Agriculture Exhibition Front-End Report: Visitor Interviews

Saint Louis Science Center

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Executive Summary

This report summarizes front-end research with visitors on the topic of agriculture, done by the Research & Evaluation Department of the Saint Louis Science Center. This front-end study was designed to inform the content and other development teams connected to the Science Center agriculture exhibit. The main objective of the research was to gather information from Science Center visitors about their familiarity and interest in the topic, their experiences with farming, their top of mind knowledge about technology and sustainability as it relates to agriculture, and their expectations for an outdoor exhibit based around agriculture. This was done to help guide the teams in developing a unique experience for visitors both familiar and unfamiliar with farming. Demographic information, such as age, residency, and gender, was also collected to allow for comparisons between subgroups.

Over the course of seven days between November 21 - December 2, 2012, 56 visitors were interviewed in various locations throughout the Science Center. Both adults and children were interviewed, with proper permissions asked prior to the interview. Interviews contained both open-ended questions and closed-ended items which asked for visitors to provide a rating. This allowed for the possibility of quantitative comparisons based on ratings and for qualitative opportunities for visitors to apply their own knowledge and opinions on certain topics related to agriculture. During interviews with younger children, particular words and phrasing was adapted and different follow-up questions were used in order to assist them to know what was being asked. A targeted sampling method was used to gather information from a representative sample of visitors. However, there is a higher percentage of tourists than what is normal for the Science Center visitor distribution.

Key Findings and Recommendations

- More than 90% of respondents had been to a farm at some point in their life and most rate themselves as somewhat familiar with farming. Visitors bring prior knowledge to this topic mostly about plants, animals, and farmers, which affects what they expect in an agricultural exhibit. Tractors, combines, cows, and corn are the typical things people imagine when they think of farming and agriculture.
    - Use known prior knowledge to put the "unexpected" in a familiar context. Allowing visitors to explore other farming methods or new ways to think about existing processes may help to make connections outside of what they expect as the "normal farm."
- A high percentage of respondents mentioned plants and animals when they talk about farming and agriculture. Those less familiar with farming think more about animals on farms, while those more familiar with farming mentioned more plants than animals when thinking about visits to farms.
    - Having animals and plants represented in the exhibit is important to visitors.
- Food was not top of mind for respondents when they thought about farming or agriculture.
    - Make connections between food and other farming products to the processes by which they are developed or created.
- Genetic engineering is a large component of the technology used in agriculture from the perspective of most adult respondents. There are both positive and negatives to this topic in visitors' responses.
    - Approach genetic engineering through the lens of science. There are visitors with highly emotional and informed stances on both the pro and con sides of the argument. There are also visitors who just know that it has impacted our society and should be explored.
- When exploring sustainability in the exhibit, there must be a clear voice as to what the Science Center means by sustainability. Children do not know this word, although some link it to "stability." Adults have varied interpretations of the word.
    - Consider the use of words that have clearer meanings in order to explore the different areas of sustainability.

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Background

In order to inform decisions related to the development of a new, outdoor agriculture exhibit experience, the Science Center's Research & Evaluation Department conducted front-end interviews with a sampling of general public visitors. Questions addressed familiarity with the terms "agriculture," "farming," and "sustainability"; interest in agriculture; previous experiences with farms; whether respondents live or have ever lived in urban, suburban, or rural areas; familiarity with the use of technology in agriculture; interest in working with scientists; expectations for an exhibition about agriculture; and certain visitor demographics. A copy of the interview questions is included in ***Appendix A***.

Methodology

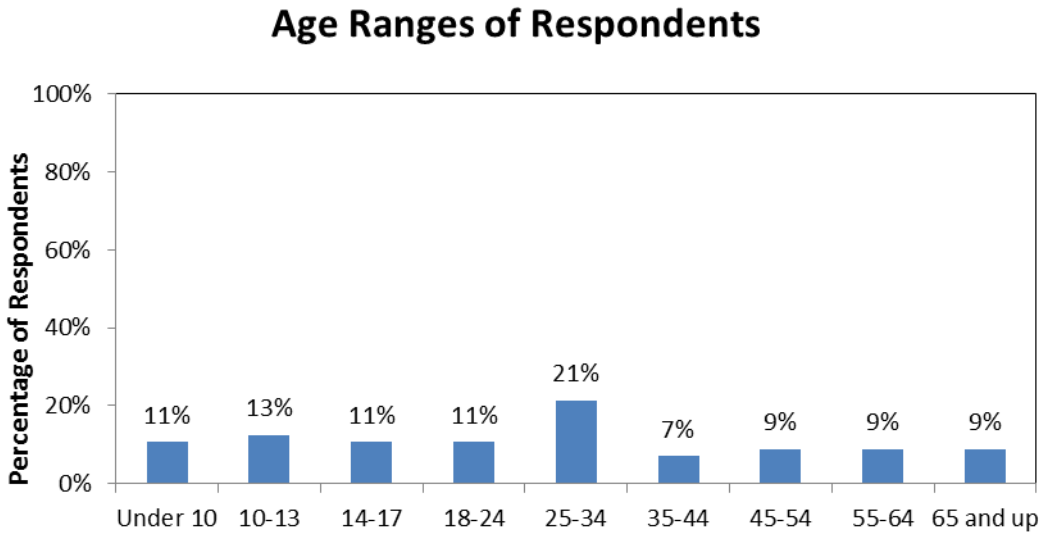
On November 23-25, 30 and December 1-2, 2012, a total of 56 interviews were conducted with Science Center visitors by Research & Evaluation staff. A purposeful sampling approach was used in order to ensure that a representative sampling of visitors was included in this study. The interview included both open-ended and closed-ended items. For adult participants, interviewers obtained verbal consent from the participants. For child participants, interviewers obtained verbal consent from parents and verbal assent from children. Parents were able to observe the interview process. No video or audio recordings were made of the interviews. Interviews were conducted throughout the Science Center's public spaces and lasted an average of nine minutes.

Characteristics of the Sample

On the whole, the sample is generally representative of the Science Center's general public audience; however the following subgroups may be slightly underrepresented in this sample: those age 35-44, those age 45-54, and local residents.

- Gender: 54% female; 46% male
- Science Center Membership Status: 93% Non-Members; 7% Members
- Age: 66% adults; 34% children

Figure 1: Age Ranges of Respondents



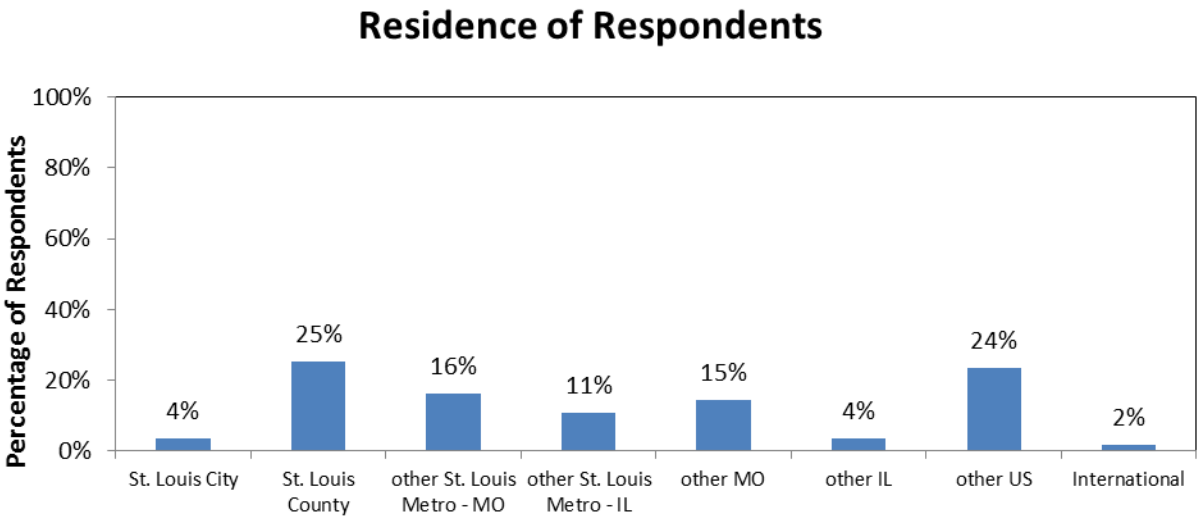
- Highest level of education completed: (includes respondents currently in high school)

Table 1: Education Level of Respondents

Level Completed	Percentage of Respondents
Elementary	16%
High school	12%
Some college/Associate degree	28%
Undergraduate degree	21%
Advanced degree	23%

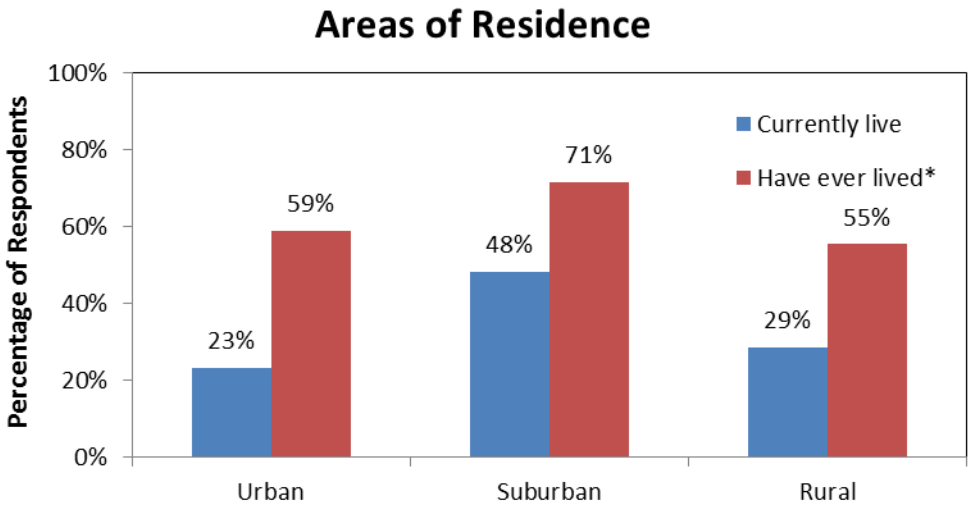
- Residence (based on ZIP code data): 56.4% locals; 42.9% tourists

Figure 2: Residence of Respondents



- Residential area (based on respondent self-report):

Figure 3: Area of Residents of Respondents



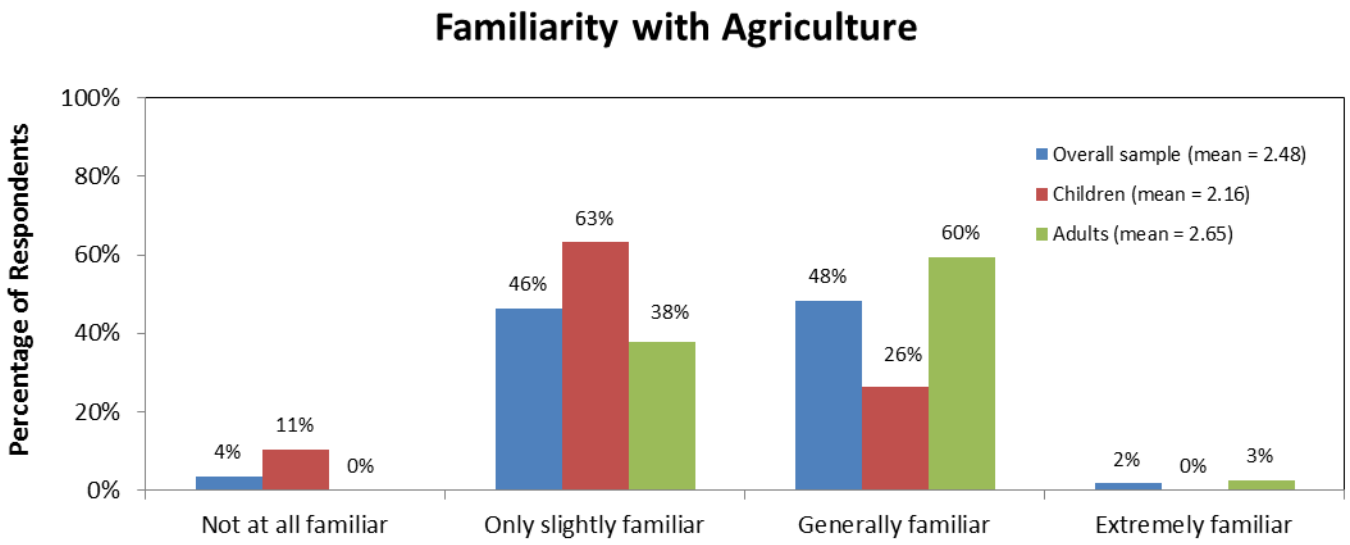
*** Multiple responses possible. Total exceeds 100%.**

Familiarity and Experiences with Farming/Agriculture

To get a better understanding of Science Center visitor familiarity and experience with agriculture, visitors were asked to rate their familiarity with agriculture on a four-point scale (where 1 was "not at all familiar" and 4 was "extremely familiar") and then asked to describe their experiences with farming.

While 91% of respondents reported having been to a farm at least once, self-reported familiarity with agriculture was slightly lower than mid-range. Most respondents rated themselves as *only slightly familiar* or *generally familiar* with the topic of agriculture, an average of 2.48 out of 4. Adults expressed greater familiarity with agriculture (2.65 out of 4) than children (2.16 out of 4). As seen in ***figure 4*** adults are more likely to have a higher level of familiarity with agriculture than children.

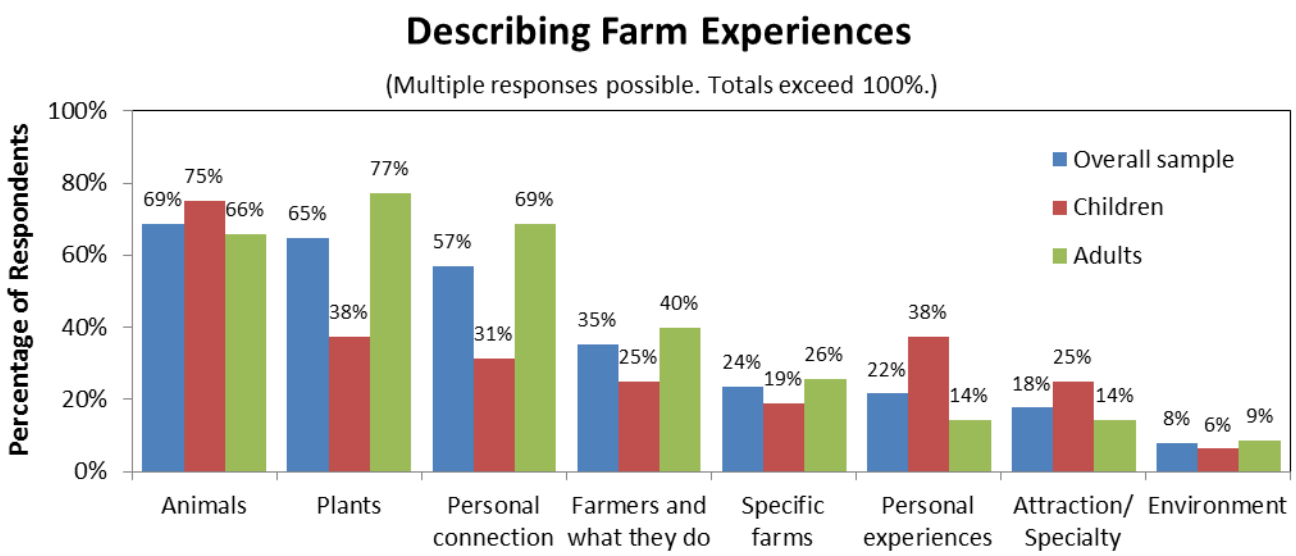
Figure 4: Familiarity with Agriculture, Ratings



Experience with farming ranged from a class field trip to growing up and working on farms. Even a majority of those who grew up on a farm or had family with a farm (57% of respondents) did not see themselves as experts on the subject. Of the respondents with a personal connection to a farm, 52% rated themselves *only slightly familiar*; 45% rated themselves as *generally familiar*.

