FarmLab Study

Phase 1 – Needs Assessment

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Prepared for the Elkhart County Redevelopment Commission

by Phil Metzler and Mark Seeley

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In January, 2016, the Elkhart County Redevelopment Commission contracted Phil Metzler and Mark Seeley to perform a feasibility study for the FarmLab project in the Middlebury Ag TIF district. This report is intended to fulfill Phase 1 of the study.

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AUTHORS

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Phil Metzler is a former engineer working to promote and facilitate the growth of local food systems in Elkhart County. He directs a local non-profit focused on building community networks and facilitating collaborative initiatives. His marriage to an instructional guide for experiential learning curricula has given him a passion for supporting education, particularly food literacy and place-based learning.

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1.0 INTRODUCTION

Project Background

This study evaluates the feasibility of a farm-based education center located at the Crystal Valley Farms site within the Middlebury Ag TIF district. The Elkhart County Redevelopment Commission is able to use agricultural tax increment financing to underwrite further ag-focused improvements within the TIF district and provide subsidies in support of agricultural development. Recognizing the need for local food production partnerships, facilities, and training to access new local and regional markets, the Redevelopment Commission allocated TIF funds to support this study in assessing the potential development opportunities for corresponding FarmLab activities.

The feasibility study proposal submitted to the Redevelopment Commission includes three phases:

- Phase 1 - Needs Assessment: Identify and quantify needs and opportunities for a farm based education facility that serves schools as well as the food production industry.
- Phase 2 - Program Identification and Development: First level financial feasibility test, and foundation for business plan.
- Phase 3 - Business Plan Development: Fully developed business and facility plan that can establish organizational structure and financial operations.

This report is intended to fulfill Phase 1. Phases 2 and 3 will be initiated if deemed appropriate by the Redevelopment Commission based on the results of this study.

The vision for the proposed FarmLab project was conceived by Elkhart County Commissioner Mike Yoder as a strategy for preserving local agricultural land and capacity by restructuring Crystal Valley Dairy Farms to support a farm-based experiential learning center. The initially envisioned activities included collaboration with local schools to provide field trips and hands-on learning, supervised agricultural experiences (SAE), and summer work experience and mentoring programs for students interested in ag-related careers. The ongoing operations of the farm would provide partial financial support for the operations of the learning center.

As Yoder's vision continued to evolve, other complementary initiatives emerged, including new ag education programming in Elkhart Community Schools through the Elkhart Area Career Center. ECS has also begun developing the Agriculture Community Center and Environmental Learning Lab (ACCELL) as a similar ag-based experiential learning site in collaboration with the Elkhart County Farm Bureau. Fairfield Community Schools built a cutting edge veterinary surgical lab in support of their ag education program. Throughout Elkhart County school districts, there is increasing interest in food and agriculture as a focus for curricula based on experiential learning and problem-based learning pedagogies. At the same time, a growing local food movement continues to generate unmet demand for local producers willing to diversify production and serve new markets.

Definition

For the purposes of this study, the proposed mission and aims of the FarmLab project are as follows:

> The **FarmLab** is a farm-based education center that:
>
> - Sustains and expands local agricultural knowledge
> - Promotes agricultural career pathways
> - Preserves agricultural land and productivity
> - Improves access to local, healthy food
> - Opens new markets for local food production

Phase 1 of the study was framed as a needs assessment to guide further feasibility studies. Because this study began with a proposed mission and aims for the FarmLab already in mind, the starting point was to assess the current contexts for key constituencies with respect to the these aims. We (the authors) interviewed specific leaders and reviewed relevant studies and secondary data to determine what needs and opportunities the FarmLab should focus on in discerning how best to serve the key constituencies. For the sake of this report, we define 'needs' broadly as the gaps between the intended aims and current contexts that emerged from this study.

This report is a synthesis of diverse information and experiences. It is not the product of a methodical survey of the educational community nor a rigorous analysis of the potential economic impacts of food localization in Elkhart County. Instead, it is a digest and interpretation of extensive interviews, data, and references relevant to agriculture and education in the community. It also considers personal experiences, conversations, and perspectives gleaned through many interactions in the local agricultural community by the FarmLab leaders and consultants contributing to this report.

As one of the largest agricultural counties in Indiana, Elkhart County offers an abundance of opportunities for catalyzing education, innovation, and economic development around our agricultural resources and heritage. While this study encountered a wide range of perspectives on the issues at hand, there was general agreement about the need for better communication, networking, and collaboration among existing stakeholders. The value of connecting and building upon the work already being done was also evident, along with a desire for facilitation regarding these ripe possibilities. Thus, the overall goal of this feasibility study is to consider how the proposed FarmLab project might make an effective contribution to envisioning, planning, and enacting this process.

While this report is focused on Phase 1, the numerous appendices supporting it are intended to deepen appreciation and understanding of education and agriculture contexts in Elkhart County, providing a bridge into the next phase if the project moves forward, or a reference to inform future projects.

2.0 Who? - CONSTITUENCIES

A constituency is defined here as a category of persons, a group, or an organization that works in the area of education or agriculture or has a stake in the outcome of any ongoing conversations bridging these fields. There are many connections and overlaps between these categories but they consist generally of:

The Community – includes consumers, their health, their food-purchasing practices, and their attitudes.

The Producers – includes farmers, markets, and agricultural trends that impact the production of food.

The Schools – includes public schools, their existing and proposed programs for food and ag-based curricula and for agricultural education.

The Organizations – includes organizations, their existing and proposed programs for agriculture and education.

The Government and Agencies – includes public entities (federal, state, and county) and agencies, their resources, programs, and activities concerning agriculture and education.

2.1 The Community

2.1.1 Health

The Elkhart County community values its youth and agricultural heritage. Yet one in five children currently have inadequate access to healthy, affordable food.[1] Food insecure students are the product of food insecure households, so the challenge of improving food access and education goes beyond the schools. A common concern is that many people no longer know where their food comes from. This has implications for managing increasing health costs from food-related disease on one hand, and for responding to changing perceptions of agriculture on the other.

According to the Elkhart County Health Assessment performed by Purdue University in 2011, 77% of Elkhart County residents consume fewer than the recommended amount of daily fruits and vegetables in their diets, and one quarter of Elkhart County residents had a sedentary lifestyle without any leisurely physical activity.[2] The adult obesity rate in Elkhart County was 29.5% in 2010,[3] and the adult diabetes rate in 2008 was 9.3%.[4] The adult diabetes rate is similar to the state rate. However, an increasing trend of diagnosed diabetes was noted in Elkhart County from 2004 to 2008.[5] While Elkhart County currently has a significantly lower mortality rate for diabetes than Indiana overall, this trend may change in subsequent years with an increasing prevalence of diabetes mellitus in the County.[6]

Physical activity and proper nutrition are essential to maintaining healthy weight and preventing disease. Physical inactivity and poor nutrition present significant risk for development of many chronic diseases such as heart disease, obesity, diabetes and cancer.

> "The medical costs for diabetes-related health conditions are estimated at $3.7 billion for the state of Indiana - an amount that rivals the value of the annual corn crop."[7] (Meter)

2.1.2 Consumer Demand

Total food purchases by Elkhart County residents amount to $532 million annually, of which $325 million is consumed at home. Consumers purchased $61 million in fruits and vegetables for home consumption, yet only $2.4 million on direct purchases with producers.[8] Overall, Elkhart County spent $7,100 per household on food (12.1% of total expenditures).[9] These numbers do not include food obtained through charitable networks. They do include the spending of Supplemental Nutritional Assistance Program (SNAP) benefits, which totaled more than $48 million in 2014.[10]

25,370 Elkhart County residents (12.7%) were classified as food insecure in 2014, meaning they sometimes lacked access to enough nutritious food to sustain an active, healthy life. 11,200 Elkhart County children (20%) were food insecure, yet 19% of these children were ineligible for federal nutrition programs.[11] Approximately 28,000 Elkhart County residents lived in poverty in 2014. Among Elkhart County's food insecure residents, 40% had income levels ineligible for SNAP benefits.[12]

The consumer spending, health, and food insecurity contexts demonstrate a disparate range of consumer demand. As Elkhart County Extension director Mary Ann Lienhart Cross observes,

> *"I think there's a whole piece where there are people who want locally grown or sustainable – then there's the whole other side that just wants affordable food."* (Lienhart Cross)

Changing expectations for producer practices and quality (i.e., organic and pasture-raised) are fueling a growing market demand that local production has difficulty meeting. Increasing demand for local food in particular is motivated by freshness and taste, healthier eating, food security and environmental concerns, and a longing to restore place-based connections, among other reasons. In their "Sustainable Local Food Initiative Report," Reding and Moody observe:

> "Though it can be said that the majority of consumers still place high value on buying food as inexpensively as possible, there has emerged a growing sector of consumers that wish to be reattached to their food supply. They are seeking that new connection more directly than simply going to a grocery store or restaurant and buying what is offered. They are now more interested in the methods and location of production, how it is processed, the place of purchase, and even the character and authenticity of the person or business from whom they purchase their food."[13] (Reding and Moody)

For these consumers, the clear preference is to purchase their food directly from local farmers. Direct sales in Elkhart County reported through the 2012 USDA Census of agriculture amount to

0.8% of total ag product sales. While small, this percentage is more than double the national average.[14]

2.1.3 Perceptions of Agriculture

Community perceptions of agriculture can have a direct bearing on industry trends. While support for local food production is opening up new markets for producers and improving access for consumers, several interviewees expressed concern that the local food movement is fueling negative perceptions of conventional agriculture. With respect to increasing consumer demand for local food, Reding and Moody observe:

> "This emerging market sector is educating itself with information from popular media outlets concerning methods of modern agricultural production and processing. Some of the information is accurate, and some is not, but frequently is contrary to traditional views held by many in the agricultural sector. Nonetheless, there is a growing number who are speaking out with their dollars, and more importantly, opinions that encourage other consumers to listen and consider their new views. In our open market society, it would be a significant lost opportunity for agriculture to ignore the desires of this sector."[15] (Reding and Moody)

Where local food production is associated with diversified and 'sustainable' practices such as organic production, pastured livestock, and season extension, a common question is whether or not these practices can be scaled up to feed a growing population.

