to whom beginning growers do often turn. Ken Wilder is perhaps the most obvious choice; he was the field site manager at the CASFS farm for 20 years, and upon retiring became first an informal, and now a grant-funded, mentor for beginning farmers. The grant, from the Beginning Farmer and Rancher Development Program (BFRDP), employs Ken at 50% time to act as a mentor for beginning farmers in the Central Coast region. His job is to answer growers' questions, conduct site visits and consultations, and organize workshops and other educational events for growers in their first decade of farming. He is a hugely important resource to many of the growers I spoke to, but he's not the only one. Growers who went through the CASFS apprenticeship generally consider all three of the current CASFS site managers, each of whom specializes in a particular field or garden site with different emphases (annual vegetables, orchards, cut flowers, specialty crops, etc.), to be their mentors, and cited each at various times as sources of information. Many growers turn to Ken or the current CASFS site managers because they trust their expertise, and also because, as a few noted, those mentors are employed to educate,

and so may have more time to devote to answering, may be less likely to feel imposed upon by such inquiries, and may also have particularly comprehensible ways of explaining things. As mentioned earlier, growers generally expressed a marked respect for other growers' time, and an acute desire to minimize the inconvenience they might cause by asking, but they seemed to sense that they were "allowed" or even "supposed" to ask those particular CASFS-affiliated mentors, and so do so more freely.

The other appeal of these community mentors is that, because so many growers bring their questions to them, they become a sort of an aggregation hub for local farming questions and answers, similar to the way Eric collected information. These mentors can observe patterns in the questions that arise, and begin to develop aggregate pictures of the community's needs, as well as receive feedback regarding what works. As Ken put it, "Now I'm visiting farms all over this region, and I really have a much better sense of what the problems are and what the questions are and what the issues are."

Of course those kinds of benefits only accrue to growers who are in touch with those CASFS-affiliated mentors, and, as one grower pointed out, that's not everyone in the alternative farming community. To Maya, a grower who did not do the CASFS apprenticeship, the CASFS community can feel like a self-contained entity of which she isn't necessarily a part:

There are definitely times when I wish I had more of a relationship with some of the more experienced farmers around here... I do miss that.... That's definitely something I've intended to work on... I just never developed those relationships. I didn't do the [CASFS apprenticeship] program, everyone gets to know each other, and it's kind of a little, that whole community is its own thing.

I didn't get the sense that Maya felt actively excluded from the CASFS community; she talked about building those connections as something she could work on personally. But the reason she didn't have those connections already, she said, is that she didn't do the apprenticeship. The possibility, and sometimes reality, of the CASFS community, and its associated mentors, becoming somewhat insular is a real concern to many in the community, including Ken Wilder. As we were discussing his role as a mentor and the grant that funds it, I asked about how growers with questions might find him:

Me: Do you think if I were a beginning farmer who hadn't met you and hadn't had any connections to CASFS, I would be able to find you?

Ken: No! And you know that's something that really bothers me... Everybody's like, "Oh, we got this grant and we're going to do this and we're going to do that, and we're going to write articles and we're going to promote this," and there has been zero promotion...

Everybody gets so bogged down in the current crisis, and yeah, I think that's really bad...

And that's why part of how I've kind of wanted to see this evolve was to do more and more workshops with public participation from a broad audience that, rather than making this kind of inside deal – if you went through CASFS then you know who Ken is – but it hasn't really.

Ken attributed the failure in outreach in part to the current economic crisis that has tightened budgets across the UC system, hitting non-academic programs like the apprenticeship especially hard. He was particularly frustrated, I think, because he felt that all the other pieces were in place: He was finally getting paid for his time, he had the region-specific expertise and the trust of growers, and clearly had identified methods – site visits, workshops, email, etc. – that were working to help farmers learn, but a simple lack of promotion was inhibiting his ability to reach growers outside the CASFS network. Gretchen, a CASFS alumna, expressed a similar concern: "We're lucky because we have Ken Wilder, and because we've already developed a relationship. Like young farmers who haven't done the Farm and Garden program, who aren't in this big CASFS sphere, how do they know who Ken Wilder is?" Not knowing Ken, she suggested, would be a significant handicap; he is a valuable resource to many. Eleven of the 20 growers I interviewed cited him as a source of information. But there was a clear correlation between past participation in the apprenticeship and a tendency to turn to Ken for information. Only one CASFS alumnus didn't mention Ken at all, and only two non-alumni (one of whom manages a farm founded by CASFS alumni) did mention him. Ken's and Gretchen's concerns are real; utilization of Ken's mentorship seems largely tied to CASFS alumnus status, which is a particular shame because the grant that funds his work is specifically meant to support all beginning growers, not just those who go through the apprenticeship.

So growers who didn't do the CASFS apprenticeship are much less likely to consider calling Ken or the other CASFS mentors off the bat. But many do eventually find their way to those mentors; as mentioned, the CASFS influence is pervasive, and it is impossible to farm on the North Central Coast in isolation from the CASFS community. Of those participating growers who hadn't done the apprenticeship program, many were only one degree removed, being close friends or neighbors with, working for or employing, or being otherwise socially or professionally connected

to apprenticeship alumni, and thus had found their ways into the “CASFS sphere” of knowledge. Five of the non-alumni mentioned having contacted CASFS-affiliated mentors or researchers with questions; they’d met at workshops, farm tours, or conferences, or in one case through on-farm research. That still left six growers, almost a third of my sample, who aren’t taking advantage of CASFS resources. And my sample, if anything, was likely biased toward use of those sources; my recruitment method relied on the same social network through which awareness of and acquaintance with CASFS mentors would spread.

Maya and Bianca are two particularly interesting examples of unaffiliated growers navigating the community. They were in many ways similar; both were in their third season farming, both had spent many years in other careers before deciding to farm on land that was already in their families but uncultivated, both were on the older end of the spectrum. And both found themselves confronting isolation, which they attributed both to their lack of CASFS affiliation and to their ages. Those two factors are related; though the apprenticeship is open to all, and neither Bianca nor Maya would have been the oldest to have enrolled in most years, the lifestyle associated with participation, leaving family at home and putting the rest of life on hiatus for 6 months to commit full-time to living in a tent cabin among a community of nearly 50, is more easily manageable earlier in life. As Bianca put it, “I would love to go to the UC Santa Cruz program, but at this point in my life, I don’t think that would actually work too well.” The apprenticeship wasn’t a realistic option for her, or for Maya, so neither applied. But the consequence for both was that they found themselves isolated from the network, and challenged to find ways to relate to their fellow growers. Maya struggled more:

Most of the people who are going into farming new in this area, they’re a lot younger than I am, and they have a different relationship with some of the farmers... There’s a more natural peer-mentor relationship that I don’t, I’m a lot older, I’ve done a lot, I don’t tend to approach people with that, I just like figuring it out myself most of the time.

Maya seemed to have difficulty finding words to describe the relationships and habits she has observed among other growers, but she clearly recognized differences between theirs and her own, and attributed them to her age and life experience. I didn’t ask interviewees to disclose their ages, but I can’t believe that Maya was that much older than the average alternative grower. She certainly wasn’t the oldest person I interviewed, but her pre-farm life experience included a career in a field in which she had gained a certain level of expertise and authority, and it may be that the

eager learner humbly seeking advice was an identity she had already worn and shed, and that she wasn't particularly keen to readopt, which made it harder for her to feel comfortable asking other growers, who were often much younger than she was, for advice, or developing peer-mentor relationships. But she indicated, and other interviews confirmed, that her particular orientation is the exception among this group of growers, highlighting by contrast the prevalent comfort among alternative growers with asking questions and seeking guidance, and their willingness to conceive of themselves as learners rather than as experts or authorities.