When describing their visits to farms, respondents mentioned a variety of topics. A high percentage (72%) of respondents who were *generally familiar* with agriculture mentioned plants in the description of their experiences, whereas 58% of those *only slightly familiar* with agriculture mentioned a plant. Animals, however, were mentioned by a higher percentage (75%) of respondents *only slightly familiar* with farming, while 64% of *generally familiar* respondents mentioned animals. A total of 24% of respondents *generally familiar* with agriculture described themselves participating in some aspect of farming, including feeding animals, picking crops, and/or working the land; this is higher than in any other familiarity category.

Figure 5: Visitor Descriptions of Farm Experiences



Comparisons by Age

As seen in ***figure 5,*** children are more likely to talk about *animals* (75%) than *plants* (38%), when they describe their experiences with farming. "We looked at goats and horses, pigs, chickens [farmers] they take care of animals, plant stuff to eat and things" (Male, under age 10). This pattern was different for adults, 66% of whom mentioned an *animal* when they spoke about their experiences and 77% of whom mentioned *plants*. Adults were also better able to articulate *personal connections* they had with farming (69% of adults compared to 31% of children). "My grandparents had a farm in Ohio - grew corn and used to have chickens and pigs. They had a vegetable farm that I had to weed" (Female, age 35-44). A higher percentage of children (38%) than adults (14%) mentioned their *personal experiences* with farming "I got to take care of the horses, feed them, cleaned and washed them" (Female, 14-17). Adults, however, were more likely to mention *what farmers do* (40%) than children (25%) in their farming experience descriptions.

Comparisons by Residence

Local residents from St. Louis City and County were just as likely to have a *personal connection* with farming as both tourists and local residents from surrounding St. Louis Metro area counties (57% of respondents within each regional category). Local county residents were more likely to discuss *what farmers do* in their description of their farm visits (43%) than St. Louis City and County residents (29%), or tourists (36%).

When looking at the types of places respondents have lived in or currently live in rather than their proximity to St. Louis, it is quite clear that current rural area respondents are more likely to have a *personal connection* with farming (71% of rural area respondents). Those who have never lived in a rural area were less likely to have a *personal connection* (39%). Respondents who have lived in a rural area were more likely to describe *what farmers do* when describing their farming experiences (43%) than those who have not lived in a rural area (26%). Respondents who have lived in a rural area are more likely to mention *plants* in their experiences with farming (79%) than those who have not lived in a rural area (48%). A high percentage of residents from urban areas (75%) mentioned *animals* in their description. Additionally, 58% of urban residents mentioned *plants*. Of those who have never lived in a rural area, 35% described their experience with farms as going to an *attraction/specialty farm*, such as a Christmas tree farm or Purina Farms. "My sister has a Christmas tree farm, so I guess other than agriculture; it's in Texas. I've taken the kids to farm related events, like hay rides, [and to] feed animals" (Male, age 45-54). Only 4% of respondents who have lived in a rural area mentioned an experience with an *attraction/specialty farm*, presumably because they had other experiences with farms and this area of farming was not top of mind.

"Agriculture" vs "Farming"

A large question for this evaluation was what people, with their inherently different experiences with farming, think about when they hear the words "agriculture" and "farming" and what, if any, differentiation they make between the words.

Figure 6: Visitor Thoughts on "Agriculture"

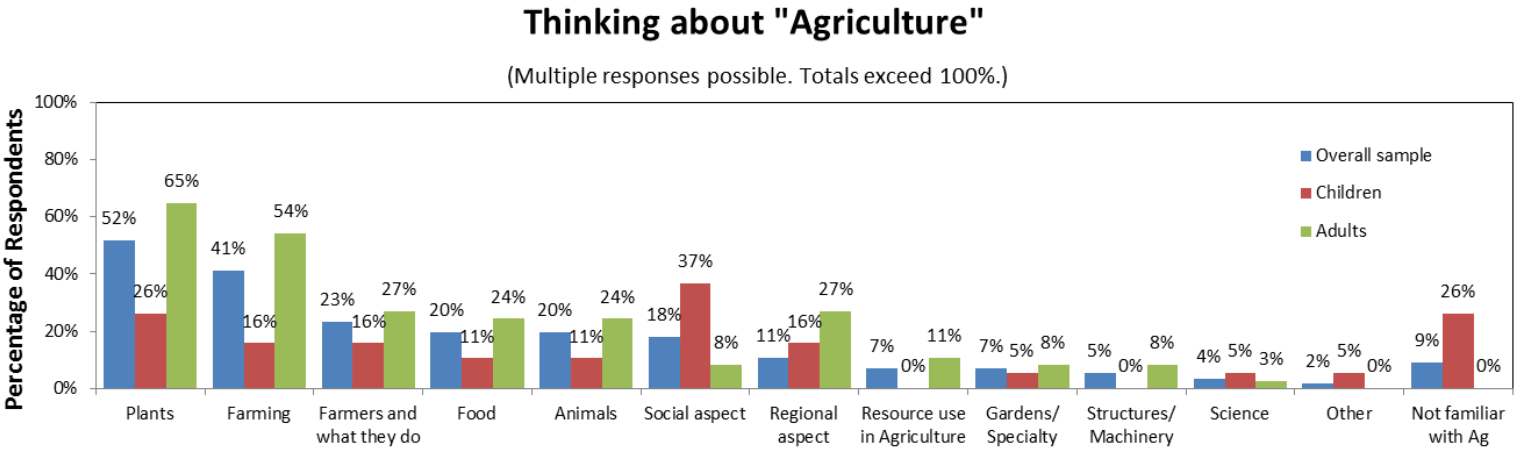
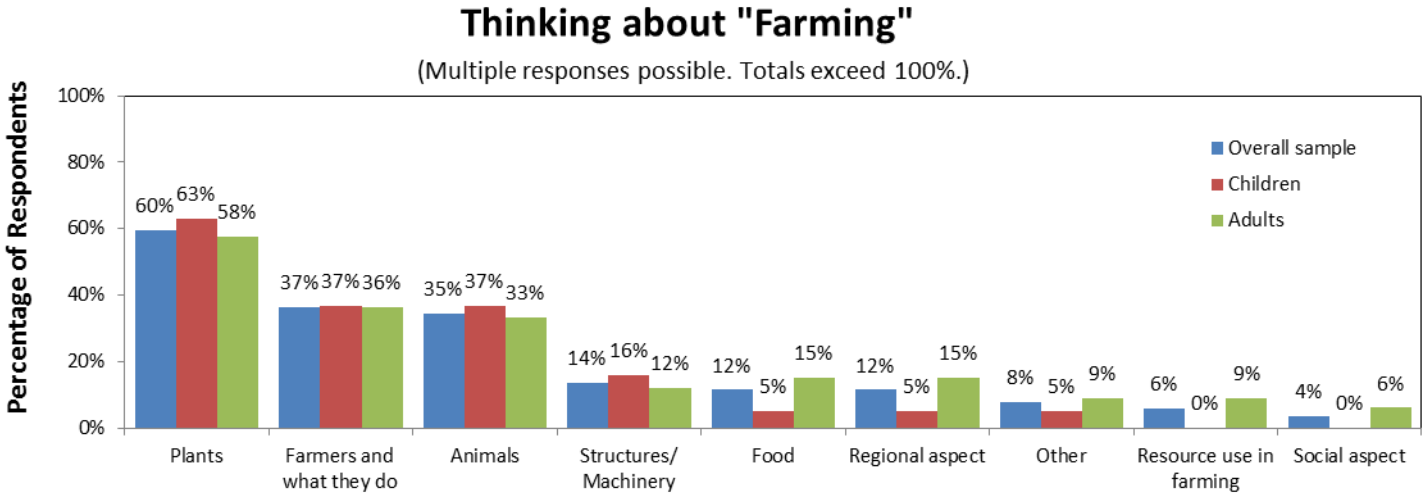


Figure 7: Visitor Thoughts on "Farming"



Comparisons by Age

More than half of the respondents mentioned *plants* when they thought of "agriculture." As seen in ***figure 6***, 52% of the overall sample and 65% of adults mentioned at least one type of *plant* when speaking about "agriculture." *Farming* was the second most mentioned topic when thinking about "agriculture," with 41% of the overall sample and 54% of adults connecting *farming* to "agriculture." A total of 56% of people who rated themselves as *generally familiar* with agriculture associated it with *farming*.

For children, "agriculture" was not a familiar term; 26% of children (mostly those under age 10) were not familiar with it at all and 37% provided a meaning that was more social-oriented because of the component of the word "culture." For one girl, age 10-13, "agriculture" was "History, old history." Even with less familiarity with "agriculture," *plants* were mentioned by 26% of children. Other topics that were top of mind for at least 20% of visitors were connections to *food*, *animals*, and *farmers and what they do*. For each of these three categories, adults were more likely to mention them than children when thinking about "agriculture."

Children are more familiar with the term "farming" than with "agriculture." For them, *plants*, *animals*, and *farmers and they do* are the most associated categories. As seen in ***figure 7***, children mention *plants* and *animals* slightly more than adults. Children ages 9 and younger largely connected *animals* to "farming" (83%). "I really like them [farms]. I like to see a lot of animals" (Female, under 10). Children between 10-13, were the opposite; 86% of these pre-teen respondents mentioned *plants* and none of them mentioned *animals* when asked about "farming." Teens from 14-17 mimicked the distribution of most adult groups, mentioning both *plants* and *animals*, but still being more likely to mention *plants* (68%) than *animals* (33%). Two other notable differences between adults and children were observed. Adult respondents were more likely to connect *food* to "farming" (15% of adults compared to 5% of children). "I guess farming is more of the producing of food" (Male, 55-64). *Structures/machinery* was less associated with "agriculture" than with "farming" for both adults and children, but no children mentioned them when discussing "*agriculture.*"

Comparisons by Gender

Female respondents were more likely to associate "agriculture" with *food* (23%) and/or *plants* (57%) than male respondents (15% and 46% respectively). Male respondents were slightly more likely to associate "agriculture" with *animals* (23%) and a *region* of the country (15%) than were female respondents (17% and 7% respectively). Similar percentages of males and females (7% and 8% respectively) noted a connection between *gardens/specialty farms* and "agriculture." This topic as well as a connection between *science* and "agriculture" were not mentioned which discussing "farming."

Unlike with "agriculture," a slightly higher percentage of male respondents (16%) than female respondents (7%) associated "farming" with *food*. A higher percentage of female respondents also associated "farming" with a *regional aspect* (18%) than male respondents (4%). "Countryside, usually rural crops" (Female, age 65 or older). More male respondents (60%) also mentioned *plants* when thinking about "farming" than they did with "agriculture" (46%).

Comparisons by Residence

Respondents who currently live in an urban area were less likely (39%) than suburban or rural residents (both 56%) to mention *plants* when thinking about "agriculture." Current rural residents were the only subgroup that mentioned *structures/machinery* (19%). One woman, age 25-34, thought of "Farming grain, combines and tractors" when she thought of "agriculture." Rural residents also were more likely to connect "agriculture" to *farmers and what they do,* 38% compared to 19% and lower for other residents. *Structures/machinery* and the *use of resources* did not come up when discussing "agriculture" with children.

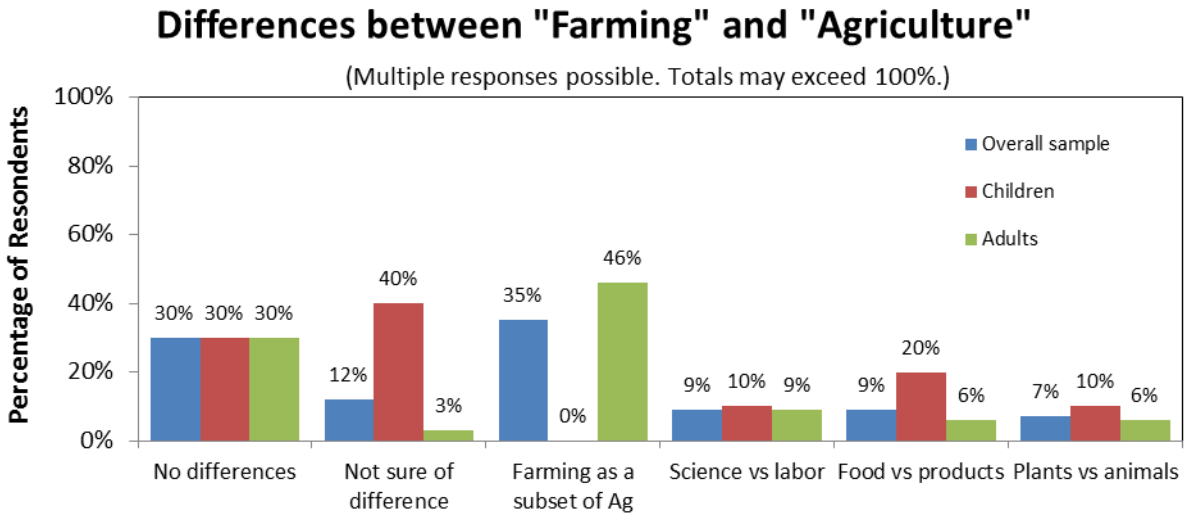
Current rural residents were more likely to mention *plants* (79%) than those from urban (46%) or suburban (54%) areas when thinking about "farming." For one current rural resident, age 18-24, "agriculture" meant "Farming, plants… like corn, wheat, that kind of thing." Rural residents were also more likely to mention a *structure/machinery* component (36%) than the other two categories (both under 10%). A similar pattern is seen with *animals*; respondents who have lived in a rural area were more likely to mention an *animal* (39%) than respondents who have not (28%).

For St. Louis City and County residents, *animals* were not top of mind when thinking about "agriculture"; 0% of St. Louis City and County residents mentioned *animals*. When thinking about "farming," however, 32% of St. Louis City and County residents mentioned *animals*. In their "agriculture" responses, 33% of locals from surrounding Metro area counties mentioned *animals;* that level rose to 50% of local Metro area county residents when thinking about "farming." "[For farming, I] Think of growing corn, vegetables and raising animals. … Agriculture is more growing cotton; farming is raising animals or growing things to eat" (Female, 14-17).