> *"We're not feeding the world; we need to figure out how to feed more people, affordably. Some of what we're hearing doesn't make it doable. If we are going to feed everybody with all of the non-production processing, we're not going to do it."* (Burbrink)

Further Reading:

- Appendix A – Elkhart County Ag Overview: surveys available data relevant to local consumers and producers to identify and understand ag trends.
- Appendix E - Food and Ag Literacy: addresses two frameworks for helping consumers make more informed, healthful decisions about the foods they consume.

2.2 The Producers

At present, an estimated 90% of the food Indiana consumes is imported from outside the state.[16] Yet, as long as the demand for fresh, locally produced food continues to exceed the available supply – whether it be in farmers markets, restaurants, cafeterias, or food pantries – Elkhart County is likely to see continued diversification and growth in local food production. Elkhart County's unique agricultural resources and capacities, including an almost unparalleled landscape of functioning small farms and skilled farm labor, provide a solid foundation for this growth.

2.2.1 The Ag Industry

The ag industry in Elkhart County is the second largest in Indiana, with 1,724 farms covering more than half of all land in the county, based on 2012 USDA Census of agriculture data (Ag Census). Elkhart County ranks highly in the state both for total farm production and diversity. Elkhart County farms sold $297 million in farm products in 2012, of which $83 million (28%) were crops and $214 million (72%) were livestock. Relative to other Indiana counties, Elkhart County ranks:

- 3rd for sales of agricultural products, with $297 million;
- 1st for sales of livestock and poultry, with $214 million;
- 1st for sales of sheep and goats, with $730,000;
- 2nd for sales of cattle and calves, with $31 million
- 2nd for sales of milk, with $65 million;
- 4th for sales of poultry and eggs, with $91 million;
- 7th for sales of vegetables, with $3.2 million;
- 1st for acreage of corn for silage, with 15,000 acres;
- 2nd for acreage of forage crops (hay, etc.), with 18,000 acres.[17]

Elkhart County also ranks 1st in the United States for inventory of ducks, with 1.1 million.[18]

As shown in Appendix A, the distribution of these farm product sales was uneven due to economies of scale favoring larger operations:

- 485 farms (28%) sold *less than* $2,500 in farm products - less than $0.3 million collectively;
- 831 farms (48%) sold *less than* $10,000 in farm products - less than $2.2 million collectively;
- 628 farms (37%) sold *more than* $50,000 in farm products, accounting for 97% of total farm product sales;
- 154 farms (9%) sold *more than* $500,000 in farm products, accounting for 66% of total farm product sales;
- While total farm product sales in Elkhart County increased by $91 million (44%) from 2007 to 2012, the 154 farms with sales greater than $500,000 per year accounted for 97% of this growth.
- 917 Elkhart County farms (53%) reported $14 million in net losses (compared to 51% in the Elkhart region and 47% in Indiana), with an average loss of $15,479.

According to Meter, Elkhart County farmers sell $195 million of food commodities per year (1989-2012 average), spending $177 million to raise them, for an average gain of $18 million each year (based on BEA sales figures). This is an average net cash income of $10,847 per farm. [19]

2.2.2 Small Farms

Relatively large agribusiness operations are complemented by an abundance of small farms with varying levels of productivity. A large Amish population in Elkhart and LaGrange Counties and good opportunities for off-farm income have helped preserve one of the largest concentrations of small farms in the Midwest. Nearly all of Elkhart County's small farms are still family-owned and operated.[20] A central question is whether the capacity of these small farms can be harnessed to help fill growing demand for locally produced food in a way that increases the health of everyone involved and creates new opportunities for ag livelihood.

> *"Farms have become bigger; the majority are still family-owned and family-managed despite what papers want us to believe. As these farms have increased in size, communities have seen an increase in small plots, which a large farm manager does not want to grow crops on. In Elkhart County there are many, many 3-5 acre plots … and it's difficult to find farmers willing to grow crops on those plots, as well as the people willing to do the work that it takes."* (Burbrink)

Until recently, the USDA generally defined 'small' farms as having gross cash farm income (GCFI) less than $250,000 per year (the threshold was raised to $350,000 in 2013[21]). At least 80% of Elkhart County farms fit this classification in 2012. The USDA defines 'small-acreage' farms as operating on 10 acres or less. Elkhart County has the highest number of small-acreage farms in the Midwest – 453 farms (26%) – according to Ag Census data.[22] Furthermore, 63% of Elkhart County farms have less than 50 acres, and 89% have less than 180 acres. While economies of scale favor larger operations, the number and acreage of these small-sized farms nonetheless continued to increase from 2007 to 2012, mirroring the consolidation of larger farms.

Table 1: Changes in Farmland Distribution in Elkhart County

	Increase from 2007 to 2012	
Farm acreage	**farms**	**acres**
<180	135	11,761
180-499	-22	-4,421
500-999	-15	-11,880
1,000+	9	14,092
total	107	9,552

Source: 2012 USDA Census of Agriculture

Many of the small farms are assumed to be non-commercial retirement or lifestyle farms. Nearly half of all Elkhart County farms (48%) sold less than $10,000 in 2012, and more than one thousand Elkhart County farm operators derived their primary income off the farm.[23] Yet many small farms are finding opportunities for growth, filling niches in regional dairy and livestock operations or responding to increased demand for local produce through local markets and direct sales.

Appendix B considers the particular influence of the large Amish populations in Elkhart and LaGrange Counties on economies of scale in local food systems. To date, there has been little assessment of the overall impact these particular farm communities have on the local economy and ag industry, nor exploration of the specific innovations and investments in infrastructure that could best amplify their contributions to continued food localization and economic development.

2.2.3 Local Food Markets

Three common means of conducting direct sales are farmers markets, roadside stands, and Community Supported Agriculture (CSA). There are currently at least 7 farmers markets in Elkhart County. The mainstay in Elkhart County has been Goshen's indoor farmers market, operating year-round since 2001. Producers offering CSA's, through which they pre-sell "shares" of produce, meat, or other food products to consumers in exchange for regular distributions throughout the season, doubled from 9 to 18 between 2007 and 2012.[24]

Farm markets such as Kercher's Sunrise Orchards Farm Market, Bullard Farms Market, Sweet Corn Charlie's Produce, and Kruse Farm Supply sell directly, and frequently serve as aggregators and markets for other producers as well. Elkhart County is also fortunate to have the Wakarusa Produce Auction as an outlet to sell specialty crops and plants. The auction attracts many different customers including restaurants, markets, and individual consumers. While not as large as Clear Spring Produce Auction in LaGrange County, it provides a particularly important market for many Conservative Mennonite farmers in the area.

Local grocers and retailers, representing the largest potential market for local food, are also responding to rising demand for local produce with increased products on their shelves and the promotion of local sources. However, lack of intermediate aggregation, processing, and distribution infrastructure limits accessibility to these markets for many smaller scale producers. Only seven Elkhart County producers are currently registered to sell wholesale with the Indiana State Department of Health.[25] Large and small retailers commonly identify difficulty establishing connections with local producers who are able and willing to comply with their procurement guidelines and fulfill their demands for quality, quantity, and consistency.

Further Reading:

- Appendix A – Elkhart County Ag Overview: surveys available data relevant to local consumers and producers to identify and understand ag trends.
- Appendix B – Amish Influence: considers the potential influence of area Amish populations on local agriculture and the unique capacities they bring.
- Appendix F – Agricultural Innovation: discusses current innovations in agriculture relevant to local needs, capacities, and potential relevant to possible FarmLab operations.

2.3 The Schools

As the only two established ag education programs in Elkhart County, Fairfield Community Schools and Wa-Nee Community Schools frequently collaborate and their programs often overlap. They elected to be interviewed jointly for the sake of this study and are therefore presented together below. Elkhart Community Schools initiated a third formal ag education program in 2015 and is presented independently as a model for other school districts considering new ag education programs.

Baugo, Concord, Goshen, and Middlebury Community Schools are also engaged in activities related to food and agriculture, including experiential learning and wellness initiatives that demonstrate additional opportunities for FarmLab collaboration and support. Upon initiating this study, these districts asked to be included in any conversations about expanding ag education programming in Elkhart County.

2.3.1 Fairfield Community Schools and Wa-Nee Community Schools

The Wa-Nee Community Schools (WCS) and Fairfield Community Schools (FCS) ag education programs are both anchored in a curriculum focused primarily on animals and plant-based life systems. Each offer dual credit core science courses through Ivy Tech. Course offerings are summarized in Table 2. Extracurricular activities are also listed, which frequently include participants from both programs in order to better utilize available resources and benefit from each other's strengths.

WCS owns 120 acres of productive land that is currently rented out. They would like to build a shop for managing equipment before using the land themselves. While resources could be obtained from the community, staff time is limited and they are careful not to over-extend themselves.

At the time they were interviewed, FCS was undergoing a school building project including a 2,400 square foot veterinary facility, veterinary surgical lab, and science lab to support their growing animal systems programs. These new animal science facilities will enable FCS to begin offering courses in veterinary science in 2016-2107, leading to the launch of a veterinary tech program the following year. The two-year program will provide an opportunity for students to pursue a Certified Veterinary Assistant degree.

FCS also has a fenced in 4-acre small ruminant pasture and a 4-acre test plot for cover crops.

Table 2: Ag Education Activities for Fairfield and Wa-Nee Community Schools

	Fairfield Community Schools	**Wa-Nee Community Schools**
Ag Educator	Kraig Bowers	Amy Beer
Grade levels	8 through 12	9 through 12
Course Enrollment	130 students	100 students
Ag Course Offerings	Animal Science Introduction to Agriculture Natural Resource Management (dual credit) Agriculture, Power and Construction Plant and Soil Science ALS Animal Science (dual credit) ALS Plant Science (dual credit) Agribusiness Management (dual credit) Career Development Experiences (CDE's) -- Veterinary Science (2017) Veterinary Tech Training (2018)	Agriscience Animal Science Small Animal Science Large Animal Science Natural Resource Management (dual credit) Plant and Soil Science ALS Animal Science (Science Credit) Agribusiness Management (dual credit) Career Development Experiences (CDE's)
Extracurricular Activities	soils evaluation livestock evaluation	soils evaluation livestock evaluation tractor restoration debate
FFA Club Participation	50-60 students	50 students

2.3.2 Elkhart Community Schools

Elkhart Community Schools (ECS) started the third ag education program in Elkhart County in 2015 by hiring Cyndy Keeling as a district-wide ag educator. The program is being run through the Elkhart Area Career Center (EACC) and will follow 3 phases of implementation: curriculum development; developing a 114-acre Agriculture Community Center and Environmental Learning Lab (ACCELL); and broader community engagement. The innovative program will serve most

of the district's K-12 population and is on track to become the largest ag education program in Indiana.