Bianca is a great example of a grower comfortable admitting her inexperience. Among the first things she said to me in describing herself was, "I'm still learning. So if you're looking for someone who's a newbie, who's got lots of questions, here you go," off the bat identifying herself as a continuing learner. Though she found herself in the same tricky spot as Maya, as an older beginner outside the CASFS network, she didn't seem to have the same difficulty reconciling her greater life experience with her lack of farming experience, and in fact found an elegant way to use the former to address the latter. She explained her scheme to me: "There's these incredibly smart kids coming through that [CASFS] program, so our idea is that we can offer them a place to work kind of in exchange for sharing information." And that's what she did. She put the word out through a fellow grower who was a CASFS alumnus, and has since had a few CASFS grads come to work and live on her farm and teach her what they know. She was very upfront about her need for farming expertise and her desire to learn, and recognized the fact that in the alternative community, the holders of much of that knowledge are, as she put it, kids, people who are significantly younger than she is, and at a very different stage of life. But while Maya saw that difference as a barrier to connection with those other growers, Bianca turned it to her advantage: What she, as an older individual with more of life behind her, had that her younger colleagues often didn't was financial and land security, which she willingly offered in exchange for what they had that she didn't, farming knowledge. The trade worked because she had no qualms about asking that younger generation to share their knowledge. For her, admitting her need for help in farming didn't have to challenge her broader self-conception as an experienced older woman; the two could in fact complement each other. It also worked, of course, because there happened to be a ready supply of those young, smart, knowledge- and enthusiasm-rich, land-poor kids emerging from the CASFS program. The arrangement has been a success, according to Bianca, and has produced some added benefits as well. Young growers have taught her what they know about farming, of course, but they

also have provided an in into the CASFS network, which has led to further sources of farming advice. When I asked Bianca how she had come to know the other growers she currently consults with questions, Bianca responded,

You know, I think Celia [the live-in younger grower] has been my connection... I think if Celia weren't here, I'd be a little, I'd be pretty isolated, because all the farmers I know are kind of your age, or the older farmers [who aren't beginners anymore]. And the older farmers I wouldn't be connected to except through doing the farmers' market... I would love to find a bunch of people my age that are into this, but most of my friends are talking about buying country homes in Hawaii and condos somewhere, you know what I mean? I don't know a lot of people my age that want to do this. I know a lot of kid farmers that want to do it.

Bianca's more natural peer cohort isn't interested in farming; she identified herself, with little regret, as the odd one out of that group. But she didn't necessarily see a fit for herself among the North Central Coast growers either, whom she grouped into two categories: the older experienced crowd and the younger "kid farmers." Interestingly, she didn't seem to contemplate with much commitment the idea of consulting the former. She seemed to feel less natural connection to the more established growers, but to know a lot of the younger ones, and chose to affiliate with the kids, even though, or perhaps because, they had less experience – another example of an alternative grower seeking knowledge from peers with similar levels of experience rather than from mentors with more authority.

So the importance of networks in this alternative farming community is huge. Other people are the main repositories of much of the knowledge that these growers need, and because specific context is so essential to alternative growers whose circumstances are so unique, that knowledge will only be optimally useful when paired with familiarity with the holder of the knowledge. It's not surprising, then, that young growers so actively cultivate relationships with one another, and that growers both inside and outside the CASFS network recognize the value of membership in that group.

Extension

We have thus far touched on growers' consultation of other growers, the SCFF, dealers, and the Internet, but have until now not mentioned Extension, which may be surprising in a discussion

of how farmers inform their decisions. But this group of growers is by and large farming independently of UC Cooperative Extension; growers never brought it up when they listed the first few places they turned when they needed information. Of 20 interviewees, 8 say they never use the service, and 9 say they use it rarely (for many it was a single instance). Of the three who have used Extension more than once or twice, two mentioned that their relationships with Extension were in part due to their interactions with the institution in other capacities; one is employed part time as a water quality monitor and often works with Extension agents as part of that job. The other works for the UC system, so also regularly interacts with Extension outside of the traditional farmer-Extension agent relationship. It's worth noting that all three of the growers who said they use Extension regularly are in Santa Cruz County. All three are also on the larger side, weighing in at twenty acres or more.

The fact that the growers who are using Extension are all in Santa Cruz County is not likely a coincidence. Because Cooperative Extension is administered at the county level, growers in San Mateo County, nine of the growers I interviewed, encounter different Extension resources from those the Santa Cruz County growers do if they go to their county office. San Mateo County is much more densely populated and largely suburban, and its Extension office is consolidated with San Francisco County's, so the general population it serves is much more heavily weighted toward the urban and suburban. Programs highlighted on its homepage include youth education projects, the Master Gardener Program, nutrition and food preservation education, landscape horticulture, and urban forestry. "Agriculture" doesn't even appear on the main menu. Perhaps not surprisingly, San Mateo County growers often expressed frustration with the lack of ag-appropriate resources and confusion regarding how even to reach the appropriate agent. Because such a large fraction of the population served by San Mateo County Extension is suburban homeowners, the Master Gardener Program, staffed by highly trained county resident volunteers, is the logical recipient of most horticulture-related inquiries. But extensive as the volunteer training is, it is clearly focused on the garden scale, with a recreational, rather than a production focus. Many growers expressed frustration at calling Extension and finding themselves talking to Master Gardeners who, for all their generosity of time and horticultural expertise, were dismally ill-equipped to answer questions related to farming on a production scale. Growers hesitated to disparage Master Gardeners, but clearly didn't find the service appropriate for them, and, some even found it mildly insulting that

their calls are directed there. They are farmers, not gardeners, and Extension resources that assume otherwise simply don't suit.

At the same time, though, resources intended for production farms often prove similarly inapplicable for this group of growers. Growers frequently expressed the belief that Extension isn't for them, mostly because of specific aspects of their scale, their farming practices, or the array of crops they grow. Again, they identified the type of agriculture they're doing as fundamentally different from what Extension is equipped to serve.

Many mentioned beliefs that Extension wouldn't cater to organic farmers. Bernard told me, "So much of these land grant colleges don't seem to be too dedicated to actual, well certainly not to ecological farming. It's like, 'This problem? Here's this chemical for you.'" Diana was similarly frustrated with the reliance on non-organic treatments she'd observed in the UC system: "When we do use the UC Davis service and talk to those veterinarians, they are so conventionally oriented, it's like the answer to everything is antibiotics, and they couldn't even advise us in a method for dealing with things without resorting to antibiotics."

But it's not just because Extension "doesn't serve organic farmers." These alternative growers are alternative in many ways, and scale is another important point of divergence between these interviewees and the farmers they believe Extension serves. As Faye told me, "This is an annoying thing about Extension, is that when your scale is in the less-than-ten-acre range, they don't want to talk to you, and they want to send you to Master Gardeners." She wasn't the only grower who felt dismissed by Extension because of her size. Ethan recounted a time when he had reached out to an Extension agent about an irrigation question and found the interaction similarly unsatisfying, saying,

[He was a] really intelligent guy and doing good work, but kind of couldn't suffer us because we were small.... I think for them it's really about payoff, in terms of what their time is going to yield in terms of benefits to affect the most number of acres.