Differences between Farming and Agriculture

To look further at differences in meanings, visitors were also asked if they thought there were any differences between "agriculture" and "farming." The highest percentage of adults who responded to this question (46%) suggested that *farming was a subset of agriculture*. "Agriculture is more general and farming is specific farming like wheat farms or cattle farming" (Male, 25-34). Children, if they knew the term "agriculture," were more likely to say that the words were different, however they were *not sure* of that difference. Similar percentages of respondents in both groups (30%) stated that there were *no differences* between the terms. Other differences that were mentioned was that "agriculture" was associated more with *science*, while "farming" was associated with some aspect of implementation or *labor*. "Agriculture is more involved scientifically, farming is more labor involved" (Female, 18-24). Respondents who rated themselves as *generally familiar* with "agriculture" were more likely than respondents in other familiarity levels to state that *farming is a subset of agriculture* (33%). This distinction is also supported by a higher percentage of respondents who have lived in rural areas describing *farming as a subset of agriculture* (39%) compared to respondents who have not lived in a rural area (12%). For 7% of respondents, one term was associated with *plants*, and another with *animals*. "Agriculture is more about livestock, farming is more about crops" (Male, 65 or above). Similarly, one of the terms (agriculture or farming) was associated with the production of *food* while the other was not. In both cases these terms switched depending on the respondent. See ***Appendix D*** for respondent comments.

Figure 8: Differences between "Farming" and "Agriculture"



Keywords used by Visitors

Keywords can help us when looking further into what is top of mind when thinking about farming/agriculture and visitor experiences with farming. The comments from the first three open ended questions (see ***Appendix A*** for the list of questions asked) were further analyzed by animal, plant, and what farmers do keywords. These three questions, "What do you think of when you hear the word Agriculture?", "What do you think of when you think of Farming?", and "Tell us about your visit to a farm. What do you think farmers do?" were collectively analyzed by keywords because they relate as a unit to visitors' thoughts and experiences with agriculture and farming. Other questions were not combined for a keyword analysis because they addressed respondents' opinions and suggestions.

Animal Keywords

A total of 86% of respondents mentioned an animal when thinking about farming/agriculture and their experiences with farms. As seen in ***table 2***, *cows* were mentioned by the majority of respondents (54%), which is higher than any other mention of a specific animal. *Pigs* were second, mentioned by 29% of respondents. The term *animals* was mentioned by 46% of respondents; 60% of children used this term, which is a higher percentage than adult respondents (39%). No child under 10 used the term *livestock*, although a few in the 10-13 age range did. Respondents with higher interest (*Interested* or *Extremely Interested)* in farming mentioned *cows* in at least one of their responses about farming and agriculture; 60% of those *Interested* in farming and 80% of those *Extremely Interested* in farming mentioned *cows*. For one man, 65 or older, "farming" was associated with "having cows and milking cows…"

Table 2: Animal Keywords

Animal Keywords	Overall Sample
Cows	54%
Animals	46%
Pigs/Hogs	29%
Chickens	23%
Horses	21%
Livestock	21%
Dairy	15%
Sheep	8%
Farm Animals	6%
Turkeys	4%
Goats	4%
Eggs	2%
Dogs/cats	2%
Rabbits	2%
Buffalo	2%
Fish	2%

(Multiple responses possible. Total exceeds 100%.)

Plant Keywords

A total of 88% of respondents associated a plant with agriculture/farming or their experiences on a farm. This is very similar to the percentage who mentioned animals, although respondents mentioned a larger variety of plants than animals. As seen in ***table 3***, *corn* was mentioned by almost three-quarters of the respondents and *crops* were mentioned by more than half. "Cornfields… agriculture is more broad, [it's] about all of the ground not just corn" (Female 18-24). *Plants* were mentioned by 43% of child respondents, whereas just 20% of adults mentioned *plants*. Other notable terms for adults were c*rops* (60% of adults), *beans* (34%), and *wheat* (37%). *Wheat* was not mentioned by anyone 17 and younger. Although *corn* was mentioned by approximately 75% of both people who have and who have not lived in a rural area, 30% of those who have not lived in a rural area mentioned *vegetables*, compared to 11% of those who have lived in a rural area. For one suburban resident, age 55-64, "agriculture" was associated with "Vegetation - vegetables, corn, wheat, barley, squash, pumpkins, lima beans, okra, onions... I love vegetables!" Similarly, respondents who had lived in a rural area were more likely to mention *wheat* (32%), than those who had not (19%).

Table 3: Plants Keywords

Plants Keywords	Overall Sample
Corn	73%
Crops	57%
Beans -soy	29%
Plants	27%
Wheat	27%
Vegetables	18%
Grain	14%
Hay (bales)	12%
Apple tree-apples	10%
Gardens	8%
Potatoes	8%
Cotton	6%
Christmas trees	6%
Tomatoes	6%
Watermelon/melon	4%
Lettuce	4%
Carrots	4%
Strawberries	4%
Pumpkins	4%
Barley/malt	4%
Coffee	2%
Silage	2%

Plants, cont'd.	Overall Sample
Cash crop	2%
Flowers	2%
Oranges	2%
Green beans	2%
Pear trees (pears)	2%
Sugar cane	2%
Rice	2%
Green Onions	2%
Peppers	2%
Wine	2%
Blueberries	2%
Orchards	2%
Spinach	2%
Squash	2%
Lima beans	2%
Okra	2%
Onions	2%
Peas	2%
Alfalfa	2%
Seeds	2%
Forests	2%
Fruit	2%

(Multiple responses possible. Total exceeds 100%.)

Farmers and What They Do Keywords

As seen in ***table 4***, respondents used a variety of terms to describe what farmers do. These ranged from specific tasks such as *feeding* animals to a generalized duty of *providing* for the world. One female respondent, age 25-34, stated farming is "growing food, or everything we need to sustain life." *Growing* and *raising* were the two terms respondents used most often; however children under 10 did not use either word. A total of 75% of the children under age 10 used *taking care* and *feeding* to describe what farmers did. For one boy, under age 10, "[Farmers] walk and take care of the animals." This suggests that for this age group, animals are top of mind when they think of farming/agriculture. *Raising* was largely used by older adults, age 55 and above. More than 75% of this group used this term. Current suburban residents were more likely to describe *land* in association with farming. A higher percentage of suburban residents mentioned *land* (30%) than urban and rural residents (both 15%). For one suburban respondent, "agriculture is keeping the land right." A total of 30% of respondents who had ever lived in a suburban area mentioned *land*; residents who had not lived in a suburban area did not mention *land*.

Table 4: Farmers and What They Do Keywords

Farmers and What They Do Keywords	Overall Sample
Growing	41%
Raising	36%
Feeding	27%
Planting	25%
Land focus	23%
General work, working hard, labor	18%
Providing food/sustain - multi level	18%
Taking Care	16%
Harvesting/production of a crop/combining	16%
Milking, other chores	11%
Preparing/planning/developing	9%
Business - (sell)	9%
Plowing	9%
Using pesticides, chemicals	5%
Leisure	2%

(Multiple responses possible. Total exceeds 100%.)

Food as a Keyword

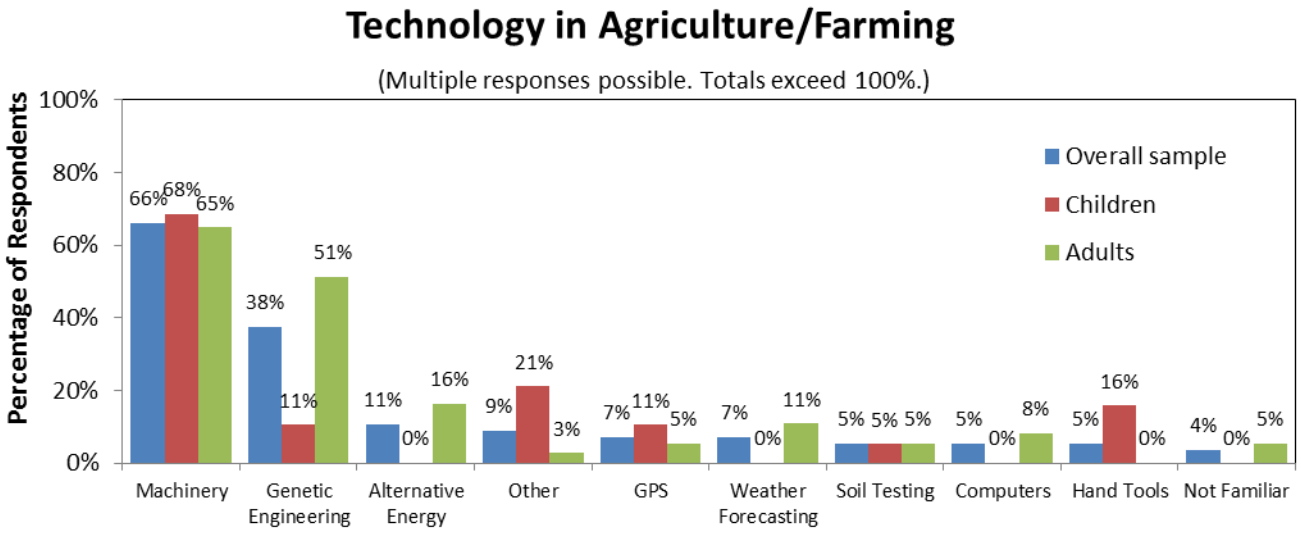
Food was also looked at as a keyword. Of the 56 respondents, only 38% of them mentioned food when thinking about farming/agriculture or their experiences with farms. Children were less likely to mention food in their responses (23%) than adults (43%). No child between 10-13 mentioned food and only 33% of children under 10 mentioned food. Most adults above age 35 associated food with farming/agriculture. A slightly higher percentage of female respondents (40%) mentioned food than male respondents (35%). Mentioning food also differed by residential area. A higher percentage of urban residents mentioned food (46%) than suburban (33%) or rural residents (38%). Respondents were more likely to mention food (46%) if they have ever lived in an urban area than if they had only lived in a suburban and/or rural area (26%).

Technology

Visitors are most aware of basic machinery when they think of the technology associated with agriculture/farming; 66% of the overall sample (with similar percentages of child and adult respondents) mentioned *machinery.* Within this category, tractors or combines were mentioned by 96% of the respondents (43% of the overall sample). Responses in the *machinery* category also included references to water and irrigation systems, which were made by 13% of all respondents. A higher percentage of female respondents (73%) mentioned *machinery* than male respondents (58%). Female respondents also mentioned *computers* in technology, while males did not. A total of 16% of adult respondents mentioned *alternative energies* related to agriculture, while no child respondents mentioned *alternative energy*. Children mentioned *hand tools* when they thought of different technologies being used in farming (16%); adults did not mention *hand tools* as a technology utilized in farming.

Slightly more than half of adult respondents mentioned *genetic engineering*; this topic only came up with 11% of children. "Combines, grains and seeds with bioengineering if that's the word, the recent court ruling of life being able to be patented. That's a big impact on our society..." (Male, 25-34). Male respondents were more likely to mention *genetic engineering* (46%) than females (30%). Respondents who had once lived in an urban or suburban area were more likely to mention *genetic engineering* (46% urban residents, 45% suburban residents) than if they had not (26% urban residents, 19% suburban residents). Comments on *genetic engineering* had both positive and negative tones, sometimes about the same issue. Of those respondents who mentioned *genetic engineering* (38% of total respondents) 71% expressed a positive or neutral tone toward *genetic engineering* and 29% expressed a negative tone. Current rural residents were more likely to provide a comment with a negative tone (40%) than suburban (25%) or urban (0%) residents. See visitor responses in ***Appendix F***.

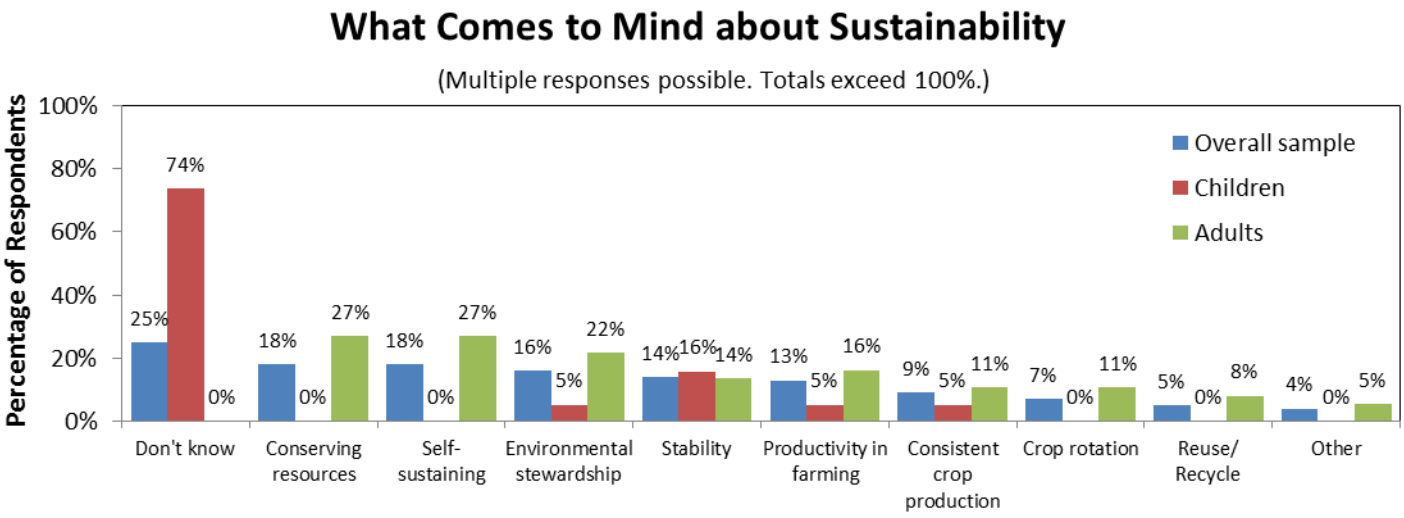
Figure 9: Technology Associated with Agriculture/Farming



Sustainability

"Sustainability," when known, had a variety of meanings to the respondents. A high percentage of children (74%) did not know this word, while adults were generally able to provide a response to the question. For children who recognized the word, the most common meaning they derived pertained to *stability*. For one girl, age 14-17, sustainability meant "Being able to maintain something." For adults, *conserving resources* was on the top of their mind when thinking about "sustainability," as was *environmental stewardship*. "Sustainability," for a 45-54 male respondent, was "Achieving the requirements of daily living - food and otherwise - without depleting the world's resources..." The notion that "sustainability" also meant to *self-sustain*, "When it can sustain on its own" (Female, 25-34) came up for 27% of adult respondents. For respondents "sustainability" also had different scales; responses ranged from sustaining the world to sustaining yourself. Respondents who have lived in a rural area were more likely to think of *conserving resources* than those who have not (23% compared to 12%). They also mentioned aspects of *environmental stewardship* more than non-rural residents (23% compared to 8%). See ***Appendix G*** for visitor responses.