The first phase includes training and licensing 20 ag-certified science teachers under Keeling's guidance and following the Curriculum for Agricultural Science Education (CASE).[26] This level of staff will enable ECS to offer an Intro to Ag course in 8th grade expected to reach 70% of the student class. Every high school ag education course will be dual credit through Ivy Tech.

While agriscience will be the primary focus, the ag education program will target a variety of career pathways through the EACC. The EACC started the first FFA chapter in ECS in November and will develop courses in small engine repair, horticulture, and landscaping. Through the EACC, the program will be able to serve 16 area schools currently sending students to EACC, including six districts in Elkhart County.

ACCELL is currently providing a destination for ag in the classroom field trips, but will ultimately focus on experiential learning at all grade levels for more than food production. Its woodlands, wetlands, and pasture will provide opportunities for broader Agriculture, Fiber, and Natural Resources (AFNR) project-based assignments. The assistance of the Elkhart County Farm Bureau in developing this project exemplifies the support they are receiving from the broader community.

2.3.3 Other Schools

Other Elkhart County school districts recognize food and agriculture as practical, place-based topics for student-centered pedagogies that encourage critical thinking and appreciation for real-world problems within their curricula. They are particularly interested in how ag education can offer new pathways for Career and Technical Education and early college programs.

While this study focused on public school districts with existing formal ag education programs or interest in implementing them, numerous private schools, pre-schools, Boys and Girls Clubs, and other institutions also represent potential partners.

Further Reading:

- Appendix C – Ag Education Background: provides an overview of ag education resources supporting current programs that could benefit other schools.
- Appendix E - Food and Ag Literacy: addresses two frameworks for helping consumers make more informed, healthful decisions about the foods they consume.

2.4 The Organizations

2.4.1 Elkhart County Extension and 4-H

Each year in July, agriculture in Elkhart County is the center of attention at the Elkhart County 4-H Fair. One of the largest in the nation, the fair typically attracts more than 250,000 attendees. The Elkhart County's 4-H program that the fair showcases is the largest in Indiana, with more than 3,600 participants in approximately 60 clubs, led by Purdue Extension Elkhart County office (Elkhart County Extension) and community volunteers.

4-H helps Elkhart County rural and urban youth in grades 3 through 12 develop basic life skills through general and project-specific clubs. The largest 4-H club is currently shooting sports, with over 700 participants. While many of the clubs still have an agricultural focus, the program is evolving with changes in the landscape and community relationships to agriculture.

> *"It will be interesting to see where we are at in 10 years. We have youth right now that have livestock at their grandparents' house. But their parents probably won't be on the farm for their grandkids*." (Lienhart-Cross)

In addition to 4-H youth development, Elkhart County Extension provides direct support to local producers and plays a lead role in educating the broader community about healthy eating and wellness following USDA guidelines. The Extension Service's Nutrition Education Program provides community education with respect to nutrition and meal planning; food purchasing and preparation; food safety, and resource management.[27] A new Community Wellness Coordinator is concentrating on these areas in limited-resource communities. The importance of this work is evident in the current health and consumer trends referenced in Appendix A.

2.4.2 Elkhart County Farm Bureau

Agriculture in the Classroom is a grassroots initiative designed to help students "gain a greater awareness of the role of agriculture in the economy and society so that they may become citizens who support wise agricultural policies." The Indiana Farm Bureau manages the Ag in the Classroom program in Indiana, offering free lessons and materials to schools and other community groups and organizations.[28] The Elkhart County Farm Bureau (ECFB) extends ag in the classroom programming to area schools, coordinated by Dwight Moudy. In Elkhart Community Schools, the program has grown to reach 32 classes, introducing urban youth to growing plants, hatching chicks, and other ag activities that have been well-received by the community.

> *"I'm in the schools 4-5 times a week; some is ag related, but it's also about principles and values. They don't just have to accept an EBT card – we're giving them hope and a better future. We do math in the classroom and (the students) eat it up. They want more. When they do real world problems it means something; they see a definitive answer."* (Moudy)

in 2016, Moudy planned to support 20 classes using egg incubators and another 20 growing indoor gardens. The ECFB provides resources and Moudy is available to answer whatever

questions the teachers have. Moudy also tries to connect students directly to farmers, by bringing in dairy farmers to discuss the science of feed and nutrition, organizing farm tours, and collaborating with ECS to promote Ag Days at ACCELL; ECFB recruits members from across the county to bring in equipment and animals for demonstration.

> *"If you look at the average age of farmers, it's up to 60. Who's going to run these farms? The problem is you have 3-4 generations off the farm so kids don't have the opportunity to learn. How to garden isn't the only answer but it's a way to start that learning process."* (Moudy)

2.4.3 Horizon Education Alliance

Horizon Education Alliance (HEA) represents a unique platform for collaboration in education at a county-wide level, with all seven public school districts already involved. HEA is facilitating several programs focused on experiential and problem-based learning pedagogies and continuing education, which could be a good fit for food- and ag-based curricula:

- *"21st-Century Teaching & Learning* supports schools in implementing innovative designs such as project-based learning and cross-curricular integration."
- *"Early College High Schools* are being pursued at all Elkhart County public high schools in what will be the most comprehensive implementation in Indiana. … HEA and area schools are partnering with Ivy Tech Community College to enable students to earn post-secondary credits and credentials - up to an associate degree - at no cost to the student."[29]

HEA also leads Business/Education Roundtables intended to facilitate collaboration between teachers and business leaders in building curricula around practical, real world problems. Jim DuBois and Carol Deak of Baugo Community Schools noted the need to bring ag community leaders to the roundtables:[30]

> *"This is our first year. … Several teachers have agreed to do (problem-based learning) activities ... that's the innovation piece. Health and food service have integrated into their classes. Around the table we have medical and manufacturing. Ag would be helpful. If you are going to buy locally it would be wonderful if we could have local producers (at the table) that sell food to our kids at school."* (DuBois)

> *"If we want to expand into ag, that would be beneficial to have someone part of that team that would bring that influence to the table. Trying to break that stereotypical 'ag is only farming and corn' because there are lots of things I could see fitting into that whole business model."* (Deak)

Further Reading:

- Appendix A – Elkhart County Ag Overview: surveys available data relevant to local consumers and producers to identify and understand ag trends.

2.5 The Government and Agencies

2.5.1 Charitable Food Networks

Elkhart County has developed an extensive charitable food network to serve more than 25 thousand food insecure residents, including more than 40 food pantries and hot meal sites. Church Community Services of Elkhart managed the Food Bank of Elkhart County until its closure by Feeding America in 2015. The production capacity of Elkhart County has prompted a variety of initiatives over the years to make fresh produce more accessible to those in need.

Surplus produce can be donated to pantries through the Good Samaritan Act.[31] Some producers have made arrangements with area pantries for pickup or delivery of surplus produce, although coordinating these transfers and harvest costs limit this practice. An estimated 40% of all food grown is wasted from field to plate.

In 2012, Church Community Services initiated the Seed to Feed program to engage community partners in donating cash crop sales and growing produce to be distributed to area pantries. The project has grown from 2 gardens initially to 17 gardens in 2016, harvesting more than 43,000 pounds of produce for distribution in 2015 alone.[32] Faith Mission in Elkhart also has a large garden generating fresh produce for their kitchen, which preserves and incorporates produce donations from several area producers.

Farmers markets provide additional access to fresh produce though WIC farmers market vouchers and EBT sales. The Goshen Farmers Market has gathered financial support to provide partial matches to EBT transactions and subsidize produce baskets for qualifying individuals.

2.5.2 Federal – the USDA

The USDA supports local food research and development through the Agricultural Marketing Service, Economic Research Service reports, the Sustainable Agriculture and Research Education Program and its Know Your Farmer, Know Your Food Initiative.[33] The agency also contributes to emerging knowledge by providing public access to research results, reports, agricultural data and census/demographic information.

The USDA administers the National School Lunch Program, which regulates public school food service operations and budgets.[34] The USDA also champions an extensive Farm to School Program through the Food and Nutrition Service's Office of Community Food Systems. The program was established through the Healthy Hunger-Free Kids Act of 2010, publishing extensive resources to support school food and nutrition services with local procurement and farm to school programming.[35]

2.5.3 State – Indiana State Department of Agriculture (ISDA), Indiana State Department of Health (ISDH), and Purdue Extension

Efforts to improve access to locally grown food, both charitable and commercial, stem from a growing awareness and appreciation of the importance of strengthening local food systems. Support for local food systems in the context of community and economic development has emerged at all levels of leadership within the state.

In 2014, Purdue Extension launched a new Local Food Program, selecting Elkhart County and Batesville, Indiana as its first two pilot communities to explore strategies for rebuilding local food systems in the state. The Elkhart County Foodshed Initiative grew out of the Purdue program to continue advocacy for community-based food systems in Elkhart County.

In 2015, the ISDA developed its Indiana Grown program to promote Indiana-produced agricultural products across the state.