Compounding the issue of scale is the fact that these alternative growers are so diversified that even if their farms are larger than that 10-acre minimum, the total acreage of land they have planted in any given crop is only a fraction of that. That can make Extension's advice less applicable, as Paul pointed out:

UC will give you one answer of what you should do, and that's fine, if you're growing a 40-acre field of all one thing, but if you're growing so many different things like we do, it's just, you can toss that out the window to a certain degree.

Diversification will also affect the relative gravity of any given pest or disease problem, both in the broader scheme of the farm's crop in relation to other farms' crops, and in the narrower consideration of the troubled crop in relation to the farm as a whole. Brooke made some revealing comments regarding a disease that had been affecting her raspberries. She mentioned that she had considered sending tissue samples to Extension, but that she had decided it wasn't "dire enough," which led me to wonder what she would classify as dire enough. When I asked, she responded,

I guess like, maybe I don't know, like if I had more acreage in anything. We're really small. So sometimes it's like, yeah, okay, this is suffering, but we have four beds of it, you know what I mean? Or financially, I don't know what would make it more of an incentive to do that. And then I think it's just taking the time to do it, whereas I usually rely more on information gathering from the community.

Her four beds of raspberries might not be enough to concern an Extension agent, but they also might not be enough in her own mind to warrant the trouble of calling and sending in samples. Part of the beauty of diversified farming is that if any one crop fails, it won't ruin the farmer, but it also means that growers are less likely to be convinced that contacting Extension about a problem with any single crop will be worth either Extension's time or their own, especially when they can just ask neighbors.

And neighbors are more appealing to many of these alternative growers, not only because there is much less mystery surrounding how to contact them, what they know, or the origins of their knowledge, but also because, as shown earlier, they have personal and professional relationships with them already. Growers repeatedly commented on their distinct lack of relationships with Extension agents, often pinpointing it as a reason they don't tend to consult the resource. Recalling her attempt to contact an Extension agent a few years back, Olivia told me,

I don't even remember who I spoke to. So I definitely did not form a relationship with an Extension agent... It just didn't feel accessible. I think I even tried to call, and maybe left my number and, "so and so will get back to you," or "oh that person's not here right now."

Other growers told similar tales of games of phone tag with agents, or of calling offices only to find the number disconnected, or worse, to learn that the poultry agent had retired and not been

replaced. The inaccessibility of agents makes it nearly impossible for growers to have interpersonal interactions, much less interpersonal relationships with Extension agents.

While some growers seem entirely content to let Extension stay in the separate “unrelated to what I do” category, a few do seem to crave relationships like the ones they’ve witnessed in other states. Sam remarked,

I feel like when I go to conferences and there’s people in other states speaking, their Extension agent is so part, they have a relationship with them, and they’re always like, “Go to your Extension agent for what kind of seeds to grow and this kind of stuff,” and I don’t know if they’re seeking them out or if the Extension agent is going to them, but I just, it seems very inaccessible here. I don’t know what that’s about. I mean it’s crossed my mind like, huh, they would probably know something, but I just, I don’t know how to get a hold of them... I don’t even know who, or where to go.

Other growers who had farmed in Massachusetts, Vermont, or Oregon before coming to California all remarked on how different the system was where they had come from, how they’d known where to go or whom to call, and had regularly used the resources, would recognize the local small farm advisor if he or she pulled up in a truck. The contrast with these unreachable agents whose faces they never see and whose names they can’t remember puzzles many North Central Coast alternative growers.

The other interesting part of Sam’s comment is his admission that he “doesn’t know how to get a hold of” Extension. He wasn’t the only one who was a bit perplexed. Other growers also revealed a remarkable degree of confusion regarding not only whom to call or where to go, but about more generally how the institution works and what it does. They said things like, “I’m not really aware of the range of services they offer,” or “I don’t know what the deal is there, and what kind of organic research is happening.” They know Extension exists, but aren’t exactly sure how or whether its services might apply to them. Others had difficulty distinguishing Extension agents from other advisers in the area: “I don’t know the difference between certain Extension agents and researchers, ‘cause there’s some people in the area, and I’m not sure if they’re agents or not.” And that confusion contributes to their hesitance to take advantages of their services, as Faye told me:

I’m not 100% clear on how Extension behaves, and if I maybe knew that differently, I might use them more.... When I have a question that is fertilizer-related, or what I feel like are the more acute sciencey things that I don’t have a concept of how to wrap my mind

around or adding soil amendments without – I don't – I mean, are they a resource at all for that?

These are educated, connected, savvy growers, and yet many of them clearly don't understand who the agents are, what kind of information they can offer, or how the system works. It's not surprising that these alternative growers, who depend so heavily on understanding the context under which advice was derived, decline to consult a resource that they so poorly understand.

It is interesting to ponder the possible reasons for this ignorance of Extension, and whether it points more directly to a failure of Extension's outreach, or to a culturally mediated choice by these alternative growers not to engage. I did encounter evidence of the beginnings of a cultural norm that might discourage consultation of Extension. Because some of these growers have encountered difficulty in obtaining advice appropriate to their alternative farms from Extension, they have concluded that Extension isn't meant to serve growers like them. It's a logical conclusion, but it doesn't leave room for evolution of the Extension system and future efforts to serve this group. Those past experiences have contributed to an increasingly pervasive perception of Extension as not useful to alternative growers, which may translate into a resistance to consult Extension not because it doesn't or can't help now, but because it didn't in the past. Such a perception may already be taking hold. As Melissa told me, “[consulting Extension] is just not really in the organic farming culture as much, or for me it hasn't been.” The common understanding among some alternative growers is that Extension isn't a useful resource; it's not the cultural norm to go there. And in fact a few growers said that Extension's reputation had preceded it in their experiences. As Ethan told me, “I got a lot of feedback from people that they're really not helpful, they deal with folks on a larger scale.” Olivia, too, had “started to catch wind that they were really inaccessible” even before she visited their website. Because these growers are so dependent on advice from each other and put so much stock in their peers' accounts of their experiences, this general attitude toward Extension has the potential to feed back on itself and perpetuate that cultural perception of extension as “not for us.” Reasons for not consulting Extension, then, appear to be cultural as well as technical.

Discussion

Summary

I hope the above has painted a clear picture of this North Central Coast alternative farming community and the growers who populate it, and that the discussion thus far has offered some insights into the factors that contribute to the information-seeking strategies I've described. Before discussing, it may be helpful to rehearse some of the main findings briefly here:

Because these growers raise so many different crops, and because the geographic and market contexts, and perhaps their personalities, demand that they constantly try new things, they often find themselves with only beginners' knowledge about the tasks at hand. That state of ignorance is apparently very comfortable to these growers, who exhibit few reservations about revealing their novice status and proudly identify as learners. As Bianca told me, "You want anything you do to be like that, that you're still interested and wanting to learn and try different things." But these alternative growers are selective about what they're interested in and willing to try, and they often deliberately eschew knowledge they perceive as coming from conventional agriculture. That choice is likely rooted in how they identify themselves and the groups to which they do and do not belong, and in their hyper-awareness of the uniqueness of their own situations. So these growers show two distinct types of ignorance, both of which they find untroubling, the first because it accompanies and confirms their learner status, and admission of that type of ignorance makes collaborative learning and interaction with others in the community easier, and the second because it confirms their identity as alternative growers, distinguishing them from the conventional crowd.

These growers prefer to look first for knowledge within their own community, which in this case is a particularly strong one, built on relationships that are both personal and professional. They tend to seek other growers whom they consider peers, and to appreciate opportunities for collaborative learning. They do also seek more experienced mentors, but because of limitations grounded in geography and in real or perceived availability of such mentors, do so less frequently.