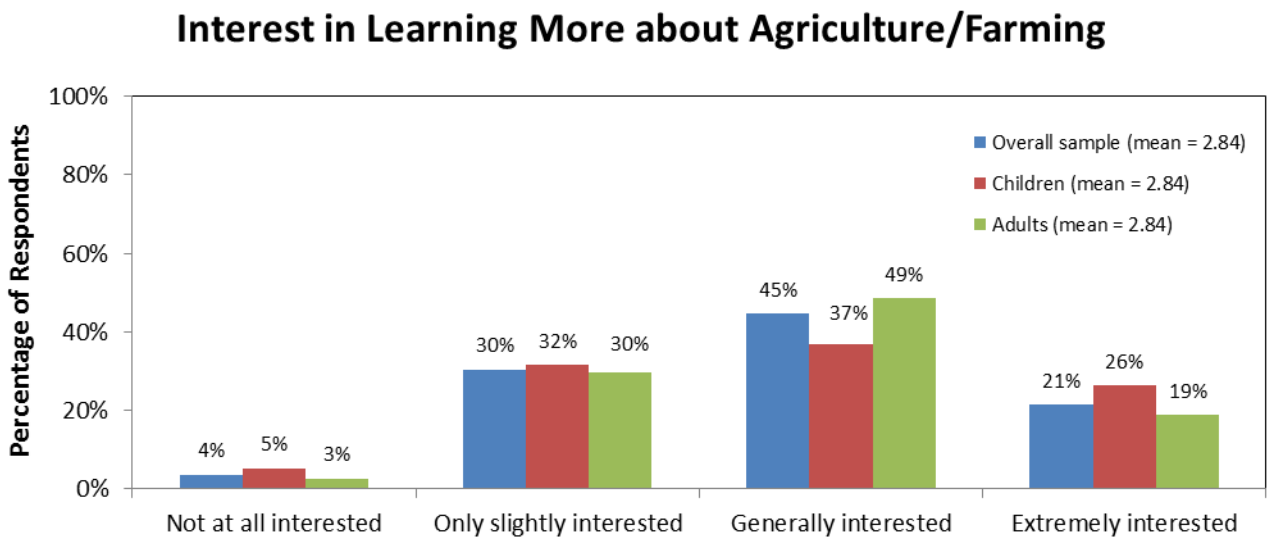
Figure 10: What Comes to Mind about Sustainability



Interest in Agriculture

To gauge interest levels in an agriculture exhibit, visitors were asked to rate their interest in learning more about agriculture/farming on a four-point scale, where 1 was "not at all interested" and 4 was "extremely interested." On average, respondents' interest was slightly better than mid-range (2.84 out of 4). Both children and adults also averaged a 2.84 interest level out of 4.

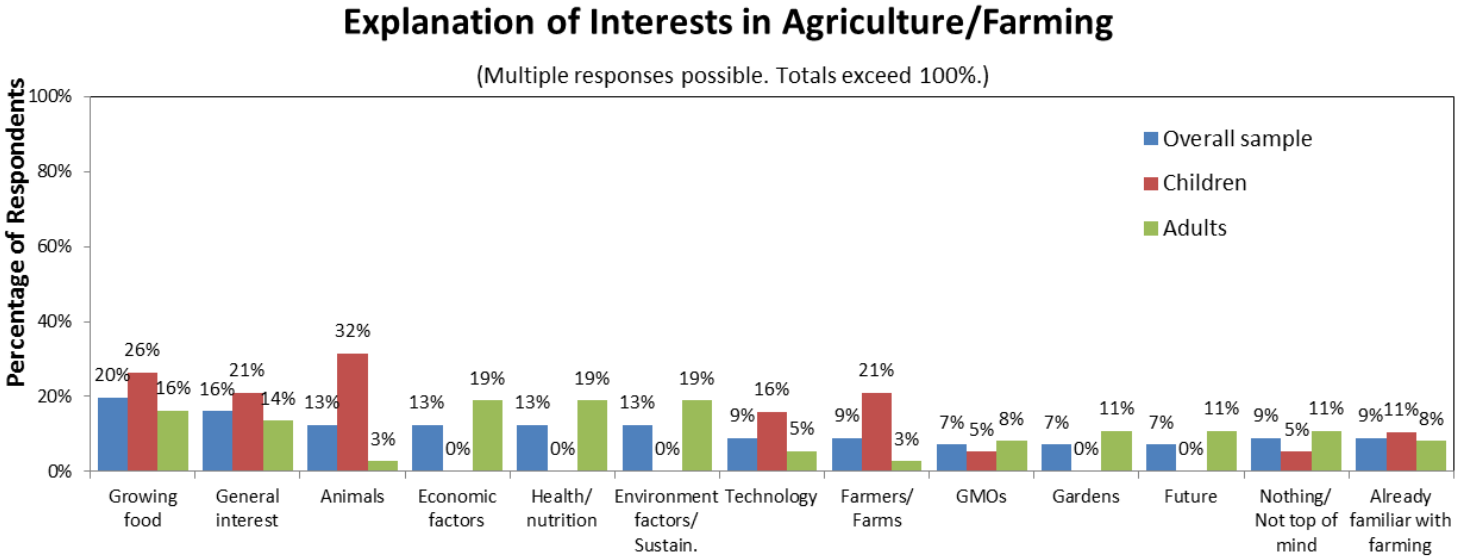
Figure 11: Interest in Agriculture/Farming, ratings



After visitors rated their interest in agriculture/farming, they were asked to explain their ratings and describe a main area of interest within the topic. As seen in ***figure 12*** children are interested in *animals* (32% of child respondents), *growing food* (26%), *technology* used on farms (16%), and *farmers and what happens on farms* (21%). Adults, although interested in these same topics, were more interested in other topics. The *economic* and *environmental factors*, as well as *health and nutrition* concerns of agriculture were of interest to 19% of adult respondents; all three of these topics were not mentioned by children. Overall, female respondents were more likely to be interested in the *economic factors* related to agriculture (17%) than male respondents (8%). *Gardens* and the *future* impacts of agriculture were not mentioned by children.

Respondents who rated themselves as *less familiar* with agriculture were more interested in *growing food* (27%) than those that rated themselves *generally familiar* (11%). Respondents *generally familiar* with agriculture were more likely to say they were interested in the *economic factors* (22%) than other categories. If respondents had lived in an urban area at some point, they were more likely to be interested in *growing food* (24%) compared to 13% of respondents who had not lived in an urban area. Current rural residents were less interested in *growing food* (13%) compared to urban and suburban residents (both above 22%). Current suburban residents were more likely to be interested in the *environmental factors* of agriculture (22%) than respondents in other residential areas (0% of current urban residents; 6% of current rural residents). Similarly, agriculture was more likely to not be of interest/top of mind for urban residents (31%) than for respondents in other areas (4% of suburban residents, and 0% of rural residents).

Figure 12: Interests in Agriculture/Farming



Interest in Working with Scientists

Beyond their interest in agriculture, visitors were also asked to rate their interest in working with scientists in a citizen science capacity to do various types of research both at the Science Center and off-site. Ratings were given on a four-point scale, where 1 was "not at all interested" and 4 was "extremely interested." Respondents were asked about three types of citizen science activities, including collecting plant samples and other data off-site and bringing them back to the Science Center; planting collected samples on Science Center property; and working with scientists in a lab onsite to do research on the sample specimens. The mean ratings for all three questions were mid-range. On average, respondents provided a slightly higher score to planting collected samples (2.77 out of 4). This was rated by both children (3.32 out of 4) and adults (2.49 out of 4). Working in a lab had the lowest overall score (2.46 out of 4).

Younger children, under 13 years old, provided higher average ratings for their interest in collecting plant samples than respondents in other age categories; children under 10 averaged 3.00, children 10-13 averaged 3.29. Other groups were all below 2.60 out of 4. In general, children were more interested in working with scientists than adults, as shown in ***figures 13 – 16***. Female respondents were also more likely to be interested in working with scientists than male respondents. See ***table 5*** below for average ratings by respondents.

Table 5: Interest Ratings for Working with Scientists

Activity	Overall Mean Interest	Children	Adults	Males	Females
Working with scientists to collect plant samples in nature	**2.55**	2.84	2.41	2.31	2.46
Working with scientists to plant collected samples at the Science Center	**2.77**	3.32	2.49	2.46	3.03
Working with scientists to research the samples in the lab	**2.46**	2.84	2.27	2.42	2.50

