



## **Farm Journal Foundation Learning Materials**

A Teacher's Guide & Resource to:  
Voice of the Farmer Garden Tour Modules

### **Purpose**

This guide is to provide teachers insight into the objectives of Farm Journal Foundation's Voice of the Farmer Garden e-learning modules. This guide is also intended to provide you, as the educator, an understanding of what level of learning this material is at, how to integrate these modules in a variety of classroom settings/subject areas and questions to use to assess your students' retention and understanding of the material.

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## **Learning Levels & Overview**

\*Each plot varies in time length from 2-3 minutes with 12 plots total.

**Audience:** Primarily consumers unfamiliar with agriculture, this guide helps take these modules into a classroom for use from the 5th grade level to the introductory university level.

- **Beyond the classroom:** The beauty of our garden tour is adaptable in a variety of settings from the classroom, to a youth development/Extension learning event to a general consumer education event.

### **Overview of content within our 12 garden plots:**

#### **Plot #1-**Insight in the Agriculture Industry & Consumers

Introduction into the agricultural industry including commodities, general markets including exports and consumers' role in the industry. A.G. Kawamura explains the importance of transparency with consumers today in food and agricultural production.

#### **Plot #2-** Technologies (i.e. Irrigation)

Annie Dee of Dee River Ranch in Alabama explains the reasons behind her operation's use of irrigation systems. Further explanation given on overarching use of technology such as irrigation aiding producers in managing risk.

#### **Plot # 3-** Corn & Soybean Production Statistics

How much corn and soybeans do we produce in the U.S.? This plot digs deeper into growth and reproduction of corn and the dependence we have on these two crops for a variety of everyday products beyond food alone.

#### **Plot #4-** Maintaining the Environment is Key!

Whether livestock producers or crop producers, both types of producers depend heavily on the environment. They are cautious of their impact on the environment by establishing conservation practices that protect key resources. Furthermore, livestock producers protect the health and well-being of their animals as well.

#### **Plot #5-** Animal Well-Being 101

Animal well-being is a top priority of livestock producers, and it is a complex task to ensure. John Pendergrass of Pendergrass Cattle Company shares his perspective on his moral responsibility to care for his livestock to the best of his ability.

#### **Plot #6-** Pollinators

This plot focuses on what pollination is, examples of pollinators, honey production, and more importantly the important role pollinators play in the growth and development of numerous grain crops, vegetables, and fruits.

**Plot 7- Water**

Agriculture's use of water and the practices and technologies that have provided farmers strategies to maintain water quality and conserve water. Vocabulary on techniques including buffers, terraces, and tiling.

**Plot 8- Pest Management**

Overseeing your crop as it's being produced allows a producer to combat pests prior to permanent yield reductions. Technology and research have aided producers in understanding how to combat certain pests most effectively whether through a pesticide or biological control.

**Plot 9- Wheat**

This plot dives deep into the production of wheat, its diverse uses and statistics globally.

**Plot 10- Soil**

Healthy soil is one of the most critical natural resources to farmers, maintaining soil health can minimize risks for farmers and improve yields. This plot explains the varying methods farmers use to protect and maintain the health of their soil. Vocabulary includes no-till and cover crops.

**Plot 11- Seed and Herbicide Technology**

A brief explanation of how seed and herbicide technology have helped producers in reducing their use of natural resources, their input costs and improved their efficiencies.

**Plot 12- Our economy's dependence on Agriculture**

The value chain of our food is long and intricate, this section explains each step and the companies, retailers, producers, processors and more consumers depend on the end food product.

**Objectives**

Viewers/Students will:

- Have a basic understanding of the various facets of the agriculture industry.
- Be able to identify the top commodity crops in the United States.
- Diagram the sectors/steps through the value chain from seed to table to comprehend and explain visually the key aspects of these steps that ensure our food supply is safe, efficient and available to all.
- Evaluate technology's numerous roles and improvements that continue to aid farmers and producers in advancing their operations with efficiency, production, safety, health and sustainability concerning both crop and animal production.
- Recognize types of pollinators and the role these pollinators have on producing a variety of crops and everyday food items.
- Explain the natural resources farmers strive to protect and maintain and the methods they use to conserve these resources through management practices and technology.