One of the reasons they so regularly seek other growers is that interaction with humans is a key part of their question-formation strategy. They turn to humans because those humans can ask follow-up questions that will draw out the necessary contextual details growers might not have thought to provide, and because those humans often also offer unsolicited information, which many of these growers realize they are not always "clever enough to ask" for, but which they ultimately find vitally useful. Importantly, these growers recognize the advantages of those kinds of interpersonal interactions, and many conscientiously place themselves in circumstances where such

interactions are likely to take place as part of their information-seeking strategies. Other growers are often the targets of such strategies, but so are equipment and seed dealers, whom many growers said they value not just for their expertise, but for their ability to connect to other sources of knowledge, such as other growers in the community who have asked similar questions, or industry networks that growers can't access on their own.

Access to networks is critical for members of this alternative farming community. Growers' comments revealed the important influence of the CASFS network, and consequences of isolation from it, as well as one not-otherwise-affiliated grower's strategy for tapping into the network.

The uniqueness of these alternative farms means that standardized advice often requires some tailoring before these growers can apply it. Improvisation is a huge part of these growers' farming strategy, a response not only to their unconventional contexts, but to their need to find lower-cost solutions in order to make a profit in their low-volume scenarios. But these growers' ability to improvise or tailor depends heavily on their understanding of the contexts under which the advice to be tailored was derived. Alternative growers are thus particularly concerned with context, and tend to seek advice from sources whose methods and circumstances are familiar and can be compared to their own, which again often leads them to seek knowledge from sources within their own community.

Extension is not generally one of those sources. Growers don't tend to consider UC Extension agents part of their community, and many are unfamiliar with Extension's methods or how it functions as an institution. They often find it difficult or impossible to reach their local agents, and as a result have not developed with them the type of interpersonal relationships that they so value. They also have experienced for themselves, or heard from other alternative farmers, that Extension isn't for them, and thus don't often consider it a resource they might consult.

Characterization of this community, its networks, attitudes, and habits is an intriguing exercise in its own right, but infinitely more satisfying if the collected data can inform improvements in the system. Going forward, the obvious question that arises from this discussion is what these findings imply for future efforts, by Extension, or by other entities with similar goals. What follows here is a more in-depth discussion of how the findings introduced above

Understanding the Community – Knowledge as Collective Praxis

Roth and Lee (2002) provide a useful framework for understanding the way knowledge flows through this community. They discuss literacy as collective praxis, and as a property of a community as a whole, rather than of an individual. In their view, the ability of an individual to locate and access expertise within the community is at least as relevant as that individual's own possession of expertise when it comes to translating knowledge into practice. Roth and Lee write specifically about scientific literacy, but note that their framework applies to other cases of praxis, and farming as described here is a good example, especially because this type of diversified farming, as noted earlier, draws from such a broad scope of knowledge that expertise in every facet of the endeavor is not a realistic goal for any individual. Very rarely will a diversified grower be able to act based solely on his or her own expertise, and these North Central Coast alternative growers demonstrated their comfort with that fact on many occasions. They don't aspire to expert status regarding leaf miner ecology broadly; what they seek is applicable knowledge about how to grow marketable beets as part of their specific system, one component of which is knowledge about how to respond to leaf miner pressure. For those growers, then, ability to locate that knowledge, preferably from within the community so that it will most readily apply in their specific context, when they need it is key.

And in this community, they often do have access to the holders of that knowledge, especially if they turn to the SCFF, which is an apt example of the "conversational activity" that Roth and Lee (2002) highlight as an important contributor to scientific literacy. They write that, Literacy is produced in conversations that take place in other situations in the community and where individual participants bring different resources based on a variety of socio-, ethico-, and politico-scientific practices. Each contribution to the conversation is not merely outcome but becomes itself a part of the context of the activity; that is, each outcome is reintegrated into the activity system in which it can become a resource available to the community as a whole. (p. 51)

Forum strings like the broccoli side-dressing post mentioned briefly earlier, where a private consultant, a USDA researcher, and another grower all weighed in with different perspectives, are evidence of the diversity of practices that different participants bring to the table on the SCFF. And all of their contributions are recorded and preserved in forum archives as a resource for the whole community the next time such a need arises. Ethan, who asked the question originally, then took

those pieces, and mapped them onto his own financial and ethical decision-making framework to come up with a solution for his own farm. He explained it to me:

At [our farm] we would probably take all that with a grain of salt, being that we didn't really want to do too much supplemental fertility, right, just 'cause of the cost and overall maybe environmental ideals of not either sourcing the stuff that took all this energy to make and or putting too much in the soil. So we would probably take that and say, okay, well, we understand that that's common practice, and we're seeing some nutrient deficiency in our crops, but maybe this year we'll try half of that recommendation. So that's where our own personal thoughts would layer on top of what other people would say.... I think Heidi's comment actually was we're not growing for the wholesale market where you really need to have super consistent same-sized heads all at the same time, so because of the direct marketing outlets we can have more variability that will come with different nutrient levels.

The USDA researcher had attached a PDF of a journal article, the consultant had explained his nitrogen budget calculations, and the other farmer had shared her experience growing for this particular market. Each contribution came from a slightly different perspective, and Ethan internalized them all, added his own considerations, and developed a plan for himself that felt reasonable and appropriate.

He was able to take advantage of expertise within the community because he had an effective forum through which to do it. That forum, the opportunity for that "conversational activity," is invaluable in this context, and contemplation of that value is essential in consideration of future directions for farmer education in this community. Roth and Lee argue that, given the importance of community in collective praxis,

Our task as school and adult educators becomes one of enabling situations characterized by a collective scientific literacy rather than thinking about the individual appropriation or construction of knowledge... Our real problem then becomes one of how to facilitate democratic conversations among individuals with different expertise and with different locations in social space. (p. 51)

The implication for Extension, then, is that perhaps resources may be better spent facilitating those conversations and contributing through and strengthening networks so that knowledge becomes applied, contextualized, and shared through those trusted networks, rather than informing

individual growers with standardized knowledge, which these growers are often not convinced is for them.

Understanding the Alternative Identity

Understanding the knowledge networks in this community is important not only because it can facilitate outreach through those networks, but because those networks are a key component in construction of these growers' identities, which in turn affect their attitudes toward information sources. Wenger's (1998) community of practice framework offers some helpful insights into how members of this alternative farming community identify themselves and others in relation to the community. The North Central Coast alternative farming community fits his definition of a community of practice as he describes it. There is **mutual engagement** among its members – they gather for field days, workshops, and social events, they engage with each other through the SCFF, they build professional and social relationships, and they maintain them through practices like respecting competitive advantage boundaries and being considerate of each others' time. There is a **shared repertoire** – though these farms are diverse, they also have a lot in common, often growing the same varieties, negotiating the same organic standards, marketing to a similar consumer base, and often subscribing to the same ideals, informed by common experiences in the CASFS apprenticeship, or inspired by the work of authors like Michael Pollan, Joel Salatin, and Wendell Berry, all of whom were mentioned multiple times during interviews. This community can even be considered a **joint enterprise** – though of course these are individual farm businesses that technically compete for patronage from the same base of consumers, they are also united by their participation in the larger local food movement and their efforts to educate consumers about organic and local agriculture, as well as by their more basic needs as small farmers to collaborate on joint orders of seeds and supplies, to recycle plug trays, or to share tractors, cooler space, or water pressure with neighboring farms. So this alternative farming community has all the characteristics of Wenger's communities of practice, and thus may be analyzed using his framework.