Figure 13: Interest in Collecting Plants Samples

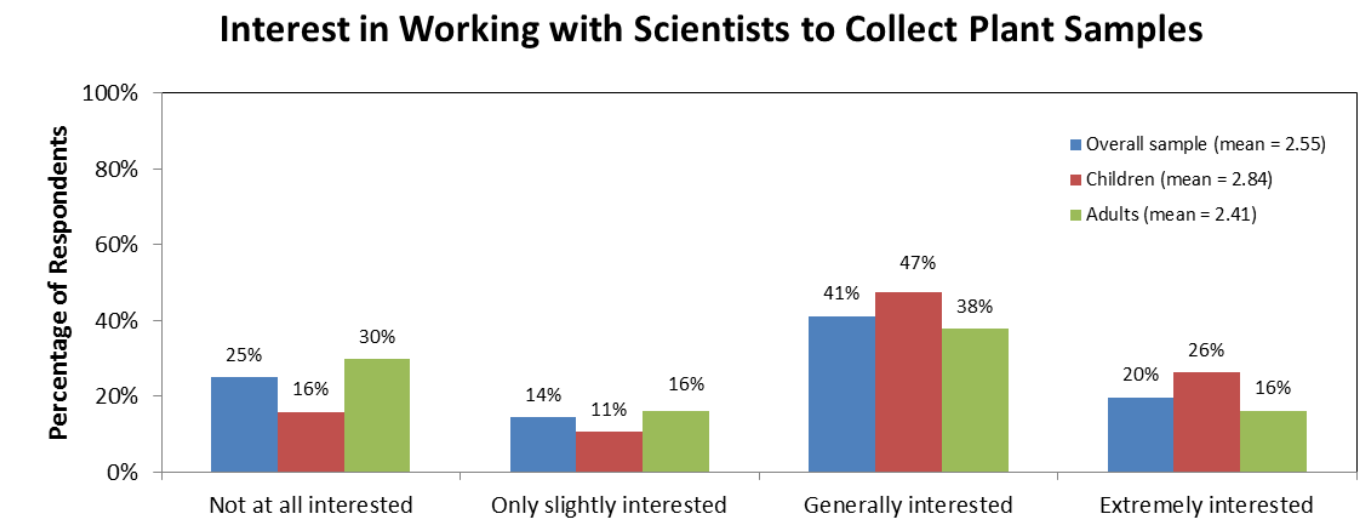


Figure 14: Interest in Planting Collected Samples

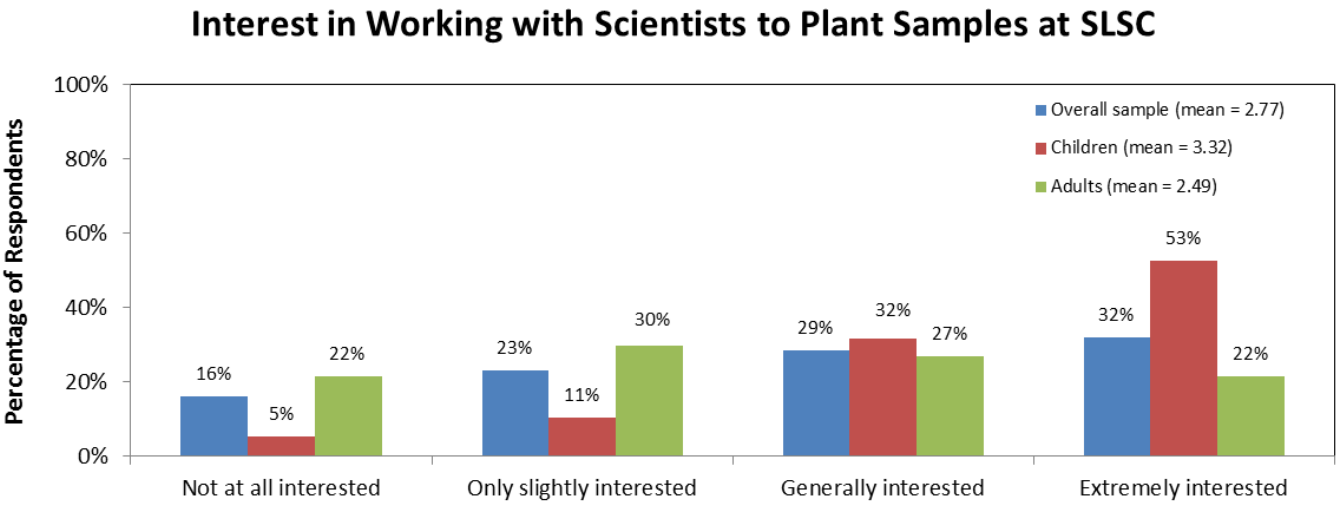


Figure 15: Interest in Doing Lab Research on Food Crops

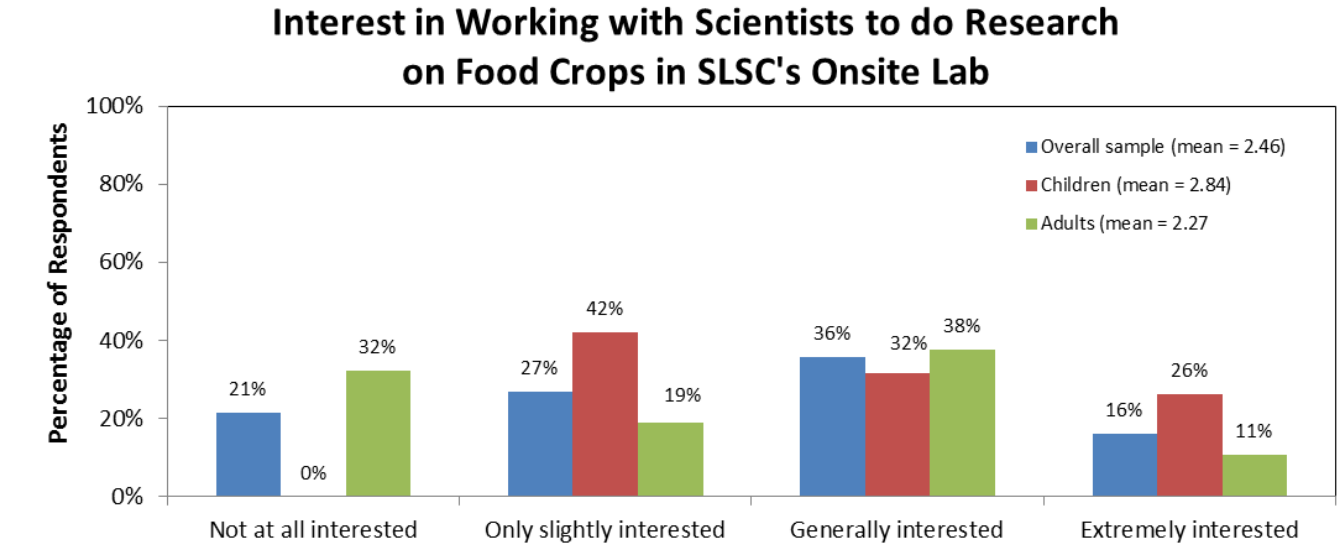
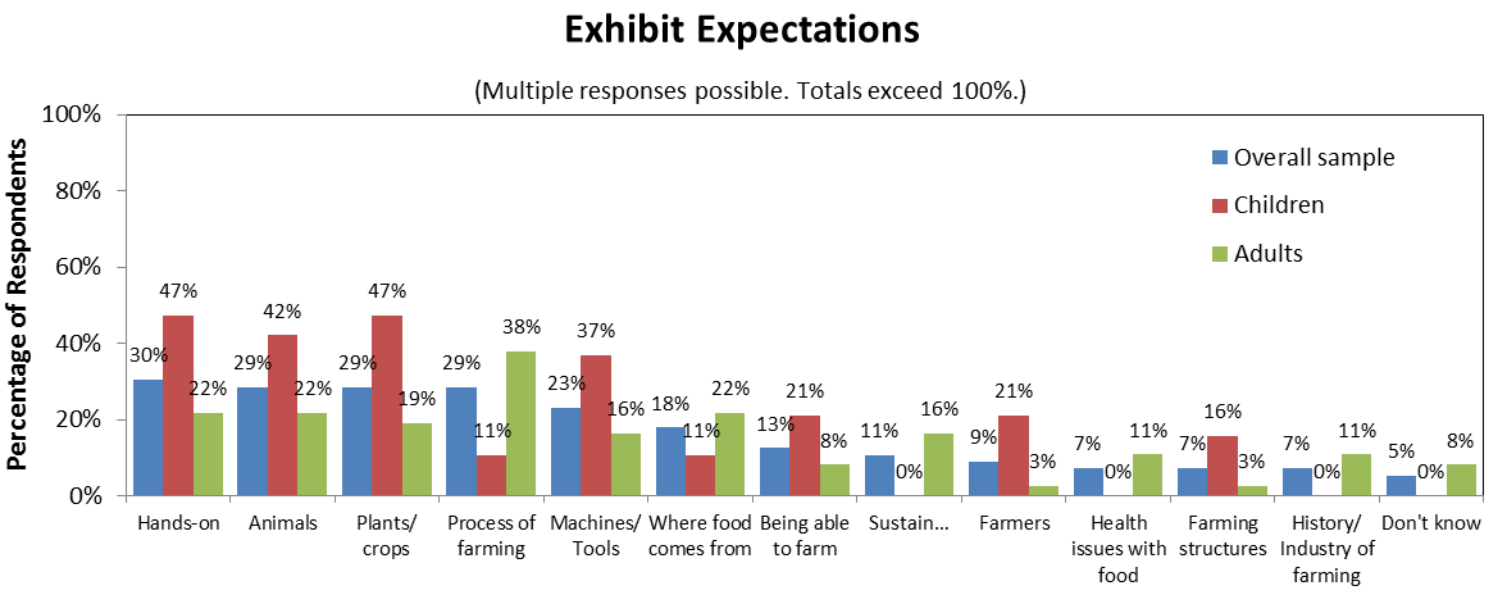


Exhibit Expectations

Visitors were asked what they would expect to see and do in an outdoor exhibit based on agriculture/farming. See ***Appendix I*** for all visitor comments organized by their primary category. *Animals* were a high priority for children, with 42% of them mentioning they expected to see *animals*. "I expect to see a lot of animals and to feed them. I'd like to feed the animals" (Male, under age 10). Child respondents also expect to see some types of *plants/crops* (47%) as well as have a *hands-on* experience (47%). *Machines* such as tractors or combines were expected by 37% of children. "I'd want to learn about where the food and supplies that we use every day comes from. I'd like to see some big tractors and be able to get inside of them" (Male, 14-17). Male respondents were more likely to mention *machinery/tools* in their expectations (31%) compared to female respondents (17%). Some children (21%) expected to see *farmers*, possibly as guides to help interpret the experiences. "I'd want to see what a farmer does in their daily life, harvesting. Maybe have a person from a farm that tells you what they are used to doing" (Female, 10-13). Female respondents were more likely to expect to have *an opportunity to farm* in the exhibit (20% of female respondents compared to 4% of male respondents).

Looking at respondents by residence, current urban residents were more likely to expect to learn about and explore the *processes of farming* (46%) than suburban (26%) or rural residents (19%). St. Louis City and County residents were more likely to expect to see the *process of farming* in the exhibit (56%) than residents from other Metro area counties (0%) or tourists (25%). Respondents less familiar with agriculture expected to see how farms work and what happens there. Respondents who have never lived in a rural area want to know more about *farmers* and to possibly see them in the exhibit; 20% of non-rural residents mentioned *farmers*, while respondents who had lived in a rural area did not mention *farmers*. Non-rural respondents were also more likely to expect *plants* (36%) than rural residents (23%).

Figure 16: Visitor Expectations for the Exhibit



Conclusions and Recommendations

Through this front-end study, Science Center visitors have shared their knowledge of and experiences with farming and agriculture. They have expressed both positive and negative opinions on topics within agriculture, and what they are interested in seeing and doing in the exhibit. For the most part, variability in responses to many of the questions aligned with the age group, adult or child, of the respondent. Residential area of the respondent also played a factor in responses. Differences among gender were fewer than in other subgroups.

Expectations of the Visitor

- More than 90% of respondents had been to a farm at some point in their life and most rate themselves as somewhat familiar with farming. Visitors bring prior knowledge to this topic mostly about plants, animals, and farmers, which affects what they expect in an agricultural exhibit.
    - Use known prior knowledge to put the "unexpected" in a familiar context. Allowing visitors to explore other farming methods or new ways to think about existing processes may help to make connections outside of what they expect as the "normal farm."
- Tractors, combines, cows, and corn are the typical things people imagine when they think of farming and agriculture.
    - Approach the visitor experience, particularly for children, through familiar and concrete images of farming.
- Children and those who are less familiar with farming want to know more about what happens on a farm.
    - Give a face to the farm by having farmers (real or not) present. Respondents less familiar with farming would like the opportunity to speak with them or see what they do.
- Female respondents were even more likely to want to farm while in the exhibit.
    - Include opportunities for all visitors to experience digging, planting, and other "farming" tasks.

Farming and Agriculture

- The term "agriculture," though associated w/ "farming" by most respondents, proved to be a difficult word for younger children.
- Visitors who thought there was a difference between farming and agriculture mostly thought farming was a subset of agriculture and that agriculture was a broader term with more topics and subject areas.
- Gardens are more associated with agriculture than farming.
- Rural residents (who know about farmers and are more likely to be personally connected to farming) are less likely to want to see farmers in the exhibit. Urban residents do not see themselves as connected to farmers and want to understand what farmers do. They are more likely to not have the topic on their radar.
    - For urban residents in particular, it will be important to make the connection to farming and their daily lives.
- Adults were able to think about their experiences with farming beyond their personal (hands-on) experiences and think about the tasks farmers do. Children, however, focused on the tasks they got to help with while on their visit.
    - Provide memorable hands-on experiences for children that allow them to participate in a role that a farmer would do. By providing a direct experience for the children they can continue to form connections between farmers and themselves.

Plants and Animals

- A high percentage of respondents mentioned plants and animals when they talk about farming and agriculture. Those less familiar with farming (children and urban populations) think more about animals on farms, while those more familiar with farming (rural residents and adults) mentioned more plants than animals when thinking about visits to farms.
    - Both plants and animals need to be addressed in the exhibit.
- Of all animals, cows were mentioned most often. The plant mentioned most often was corn.
    - Both cows and corn need to be addressed in the exhibit to some degree because of their heavy association with farming.
- Wheat was not mentioned by children within the first three open-ended questions.
    - Address other plants, such as wheat, and animals that are less well-known for their connections to farming.
    - The exhibit should introduce grains other than corn that are important to agriculture.
- Children, particularly younger children, prefer the term *plants* to *crops,* although they are familiar with *crops*.

Food

- Food was not top of mind for respondents when they thought about farming or agriculture.
    - Make connections between food and other farming products and the processes by which they are developed or created.
- Growing food is of interest to urban populations.
    - Beyond exploring this topic in the exhibit, design programs that will introduce visitors to the processes of growing food.

Land and Resources

- Land and environmental factors were of interest to adults and suburban populations.
    - Adult programming, such as a lecture series, would be a good way to extend the reach of messages explored in the exhibit.

Technology

- Technology related to agriculture mostly focused on machinery and tools used on the farm. Over 60% of both adult and child groups mentioned basic machinery.
    - Have big machines, such as tractors and combines, represented in the exhibit.
- Children mentioned the use of hand tools as a technology used in farming while adults did not.
    - Smaller hand-held tools should also be included for young learners to use.
- When asked about technologies used in farming, irrigation systems and water were mentioned by only 13% of respondents.
    - Connect water to technology for visitors who may not think about the technological infrastructure involved.
- Genetic engineering is a large component of the technology used in agriculture from the perspective of most adult respondents. There are both positive and negatives to this topic in visitors' responses.
    - Approach genetic engineering through the lens of science. There are visitors with highly emotional and informed stances on both the pro and con sides of the argument. There are also visitors who just know that it has impacted our society and should be explored.

- Several respondents mentioned Monsanto and Sodexo as companies that work on modifying seeds. Respondents did not mention other instances of scientists or other agriculture-related professions.
    - Integrate people who work in agriculture, but are not farmers, into the exhibit, which would help to make personal connections. It would also be a way for people to look beyond the name of a company.

Sustainability

- When exploring sustainability in the exhibit, there must be a clear voice as to what the Science Center means by sustainability. Children do not know this word, although some link it to "stability." Adults have varied interpretations of the word.
    - Sustainability will need to be put in context. Using it as a term that covers a range of topics may be unclear to visitors.
    - Consider the use of terms with clearer meanings in order to explore the different areas of sustainability.

Appendices

Questions asked during the visitor interviews are attached in Appendix A. Parentheses include prompts for interviewers to follow; follow-up questions are indicated in italics. Appendices B – I contain the comments, organized by category, from each open-ended question. Code categories and their definitions are listed in a table above the corresponding comments. In many cases, comments have been coded into multiple categories, in which case the comments have been organized by and presented under their primary code category. Brackets [ ] indicate interviewer's notes.

Appendix A: Visitor Interview Questions

1. How would you rate your familiarity with the topic of agriculture?
❑ 1 – Not familiar at all ❑ 2 – Only slightly familiar ❑ 3 – Generally familiar ❑ 4 – Extremely familiar

2a. When you hear the word "agriculture" what comes to mind for you?

2b. When you hear the word "farming" what comes to mind for you? *Do you see a difference between the word farming and the word agriculture? What would that be?*

3. Have you ever been to a farm? Y N
If yes, "tell me about it" – (type of farm – size, type of crop(s) or livestock raised, length of exposure – one visit or multiple visits) *If no, or as follow-up* – "*What do you think farmers do?*"

4. Which of the following types of areas have you lived in, at any point in your life? (check all that apply)
❑ Urban ❑ Suburban ❑ Rural
5. How would you describe the area where you currently live? (check one)
❑ Urban ❑ Suburban ❑ Rural

6. Please describe any ways you have heard about technology being used in agriculture/farming. *How do you think farmers use technology, what kinds of technology do you think is used in farming?*

7. When you hear the word "sustainability" what comes to mind for you?

8a. How would you rate your interest in learning about topics related to agriculture?

1 – Not at all interested 2 – Only slightly interested 3 – Generally Interested 4 – Extremely interested

8b. What is the reason for your interest? What would be your main area of interest? Is there anything specific you want to know about farming?

9a. What would you expect to see and do in an exhibit on agriculture at the Science Center?

9b. How interested would you be to work with scientists to:

- go out in nature and collect plant samples
  1 – Not at all interested 2 – Only slightly interested 3 – Generally Interested 4 – Extremely interested
- plant the samples that have been collected, at the Science Center
  1 – Not at all interested 2 – Only slightly interested 3 – Generally Interested 4 – Extremely interested
- do research on food crops with scientists in our lab onsite
  1 – Not at all interested 2 – Only slightly interested 3 – Generally Interested 4 – Extremely interested

10. Please stop me when I get to the category that includes your age:
❑ Under 10 ❑ 10-13 ❑ 14-17 ❑ 18-24 ❑ 25-34 ❑ 35-44 ❑ 45-54 ❑ 55-64 ❑ 65+

12. Which of the following describes the highest level of education you have completed (adults only):
❑ 1 - Elementary ❑ 2 - High School ❑ 3 - Some College/Associate's Degree
❑ 4 - Undergraduate Degree ❑ 5 - Advanced Degree
13. What is your profession?
14. Are you currently a Saint Louis Science Center Member? Y N

15. Zip code_____ [Observed] Gender: M F

Appendix B: What comes to mind when you think of agriculture?

Code Category	Code Definition
Not familiar with agriculture	Not familiar with the word agriculture.
Social aspect to agriculture	Reference to historical, economic or social aspect of agriculture.
Food	Reference to food as part of agriculture.
Plants	Generic or specific reference to plants or crops.
Animals	Generic or specific reference to animals or livestock.
Farming	Reference to farming or farms.
Structures/Machinery	Reference to structures or machinery as something that comes to mind when thinking about agriculture.
Resource use in agriculture	Generic or specific reference to use of natural resources.
Farmers and what they do	Reference to the actions of farmers/what farmers do.
Regional aspect	Associating agriculture with a region of the country. Not including specific references to where the interviewee lives.
Gardens/Specialty	Generic or specific reference to gardens, farmers markets, or other specialty farms.
Science	Reference to science as part of agriculture.
Other	Code for other less referenced associations with agriculture – Monsanto for example.

Not familiar with agriculture

Don't know it
No (2)
Not sure
[Hadn't heard the word before - mom prompted quickly that “it's like farming- Dad is a farmer”]

Social aspect to agriculture

History, old history
History, not sure
People's culture I guess.
It's kind of the culture of farming.
Culture?
My farm - was my great grandfather's homestead from 1893. Still have it in the family. Raise mostly rocks [joke], have cattle; a neighbor runs it. Lot of family history.
Social studies, stuff my teacher talks about.
College, I got my degree in agriculture.

Animals

The study of farm animals [what type?] cows. Being on a farm, seeing how the crops are grown. Providing for our food supply. It's not just farming anymore; it's a delicate technique of making sure your crops are growing.
Cows, farm fields, John Deere
Live stock, farming, things like that

Appendix B, continued.