> "Indiana Grown is a statewide, all-inclusive and collaborative program promoting Indiana-produced agricultural products. The program enriches and preserves Indiana's strong agricultural heritage by promoting locally grown agricultural products, local employment opportunities and statewide economic growth, all while building sustainable communities."[36] (Indianagrown.org)

The ISDH has also championed increasing access to local food as a strategy for improving community health by helping lead the Indiana Farm to School Network,[37] along with the Indiana Department of Education, and commissioning Ken Meter and Crossroads Resource Center to perform several related food system assessments at the state and local levels. The ISDH also oversees food safety in Indiana, launching the Farm Produce Safety Initiative to "encourage produce farmers to adopt Good Agricultural Practices (GAPs) and good handling practices to prevent contamination of produce from farm to distribution."[38]

2.5.4 County – Elkhart County Redevelopment Commission and Elkhart County Health Department

Because the proposed site for the FarmLab is located within the Middlebury Agricultural TIF District, the project would be regulated by the Elkhart County Redevelopment Commission, which oversees all county TIF districts. The Ag TIF was established in 1999 to use incremental revenues (new revenues in excess of the base revenues established prior to the TIF) to underwrite further ag-focused improvements within the TIF district and provide subsidies in support of ag development. The broader intent of the Ag TIF is to preserve farms by restricting residential development, thereby maintaining jobs in agriculture and encouraging continued agricultural and economic development.

The Elkhart County Health Department (ECHD) administers the Woman, Infants and Children (WIC) program, which supports the purchase of healthy foods for qualifying residents. To increase redemption of WIC Farmers Market checks, the ECHD has collaborated with local farmers to set up a farmers market at the WIC office while the checks were distributed.

The ECHD would be a direct stakeholder in multiple aspects of the FarmLab project through its various programs. The ECHD supports the Elkhart County Healthy Schools Workgroup (see Appendix E) and is committed to improving community wellness through better nutrition. The ECHD's Food Protection Program is charged with preventing diseases associated with improper food handling, promoting food safety through education and routine counseling of all food service operations in Elkhart County. This includes food handler certifications, certified kitchens, and home-based vendors.[39]

Further Reading:

- Appendix A – Elkhart County Ag Overview: surveys available data relevant to local consumers and producers to identify and understand ag trends.

3.0 What? - FarmLab

As described above, the FarmLab was conceived as a farm-based education center that:

- Sustains and expands local agricultural knowledge
- Promotes agricultural career pathways
- Preserves agricultural land and productivity
- Improves access to local, healthy food
- Opens new markets for local food production

This section is designed to narrow in on each of these aims, define common language, and explore underlying principles and goals.

3.1 Agricultural Knowledge

Definition

Until the very recent past, ag education was commonly viewed as a distinct domain pertaining to Future Farmers of America (FFA) and the "traditional" agriculture of "plows, cows, and sows." However, today's ag educators are quick to differentiate their current efforts from this conception, pointing out that their programs have much more to do with science and broader career paths than farming alone.

As the emerging ag education program in Elkhart Community Schools demonstrates, ag education itself is rapidly evolving in response to changing technologies, economic conditions, consumer expectations, and the aforementioned ag industry trends. One of the most common themes among the ag education leaders interviewed for this study is that ag education is about using agriculture as a foundation for broader Career and Technical Education (CTE), and cultivating ag literacy throughout the community.

Yet, how might agricultural education translate into agricultural *knowledge*, especially when educating students about "where their food comes from" and "empowering them to be better consumers" is receiving as much attention as ag career pathways? In Elkhart County and schools across the country, this is the domain of 'ag in the classroom', ag literacy, and a rapidly growing farm to school movement targeting students at all grade levels in urban and rural settings alike.

Principles and Goals

3.1.1 Ag Literacy

The American Farm Bureau Agriculture Foundation defines ag literacy as the ability to:

> "understand the relationship between agriculture and the environment, food, fiber and energy, animals, lifestyle, the economy and technology."[40]

In addition to these six 'pillars' of ag literacy, the standards outline foundational knowledge in ag vocabulary and industry terms, ag history, product identification and use, and production awareness. Tools and resources are provided to educators and community partners to encourage ag literacy-based education (see Appendix C).[41]

Elkhart County ag educators perceive improving ag literacy as an important aspect of cultivating connection to place and helping people appreciate how their lives are rooted in relationships to agriculture. At the same time, school efforts fit within a much bigger context that is as much about poverty, nutrition, and culture as it is about education and awareness. Simply knowing where one's food comes from is not enough to empower consumers to take control of their health and nutrition. Consumers need access to healthy food and knowledge of how to prepare it in a safe and practical manner.

3.1.2 Food Literacy

Food literacy focuses on practical lessons to teach students to be more self-sufficient, representing the most accessible starting point for schools without agriculture programs to focus more broadly on wellness, nutrition, food culture, policy, marketing, and accessibility. Food literacy therefore complements ag literacy by starting with the perspective and experience of the consumer and considering their particular needs in context. It considers how people receive the information about food and agriculture communicated to them and then make choices based on that knowledge.[42]

The impacts of food-related disease referenced in Section 2.1.1 have driven renewed emphasis on improving nutrition and public health through healthy eating styles, such as the USDA's MyPlate campaign.[43] Child nutrition, in particular, has risen to the forefront of many initiatives, such as the Healthy, Hunger-Free Kids Act of 2010. According to Vidgen and Gallegos, food literacy improves nutrition by empowering consumers to eat more consistently, wisely, and enjoyably. However, nutrition and improved diet are also a function of social determinants of health such as poverty, culture, and environment.[44]

> "Decision making around food is complex. So many different factors drive people's choices—not just knowledge about nutrition but also how one has been socialized around food (e.g., whether someone grew up eating dinner at the table or going out for fast food), how food is marketed (i.e., marketing influences attitudes and behaviors), whether and which foods are available (e.g., the proximity of grocery stores), and policies around food (e.g., how many fast food restaurants are allowed in one's neighborhood)."[45] (Vidgen and Gallegos)

Everybody eats; even though levels of food literacy vary substantially, food will always be a familiar topic that can be used as an effective focus for almost any subject. Food-centered lessons can be focused on at the level of one's plate, the farm that produced it, or the broader local or global food system that the farm is a part of. Food systems represent a gateway to

many different sectors and disciplines, providing a context for a wide array of problems and projects.

> "Planning food production, tending gardens, and preparing tasty meals have shown themselves to be valuable venues for science education, because they involve very tangible measurements of quantities and mastery of logical concepts that encourage scientific experimentation."[46] (Meter)

Both locally and nationally, schools and related educational programs are focusing on food as a tangible, place-based topic for project-based and experiential learning. These collective efforts are relevant to a broader farm to school movement that is finding new ways to incorporate food into curricula; create educational gardens for hands-on learning; and bring fresh food to students' plates through cafeterias.

3.1.3 Educational Ag Experiences

Field trips compliment ag-based curricula and ag in the classroom activities by enabling students to engage directly with farms, livestock, and equipment. In addition to Ag Days at ACCELL, the Elkhart County Farm Bureau sponsors field trips for 1,000 students to visit Fair Oaks Farms in Northwest Indiana, and sends approximately 3,000 students to local dairy farms.

Crystal Valley Dairy Farms, the proposed site for the FarmLab, also regularly hosts farm tours in Middlebury. In Goshen, Kercher's Sunrise Orchards offers tours in the fall specifically designed to provide educational ag experiences for students. Merry Lea Environmental Learning Center in Noble County also serves Elkhart County schools, offering a historic farmstead showcasing turn of the century techniques as 'farmcraft' to approximately 2,000 students per year. Taking advantage of these opportunities is typically limited by transportation costs, which many schools must ask students to help cover.

Rather than sending students to farms, some schools are developing educational gardens on school property. In addition to garden-related ag in the classroom activities supported by ECFB, examples include teacher-led garden projects at Chandler Elementary and Waterford Elementary in Goshen, and a Goshen Middle School community garden partnership with IU Health Goshen and Seed to Feed to support Church Community Services. NorthWood High School FFA students have also helped with Seed to Feed gardens to support Family Christian Development Center. Bethany Christian Schools and the Boys and Girls Club of Goshen also have educational gardens.

3.1.4 Ag-based Curriculum

Elkhart County school districts have been exploring and implementing a wide array of strategies to maintain test scores and meet Indiana state standards while providing students with more diverse learning opportunities. While schools with ag education programs already rely on ag-based curriculum, other Elkhart County schools see food and ag as a useful focus for their general curriculum and instruction as well. Schools and teachers are increasingly using lessons that go beyond direct instruction and textbooks, seeking to engage students more effectively by

connecting to them using topics of first hand relevance and experience through pedagogies such as: project/problem-based learning (PBL); inquiry-based learning; experiential learning; STEM; service learning; and place-based learning.

The challenge for most districts, schools, and teachers, is that curriculum must align with rigid standards and testing requirements. For a particular lesson to be accessible and useful to an instructor, it must be tied to Indiana state standards.

> *"Curriculum standards set by the state make it difficult to explore new programs because teachers already feel swamped. If someone would take an already developed ag curriculum and align it with state standards in a way that involves teachers … they will do it. They are an enthusiastic bunch. Teachers would want to know ahead of time what is being required of them, and what they could swap out to incorporate ag-based curriculum in the classroom."* (Vallance)

> *"They want certain things taught. Teachers don't have much options. If we can incorporate doing math with a milk cow, it meets a standard. We sometimes have them read about farm life and answer some questions, do some problem solving … you can meet those other standards. You have to be very creative and have someone who can think outside the box."* (Moudy)

Moudy pointed out that ECFB has up to 30 weeks of curriculum available through their ag in the classroom programming. This is a significant advantage of ag and food-centered education; substantial bodies of ag-based curricula have already been developed and crosswalked with standards in many content areas. For ag in the classroom and general lesson plans, the National Agricultural Literacy Curriculum Matrix provides an "online, searchable, and standards-based curriculum map for K-12 teachers. The Matrix contextualizes national education standards in science, social studies, and nutrition education with relevant instructional resources linked to Common Core Standards."[47]

The Curriculum for Agricultural Science Education (CASE) used by Elkhart Community Schools is designed to improve the delivery of ag education through fully developed curricular materials applying agriculture, fiber, and natural resource (AFNR) knowledge and skills to science, mathematics, and English language understanding. "The CASE curriculum highlights the strengths of experiential learning, the heart and soul of agricultural education, by utilizing activity-, project-, and problem-based instructional strategies." CASE also targets Career and Technology Education (CTE) reform through STEM education, with curriculum development support from Project Lead the Way, Inc.[48]

> "CASE is not designed to replace traditional agricultural education programs. The goals of CASE are to improve the retention of professional teachers in agriculture and generate interest in districts seeking an alternative model for agricultural education instruction. However, the developers of the CASE curriculum are confident that CASE can provide value to any program in almost any situation."[49]

CASE aims to promote high levels of classroom instruction by providing four major areas of support: curriculum, professional development, assessment, and certification.