The two most salient components of Wenger's framework, with regard to the community described here, are his insights on the effects of non-participation and multimembership. Wenger argues that, "We not only produce our identities through the practices we engage in, but we also define ourselves through practices we do not engage in... What we are not can even become a large part of how we define ourselves" (p. 164). Non-participation in a community can be just as

significant to our understanding of ourselves, and to our resulting attitudes and choices, as is participation in a community. I found this to be very true among the alternative growers in this study; they identified themselves as much by their choice not to use conventional methods like pesticide and herbicide application as by their holistic alternative approaches, actively choosing not to participate in the conventional farming community. Wenger points out, and I observed among my interviewees, that non-participation in a community affects what people care about and what they neglect, as well as what they attempt to know and understand and what they choose to ignore (p. 167). The former manifested itself as an emphasis on lifestyle over livelihood, as these growers chose to care about land stewardship, respect for the environment, and being close to nature, while sometimes neglecting important financial considerations. They also, as Ethan's broccoli side dressing question revealed, chose to care about things like minimizing fertility inputs, and to care less about the uniformity of their products.

Perhaps even more pertinent to this conversation about knowledge in this alternative farming community is Wenger's point about how identity shaped by non-participation in a community can affect what people attempt to understand and what they ignore. This phenomenon became obvious through Ethan's and Diana's reflections on their relationships to the conventional growers' community. These alternative growers, as active non-participants in the conventional community, choose to ignore the information and research associated with it, occasionally to their own detriment. Hassanein and Kloppenburg (1995) observed similar inclinations among a group of Wisconsin graziers, another type of alternative farmer, that they studied, and in their analysis layer on additional insights from social movement theory. Hassanein (1999) identifies the social movement at hand as one that "seeks to establish alternatives to the conventional food systems in the United States" (p. 1), a movement specifically defined as counter to the conventional culture. Citing Eyerman and Jamison (1991), Hassanein and Kloppenburg (1995) note that, "social movements develop worldviews that restructure cognition, that re-cognize reality itself" (p. 729). They add that by redefining themselves, the graziers they studied were "self-consciously rejecting the ideology, technical trajectory, and social structure of conventional dairying" (p. 729). The social movement framework that Hassanein and Kloppenburg offer is an apt complement to Wenger's community of practice. The "joint enterprise" that unites these alternative growers in community is a social movement focused on improving the food system through alternative farming methods. Participation in that broader social movement is part of what defines and unites the

community, but it is also what underlies these growers' active non-participation in the conventional community, which is what triggers their rejection of conventional information sources.

Understanding that the root of these alternative growers' choice to ignore conventional resources lies not simply in their belief they such information won't apply to them, but rather much deeper, in their participation in the local and organic movement and their associated self-conceptions, may help educators better shape their approaches to alternative growers. Simply framing advice as also appropriate for alternative farms, or highlighting similarities between conventional and alternative agriculture may perhaps prevent automatic dismissal of sources as entirely inapplicable, but it may not be enough to overcome these growers' resistance to information from conventional sources, which is rooted in their identities as alternative growers. More effective methods might be for information sources to associate actively with the local and organic movement, and thus to align themselves with the alternative community of practice, the knowledge networks within which these growers are eager to take advantage of. More concretely, that may mean participating in the community through mutual engagement, by developing an active presence on the SCFF, and signaling shared repertoire, by exhibiting familiarity with smaller-scale methods or the nuances of growing for the direct market. Emphasizing the ways that particular suggested methods or strategies align with broader alternative farming goals, such as land stewardship or environmental sustainability, may be another way to signal to alternative growers that information is an artifact of the joint enterprise based on the local organic movement, as will careful consideration of the language used in presentation, as Warner (2008) points out. He notes that the connotations associated with various prefixes may affect participants' attitudes toward the group that bears them in its moniker. Nuances in the associated meanings of "bio-" versus "eco-," he suggests, were important considerations in the community he studied, and they are likely as significant in the North Central Coast alternative farming community, whose members so strongly identify as not conventional, and who use indicators that knowledge was generated by or for conventional farmers as cues to seek advice elsewhere. A more directed survey might reveal other more specific terms to be used or avoided.

The other relevant insights Wenger offers relate to multimembership. As he explains, a given individual is not limited to membership in a single community; most of us associate with multiple communities, which is certainly the case among North Central Coast alternative growers. They identify as alternative growers, but they also bring with them affiliations with other groups

and associated identities, often rather disparate ones, such as affluent suburban families, CASFS alumni, English teachers, scientists, graphic designers, environmentalists, educators, motorcycle owners, anarchists, or librarians. Sometimes membership in those other groups complements their alternative farmer identities, but sometimes it produces friction. As Wenger points out, “the work of reconciliation may be the most significant challenge faced by learners who move from one community of practice to another... Learners must often deal with conflicting forms of individuality and competence as defined in different situations” (p. 160). We saw this with Maya, whose struggle to reconcile her expert status in other parts of her life with her beginner status in the alternative farming community made it more difficult for her to seek advice from her peers and to find a way to belong in the CASFS community. It is of course not the responsibility of Extension to address Maya’s personal identity reconciliation plight, but recognition of the diverse backgrounds of the alternative farming audience and of how those backgrounds inform individuals’ location of themselves within the alternative community, as well as what other expertise and identities they may bring with them, may contribute to a more accurate general understanding of the population and the structure of the community, aid in assessment of its information needs, and prevent unwarranted assumptions about how growers will relate to information.

Anticipating and Facilitating Improvisation

One aspect of the alternative grower identity that arises from and contributes to non-participation in the conventional community is the hyper-awareness of the specificity of their own situations, discussed earlier, and a related cynicism regarding the applicability of standardized advice on their farms. As Gretchen put it, “What works at one farm doesn’t work at another, which is why it’s important to be humble in your knowledge of things as a farmer.” There was a strong sense among some growers that standardized advice derived from Extension trials that assumed any particular context would be unlikely to fit their farms because of differences in irrigation systems, mulching strategies, available tillage implements, or any number of other variables that set their farms apart. Authors of recent papers (Berry, 1984; Lyon, Bell, Gratton, & Jackson, 2011; Nerbonne & Letz, 2002,) have likened Extension advice to a recipe or prescription, and alternative growers to cooks who don’t have half of the ingredients called for. Prescriptive advice that assumes that infrastructure has been installed or that the grower has access to particular implements often proves unhelpful, as Heidi explained to me:

Last winter I was trying to find out about the kiwi ripening and I reread and reread the ANR [Agriculture and Natural Resources] manual on kiwis, and it was completely oriented toward using an ethylene producer to modify your controlled storage. And I was like, “I don’t get it. If you don’t have ethylene, is putting them in the fridge for ten days, is that really necessary?”

Melissa had a similar problem, also stemming from lack of access to controlled storage, as she told me:

A lot of the books are like, “Here is the exact temperature and humidity you’re supposed to store peppers,” and you’re like, “But outside it’s not that, and inside it’s not that, so what do I do?” And that’s where the experience comes in, but I think it would be cool if there was some way for other people to access that.

What Melissa wanted was advice on how to improvise when her particular situation didn’t allow her to achieve the exact specified conditions. Precision in presentation of optimal practices is nice, but in a case where those optimal practices are out of reach, as they often are on these diversified farms where equipment and management strategies must be general enough to work with multiple crops and specialized implements are rare, information that can guide a grower to an improvised solution may be more useful. In Melissa’s case, that might have meant insight into whether her peppers would keep better in cooler-than-optimal or in warmer-than-optimal conditions, or strategies for increasing the humidity in one corner of the walk-in cooler that would have to hold cut flowers as well as peppers.