Food

Food - [what kind of food?] vegetables, apples, grains
I think of food that in the ground.
Food, natural resources, farming and economy

Plants

Farming [what kind], dairy, plants
Farming of crops, some raising of animals
Farming grain, combines and tractors
[Respondent initially asked: What do you mean my agriculture? There's a lot, flowers, corn, animals...]
Plowing the land, planting the seeds, corn, lettuce, hay, different vegetables
Vegetation - vegetables, corn, wheat, barley, squash, pumpkins, lima beans, okra, onions... I love vegetables!
Plants, the development of crops and food
Plants
Plants science
Plants, science

Farming

Farming - just all of farming
Farms, regular farms
Farming, general farming we're from northern Missouri, a small town in MO, there's general farming.
Farming, growing crops
Farming [what kind], soy beans, wheat, corn
Farming, plants, [what kind] like corn, wheat, that kind of thing
Farming [what kind] food and grain
Farming [what kind], grain and dairy
Farming [what kind] corn and wheat
Farming, which includes pigs and cows and growing grains to feed them as well as growing stuff to feed us.
[Types of crops?] Potatoes, corn, spinach - vegetables and fruit
Think of farming [what kind], I don't know country farming, corn hay
Farming [what kind], corn, beans, things like that
Farming, I live in IL so I see lots of corn fields.
Farming, [what kind] corn fields, personal farming but mostly corn fields.
Farming, Texas A&M, [what kind] Corn wheat grain barley malt
Crops, farming, food, [what kind] Corn, soybeans
Farming, erosion. Supplemental irrigation, stuff like that
Outdoor gardens, farming

Resource use in agriculture

Just soil, plants, air, water
Land

Appendix B, continued.

Farmers and what they do

I'm from IL so corn, soybeans, farmers, tractors, cows

Farmers, cows, animals, gardens

Farmers, plants, growing food

Not the most exciting thing. It's the growing of crops for feeding people and for industrial use. Takes place internationally.

Raising animals and stuff, I'm in an Ag class and we learn about different cuts of meat, and on Fridays we go to an Ag center.

Regional aspect to agriculture

Kansas [what about Kansas reminds you?], flat and has a lot of farming

Gardens/Specialty farms

I'm from San Diego so farmers markets and community gardens.

Other

First thing that comes to mind is Monsanto, think of cotton and corn, crops really.

Appendix C: What comes to mind when you think of farming?

Code Category	Code Definition
Food	Reference to food as part of farming.
Plants	Generic or specific reference to plants or crops.
Animals	Generic or specific reference to animals or livestock.
Structures/Machinery	Reference to structures or machinery as something that comes to mind when thinking about farming.
Resource use in farming	Generic or specific reference to use of natural resources.
Farmers and what they do	Reference to the actions of farmers/what farmers do.
Regional aspect	Associating agriculture with a region of the country. Not including specific references to where the interviewee lives.
Social aspect	Reference to historical, social, or economic aspect of farming.
Other	Code for other less referenced associations with farming, including: Monsanto and agriculture.

Plants

Farming is growing livestock and crops
Cattle, growing crops
Usually cattle, pigs, we also have corn, bean that are around us
Crops, all, the whole thing.
Crops mostly
Crops, corn, soy beans, plants, stuff, that's grown
Corn soy beans, Monsanto, rakes
Think of growing corn, vegetables and raising animals
Wheat, corn, soybeans, dairy, pork
Corn, watermelon, hay, tomatoes, potatoes
Corn, barn, silos
Cornfields
Planting, crops, corn
Plants, vegetables
Plant stuff, feed animals
Wife was raised on a farm that grew soybeans, corn, wheat. Can't raise much in the Ozarks
I also think of plants, horticultural aspect to farming. My dad has a farm.
What type of farming? First thing I think of is coffee farming; I'm reading this book right now.
Fields and stuff

Animals

My brother in law and sister are famers they have a dairy farm.
There are so many things, farming crops, farm animals
Food and livestock
Animals, cows, turkeys, horses, pigs
Pigs and cows
Having cows and milking cows, growing wheat and corn, horses and sheep, crops in general are mostly corn wheat and soy beans.
Tractors and cows
Animals
They walk and take care of the animals.
I really like them [farms]. I like to see a lot of animals.

Appendix C, continued.

Food

Feeding the world, USA dominance
Food, corn

Structures/Machinery

Thought about a tractor, corn, food
Tractors, plows
John Deere
Barns, the smell of cow manure. [What happens on a farm?] You grow crops.

Resource uses in Farming

Sustainability
Lots of land, lots of work

Farmers and what they do

I think of milking a cow, feeding pigs, chickens- collecting their eggs
Crops and stuff, planting and growing crops
Growing stuff, Agriculture is more wheat, grains and feeding animals; farming is vegetables, stuff you eat.
More living off the land, raising animals, growing food or everything we need to sustain life [no difference].
Farmers. [What do they do?] Plants and crops [what kind?] Corns, potatoes

Regional aspect

Countryside, usually rural crops
Iowa
Home, I'm from Wisconsin
Raising of crops, I'm from Louisiana and we have sugar cane, cotton, rice, and soybeans, here I know you have corn
Generally think about states in the west, there's not a whole lot of farming in the west.
I'm not from the States, but there are 2 kinds - pastoral and farms for...; In the UK, it's a lot of small family farms... I include wine in agriculture. It's a very traditional way of life. In the UK there's a tension between farm and city. It's a hard way of life, demanding on time, seasonal.

Social aspect

Economy, fields, wheat, corn, crops in general

Other

I think of agriculture

Appendix D: Differences between farming and agriculture.

Code Category	Code Definition
N/A	Didn't ask question to interviewee.
No differences	Stating no difference between two words.
Not sure of differences	Stating there is a difference but not sure of the difference.
Farm as subset of farming	Difference is that farming is a subset of agriculture, including references to specialty farms.
Science vs labor	Difference is that one of the words, usually agriculture, relates more towards science and technological innovations, and the other, usually farming, is working the land or referencing labor processes.
Plants vs animals	Difference is that one of the words, usually agriculture, is about plants and crops, and the other, usually farming, is about animals.
Food vs product	Difference is that one of the words indicates food-related and the other is non-food related.

Farm as a subset of Agriculture

Agriculture combines all that [all of farming]

Farming may be a subset of agriculture.

Agriculture is a big umbrella word for animals and food and other areas, forests, and nature and development.

Yes agriculture is more of an all together environmental interpretation of what farming does.

Agriculture is more than just farming, it encompasses the environment.

Yes, ag encompasses more than just farming.

Agriculture is more of the using of land; farming is different types of farming, air farming, dairy.

Agriculture is more expansive than farming.

Others may not think that it's indifferent, but agriculture is more general and farming is specific farming like wheat farms or cattle farming.

Agriculture is more inclusive, includes more things, I guess more of the production of corn, and they have ag schools.

Farming has to do with a career, Agriculture is meant as the environment as a whole and the global community.

Yes, agriculture is more broad - about all of the ground not just corn.

Yes, there's a difference. Agriculture is more industrialized.

[Words are] kind of interchangeable, but agriculture is more broad spectrum than just farming. Agriculture would include things like fish farms and Christmas tree farms. Farming is plowing the dirt; agriculture is more all-encompassing.

Science vs labor

[Differ] slightly; agriculture is more involved scientifically, farming is more labor involved.

Yes farming is growing crops for what you need and agriculture is keeping the land right.

Agriculture is much more of what I think of as the groundwork, I think of Monsanto and modifying and working the crops, Farming I think of as the result, actually growing and harvesting the crops.

Yes, agriculture is the science behind farming, and farming is the actual growing process.

Appendix D, continued.

Plants vs Animals

Probably is different, agriculture is more growing cotton; farming is raising animals and growing things to eat.
Agriculture is more about livestock, farming is more about crops.
Farming is more like raising animals; agriculture is more like combining and harvesting.

Food

Agriculture is more wheat, grains and feeding animals, farming is vegetables, stuff you eat.
Agriculture is more food than farming.
I guess farming is more of the producing of food.

No differences

Agriculture and farm the same thing
Words are interchangeable
Same category as agriculture
Same thing
Not really, I would like to find out the difference between the business side of it and what smaller kids think of it.
Not really (2)
Doesn't have a difference
[No difference] (4)

Not sure

Agriculture is more to do with culture and the past; farming is farming, not sure
I'm sure there's a technical difference, but I don't know what
Not sure but agriculture is [related] to farm
Agriculture seems different, now sure how
A little diff, not sure

Appendix E: Tell me about your visit to a farm.

Code Category	Code Definition
Plants	Reference of plant or crops during their visit.
Animals	Reference to animals or livestock during their visit, includes dairy.
Specific farms	Reference to a difference between the farm they visited and what they consider as a farm.
Attraction/Specialty	Reference of farms that are also attractions or seasonal specialties.
Personal connection	Reference to connection of farms through family, friends, or where they live. Also includes reference to working on a farm. In-depth connection.
Personal experiences	Reference to getting to do things as a visitor on a farm or doing farm-related activities off of a farm. This includes feeding animals or picking plants/working land during their visit. This is different than stating what they have done as a farmer, working on a farm or while they lived on a farm.
Environment	Reference to the environment of a farm, e.g. smell.
Farmers and what they do	Reference to the actions of farmers/what farmers do. This includes the interviewee working on a farm, actions performed while living on a farm, or mentioning friends or family as performing actions as farmers. Does not include personal experiences.

Plants

Strawberry farm two times, no livestock, my sister lives in Oxnard but they have strawberry fields in San Diego too.

Cattle, beans, and corn [at this farm I liked] feeding cattle

Vegetables, lived in Kentucky for a while and our neighbors had a farm, lived on a house that was adjoining the farm. [Farmers] raise crops, they grew mostly veggies, beans, corn, little of everything.

Animals

Many farms, animals, dairy farm

Dairy farms. [Farmers] grow crops, raise livestock

It was different, I am a city girl, and when I got dirty I was a little squeamish. It was a dairy farm, my friend owns the farm and I bottle fed the babies and I hooked up the milk things [suctions cups].

I remember animals. [Farmers] raise crops, take care of livestock

Livestock, cows, chickens, pigs. That was 22 years ago.

We looked at goats and horses, pigs, chickens. [Farmers] they take care of animals, plant stuff to eat and things.

My uncle lives in Louisiana on a farm, with horses and things, cows. I've never been to an actual crops producing farm, oh and I went to his neighbor's farm and he grew watermelon, I guess that's more of a hobby farm than a producing farm.

[Farmers]They take care of animals and feed them, and make sure they're feeling good. I help my grandpa feed the animals [her grandpa lives on a farm, "what does papa do," mom asks] He's building another house.

Appendix E, continued.

Specific types of farms

Not to a real one, a small one, one of those places where they make hay or I guess they grow it not make it, I guess that's a real one, they basically grow grass and bundle it into hay.

Not to a food farm, it was a horse farm; I got to take care of the horses, feed them, cleaned and washed them.

In the UK - a pastoral, dairy farm with sheep and cattle. Can see animals up-close, which is easy to do in the UK, walking paths run through private farms, kids can see animals and pet sheep. Get to see what it's like, breathe strange smells. Haven't seen any industrial farms. [What do farmers do?] Get up early, get cows in for milking, more about livestock farming than agriculture farming.

Attractions/Specialty farms

Bellville farms in like the first grade. I saw cows, horses, apples pumpkins, Christmas trees

Purina farm, they have all these animals to touch, not a petting zoo, but they have people that milk cows in front of you, or the kids can milk a cow, kid-friendly. I've also been to a corn farm, outside of Kansas City.

It was fun, picked fruit and vegetables, at Underwood Family Farm in CA. I've been a few times.

I'm from Iowa; I've been to a petting zoo, corn mazes. [Farmers] grow the food and sell it to big companies.

Grants farm if that's a farm; they have farm animals, not an actual farm where there is growing stuff.

My sister has a Christmas tree farm, so I guess other than agriculture; it's in Texas. I've taken the kids to farm related events, like hay rides, [and to] feed animals, never did ag in school, the kids didn't get into ag, it's big in Texas where I live.

Personal connection

Grew up on a farm, was there for 22 years. It was a hog farm, what I think of as an agricultural farm, we had crops, soy beans, wheat, corn mainly, baled hay, silage [fodder].

I grew up on a farm; I remember picking green beans on the field. It's a family farm, grew everything, corn, green beans, carrots, strawberries, you name it. I was there til I was 10 years old, still remember picking things.

Many times, my dad was raised on a farm so anytime we were going to see grandparents. They had a dry farm; those are mostly in the west, southern Idaho. They're irrigation comes from streams, mostly grain and wheat.

Grew up in a city, where I live now it’s surrounded by fields. My uncle has a farm, corn beans, cattle, it's a Midwest crop farm.

In Kansas, we grew wheat, corn, other crops, bale hay. I spent part of my life, 8 years there; we had horses, and cattle, goats, dogs, cats, rabbits, chickens, and pigs. I live in Amish country now, Pennsylvania where there are the horse and buggies.

Wife grew up on a farm, they have corn and livestock.

I lived on a farm, played in big corn bales. We had animals and crops, went horseback riding, we had buffalo that we butchered, and horses chickens, cows, we had a turkey, this was in IL.

Sort of, lived in a house that’s on a farm, he has cows and chickens, he grew up raising corn, apple trees, and pear trees. [Farmers] work hard and get dirty, rotate crops.

My grandfather owned a farm, it had sugar cane that was the cash crop, and they raised animals for themselves I think. [Was there] til I was 12.

I would go to a field and pick tomatoes and green onions and take a biscuit with me and eat in the field. I grew up on one, an itty bitty farm; everyone raised their own vegetables and crops to feed the cows.

I grew up near many, many farms, many corn fields.

Appendix E, continued.

Went to my Uncle Jimmy's house in Tennessee, it was his landlords farm, and I got to feed goats and bulls, I went a lot.

My dad lives on a farm house, I worked and sawed, building a bird house.

Plenty of farms around my house. [Farmers] they don't do much beyond planting and harvesting.

Grew up in VT, done a little of everything, planting, helping to take care of the animals.

Live next door to a farm, using pesticides or herbicides that impact us. More important to know about [Farmers] they provide for the community, and the country as a whole, they export. They rely on new ways of doing things, solar energy that has evolved.

Husband is from Mississippi - his family has a small farm, raised greens, okra, peas, chickens, hens, pigs.

Family farm, still have 250 acres left out of 400. Just spent a week there. Farms are getting bigger and bigger all the time.

My grandparents own a farm - raise sheep, lots of crops. [How big?] About 200 acres, about 2 hours west of here. [What do farmers do?] Planting and combining

My dad used to have a small farm. They raised pigs, chickens, cows. He raised his own crops - some food we ate ourselves, some the animals ate. [Crop types?] A garden - potatoes, tomatoes, carrots, lettuce, alfalfa hay for the animals.

We live on a farm. [Crops?] corn, chickens, tomatoes, peppers, watermelon, cantaloupe. [What do farmers do?] For us it don't make an income, more of a hobby. Cultivate and prep the land, add chemicals according to what the research comes back. Plow it, seed it, weed it, put insecticides on it and harvest it. And the process starts all over again.