Further Reading:

- Appendix C – Ag Education Background: provides an overview of ag education resources supporting current programs that could benefit other schools.
- Appendix E - Food and Ag Literacy: addresses two frameworks for helping consumers make more informed, healthful decisions about the foods they consume.
- Appendix H – Farm to School: describes the concept and application of farm-to-school programs.

3.2 Agricultural Careers

Definition

Who is considered a farmer and what are the opportunities for farming careers? At present, according to the USDA 2012 Census of Agriculture, Elkhart County has 1,724 farms. 348 farms paid $7.3 million to 1,131 workers, of whom 69% worked less than 150 days on the farm. 37% of principal farm operators in Elkhart County worked off the farm less than 50 days per year, compared to 52% who worked at least 200 days per year off the farm. 1,063 operators (62%) did not identify farming as their primary occupation.[50] Management practices, tenure, and livelihood vary significantly among Elkhart County farms, ranging from small livestock operations to large commodity farms.

A common sentiment is that while agriculture offers diverse career pathways, farming does not. With the continued consolidation of mid-sized farms into larger operations, the advent of new technologies, and an aging farm population, there are fewer opportunities for conventional farming careers focused on commodity production. However rising demand for local produce and non-conventional practices to fill niche markets is opening up new agricultural career options in diverse, sustainable, specialty, and intensive farming operations. Food localization will require many new farming entrepreneurs and investments in infrastructure to support increasing ag innovation and diversification.

> "People across the state warn that Indiana must grow thousands of new farmers if it is to meet consumer demand."[51] (Meter)

Principles and Goals

3.2.1 Succession

Only 5% of principal farm operators in Elkhart County have been on their present farm for less than 2 years, while 75% have been on their farm for at least 10 years. According to the 2012 USDA Census of agriculture, 41% of principal operators are at least 55 years of age, while only 16% are younger than 35 years. The average age of Elkhart County principal farm operators was 50 years.[52]

"What are we waiting for? We're losing young people - partly from farmers themselves who said, 'we don't want you to work this hard.' It's a hard life. Farm parents have pushed their kids away from it a bit." (Moudy)

"If you don't have the farm you don't have any food. It's just that simple. If you look at sheer numbers, it's about 75% of farmers are part time. The young farmers … most of them work off farm and go home at night and milk a few cows … they are working part time. That tells me there is an interest, they just don't always know how (to make it a career)." (Moudy)

"Many young farmers find themselves in a vulnerable place. Many have turned away from a dependence on commodity agriculture since they view it as unrewarding, or beyond their financial means. Other farmers have concluded that to respond to the growing interest from consumers, they need to fashion farms that are vastly different from those their parents ran."[53] (Meter)

3.2.2 Career Pathways and Continuing Education

Both statistics and observation indicate that few young people are gravitating to careers in traditional areas of farming, either through succession or acquisition, but that a lack of opportunity for rewarding agricultural endeavors, at least in Elkhart County, may be more perception than reality.

It should be noted that agricultural careers encompass more than just crop production and livestock management. They can also include business management, mechanical skills, scientific competencies in such areas as horticulture, agronomy, forestry, plant and animal pathology, and such diverse areas as communications, economics, engineering, food sciences, and culinary arts. As described in Appendix C, these diverse AFNR career pathways have been well defined by The National Council for Agricultural Education (The Council).[54]

In addition to these specific career pathways, the "AFNR Cluster Skills" and "Career Ready Practices" content standards published by The Council provide a widely relevant foundation for interdisciplinary and practical education built on the Common Career Technical Core standards, outlining "fundamental skills and practices that all students should acquire to be career ready." To encourage further adoption and use of this work, The Council has cross-walked these standards with national academic standards, including Common Core standards for English language acquisition and mathematics.[55]

Multiple district representatives commented on existing agricultural career programs or the potential for them within their schools as a way to expand their CTE offerings.

In the Middlebury Community School district, agricultural studies was perceived as a vocational category. With current vocational education programs unavailable to the lower performing third of their students, new pathways in ag could be attractive to students struggling to meet increasing academic standards.

Baugo Community Schools teach welding and ag science as part of a program to allow students to test out career interests. Their focus is on supporting students in gaining actual job skills. Dual credit opportunities with Ivy Tech was seen as one way to expand access to resources that the schools were unable to offer on their own due to space restrictions, teacher capacities, and funding. They have identified a need to make students more aware of career options in general.

Goshen Community Schools would also like to bring their programs more into alignment with vocational opportunities, both through early college and through partnerships with industry, specifically manufacturing or medicine. So far, none of their conversations have included agriculture or food production but the possibility has not been ruled out. Their focus is on career training that is community-based and has 'real world' implications. Approximately 100 Goshen High School students access vocational training through the EACC, and 20 are involved in building and construction classes.

Fairfield Community School's concern is that traditional agriculture programs are less relevant to today's students because of a perceived lack of jobs in the field. They recognize a need for further innovation, particularly in animal sciences. With the completion of their new veterinary surgery lab, they plan to offer a veterinary tech program leading to certification as a veterinary assistant.[56]

The interviews conducted for this study frequently raised a distinction between on-farm careers and careers "in agriculture." Questions persist regarding the viability of farming in Elkhart County as a full-time livelihood, which the FarmLab could be uniquely positioned to help address by focusing on new opportunities to serve local markets. According to Reding and Moody,

> "the local food sector is in a critical and exciting time of growth. The window is open to fill (demand) to the satisfaction of the consumer and at the same time create numerous jobs and vocations that could put young people back on our farms with increased margins and employment ratios per acre than commodity production models offer."[57] (Reding and Moody)

> "It is challenging to find young people to replace the aging agricultural owners and operators as the training requirements for artisanal forms of production are learned over time and through experience rather than in a classroom setting. Farm apprentice programs are great opportunities for this type of education."[58] (Reding and Moody)

A core component of ag education, supervised agricultural experience (SAE), may offer the best path for engaging these young potential farmers. "Through the SAE program, students can consider multiple careers and occupations, learn expected workplace behavior and develop specific skills within an industry. They can also practice their skills in a workplace or simulated workplace environment—applying what they learn in the classroom to prepare for college and career opportunities ahead."[59] SAE represents a robust experiential learning model that can take numerous forms according to the interests and goals of the student, including:

- Exploratory activities to set up future work
- Placements and internships
- Business ownership and entrepreneurship
- Experimental, analytical, and invention-focused research
- School-based enterprises
- Service learning[60]

In terms of needs for implementing SAE effectively, The Council identified several significant barriers for ag educators and students to overcome, including:

- "Limited teacher time based on enrollment numbers to commit adequate time to supervision;
- Less students coming from agricultural production backgrounds and less employment availability in the agriculture sector for youth;
- Lack of resources to help students create ideas and SAE programs;
- Perceived administrative barriers to what types of programs students could engage with at a local level."[61]

These challenges for SAE reflect common barriers to CTE. To address them, The Council established the "Philosophy and Guiding Principles for Execution of the Supervised Agricultural Experience Component of the Total School Based Agricultural Education Program," providing a useful reference for exploring new career programs in Elkhart County schools.[62]

This study did not identify any formal agricultural training programs specifically for adults in Elkhart County. However, as Ken Meter notes,

> "Purdue Extension educators offer assistance to many emerging farmers. The county-based extension service places Indiana at a profound advantage over other states that have consolidated into less responsive regional units."[63] (Meter)

For home production, Elkhart County Extension's Elkhart County Master Gardeners program offers technical assistance for gardening and horticulture. Church Community Services also teaches basic food production skills through its Men Alive program, including an on-site produce stand, and has introduced new mentorship programs through Seed to Feed. However, for commercial production, there is clearly a need for more adults to pursue on-farm careers, who would in turn need additional education opportunities.

> "An aggressive "growing farmers" program could be pursued with the purpose of increasing the number of producers in the state in all forms of value added agriculture. This should be accomplished through comprehensive, incentivized and/or subsidized apprenticeships with producers that are currently involved in value added agriculture, production, processing, marketing and distribution in coordination with agricultural organizations, colleges, and universities and the Indiana State Department of Agriculture (ISDA)."[64] (Reding and Moody)

Further Reading:

- Appendix A – Elkhart County Ag Overview: surveys available data relevant to local consumers and producers to identify and understand ag trends.
- Appendix C – Ag Education Background: provides an overview of ag education resources supporting current programs that could benefit other schools.
- Appendix F – Agricultural Innovation: discusses current innovations in agriculture relevant to local needs, capacities, and potential relevant to possible FarmLab operations.

3.3 Preserve Agricultural Land

Definition

Preserving agricultural land refers to three broad categories. These are:

- Farmland Protection – keeping farmers farming by protecting agricultural lands from encroachment or dereliction.
- Farmland Management – keeping farmland productive through management practices, respect for human resources, and ongoing economic viability.
- Farmland Conservation – protecting natural resources by attending to soil, air, and water quality, controlling erosion, and maintaining landscape and ecological diversity.

Principles and Goals

3.3.1 Farmland Protection

Although changes in the distribution of agricultural land from 2007 to 2012 coincided with steep increases in the average market values of farmland per acre in every Indiana county, Elkhart County continued to exhibit the highest average ag land values in Indiana ($8,067).[65]

> *"I can't afford to pay for the piece of land that I grew up on ... the cost of land is so expensive. How can we get young people involved in ag because they might be the ones who can come in and figure out how to make profit through ingenuity, how to make a 5-10 acre farm profitable. They can't do it if they don't have access to land*."[66] (John Sherck)

Cost of land is, in part, influenced by development pressures. In Elkhart County, as in most semi-rural counties with a growing or suburbanizing population, land use policy decisions have sometimes exacerbated the problems of both pricing farmland out of farmer's hands and uncontrolled growth.