Related to the prevalence of improvisation among these farmers is the dearth of capital that often necessitates it. These alternative growers are mostly farming on very slim margins, and often when I asked about the reasons they might not apply advice they’d received, cost was at the top of their lists. Often their research would reveal ideal solutions that required heavy investments in inputs or equipment that they couldn’t afford, so even if they trusted the source and felt the strategy was appropriate for their system, they wouldn’t implement it. Jason summed up the situation with an old adage he’d heard somewhere: “That line about farmers turning away Extension agents at the gate because they already know how to farm better than they can afford. I think that’s kinda true.” Again, for these growers, the ideal, best-case scenario is often out of reach; while it may be interesting, or even informative, to contemplate, the more applicable advice may be guidance regarding implementation of the less ideal, but lower-cost solution. Extension, or any other entity

that hopes to serve these alternative growers, will increase its usefulness to them by recognizing their need for flexible, low-cost solutions, and providing information that will help them select the best among non-optimal choices, or understand how to modify what they do have to fit the situation.

Acknowledging the Elusiveness of Universal Truths

Another way to facilitate the type of improvisation that these growers so regularly engage in is to provide contextual information regarding the conditions under which information was derived, which we've seen these growers very often seek. Right now, Extension is inscrutable to many of these growers; they don't have an understanding of how Extension functions or where or how the research that informs it takes place. Without that information it's hard for growers to know whether advice will apply, or what modifications it will require, which makes application of Extension advice more difficult.

A related problem is the failure of information sources to acknowledge the conditionality of the advice they offer, which renders the advice less useful. As Faye told me:

If more people were more modest in saying that their truth is not always necessarily going to be true, I might actually give them more credit than them saying authoritatively that this is so... I think because then you can properly assess whether or not you're doing something that could be risky, and then you can prepare yourself for the failure or the consequences that may arise.

Faye revealed the same chafing against authority that other growers exhibited, but this time with an explanation that ties it to a specific attitude toward knowledge. The elusive "truth that is always true" is what Latour (1987) might call an immutable mobile, immutable because it is always true, and mobile because it may be applied and built upon in diverse contexts. Faye wasn't suggesting that such units don't exist in farming, but rather that they are less ubiquitous than some authorities seem to imply, and that she had observed and been frustrated by the assignment of "immutable mobile" status to information that wasn't in fact immutable. Brian Wynne (1992) observed a very similar phenomenon among the Cumbrian sheep farmers he studied, reporting that, "the degree of certainty expressed in scientific statements denied the ability of the farmers to cope with ignorance and lack of control; and the degree of standardization and aggregation of the scientific knowledge... denied the differences between farms" (p. 287). The Cumbrian sheep

farmers, just like the North Central Coast alternative farmers, recognized the differences among farms and the consequent imprudence of attempting to apply standardized “truths” across them. So while neither Faye nor, most likely, Wynne’s sheep farmers, craved uncertainty, they knew it existed, and found authorities’ suggestions that it didn’t counterproductive. And Faye’s reasoning was similar to that of the sheep farmers: Veiled uncertainty hindered her ability to prepare for the consequences when the “truth” turned out not to be true on her farm. Unwarranted expressions of universal applicability impede her ability to insulate herself from risk or lack of control.

So along with the context under which advice was derived, these growers seek information regarding the degree of universality associated with that advice, and tend to place more trust in those sources that are transparent in their presentations of how likely a given piece of advice is to be appropriate in diverse contexts, even if what they reveal is uncertainty. If growers know that a strategy or method might not work, they can better assess risks and prepare to address consequences. Advice presented as conditional, that acknowledges its mutability, therefore, is more attractive to these alternative growers than is advice that alleges universality, which these growers perceive as a relative rarity in their occupation.

The above all have implications for Extension’s efforts vis-à-vis these alternative farmers. Perhaps the most obvious point is that transparency regarding circumstances under which a given technique works, and where there may still be uncertainty, is key for this audience. These growers are remarkably comfortable with uncertainty and make decisions all the time under those circumstances, but they prefer to be apprised of the degree of uncertainty associated with the information they employ. The information sources I interviewed confirmed; all told me they regularly expressed their uncertainty in conversations with growers, and that growers responded positively to those admissions.

So perhaps the lesson for Extension is to reserve expressions of certainty, to emphasize the conditionality of the information it presents, to offer clear contexts and explanations of how and under what conditions information was derived, and to be, to use Gretchen’s phrase, “humble in its knowledge.” That kind of tone will resonate well with this group of growers, who tend to question authority in general, and to seek counsel from fellow learners rather than from more experienced or more authoritative sources. As Isaac put it, “There’s inherent resistance when it’s the word of God being handed down that you have to do things this way now.”

Research Approach

One of the most basic reasons why these alternative growers may not feel that Extension services are for them is the fact that much of the research that Extension has funding to do takes a reductionist, or component, approach, emphasizing control of variables and isolation of causes and effects. That way of conceiving of a farm system contrasts starkly with the way these alternative growers tend to approach their practice, which is generally much more holistic. Evan explained his own approach to farming:

It's not so much of a reductionist thinking. It's more of a holistic thinking... Because farming is, this isn't our fathers' farm or our mothers' farm. It's not your grandparents' farm either, because what they did then, 20-30 years ago, they were growing crops, but they weren't looking at the farm as a holistic being.

Evan is another example of a grower making a distinction between the way he does things and the way they were traditionally or conventionally done, and what he highlights is the difference in how he conceptualizes his farming system. It follows that the way research was traditionally conducted, with a reductionist approach to the agricultural system, might seem less applicable to Evan's holistically managed farm.

One characteristic that tends to accompany that holistic approach among farmers is a marked faith in the farm system's resilience, and its ability to correct back toward equilibrium through mechanisms that may be invisible to growers. When growers described the solutions they'd applied, and I asked whether those solutions had worked, I never once got a definitive "yes." When the results had been positive, growers often answered that yes, *something* had worked, but that they weren't necessarily ready to pinpoint their own actions as the single causal factor. More than once, growers responded with something along the lines of, "Well, either it worked or the problem fixed itself." That answer reflects an awareness of all the contributing variables in the holistic farm system, and recognition of the impossibility of attributing an outcome to any single action. Heidi summed up the sentiment aptly. After recounting the saga of her battle with damping off pathogens in her greenhouse, she remarked, "I think I did learn a lot, and I think ultimately some kind of ecological balance was achieved, and, but it probably wouldn't have been possible with one stroke of anything to get everything back in alignment." Heidi couldn't pinpoint which of her actions had contributed in what ways to the solution, and in fact didn't believe that any single action on her part

might have fixed the problem. The concept of isolated causes and effects on her farm, or even in her relatively controlled greenhouse, simply didn't seem to ring true to her.