My grandparents had a farm in Ohio - grew corn and used to have chickens and pigs. They had a vegetable farm that I had to week. Also been to blueberry farms and similar places where you pick your own. My parents' friends had a small hobby farm - don't remember them having a tractor.

I worked on a dairy farm for a year, they had cows and corn for feeding them.

Can I be honest with you - I don't like farms, I helped out with digging with a pickaxe on a horse farm.

When I was first out of high school, I hauled wheat to the grainery, scooped wheat, helped plow a field.

Personal experiences

I raised chickens when I lived in California. [Farmers] taking care of the land, they are provide the food, oranges, apples, vegetables, eggs, there's a lot

Pretty fun, I watered some plants it was an apple tree farm.

Drove a tractor on a field trip, saw the farm, sheep and cows, got to pet a cow, [farmers] grow stuff or raise animals, livestock, they usually grow plants or raise livestock.

Environment

It smells. There are cows. Used to be pigs. They grow corn, vegetables. [What do farmers do?] They make their own living.

Farmers and what they do

Water and plant it, not sure if you water your stuff out here with canals [Farmers] use tractors to til it

I've been to a corn farm and cattle farms and different orchards, we like looking at nature and god's creations. [Farmers] they work their butts off, planting and watering the ground and harvesting.

Appendix F: Technology use in farming/agriculture.

Code Category	Code Definition
Machinery	Generic or specific references to large machinery, including tractors, combines, irrigation systems, and milking machines.
Genetic Engineering	Generic or specific references to biotechnology, including GMOs, breeding, and hormones.
Alternative Energy	References to use of alternative forms of energy such as solar, wind, and ethanol.
GPS	References to the use of GPS, often in conjunction with a reference to machinery such as tractors and combines.
Soil Testing	References to chemically testing soil.
Computers	Generic or specific references to the use of computers.
Hand Tools	References to small hand tools such as hammers and saws.
Weather Forecasting	References to technology that watches the weather.
Other	Other responses that don't clearly describe technologies.
Not familiar	Not familiar with technology used in farming.

Machinery

Machinery alone - [What kind] familiar with combines and tractors

I haven't heard much [What technology do farmers use] sprayers, those big machines, for watering, feeding, cutting down, everything, rolling the hay

Don't know. Anything machine or computer related. [What kind] Machines help make work easier on farmers. Bigger farmers are using computers probably.

Haven't heard of it much, [what kinds of technology do farmers use] tractors, not sure if they use crop dusters anymore but that.

Massive machinery to expedite the process. Machines to help milk cows, Monsanto genetically modified soy beans.

Farming in general, dairy science, technology writing for consumer magazines, research magazines. Different things for feeding, crops, scales for harvesting, and selling.

Using irrigation systems, seen on the way here. A family I know built their own harvesters. And I imagine they have more technological means to measure the value of sugar in their crops. They're all using computers now.

Air conditioned tractors. I think certainly to do with feed, fertilizers, nutrients, moisture measurements in the soil. Genetic alteration of sends and fruits.

Combines, grains and seeds with bioengineering if that's the word, the recent court ruling of life being able to be patented. That's a big impact on our society. Sodexo is a big seed producer. They made it illegal for farmers to gather their own seed, it's having a negative impact but I guess we have a better seed if it's been engineered so much.

They keep animals safe, they love animals and care of them. They use tractors

Tractors

Machines, plowing, [use technology] to see if soil is to be good for farming

Combines are a kind of technology, tractors

Combines, tractors

Different machinery for farmers to use, tractors and turbines, Heard of using technology to breed special seeds to grow better plants, they take certain seed characteristics and breed them together to get the desired traits.

Technology is used in farming, harvesting, plowing things, you can do more with machines than by hand, machines do a lot more.

Appendix F, continued.

They don't pick cotton by hand anymore, they use big machinery.
Don't know, I'm sure they got machines that do stuff, maybe something to tell the weather maybe GPS for the farm, I guess it depends on how much land they have.
Tractors, the water system- irrigation. Use irrigation to spread water to the crops and use tractors to take out the crops.
Different watering systems, everything is now in the green house, they make hybrid plants. More extremely I know they do different tests more than just the hybrids and I'm sure they have electronics to do everything for them.
To get their crops - whatever's in a car. [What did the combine do?] Picked up the corn and put in a bin.
Don't really know. I know there's more technology in combines - I know there's GPS in them.
Just know that farmers used to use animals to plow the fields, now it's all machinery and computerized. Our friends have to test the soil and keep up with the new regulations with EPA - more government involvement in the process of agriculture.
No. Trailers, machines. The thing with the big spikes that stick out on the sides [combine?]
Combines; having to send off soil samples to get the chemical compounds in it to get the maximum growth for harvest. A lot of scientific steps to extract the nitrogen. Knowing whether or not there will be a drought, knowing how to space out your crops.
Types of machinery - tractors, things attached to tractors for plowing; technology for milking, slaughtering, watering. Formulation of pesticides, genetic engineering, process of deriving seeds. Probably a role with weather watching.
Combines that drive themselves and water things

Genetic Engineering

A lot of it with breeding. What it's done to the seed industry, Monsanto was allowed to patent its seed, basically patent life, effecting wheat mostly, now it has less protein and its harder to digest, which may be why there are more gluten intolerant people. Farmers would reuse seeds, but if it was from Monsanto and bees would cross pollinate. Monsanto was really aggressive about it - if they found any genetic material they could not use their grandfather seeds, don't even know if we could get the wheat back [to what it was] don't have any old seed. But technology is used in everything, seeds, tractors, equipment, all in that, that's why we are not pushing plows - that is technology too but it's not like that anymore.
Enhanced ways of producing crops, more efficient ways of producing crops, not sure about specific ways.
GMO crops, roundup ready, genetically modified crops, they're resistant to herbicides, so you can spray poison on the crops and they're fine, everything else dies. I know they use a lot of antibiotics in livestock.
Hormones, some plant hormones to make them bigger, strawberries.
Technology for soy beans for disease purposes, genetically modifying for beans to grow. They can grow certain sizes weed out certain characteristics.
Genetic engineering to make them more resistant to disease and insects. Larger machines for crop production.
GMOs, solar power, wind energy
I took a tour of Monsanto with my biology class and they are removing genes from bacteria or other crops and genetically modifying cotton or soy beans to make them hardy and build their resistance. And they have this crazy selective breeding process they go through it like 1000 times to get the perfect crop for farmers.
Hormones, some plant hormones to make them bigger, strawberries
Technology for soy beans for disease purposes, genetically modifying for beans to grow. They can grow certain sizes weed out certain characteristics.

Appendix F, continued.

Genetic engineering to make them more resistant to disease and insects. Larger machines for crop production.

Genetically modified things, use of animals and different kinds of plants for cross pollination, only read that not sure. They are expanding the efficiency in crops. They control crops through pesticides, but you hear about genetically modified crops that are harming your skin, cattle that don't want to eat genetically modified crops; if they have a choice of regular or genetically modified they would eat regular and not want what the government is trying to control. They cut off beaks of chickens to feed them quicker, the coop areas are smaller, and all the hormones are making us sick. Big brother is trying to control all things, agriculture also though- the size of an apple is not how nutritious it is, there is something called BRCKS, it measures the nutritional value of an apple, not based on size, it's based on how it was raised, so much of it was visual, it's like false advertising. I've heard a lot of this from the director of agriculture in Lancaster PA, modifying foods, gassing foods for transit, hormones which affect our brain chemistry. When you are buying milk you're not getting milk you're getting hormones and additives and other stuff. Nutrition and milk is a farce unless certified organic, organic is so broad, it doesn't have to be all organic, it can be 70% organic and 30% trash or what the government does to it.

Well Monsanto with its grain and chemicals, help to keep the varmits out, grains are such that the bugs don't attack the grains. It would be a good idea to have Monsanto to have an exhibit that talks about how they change their grain seed to not get diseases; that would be good for your exhibit.

Don't know, I see a lot from science programs. How they create seeds that grow with less water, the super seeds that grow in different environments and can still be plentiful crops. I guess there is more food/seed. I guess on the negative side though by doing that, treating them with pesticides and chemicals, you now have to watch what you eat- affects us differently. I guess in that way the bad can outweigh the good if that's how you put it.

Genome sequencing, the mixing of crops and combining entire genomes to make them pest resistant and the machines too, they've made great advancements in fluid transfer, getting water to the fields, new water equipment, it's all perspective, some guy comes up and says I have a 50,000 car and then the farmer says well I have a 150,000 combine that I'm only using for a few weeks.

Chemicals increase productions, but I have reservations about putting them in the soil. New electronics and farm equipment practically drive themselves now, have GPS to guide them.

Engineering - genetically engineering crops that are higher in nutrients, proteins, or more resistant to bugs and disease. Same with animals. Also using technology to better harvest the crops; using other forms of energies like wind to power different aspects of the harvest.

Alternative Energy

Lot of the windmills in rural areas, lived in Modesto, California.

Ethanol research. At my university they are doing research on soy products to make them have the taste and texture of chicken.

No, windmills that open up gates in California, let the water go thru [use] tractors, weather, almanacs

They transformed it into gas, corn and ethanol, [use] high powered John Deere tractors

GPS

Heard of farmers using GPS or GIS not sure which that connects and tracks stuff.

I know they use GPS to know where their tractors are.

Hand Tools

They use tools, saws, hammers, tractors

Sometimes he uses a bucket to give them a treat. [Mom asks "what does papa use"] tractors.

They use a rake

Appendix F, continued.

Other

I've heard a lot about compost, love doing vegetable gardens, raise beds. I went with my boyfriend to a class on general agriculture, we went on a field trip to this place that was into compost, really loved their worms.

They have to find out how long their corn rows need to be and how big their fields need to be.

Soil farm [?] electrical zapping of cows to make cow move.

Probably use water fountains for animals to drink from.

Not Familiar

Not much, haven't been involved in a farm in 20 years. [What tech do farmers use?] The typical farmer doesn't even have internet. It depends on the scale; commercial level is different from regular guys.

Mostly know in VT, which is old school.

Appendix G: What comes to mind when thinking about sustainability?

Code Category	Code Definition
Don't know	Not familiar with the term.
Conserving resources	References the importance of not wasting resources.
Consistency in crop production	Specific reference to crops or farming and reliability and predictability in what is being produced.
Crop rotation	Specific reference to the benefits of crop rotation.
Reuse/Recycle	Specific reference to recycling and/or reusing.
Environmental stewardship	Using processes/techniques that protect the Earth/soil environment.
Stability	Reference to stability or maintenance, including over an extending period of time.
Self-sustaining	Describes a process that is self-sustaining.
Productivity in farming	References how farming can meet humanity's needs.
Other	Other references within this category.

Don't know

Never heard of it
Heard but not sure what it means, keeping things up to speed.
Don't know. [Guess?] Something to do with farming?
Don't know
Not quite sure
Not
No (8)

Conserving resources

To continue to produce, how long you can continue doing what you're doing without running out of resources.
Something that doesn't require many resources, it can sustain itself to produce what is needed to be produced.
Able to produce crops with what they have. I teach and I recently taught about the lack of water, especially further out west they are losing water, so they have to figure out how to get more water somehow.
Preserving stuff, keeping enough water and grass.
Being able to extend resources.
Sustainability is something that requires a limited amount of external resources to maintain the current status.
Achieving the requirements of daily living - food and otherwise - without depleting the world's resources. Thinking about the consequences of choices, for example, GMOs aren't good if they can't perpetuate themselves. Also water and energy reserves - should be avoiding the risk of global warming. Industry-driven. Also an understanding of how what we do in one county affects another.
Basically being a good Girl Scout - replacing what you've taken. Using your technology to provide a way to replenish the earth. For example not overfishing an area, planting trees when you take them down, rotating the area you use.

Appendix G, continued.

Consistency in crop production

Someone that is substantial, they know that each year they're getting this crop of that crop (stable).

I haven't heard of it before, I'm Bosnian. I guess for farmers to produce as much as there is demand and to function again in the next year.

Crops produced in the same way from harvest to harvest or from year to year, with not much variation, not harmful to the environment, something that can be produced over and over without eliminating anything else.

Crop rotation

Crop rotation, heirloom good, plants and animals, [asked about heirloom] the way things are raised naturally normally, the old way of things, heirloom tomatoes you've heard of, or the ways pumpkins are not always orange.

Our ability to continually grow crops on the same land, that's why they have crop rotation. When you think of sustainability also think of fuel depletion, fossil fuels whether it's in 100 years or 1000 years we have to do something. Need something readily renewable and safe.

Every three years you gotta switch plots so the soil can sustain itself, if not you'll deplete the soil and you won't have any reliable crops. In general it is the ability not to take more than takes to replenish.

Reuse/Recycle

Where you use and repurpose, long lasting

Recycling, earth friendly

Green, I think of coal because people want to get rid of it to be more sustainable. Recycling, and ethanol.

Environmental stewardship

I think of it in relation to farming, how it's non-existent in the future, for farmland, in the future how does it look like, is it still productive because of chemicals were put in the ground. What about livestock? Is it more business than individual farms, corporations? I don't know. Rural areas are a lot less than they used to be.

As it relates to agriculture it's about protecting the soil.

Taking care of the soil, using agriculture such that the fertilizers won't harm the ground or runoff.

We gotta be good housekeepers - good keepers of the soil, if you don't, it'll be like the dustbowl and the soil is gone. [Is organic important to you?] Yeah. Everything that was used on our farm was organic - manure spreaders.

Keeping the environment clean. [How does it relate to farming?] Don't know

Stability

Stable

I think long term

To keep in good shape

Being able to maintain something

Stable, being able to "survive" not survive like people, but like hold your ground

Reminds me of stability, keeping on even ground

Stable - keeps the crops a certain way, temperature

Appendix G, continued.

Self-sustaining

More on agriculture, something that can be continued to be produced. Think of real estate, think of sales and the ability to continue to produce stuff.

Heard of it, think of it as sustaining something related to health value, something that is sustained. "Ability" means capable of, so...

Living off the land, growing your own food, raising your own meat.

Doing the thing that is necessary to promote economic development without sacrificing needs of today and the future. Building a community that lasts.

Doing it on its own.

Making everything you need to stay alive or barter for, but we don't do that anymore, we all live off the grocery store.

When it can sustain on its own.

Productivity

Community gardens, they are worked by people who eat and sell them.

To keep up with the stuff that grows more.

Well I'm troubled with all these combining, making all these advancements in making them more pest resistant, the yields seem to be greater for a shorter length of time. More for production, you'd need less fertilizers but the things only last a few years and you get more but then you need new seeds, I guess it's a different kind of production, not as good from year to year. It's a double edge sword, making all these advancements is one thing, then you're eating all this processed stuff, eating chemicals you don't know about. That's how I interpret it; the food cycle needs to be considered there are good things with the production but negatives too. Sustain the humans.

I guess enough food and crops to keep up with the growing rate in the US - keeping up with the population.

Other

Massive government intervention. Farmers can't do what they want to do with their land. It sounds good but if that means it is denying property rights...

That's having to do with the energy movement, power, solar power

Appendix H: Reason for interest level in agriculture? Main area of interest?