> "Indiana must make a concerted effort to train new farmers and ensure they have access to land in and near major urban areas … at prices appropriate to the costs and risks of farm production, rather than at real estate development costs."[67] (Meter)

While taxation and development policy are a bit beyond the scope of this report, it is understood that the Elkhart County Redevelopment Commission Agricultural TIF District initiative is an effort to address this issue. Future land use planning tools might include development boundaries or districts, farmland trusts, and programs for the purchase or transfer of development rights. Educational programs that connect community members with farms (tours, demonstrations, events, classes) could help promote broader investment and partnership opportunities.

Crystal Valley Dairy Farms, which includes the proposed FarmLab site, is protected from development through a development rights lease agreement as part of the TIF district. The farm also includes a separate 70-acre parcel with a conservation easement held by Wood-Land Lakes Land Trust, which holds easements on an additional 9,700 acres of farmland in Indiana. The Land Trust helps families "ensure their desire for continued agricultural-use of the land while preserving it for future generations of farmers." The conservation easement program works for "responsible stewardship of our natural resources; establishing conservation easements for farms, farmlands, woodlands, forestlands, wetlands, wildlife habitats, and open spaces."[68]

As discussed in Appendix G, there is a growing body of evidence that food localization brings diverse economic, environmental, health, and civic benefits, offering an effective strategy for incentivizing entrepreneurship and revitalizing rural economies.[69] Reding and Moody therefore call for policy makers

> "to realize the value of … local food businesses to a community with respect to rural development and vocation creation, and to act upon that realization. If this plea is heard and acted upon, the state can reap the benefits of bringing "agri" and "culture" back together; for in truth, one cannot survive without the other. … For the cause of rural development, there is an opportunity to cultivate this new industry that is married with our natural resources of abundant, productive farm land and quality human resources capable of performing the food production function well."[70] (Reding and Moody)

3.3.2 Farmland Management

While urban sprawl and an aging farm population are identified as two of the biggest threats to farmland by the American Farmland Trust, the other two are water pollution (primarily from soil erosion) and soil depletion. Loss of topsoil, the severe compromise of critical soil microbiology, and the climate consequences of conventional tillage and crop production practices are identified as three of most urgent environmental issues of the century by GRID-Arendal,[71] working for the United Nations Environment Programme.[72]

Thus, farmland management is virtually equivalent to soil management and is an area where targeted agricultural education is critically needed. The future productivity of farmland and the viability of farming for livelihood are both dependent on informed practices in soil management.

State Extension Services, Soil and Water Conservation Districts, state and federal departments of agriculture and various other public and private entities have developed extensive resources to improve soil management, and thus the sustainability of crop production, as well as drawing cogent connections between such practices as cover crops, mulching and field composting, diversification, conservation tillage, buffers and windrows to increased economic viability,

improved urban/rural relationships and partnerships, and higher quality of life for farmers and their communities. Support for such practices (such as through the USDA Sustainable Agriculture and Research Education Program) provides critical funds, peer-to-peer encouragement, exchange of information and other less tangible incentives for agricultural innovation.

As the top county in the state for livestock sales and milk sales, two indicators for affinity to soil management practices among small-scale operations are the practices of rotational or management intensive grazing, and organic production. According to the 2012 USDA Census of agriculture, Elkhart and LaGrange Counties rank 2nd and 1st in the state respectively in both categories.[73] The LaGrange County Soil and Water Conservation District, in partnership with Purdue Extension, annually hosts the Northern Indiana Grazing Conference which draws hundreds of area farmers to learn about best practices for soil management and livestock health.

3.3.3 Farmland Conservation

The National Council for Agricultural Education recognizes “resource stewardship” as an important skill for agricultural careers.[74]

Agricultural and natural areas can provide what are increasingly being referred to as “ecological services” to the entire community by producing vegetation, filtering air and water, maintaining soil and plant cover, providing shade and wind protection, preserving wildlife habitat, and offering aesthetic landscapes and pathways for trails and other recreation. Livable communities rely on farmers to see themselves as stewards, and for the community to recognize and acknowledge this role. With Vibrant Communities[75] and other initiatives bringing ‘quality of place’ to the forefront of public discourse, the question of how these physical resources can be conserved and promoted through tourism and as part of our community identity is timely.

Further Reading:

- Appendix A – Elkhart County Ag Overview: surveys available data relevant to local consumers and producers to identify and understand ag trends.
- Appendix F – Agricultural Innovation: discusses current innovations in agriculture relevant to local needs, capacities, and potential relevant to possible FarmLab operations.
- Appendix G – Food Localization as Economic Development: examines various studies supporting food localization as a means of economic development.

3.4 Improve Access to Local Healthy Food

Definition

Food access is determined by several key factors. These include:

- *Socioeconomic factors* such as poverty, culture, and education and attitudes toward food and health.

- *Infrastructure issues* such as food safety regulations, supply chains, processing, and transportation.
- *Production issues* such as crop selection, innovation, pricing, labor, and economies of scale.

Principles and Goals

3.4.1 Socioeconomic factors

A major disconnect exists between the financial ability of many families to purchase nutritious and healthy foods, particularly those that qualify as 'local' or 'organic,' and the desire of many farmers to produce these items and sell them at a premium. Lack of education and awareness or language and cultural barriers may also prevent knowledge of where to buy food other than at the grocery store or how to connect with what might be considered 'niche' outlets such as Community Supported Agriculture programs, food co-ops, or farmers markets.

3.4.2 Infrastructure

As noted in Appendix G, one way of describing the challenges of marketing and distributing local produce is the following analogy: we have created a wonderfully extensive and efficient "superhighway" for shipping food across the country and around the globe, but have let our local bridges go into disrepair, making it easier for producers to sell wholesale to distant markets than to institutions in their own town.[76] 'Relocalizing' food systems seeks to rebuild this 'middle' (or 'intermediate') infrastructure of aggregation, storage, processing, and distribution at a local or regional level.

School food services in Elkhart County, as described in Appendix D, offer a good example of the infrastructural issues related to providing healthy food options in an institutional setting.

Presently, the county's 56 schools feed approximately 35,000 students, more than half of whom qualify for the free and reduced lunch program.[77]

Total food purchases for the seven public school districts exceed $10 million per year,[78] and nearly of all of the corresponding farm product expenditures are presumed to leave the county. Based on the USDA Farm to School Census for 2013-2014, only two Elkhart County districts are prioritizing local procurement as part of farm to school programs. Other districts have interest, but have not yet developed strategies or resources for addressing numerous challenges associated with purchasing local produce, including:

- inadequate supply to meet school demands for quality, quantity, and consistency;
- complicated ordering, transportation, and payment logistics; and
- higher, unstable prices.[79]

Wa-Nee Community Schools Food Services Director Betty Hahn has taken practical steps to purchase locally through conventional channels:

- By contracting with smaller dairies such as Prairie Farms and Schenkel's, they presume most of the fluid milk they purchase is produced relatively close by.
- By communicating the district's preferences for local food to their broadline distributor, through whom they must purchase at least 90% of their food. The distributor has identified where the produce originates and helped them access local producers.
- They have recently begun using their discretionary budget to purchase from Piazza Produce out of Indianapolis, which has existing routes in Elkhart County 3 days per week. This enables Wa-Nee to make more frequent purchases of fresh produce without needing as much storage.
- They have purchased processed commodity tomatoes from Red Gold (Elmwood, IN) when possible, and commodity chicken products from Maple Leaf Farms (Leesburg, IN).

Even with access to local produce, school food services must have the capacity to process fresh ingredients and cook from scratch. Without sufficient storage and processing equipment, or if staff lack adequate chopping and preparation skills, incorporating unprocessed ingredients into menus can be cost and time prohibitive. Sara Eash, the Food Services Director for Middlebury Community Schools, is focusing on building the capacity to prepare more dishes from scratch and developing trust among the staff to make gradual changes in the kitchens, before making additional efforts to purchase local produce.

Baugo Community Schools Food Services Director Carol Deak has opted for using entitlement funds to purchase produce through the Department of Defense Fresh Fruit and Vegetable Program (DoD Fresh).

> *"We do a lot of fresh fruit and veggies and it would be nice to use more local vendors, but we can't because of manpower at this point…we just don't buy the pre-bagged stuff anymore… We've been able to get a few things that our kids otherwise wouldn't have had the opportunity to get."* (Deak)

3.4.3 Production

The significant majority of agricultural crops are produced as commodities, i.e. raw ingredients for further processing, and are sold to storage, distribution, or processing facilities and not directly to consumers. The result is centralization, or 'de-localized' systems dependent on scale and existing transportation networks and on price-point evaluation (highest priority for least expensive). In consequence, an estimated 90 percent of the food consumed in Elkhart County was produced outside of our region.

> "Elkhart County residents purchase $532 million of food each year, including $325 million to eat at home. Most all of this food is produced outside the county so the county's consumers spend about $480 million per year buying food sourced at a distance. Only $2.4 million of food products (0.8% of farm cash receipts) are sold by farmers directly to consumers."[80] (Meter)

A variety of strategies for reversing these trends are explored in Appendix F, including diversification and season extension; value addition through vertical integration and processing;

and food hubs focused on value chain facilitation for local markets and producers. Reding and Moody offer the following vision for food localization in Indiana:

> "Ultimately, consumers do not eat number 2 yellow dent corn, soybeans, or hogs, chickens and cattle. However, they do eat pork, beef, milk, poultry, eggs, vegetables and fruits; and we can and do produce the best. The underutilized asset in this consideration is in adding value to our agricultural products grown on our farms. These assets not only create jobs, but they create engaging vocations which provides entrepreneurial opportunity for young people to stay close to the land. They will also create industry infrastructure, community leadership, educational opportunities, food security and contribution to wealth in the form of higher margins per acre for our producers."[81] (Reding and Moody)

Reding and Moody also examine how communities are applying strategies for supporting local food systems and improving local access while achieving broader community and economic development goals, as explored further in Appendix G.

> As consumers across the Nation express a growing interest in a closer connection to their food producers - whether through access to more localized markets and/or shorter supply chains - cities and regions have begun to regard the expansion of local food marketing activities as a critical component of their economic development strategies. Rising demand for locally produced, source-identified, and differentiated food products has generated a plethora of new and spin-off businesses in many communities, which aim to increase the range of and accessibility to local food items for both retail and wholesale customers.[82] (Reding and Moody)

Further Reading:

- Appendix A – Elkhart County Ag Overview: surveys available data relevant to local consumers and producers to identify and understand ag trends.
- Appendix D – Food Services in Elkhart County Schools: summarizes current local food interest and procurement efforts among school food services in Elkhart County.
- Appendix F – Agricultural Innovation: discusses current innovations in agriculture relevant to local needs, capacities, and potential relevant to possible FarmLab operations.
- Appendix G – Food Localization as Economic Development: examines various studies supporting food localization as a means of economic development.