It's also interesting to note Heidi's use of the passive voice – “ecological balance was achieved” – with no identifiable actor or agent responsible for that balance. Heidi may have played a role, but she also depended on the complex functions of unidentifiable factors that contributed to the resilience of the system. And she seemed to be comfortable with her ignorance of how exactly it had happened, content to chalk it up to those unnamable factors. This type of comfortable ignorance is distinct from the two outlined above; while the earlier two types can be traced back to growers' self-conceptions as a learners (“I don't know it *yet*, but I can learn”) and as alternative growers (“I don't need to know because I'm not part of the group concerned with that”), this type stems from their conceptions of their farms – “I don't need to know because my farm system will correct itself.” Returning to Roth and Lee (2002), one might view this type of ignorance as justifiable because of a type of division of labor. Not everyone in a community, Roth and Lee posit, must know how to engineer an automobile or understand mechanics in order to make productive use of a car, as long as those abilities exist somewhere in the community. The same is true on Heidi's farm; she can choose not to concern herself with the exact mechanisms that restore balance to her system because the agents responsible for it are present on her farm, and she can trust them to do it, if she creates the right circumstances. Roth and Lee assume human community members, but Heidi's conception of her farm leaves space for non-human active agents in the system. “The system,” or perhaps “the farm” or “the land” – she didn't seem ready to name it – has its own type of agency, and thus could be depended on to perform its equilibrium maintenance without Heidi necessarily understanding how.

These alternative growers understand their farms as active, not passive, participatory entities, and of the roles their farms play as important, but also somewhat unknowable, involving countless subtle interactions that they can't understand. Awareness of all of those complex interactions and how intertwined they are may contribute to these growers' attitudes toward reductionist science that purports to have isolated answers. These growers know from their experience on their own farms, and some know from experience participating in university-sponsored on-farm research or from their own attempts at answering questions by testing one treatment or seed variety against another, that factors that might influence results are many, and that they're often very difficult to identify or control, so they are somewhat dubious of people who claim

they can. One grower who had worked with university researchers in a few trial plots on land she was managing came away from the experience, as she put it, “a little bit more skeptical.” She told me,

By participating in [the trial], I had a lot of questions about errant variables. I could see things that weren't being measured that were unfortunately part of the trial, created by trial design, like the inability to perform uniform irrigation, so working the soil at uneven moisture levels, and so then creating a lot of compaction in some places and nicer soil in others. It's like, “We're not measuring the effects of the compaction, so how much is that messing up the data?”

Having seen how the trials were carried out, now in possession of that contextual knowledge that these growers so often crave, Heidi is now less convinced regarding the reliability of the results. She saw the inputs and the outputs, but because of all the other factors she knew and suspected existed, she was less willing to believe claims made regarding the mechanism that linked the two.

So these alternative growers are less likely to believe explanations or advice that attempt to reduce the system to discrete causes and effects because their own experiences suggest that such relationships rarely exist, or that if they do, they are not reliably separable from the rest of the holistic system. It's not surprising, then, that reductionist research, which often attempts to isolate those mechanisms and present clear cause-effect links, just doesn't appeal or seem relevant to these alternative growers because it simply doesn't align with their understanding of the system. Wynne (1992) found similar results, reporting that, “The typical scientific idiom of certainty and control was culturally discordant with the farmers, whose whole cultural ethos routinely accepted uncertainty and the need for flexible adaptation rather than prediction and control” (p. 287). North Central Coast alternative growers, like their colleagues in Cumbria, don't have much confidence in humans' ability to predict or control all of the nuances of their holistic systems; instead, their strategy is to prepare to respond to the inevitable surprises they will encounter. To do that, as Faye and others pointed out, what they need is realistic assessments of uncertainty, not the rhetoric of certainty and control that often emerge from reductionist science.

The poor fit between reductionist science and alternative agriculture is a well-known and well-studied phenomenon. Since the 1990s, scholars, especially those studying organic and alternative agriculture (Barbercheck, 2011; Bawden, 1991; Faye, Waltner-Toews, & McDermott,

1997; Gliessman, 1998; Pretty, 1994), have advocated for a paradigm shift away from the reductionist science that has traditionally dominated agricultural research at land grant universities, toward a more systems-based approach, and most are optimistic about future research directions. The historical trend, at least, is promising. Looking back at the literature related to agroecology, which defines itself in part by its systems approach, Wetzel (2009) observed a shift from plot or field scale research in the 1930s-'60s toward farm or agroecosystem scale in the 1970s-2000s, as well as a general trend upward in annual number of journal articles that identify as agroecological research over that time.

But there still exist barriers to that kind of systems-based research in Extension. Compared to more traditional component or reductionist research, systems-based work is more complicated, costs more, and often takes more time, requiring multiple years of observation in order to expose the complex interactions taking place (Sustainable Agriculture Research and Education, n.d.). And there are many political, economic, and historical factors that contribute to a research climate that favors reductionist work. Jim Hightower outlined many of them in his *Hard Tomatoes, Hard Times* (1973), and many authors since (Beus & Dunlap, 1990; Buttel, 2005; Glenna, 2011; Warner, 2008) have further scrutinized the motivations, funding allocation, and research choices of Extension, and offer insights into the factors shaping Extension's priorities. My intention here is not to make normative statements regarding Extension's use of its limited resources; I am not in a position to do so. What I can offer is the conclusion that, for the reasons outlined above, this particular group of alternative farmers is likely to find more utility in results of systems-based research than in reductionist research.

Conclusion

Should UC Extension decide to prioritize these alternative growers, there are many strategies it might employ to be more effective, from tapping into existing networks, to aligning themselves with community goals, to finding ways to facilitate improvisation, to modifying the way it presents information and background about how it was derived. And of course, continuing the trend toward systems-based research would prove useful too. But all of those suggestions assume that the goal is for Extension to play a larger role in the information-seeking strategies of these alternative growers, which we shouldn't accept uncritically. These growers are finding ways to construct and maintain knowledge networks within their own community, relying on their own

experiences and collaborative learning efforts. They're finding ways to farm even without the help of Extension. So it may be that increased efforts by Extension are not the optimal way to address the "flailing" mentioned earlier; perhaps promotion of other components of the information landscape – the SCFF, local CRAFTs, Ken Wilder – would be a better use of resources. The strategies mentioned above would apply to those efforts as well.

We must, though, also keep in mind the reality that the data collected and exhibited here represent only a snapshot of an evolving community. As the community and its members grow and evolve, so too will their relationships and their information-seeking habits. Already, growers like Ethan and Diane are beginning to reflect on the effects of too strict adherence to attitudes tied to the alternative farming identity; future years may bring shifting definitions of what it means to be an alternative grower, and positive identification with that group may come to rely less heavily on non-participation in the conventional group. There also may be changes in how individuals in the group relate to each other, and to the CASFS network. Today, it seems more experienced growers are less active in the knowledge-exchanging community; will current participants "age out" and follow them toward the periphery of the community, or will the community shift from one composed primarily of beginning growers to one populated by more experienced growers? Any of those changes would affect how growers in the community receive and use knowledge, so we must avoid conceiving of these questions and this community as static.

But for now, given what we've seen, the question arises as to whether there is a role for Extension in the North Central Coast alternative farming community. I believe there can be. Hassanein and Kloppenburg (1995) studied another alternative farming community, a group of graziers in Wisconsin, and found that they similarly had drifted away from Extension. But they noted that the graziers had turned away from land grant universities "not necessarily because they believe that institutionalized agricultural science *cannot* help them, but simply because it *has not* helped them" (p. 732, italics original). My conversations with the North Central Coast alternative growers suggested a similar sentiment. Though clearly they are critical of some of the university research they have observed or learned about, and have, as one grower put it, "a healthy skepticism" regarding institutional science, they usually also expressed faith in science generally as a legitimate way of knowing, and a desire to incorporate it more into their work. Most growers said that when they sort through the results of internet searches, one of the key cues they look for in deciding which links to click on is the ".edu" ending, because they associate it with reliable, if not always

directly applicable, information. The frustrations that these growers expressed with Extension had mostly to do with difficulty connecting with agents, as described above, and with lack of research that was applicable to their situations, not with the concept of land grant university-based research in general. And though I did observe the symptoms of the beginning of a cultural norm that discourages these growers from reaching out to Extension, I also heard a lot of optimistic comments about the service. Ethan summed it up nicely:

I just feel like they [Extension] are such an amazing resource, and the folks there are so knowledgeable, and my hope is that there can be, whether it's kind of an attitudinal shift, or whether at some point there's just enough people... that they can address that have the same question that they'll make a difference. I just think we can't afford not to have that as a resource – us being the beginning diversified grower.