Code Category	Code Definition
Animals	Specific reference to animals.
Growing food	References growing food.
Technology	References use of technology and/or equipment.
Farmers/Farm	Generic or specific reference to the people working on farms and/or the process of farming.
GMOs	Generic or specific reference to GMOs.
Gardens	Generic or specific reference to gardens.
Economic factors	Specific or general reference to the economic factors related to farming/agriculture.
Health/nutrition	Specific or general reference concerns of human health or nutrition.
Environmental factors/sustainability	Generic or specific reference to how agriculture impacts.
Future	Expresses concern for or interest in the future.
Nothing/ Not top of mind	Not interested in learning more about agriculture/farming or it is just not a topic that is top of mind.
Already familiar with farming	References to already having familiarity with farming.
No personal connection	Reference to not having a connection to farming.
General interest	A general interest in the topic or interest through another topic but no specific interest areas cited.

Animals

Extremely Interested

[Laughs, 12 yr old friend says because it's the only thing we can do, mom says it's the only thing that is stable where we live.] [Main interest] Cows and animals

I think it's really cool, I love animals, any kind, I really like horses

Like to learn new things, learn everything. How do they feed the animals?

See a lot of animals, get to see my own horse

Interested

I like the concept of farming, [main] animals, food

Growing Food

Interested

I want to learn how we get those foods from farming, I'm vegetarian

Never lived in a farm area, and I don't remember much so it would be cool to see what goes on in farms. How they harvest plants.

I don't think people think about it much, but it's how we get most of our food products. It's not brought up a lot.

Only Slightly Interested

Not something pressing, not on a farm any more, but it's important. Interested in growing stuff, food, there's not enough food I guess if something happened. Couldn't go to a grocery store.

Fact that my assessment I will soon be having to raise my own food and having to have a small farm to sustain my family. [Main interest] Basic food items.

It would be cool to learn about how out food and stuff is grown, I'm not entirely excited about it, but it would be cool to see that agriculture.

Appendix H, continued.

Technology

Interested

I just find it interesting. Combines and wheat and grain, how they thrash it and how it grows.

Only Slightly Interested

The use of technology.

Farmers/Farm

Extremely Interested

Because I want to learn about more stuff about technology and farmers. Farming and animals.

Only Slightly Interested

I want to know what do they do.

GMOs

Interested

Genetically modifying crops, grew up hearing that it was bad but my opinion has changed I think it's fascinating. Removing DNA from bacteria and other crops giving it other traits, fascinating.

Only Slightly Interested

For a while I wanted to get more involved in buying only organic crops, eating healthier, be more aware of what you're eating. It would be nice to grow your own food but I live in a condominium so it wouldn't work.

Gardens

Extremely Interested

We garden, we have tomatoes, onions, strawberries when they come out, peppers, corn, you have to have your own corn, okra too.

Interested

I told my husband I want to move out to the suburbs to have more land. I'd like gardening and growing my own vegetables, having horses.

Only Slightly Interested

I like to grow my own vegetables. Except for here [just moved] I've always had gardens for vegetables and fruit.

Future

Extremely Interested

Just to see how it progresses for my kids, hope it will be safe for them and how it changes.

If it's about agriculture in general than a 1, if it's learning about plants in the future than a 4. Because of this little guy [little boy]. I want to know that he'll get the same nutrients out of vegetables that I did; that there's not a lot of chemicals, we don't know about the long term effects of all of this yet.

Interested

Wonder about it, new things, what's coming up.

Appendix H, continued.

Economic factors

Extremely Interested

It's very important to my life, huge part of the economy where I live, the people around me, it's where my food and clothing comes from, it's important.

Interested

It's important. I like to eat more local food, a general transition to be more aware of my environment.

It effects everyday life [main area] consumerism of agriculture, difference in organic food, vs genetically modified vs everything else.

I think there is an important part of our economy in this. [Main area] Sustainability, in wind farms and ethanol.

Family are farmers, Interested in how the government is controlling it, it's impact on our prices, impacts all of us, Monsanto being allowed to patent its seeds. Wheat is not as healthy.

Hands on activities, I liked digging fossils [dig site] when I do while I learn it sticks better. How the bigger cities are taking our farm land, and what to do to save the farm land and stay where we can still produce ethanol.

Health and nutrition

Extremely Interested

I'm about health, I'm about nutrition, I'm about people knowing the truth, individual choices without being manipulated by government control.

I guess it's a concern for everyone that eats.

Interested

Sustainability of the human race, how you were saying to sustain and how that affects us, negatively and positively. How much it kills or how much it produces. Science has taken it to a whole 'nother level, to know the repercussions of this.

Only Slightly Interested

Because I like history. Also pesticides in growing crops - I heard about organic rice not being healthy. Anything about health interests me.

Environmental factors/sustainability

Extremely Interested

How the processes affect the environment and the people. For example, how a big company in one country can affect people in another country through their practices - Coke in India is using so much water that it is depleting the aquifer.

Interested

I love the earth; I want to make sure it's safe in the future when I have kids way way in the future.

Because of the water, I've seen a lot of vides lately about dust storms happening now and about the dust bowl. And there is a fear of it happening now. My daughter lives in IL, and they did not have a lot of water this year and a lot of farmers lost their crops.

I read a lot about agriculture. [Topics of interest?] Sustainability - that's a good one.

Sustainability is a buzzword so it would attract my attention. Really interested in history, but also want to know how to make things better - what can I do to be more productive?

Appendix H, continued.

Already familiar with farming

Interested

Well we grew up in small farming towns [he and his wife]. Food habits to produce more [wife had discussed food advancement] Farmers grow more than previously used to, many more times, more bushels per acre because of places like Monsanto.

Only Slightly Interested

It's an important topic, need to survive and feed us, but my interest level to pursue, no. I want my kids to learn about it though, it's important.

Know friends [that have farms] not really [anything specific]

Not At All Interested

It's like, not boring but I did that stuff and they told me that I did it wrong and I'd do it over [bad experiences while on the farm]

Been around it my whole life - could care less about it. If the Science Center could figure out a way to directly connect it to your income, your livelihood, it could be more relevant. If it doesn't affect me personally, I could care less.

General interest

Interested

So I can have a general understanding of it, not really [anything specifically interested in]

There are farms around my house and I would want to know how they work.

Everything - specifically what farmers do.

Would be good for a place like St. Louis - for people who have never seen it. [Anything in particular?] No

Only Slightly Interested

Just curious about things

Cool stuff to learn about [main area] how they keep the seeds watered

Generally interested in a lot of things, the changes in different things, something to bring to kids and say, did you hear about... [Nothing specific]

Nothing/Not top of mind

Interested

Don't know, not particularly

Only Slightly Interested

No, don't have a reason; it’s something I didn't think about.

Don't really think about it, I guess community gardens.

Nothing

Appendix I: Expectations for an outdoor agricultural exhibit?

Code Category	Code Definition
Animals	References animals – either living or pretend (e.g. fiberglass representations).
Farmers	References people playing the role of farmers.
Being able to farm	References being able to actively participate in farming activities (e.g. plant seeds, pick vegetables).
Machines/tools	References farming machinery (e.g. tractors, combines) and/or tools; may include an expectation of riding or climbing on them; may include both modern and historical technology.
Plants/trees/crops	References to the types of plant life expected to be growing and/or present in the exhibit.
Where food comes from	Information about how food products are grown or raised.
Hands-on	Generic or specific references to hands-on activities and playing on items.
Process of farming	Specific or general reference processes of farming.
Health issues with food	Specific or general reference to concerns of food related health issues.
Farming structures	References structures one might see on a farm (e.g. barn, silo).
History/Industrialization of farming	References to the history and industry in farming/agriculture.
Sustainability	Specific or general reference to sustainability.
Don't know	Not knowing what they would expect to see or want to do in the exhibit.

Animals

Cows, feed, feeding the animals, samples of jars of beans and corn.

Animals, cows and bulls, I want to play with them.

See farm animals, see in the exhibit to see farm production, corn on the cob and off the cob, wheat on the stock and in the bushel, not many kids know what it looks like.

I expect to see a lot of animals and to feed them. I'd like to feed the animals.

Animals, play in the hay

See horses and a barn, like to pretend they were real.

Have to have animals too, the draw for kids, the animal exhibits, reason kids want to go see the baby chicks or the other animals, an ag-venture. You know, how much the effort the kids put into that into raising their animals, nice to give them recognition. Animal component, not just plants, involve the area kids with Ag to bring in their animals, it would get their grandparents here more, nice to give them recognition, like the rodeo events in Texas to see their efforts and their recognition in boy or girl scouts. Watching dirt doesn't grab me as much, seen the hydroponics at Epcot, their system and I was bored to tears. It would be a good place to involve the FFA kids.

Don't know, livestock, crops, machinery

Fake cows, tractor, combine, hay bales to sit on

Appendix I, continued.

Farmers

I'd want to see what a farmer does in their daily life, harvesting. Maybe have a person from a farm that tells you what they are used to doing.

Old lady old man and pitchfork, pigs, cows, chickens, rabbits, large land

Being able to farm

Learning how to properly plant foods how to work a milking facility. I really want a goat, I live where I could have a small animal like that.

Definitely be able to farm, maybe trees, be able to experience how animals live on farms.

I want to pick vegetables out of the garden, have a shovel and dig and have soil samples.

Plant seeds, ride a tractor

Machines/Tools

No, I'd like to play on a tractor

If it's for kids, farm machinery that would be safe to jump on, maybe animatronic corn that grows everyday.

Something to do with livestock, maybe animatronic cows. Something that connects for them: this is a cow, that's where milk and cheese comes from. This is a tortilla and that's corn.

Like there to be a tractor and show what it would do, I think of farming it's boring.

See tractors, plants, farming equipment, don't know

Tractors, people dressed up as farmers, a barn, crops [what kind?] corn and potato

Plants/Seeds/Crops

Expect to see lots of plants, little hands on things, maybe plant something, have fun with a few things, make a flower pot or something, mostly expect to see a lot of plants.

Different things for talking about soil, how they do irrigation systems, different types of plants, grasses and natural grasses if that makes sense.

See what different kinds of crops there are.

Where food comes from

I'd want to learn about where the food and supplies that we use everyday comes from. I'd like to see some big tractors and be able to get inside of them.

The way plants grow and then are turned into everyday items like food and gas. More hands on, touching things, something with animals.

I'd expect to see food and the way farmers live and stuff, the type of food they raise. I'd like to interact with different things, touch certain things.

Expect to see germination of the seed to the finished product. Compare and contrast the ones that don't work out so well, I guess comparing the current ways to previous, and even to the future, what is the result. Like the dustbowl, is that something that was our fault or was it just a drought situation? The only green area you see in Oklahoma is where there is irrigation, which we didn't have there in the 30s. I guess nature has stayed the same but we've been adaptive to be more productive.

A garden - seeing the process from the seed onward. Would be interesting for children - stages of the crops. Show the children what's healthy - not McDonald's - a good salad!

Learn more about why you're not going to eat supper tonight - [for example?] if it wasn't for cattle farmers, you wouldn't have a steak

Appendix I, continued.

Hands-on

Definitely hands-on, may be see the process on how farming works, from germination to the end product.

For little ones hands-on, whatever farmers do. Somehow have it setup for plowing, planting, harvesting, what it takes to milk a cow, so that kids can do it, and adults do it too, lot more fun than reading.

Hands-on experiences not on real animals, some type of simulation, showing plant development with technology and without, local impacts I guess.

Something that can give kids perspective. I always remember as a kid doing things with my hands, it's a lot more real. Maybe have someone there showing ways to farm, irrigation, plowing, different fuels that are better for one industry in one way and better for someone else in another way. There are fuels that are ideal for different industries.

Do hands on, replica of instruments used to things, Monsanto had this gun, almost like a shot gun to shoot things to get it into it, an artifact that's used in the process of horticulture. Simulate the different areas for growing crops, what the best condition is for corn, the best condition for soy beans or rice, not sure how you'd do that though.

Hands on, experiments, see something, dried things, like grass, or products they use or tools.

It would have to be something hands on for the kids - making sure the land and environment has an effect on growth. Being able to see, touch, feel, smell, use all their five sense in understanding how agriculture works.

Process of farming

About how things are produced. Different seeds and planting and taking care of things teaching them [kids] farming, the vehicles, milking a cow

Learn more about the whole process, what's done today, not just planting or harvesting, from the ground to the marketplace. How foods are enhanced, how healthy they are. Can sustainability be done effectively for farmers to still earn enough, make enough food.

See the basics, nothing too complicated, what farmers get to do, the basics

Compost, making something to show the ecological cycle for growing things.

Different experiments, how things grow, seeing the difference in the growth of plants, that kinds stuff, the latest and greatest

I'd like to see the whole process, the after effects of it we don't know yet, of taking care of the land

Expect education on what I can expect from my efforts to prepare the soil, nurture the seed, nurture plants harvested

How it gets to what it is, how it works, to show how germination works, get from the seed to that point, how they thrash it

The process of crops to the end point - all like the things corn is in - like cereal. Show from the seed to the final product

Health issues with food

I'm very concerned about taking responsibility for my own health, I don't eat a lot of what is not good for you, I'd like to become more educated and an advocate for health. [Topics] Health, nutrition, maybe have someone to talk to them about it, something like the apples and BRCKS, someone to honestly tell the truth to disclose things without big brother. The public should also be made aware of how modified food affects obesity. I know of studies regarding obesity have been done and would like the information to be made public.

Appendix I, continued.

Farming structures

To watch things and watching big stuff, and watching stuff in the sky [I think he was thinking of tall things and that air cannon/t-rex]

I'd expect to see structures, farming structures and gardening. How to compost and renew your land

History/Industrialization of farming

It would be good for the kids to see different irrigation systems and tie them into ancient systems like the Egyptian ones and we're near the Mississippi. In Louisiana we've had problems with the levees on the Mississippi we're losing land on the delta, and it's got so bad that saltwater has intruded on the levees.

Should probably have some historical background and how farming has become more industrialized. How it's changed from individual people doing farming to very industrialized farming, which is profit-driven. Need something about where things will go if you carry on - damage. Impact of local produce; importance of having a balance. Put farming into the greater context of sustainability - needs versus desires.

Sustainability

No idea, teaching kids about sustainability, it's important

New ways of producing sustainable crops. Variety, vegetables. [Expect actual crops growing?] Yeah

Looking at exhibits that show what sustainability means and how different technology is being used to inform farming and agriculture. Showing different stages of growth - for example corn - from the seed to what you eat. What it takes to grow different crops. Showing kids were food comes from. Research that's being done to eliminate pests that doesn't include pesticides. Why pesticides are bad. Explaining what organic means - there's a lot of confusing about what it really means. Taking buzzwords and pointing out the truth about them, not just what the news media says. Present information so people can make their own decisions. For example, what research has been done to say it's okay to eat genetically modified something or that's it shown to do something bad. Describe why scientists are working on genetically modified food - disease resistance. Help people make informed personal decisions.

Don't know

[No ideas]

Don't know

Not sure