3.5 Open New Markets for Local Food Production

Definition

As described above, existing markets are dependent primarily on price-point evaluation and centralized infrastructure. Shifts in both valuation and practices around food production and distribution have the potential to provide farmers with more options, less market volatility, and more economic security. At the same time, they can provide communities with more sources of local food, more variety, and more reliable supplies. Such shifts might include:

- Shift from price paradigm to "relationship paradigm."
- Shift from emphasis on centralized and distant storage, processing, and transportation to local distribution.
- Shift from marketing paradigm to "networking and communication paradigm."

Principles and Goals

3.5.1 The relationship paradigm

Developing new markets will require connecting producers with consumers who are not just prioritizing actual item price in their purchasing decisions but may be interested in a more sophisticated valuation of "cost" (such as soil depletion, compromises to taste and nutrition, or social connection). While in some situations, consumers will certainly educate themselves and seek out the products they desire if they are available, in others, changing market habits will require the power of experience – meeting farmers, getting to know others who shop and eat differently, cooking with and tasting locally-produced items. Reding and Moody call this "the relationship paradigm."

> "This relationship is what we see as the new demand of the consumers today. Local food systems that are authentic in their production and processing systems have an incredible opportunity to capitalize on this and should not market with the price point paradigm, but market with the relationship paradigm in the forefront."[83] (Reding and Moody)

3.5.2 Distribution

Decentralization depends in great part on alternate strategies of distribution. This might mean some form of direct marketing such as a CSA, farmers market or farm stand, or "soft wholesaling," as to a restaurant, a local grocer, or possibly at auction. In any case, and depending on the nature of the product and the time of year, farmers need cooling, heating, and space, especially for the fruits and vegetables demanded by local and more direct markets. In addition, local and direct markets require washing and other forms of preparation or packaging, if not actual processing, so farmers growing produce need facilities to complete these tasks. Finally, farmers growing smaller quantities of diverse items generally need to make deliveries themselves, requiring transportation equipment and the time to do it.

The ISDH listing of "Indiana Registered Wholesale Fruit and Vegetable Growers" includes just 7 producers in Elkhart County.[84] However, according to the 2012 USDA Census of agriculture data for Elkhart County:

- 71 farms marketed products directly to retail outlets (1st in state);
- 98 farms produced and sold value-added products (1st); and
- 34 farms had on-farm packing facilities (2nd).[85]

In each category, LaGrange County was either immediately behind or ahead of Elkhart County, suggesting that these capacities can be at least partially attributed to the many diversified Amish farms connecting these counties.

As discussed by Meter in the Indiana Networks report, a key consideration with respect to efficiency and financial sustainability is the extent to which producers are networked into clusters to more effectively access local and regional markets.[86] Kercher's Sunrise Produce in Goshen aggregates and distributes produce from 20 to 30 area farms including their own, mostly selling to grocery stores. With increasing demand for local produce, the Goshen Farmers Market has increasingly served as a distribution point in recent years for local restaurants, including an adjacent bakery and brewery. Vintage Meadows in Goshen works with growers in Elkhart and LaGrange Counties to distribute in and around Chicago.

3.5.3 Networking and communication

Appendix G briefly explores how the formation of local food networks and business clusters can positively affect local food systems. Meter evaluates Northeast Indiana Regional Partnership plans to build local food networks in the 11 Indiana counties surrounding the Fort Wayne metro area, including Kosciusko and Lagrange counties.

> "For this initiative, we define 'local food networks' to be the commercial, social, and cultural connections that sustain food trade within Northeast Indiana ... these supportive networks are precisely what allow local food business clusters to be cohesive and resilient. Such networks operate through the totality of physical, intellectual, cultural, and other forms of infrastructure. When successful, they foster efficient food production, processing, warehousing, distribution, and recycling of organic materials within the region. They also play strong roles in developing a strong sense of quality of place."[87] (Meter)

In the Phase 1 report, Meter notes that such networks have been slowly building in the region for decades, providing a foundation for collaboration that should enhance future food localization efforts.

> "Each (local food network) has been launched by farmers who realize that to create more stability for agriculture and local food systems, new forms of farming and marketing must be created, with supportive infrastructure. These pioneering farms produce higher value food items, differentiated from the conventional marketplace. To create

> sustainable businesses, each builds new social capital that engages farmers, businesspeople, and consumers in a common purpose." (Meter)[88]

These observations reinforce the conclusions of the "Elkhart County Foodshed Initiative Interview Project," which centered on the need for better communication.

> "Despite an overall desire for increased connectivity between all players in the food system, there is a lack of awareness about existing resources and an uncertainty about how to navigate various networks. The interviews indicated a variety of missed opportunities due to a lack of communication ability: a local grocery store would like to buy from more local farmers, but is unsure of how to find those farmers. Consumers are interested in supporting local growers, but do not know about existing market venues for purchasing local food. Larger producers would like to source from other producers to fill their orders or get additional seedlings, but do not have a means of locating those producers. Restaurants would like to include more local food on their menus, but do not know how to contact area producers to ascertain availability. Some growers are interested in selling to institutions, but do not know what their needs are."[89] (Jantzen)

Some suggestions to address this issue included gatherings to connect farmers with markets, online mapping or food guides to connect growers with potential markets, and a local food hub to aggregate products and provide infrastructure and communication.

Further Reading:

- Appendix A – Elkhart County Ag Overview: surveys available data relevant to local consumers and producers to identify and understand ag trends.
- Appendix F – Agricultural Innovation: discusses current innovations in agriculture relevant to local needs, capacities, and potential relevant to possible FarmLab operations.

4.0 How? – RECOMMENDATIONS

The previous sections explore a broad range of needs and opportunities with respect to the proposed FarmLab aims, tied in to the current contexts for agriculture and education. The qualities and issues corresponding to these needs and opportunities are generally dynamic, interdependent, and interdisciplinary. The assessed needs are therefore complex and best understood and appreciated through the contextual relationships between them rather than as distinct topics. The key conclusion is that they align well with the proposed aims overall, indicating that the FarmLab project could - and should - move forward with its original mission.

The constituencies considered in this study often overlapped, sharing many common interests and aspirations with the FarmLab project. Based on our assessments, several key trends emerged through which these interests began to align, providing four complementary directions for the FarmLab to initially pursue: food and ag literacy; ag-based curriculum; ag innovation; and food localization as economic development.

In this section, we introduce these directions as recommended focus areas, along with 'farm to school' programming as a practical point of convergence. We also suggest four general functions for the FarmLab to perform while utilizing existing resources and developing the capacity to pursue its proposed aims through these areas. Lastly, we offer several additional recommendations related to continuing this work.

4.1 Focus Directions

Food and Ag Literacy

Ag education and ag in the classroom activities seek to develop appreciation for the many relationships between agriculture and society. By better understanding where their food comes from, students can become more self-sufficient and will be more likely to pursue careers in agriculture. Yet this is not enough to empower consumers to take control of their health and nutrition; they also need access to healthy food and the knowledge of how to prepare it in a safe and practical manner.

Cultivating food literacy is at the forefront of the work of school wellness committees, Elkhart County Extension's Food and Nutrition Program, charitable food networks, and nutritionists throughout the health system. It can begin with getting healthy food onto children's plates, factoring in limited access and cultural preferences to insure that lessons learned remain relevant beyond the cafeteria. These lessons would deepen ag literacy and encourage positive perceptions of agriculture by connecting these consumers more directly to the source of their food.

- Appendix E dives deeper into food and ag literacy as a focus area.

Ag-based Curricula

Ag education and ag in the classroom programs offer extensive curricula designed to nurture appreciation for agriculture and guide students towards a variety of related career pathways. Other schools and teachers are increasingly implementing pedagogies that seek to engage students more effectively by connecting lessons to practical experience and relevant issues. Curricula based on local food and agriculture can help fill this niche well, providing an engaging focus for many subjects while simultaneously cultivating food and ag literacy.

Existing ag-based resources already aligned with required standards can provide a useful foundation for integrating food and agriculture into new or existing curricula outside of formal ag education programs. These curricula can be reinforced with educational ag experiences such as school gardens or farm tours, or through alignment with foods introduced through school meals. However there are gaps between current aspirations, available teacher time and energy, and awareness of available ag-based resources.

- Appendix C provides an overview of ag education resources supporting current programs that could benefit other schools.

Ag Innovation

While conventional ag and global food systems continuously innovate to remain profitable and feed a growing population, many smaller scale innovations are taking place at a local level. These localized innovations are largely a response to growing demand for products that can be traced back to local farmers and alternative practices that place a premium on nutrition, relationships, and sustainability. In addition to new production practices and technologies, innovation is taking place throughout local food value chains to fill gaps in aggregation, storage, processing, and distribution between producers and consumers.

Consumer demand for local and specialty produce continues to out pace available supply. At the same time, farmers are increasingly looking to preserve their farms by diversifying and accessing new markets to increase profitability and by creating sustainable new enterprises for their children. The wealth of small farms, off-farm income, and entrepreneurial capacity place Elkhart County in a privileged position to explore and develop these market opportunities. Because the risks can be high and the returns slow, however, most farmers must be conservative about adopting new practices – a need the FarmLab could help address.

- Appendix F discusses current innovations in agriculture relevant to local needs, capacities, and potential especially as they relate to possible FarmLab operations.

Food Localization as Economic Development

Facilitating new food value chain connections can lead to new livelihoods and improved access to local food throughout the community. Economic impact assessments from nearby regions and communities highlight the potential for new jobs, production, and tax revenue generated by food localization efforts. Local food networks forming in these communities are supporting more efficient, cohesive, and resilient business clusters and further increases in production. As a result, support for economic development strategies centered on local food systems is coming from the USDA and ISDA as well as local communities, making the necessary investments in strategic infrastructure more attainable.