He added, “I think we would be remiss on giving up on them. And I know a lot of people have.” But Ethan hasn't yet, and neither have a few of the other growers I spoke to, in spite of the frustrations they described to me. This is a young community, one that is still evolving, whose members are still in the process of constructing their farming knowledge and forging trails across the information landscape. And as we've seen, they don't believe in truths that are always true, so even if Extension didn't help them yesterday, they're likely ready to believe that that truth may prove untrue tomorrow.

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Appendix A

Grower Interview Questions

Do you have any questions about the project?

Farm background

- What is important for me to know about your farm?
- Unique characteristics and/or challenges associated with this particular farm?
- How big is your farm? How many acres are under production?
- What crops/livestock do you raise?
- Please describe your primary markets.
- Is your farm certified organic? How else would you define the sort of agriculture that you do? What do you think is important for other people to know about the way you farm?
- How many hours a week do you work on/for the farm?
- What fraction of your annual household income do you derive from the farm?

Farmer background

- How long have you been farming?
- Why/how did you become a farmer?
- Where did you learn what you know about farming?
- Describe your educational background (formal and informal, farming-related and not).

Information-seeking [try to get more than one example]

- Can you think of any situations in the past year where you needed to take action or make a decision, and where you felt like you didn't know enough or needed to learn something more to make the best decision? How did that question arise? (Prompt with situations that might have led to questions):
 - o Trying something new
 - o Responding to a crisis
 - o Didn't understand what was happening
 - o When you were planning
- What was that like? Was this a question that had come up before? What was different about this particular situation?
- What did you do (try to answer it, or take some other action)?
- If you decided to learn more, how did you go about learning what you needed to know?
 - o Where did you go first? Can you describe the timeline between your initial question and your eventual action?
 - o How did you identify those sources? (source you had used before, colleague recommended, internet search, other source referred, etc.)
 - o If you consulted multiple sources, did they agree with each other or not? If they gave conflicting advice, how did you decide which to apply?
 - o How did you decide what to believe? What ended up being the most important pieces of the puzzle?

- Were there sources you considered consulting, but decided not to? What factors influenced those decisions (user interface, turnaround time, credibility, specificity, ease of access, etc.)?
- How did you apply the knowledge you'd gained?
 - Did you need to modify it for your specific context?
 - Did you need to extract more specific guidelines from general rules?

Now more generally:

- Would you say that was a typical example of how you go about answering your farming questions? If not, how did it differ? What would be your more typical response?
- For the following: do you use these sources? Can you make generalizations regarding under what circumstances you use each?
 - Other farmers
 - Online search
 - Extension agent
 - Other extension resources (pamphlets, website, etc.)
 - Books
 - Conferences/workshops
 - Listserv or online forum
 - Equipment or seed dealer
 - Professional consultant
 - YouTube
 - Your own notes
 - Other... Was there anything else that you did?
- Are there resources that you use that aren't on the list? When might you consult those sources?

Science-related knowledge

- Describe your background in science (high school biology, college courses, college major, advanced degree, was employed in the field, general interest, etc.)
- Do you think science is relevant to your work as a farmer? How? (Could you say a little bit more about that?) (Can you give some examples?)
 - Can you think of places where science isn't really relevant?
- Do you ever use science in your work as a farmer? In what capacity?
 - Applying scientific principles
 - Practicing scientific method
- If/when you have science-related questions, what sources do you consult? How do you decide whether to believe the science-related sources?
- Refer to the list of sources from above: whom on this list would you approach with science-related questions
- Have you ever participated in on-farm research? Can you describe the project and your experience?

Is there anything else I should know?

Can you think of other people who might be good interviewees?

Appendix B

Information Source Interview Questions

Do you have any questions about the project?

Personal background

- Can you describe your job? Main responsibilities, region served, institutional/organizational context, etc.?
- Do you consider answering growers' questions to be a primary part of your job?
- What types of growers do you generally work with?
- How would you describe your relationships with growers? Do you tend to know the people who call you?
- Can you describe your career path? Why/how did you end up here?
- Where did you learn what you know about agriculture?
- Describe your educational background (formal and informal, farming-related and not).

Growers' questions

- Under what circumstances do growers usually contact you?
- Email, on the phone, in person? Do you visit farms?
- How do growers find you?
- How long are your typical interactions with growers? All at once, or will it be a conversation over weeks or months?
- Very broad: Why do you think growers are turning to you with these questions?
- Can you offer a few examples of typical questions growers ask you?
- Types of questions – do you get these types of questions, and how often?
 - o Directed, with a straightforward answer (what irrigation part do I need for this application? Will this variety work under these conditions?)
 - o Open-ended (what do you know about X? What things do I need to consider if I want to do Y? What are my options?)
 - o Diagnosis or trouble-shooting, originating from a problem (I've been seeing this – do you know what causes it?)
 - o Planning for next season/the future
 - o Taking advantage of network (Do you know anyone who has tried this? What have you heard from others?)
 - o Weighing two options against each other (I've heard X and Y. What else do you know that will help me decide?)
 - o Opinion (do you think I should?)
- Do you get the impression that you are the first place they go with these questions, or does it seem like they've done some research themselves first?
- If it seems like they've consulted other sources, do you have a sense of which ones (will they say "Extension agent said, or Farmer Bob suggested, or I read online, or maybe NRCS requires...")?
- Do you ever find yourself contradicting other sources? In those cases, why do you think the other source isn't offering the best answer?
- How much context do growers offer, and what kind? (I'm on the coast, or I'm CCOF certified, or I sell at this market, or I have an NRCS grant for...)

- Do you usually think the context they volunteer is enough, or do you find yourself asking more directed follow-up questions? Does it seem like at the time they ask you, growers know what all the important considerations are?

Answers

- Are you usually able to answer growers' questions?
- In cases where you can, where does that knowledge come from?
 - o Personal experience
 - o Other growers
 - o Online search
 - o Extension
 - o Books
 - o Conferences/workshops
 - o Trade publications
 - o Listserv or online forum
 - o Equipment or seed dealer
 - o Professional consultant
- In cases where you can't, do you follow up? Where do you go for those answers?
- Do you ever express uncertainty in responding to growers? How would you characterize their responses in those cases?
- Do you ever direct growers to other sources for more information? Which ones?
- What role does trust play in the equation in your opinion? Is it something you think about? Are there things that you consciously do to maintain trust?
- Do growers ever ask you how you know? Are most of them familiar with your background?

Science

- Describe your background in science (high school biology, college courses, college major, advanced degree, was employed in the field, general interest, etc.)
- Do you think science is relevant to your work? How?
- Do you think growers think of you as a source of scientific knowledge?
- Do you think of yourself as a purveyor of scientific knowledge?
- Do you ever consult "scientific" sources? Which ones? If you do, how does that information affect answers you give growers? Do you "translate" for them? Do they seem interested in the source of your knowledge?
- Do you get the sense that growers are looking for answers that are based in science?

Is there anything else I should know?

Can you think of any other people who might be good interviewees?