- Appendix G examines various studies supporting food localization as a means of economic development.

Farm to School

“Farm to school” initiatives provide a practical point of convergence for the above directions in addressing the needs identified in this study. As an independent non-profit, the FarmLab could serve as an education and innovation lab for exploring opportunities to advance farm to school initiatives in Elkhart County through “boots on the ground” research, prototypes, and pilot initiatives. As a common focus, farm to school collaboration could provide a rich context for building stronger networks and facilitating better communication across the targeted constituencies.

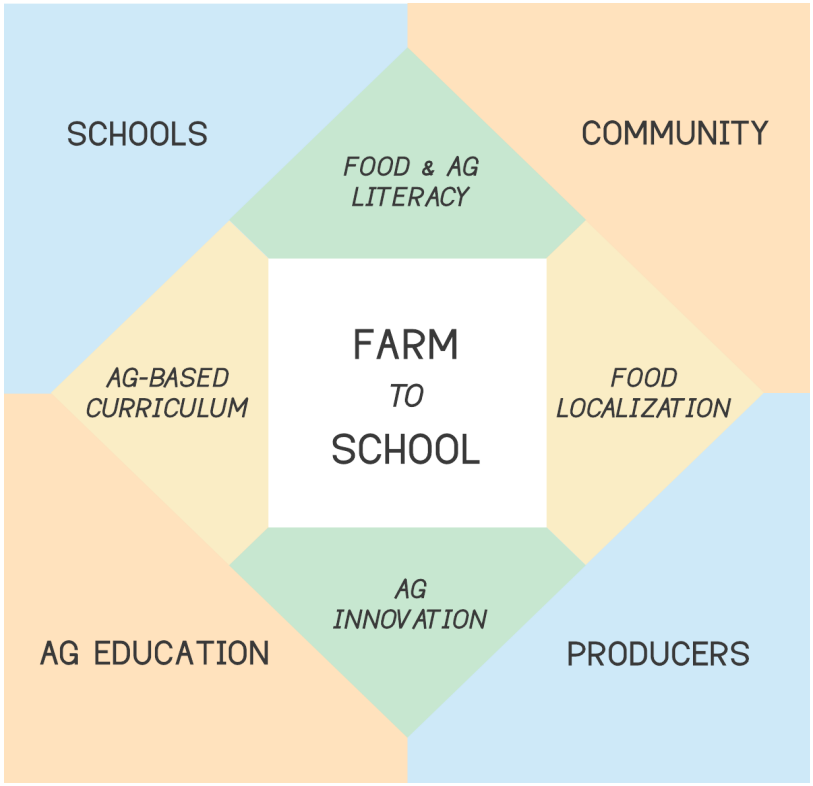
In practice, the FarmLab could work with local producers and school food service directors to identify and develop farm to cafeteria procurement programs and processes. A group of schools focusing on specific products (i.e., sweet potatoes) may provide a large enough market to justify education and aggregation support for farmers interested in diversifying their production. The FarmLab could help fill current gaps in the supply chain by trialing production, aggregation, storage, and distribution strategies to identify scalable solutions.

These projects could provide opportunities to collaborate with ag education programs in actual production and in hosting student SAE placements. Successful farm to cafeteria projects would also provide a focus for ag-based curricula, which the FarmLab could help source and integrate into the schools. The FarmLab could also help facilitate experiential learning opportunities by supporting demonstration gardens at the schools or arranging field trips to visit the site or participating growers.

- Appendix H provides a broader overview of farm to school programming and introduces potential activities and influences through which the FarmLab could help facilitate the development of such programs in Elkhart County.

Figure 1, below, is intended to relate the FarmLab focus directions described above to the constituencies considered in this study, with farm to school as a central focus.

Figure 1: FarmLab Focus Directions and Constituencies



4.2 FarmLab Functions

Based on these focus directions, several essential functions stand out for the FarmLab to perform. These functions and their potential outcomes are summarized below.

Network Building and Communication

The Farmlab could play a key role in convening and networking constituencies by facilitating communication and cultivating a shared understanding of the challenges and opportunities associated with the various aims. This would be especially valuable for aligning stakeholders focused on increasing food and ag literacy in Elkhart County, since initial successes and relationships would help enhance community engagement and provide a stronger foundation for collaboration in the other areas as well.

Expertise and Coordination

As relationships are formed and networks converge, the FarmLab could help fill gaps in each focus area by injecting appropriate knowledge and expertise. With respect to supporting ag-based curriculum, this could involve connecting teachers and administrators to existing resources and opportunities, such as ag in the classroom programs with the Farm Bureau and

ag education materials that have already been crosswalked with national standards. As a leader in broader farm to school initiatives, the FarmLab could also help reinforce new curricula by connecting it to field trips, educational gardens, and farm to cafeteria efforts. The FarmLab could also play a supportive role in the design and implementation of new ag education programs, as well as coordinating new SAE's and potential career paths for existing programs.

Innovation and Incubation Lab

A "lab" designed to demonstrate new crops and practices, incubate new programs, and prototype value-added enterprises on a small scale would represent an almost unprecedented resource for catalyzing ag innovation and entrepreneurship. Guided by 'boots on the ground' research and collaboration with local partners, such a lab could support initiatives to improve food access and pursue a wide array of grant opportunities. Shouldering the burdens of networking, assessment, funding, and especially the risk of failure would help attract producer participation to harvest relevant, critical feedback throughout exploratory processes.

Value Chain Facilitation

The FarmLab could play a practical role in connecting the dots throughout the local food value chain. By using accumulated experience to consistently assess, align, develop and leverage available capacities, the FarmLab could proceed to test and implement new food localization strategies intended to increase local production, create new jobs, and access new markets. Facilitating connections between producers and school food services, as a specific market with unique infrastructure and logistical challenges, could provide an initial strategic focus for FarmLab operations.

4.3 General Recommendations

Based on the findings of this Phase 1 report and the corresponding appendices, we offer the following recommendations for Phase 2 of the FarmLab study, in addition to the directions and functions outlined above:

1. Maintain the currently proposed FarmLab mission and aims.
2. Move forward with Phase 2, adopting 'farm to school' as a primary focus for the aforementioned functions.
3. Prioritize *facilitation* over *facilities* at early stages of development; the most important element in initial FarmLab activities is likely to be knowledgeable and committed staff who are motivated and capable of building relationships with current stakeholders and potential partners, while observing their needs and assets and developing a deeper understanding and appreciation of the current context.
4. The potential benefit of access to physical infrastructure alongside a fully operational farm would of course give the FarmLab an advantage in pursuing its aims; however, any new facilities would ideally serve multiple potential uses (e.g., equipment storage, parking for mobile storage, limited aggregation and distribution activities). As a lab, it should follow an incubator approach: starting small with prototypes, valuing feedback from failures as well as successes, and scaling up only what works, thereby modeling processes for broader innovation and intervention.

As an attempt to extend the accessibility and utility of this report, the presentation is somewhat unorthodox with a large volume of appendices supporting the current report and going beyond the current scope. The intent is to reinforce the ideas presented here, provide a direct bridge into Phase 2, and establish reference materials for future related work. Readers are encouraged to review these appendices to better understand the current education and agriculture contexts in Elkhart County.

Lastly, as this Phase 1 assessment sought to frame the current context for the FarmLab project and identify significant gaps in education and agriculture, it brought important questions to the forefront. These questions, most of which are addressed in depth in this report, are provided in Appendix I. They are intended to inform and guide further development of the FarmLab project and related local food and ag initiatives in Elkhart County.

LIST of APPENDICES

- Appendix A – Elkhart County Ag Overview: surveys available data relevant to local consumers and producers to identify and understand ag trends.
- Appendix B – Amish Influence: considers the potential influence of area Amish populations on local agriculture and the unique capacities they bring.
- Appendix C – Ag Education Background: provides an overview of ag education resources supporting current programs that could benefit other schools.
- Appendix D – Food Services in Elkhart County Schools: summarizes current local food interest and procurement efforts among school food services in Elkhart County.
- Appendix E - Food and Ag Literacy: addresses two frameworks for helping consumers make more informed, healthful decisions about the foods they consume.
- Appendix F – Agricultural Innovation: discusses current innovations in agriculture relevant to local needs, capacities, and potential relevant to possible FarmLab operations.
- Appendix G – Food Localization as Economic Development: examines various studies supporting food localization as a means of economic development.
- Appendix H – Farm to School: describes the concept and application of farm-to-school programs.
- Appendix I – Questions: Offers guiding questions for the FarmLab to consider as it moves forward.
- Appendix J – Interview Summaries: Summaries of the interviews conducted by the project consultants with leaders from key constituencies.
- Appendix K – Bibliography

LIST OF INTERVIEWS

- **Wa-Nee Community Schools:**
  - Amy Beer, Ag Educator

  Fairfield Community Schools:
  - Kraig Bowers, Ag Educator
- **Elkhart Community Schools:**
  - Bill Kovach, Executive Director - Office of Career and Alumni Success
  - Cyndy Keeling, Ag Educator
- **Merry Lea Environmental Learning Center**
  - Luke Gascho, Executive Director
  - Jon Zirkle, Sustainable Farm Manager
- **Middlebury Community Schools:**
  - Rachel Vallance, Assistant Principal
- **Purdue Extension Elkhart County**
  - Mary Ann Lienhart-Cross, County Extension Director
  - Jeff Burbrink, Extension Educator
- **Tillers International**
  - Lorie Evesque, Education Coordinator
  - Pete Robertson, Farm Incubator Manager
- **Goshen Community Schools:**
  - Diane Woodworth, Superintendent
  - Tami Ummel, Assistant Superintendent
  - Alan Metcalfe, Assistant Superintendent
- **Baugo Community Schools:**
  - Jim Dubois, Superintendent
  - Carol Deak, Director of Learning and of Food Services
- **Elkhart County Farm Bureau**
  - Dwight Moudy
- **Horizon Education Alliance**
  - Brian Wiebe
  - Jason Harrison
- **Middlebury Community Schools:**
  - Delores Merrick, Director of Special Projects
  - Sara Eash, Food Services Director
- **Wa-Nee Community Schools:**
  - Betty Hahn, Food Services Director

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