### **Classroom Integration**

\*For teachers of agricultural science, especially those at the secondary and technical school levels, the applicability of the agricultural information in these chapters is clear. However, for teachers in different subject areas and at different grade levels, the connections can be difficult to find. This section provides some suggestions, tips, and ideas to exemplify how the vital agricultural information in these chapters can be used to meaningfully supplement the existing curriculum requirements in your classes.

#### **English Language**

- English classes can use this tour primarily as a way to supplement background knowledge for agricultural literature. By grounding students' reading in relevant subject knowledge, it has been shown that their comprehension and retention of information can be improved.
- These videos can be used as models of professional informational or narrative presentation styles. Having students view this tour as a model for orally told stories would be a good setup for a podcast presentation project, an oral language development lesson or an oral and written language comparison.
- These videos can be used generally to inspire authentic writing assignments such as writing letters to farmers thanking them for their work and writing letters to policy makers advocating for support of agriculture.

#### **History/Geography**

- History, Geography, and Social Studies lessons (such as cultural differences in daily life, how terrain affects agriculture, and how agriculture affects society) can be addressed using videos from all 12 plots as “real life” examples of big ideas or as engaging ways to “hook” students into the beginning of a lesson.
- Using all 12 plots together, a lesson that explores how the uniquely varied climate of the U.S. fosters the growth of a variety of crops. This lesson would use these videos as examples of the crops available in the U.S. and would be most beneficial when supplemented with similar lists from other countries.
- Specifically focusing on Plot 8, Pest Management, it would be possible to introduce the Green Revolution in American history or in other ways contextualize the major accomplishments of the past in terms of the present.
- Specifically focusing on Plot 5, Animal Wellbeing 101, it would be possible to introduce a lesson about how laws and regulations have changed regarding animal care and safety.
- These videos could be used generally to build agriculture vocabulary lessons in connection with class content.
- Moreover, these videos could inspire local application projects exploring the farms and food production structures that exist in the community (interviews with farmers; studies of local/state agricultural laws and regulations; relationships between farmers, suppliers, and business owners to provide for the community.)

## **Math**

- The only plots that deal with information that could be directly related to classroom content for a math class are plots 1-3 and 11-12. These deal with lesson topics including basic statistics, economy interdependence, consumer/producer relationships and technology.
- It is possible to use agriculture-related scenarios mentioned in these videos to support word problems and math applications in the farming context.

## **Science**

- Science lesson topics (such as sustainability, animal wellbeing, and soil health) can be addressed using the videos from all 12 plots as “real life” connections or ways to establish set in a lesson. For example,
  - Using Danny Murphy’s story about how his family revitalized their farm from Plot 10, a lesson on plant regrowth, the soil system, nitrogen fixing or any other soil health related topics can be clearly supported.
- All of these videos can be used to support an agriculture education unit, connecting to several of the state required science curriculum objectives.
- These videos can be used to inspire local application projects exploring the farms, food production structures, and the local climate’s effect on living matter (Ex: planting a class garden, asking a local farmer to talk about the soil health or their farms risk management plans.)

## Differentiation

\*Differentiation according to a lead researcher and professor of teaching at the University of Virginia, Carol Ann Tomlinson, is teaching with the awareness that each students' learning style and levels of readiness vary prior to creating a lesson plan. This section is to assist with fostering some differentiating instruction with this e-learning material to engage all of your students.

Source: Cathy Weselby, [www.resilienteducator.com](http://www.resilienteducator.com)

### 1. Content

- Some of your students may be familiar with agriculture already, while others have no concept of growing up on a farm or in a rural setting. Accommodate for these differences by pairing students with a level of mastery to agriculture with those that are unfamiliar to share their experience and knowledge base.
- For students with lower level understanding of this e-learning content, review our assessment section or the videos yourself to create a vocabulary lesson (build understanding)
- Have students create a PowerPoint highlighting one topic area within the e-learning material that they want to expand on.

### 2. Process

- This garden tour hits on auditory and visual learners however, you may want to expand this material to include your kinesthetic learners ways to do so may include:
  - Including an experiment pertinent to the learning material
  - Going on a farm tour
  - Play a game, whether online or outside, pertinent to the module

### 3. Product

- What do you want your student to complete that reflects their comprehension of the tour's content? Options include:
  - Students could write a report regarding an element of agriculture discussed in the tour.
  - For those visual learners in your classroom, have them summarize a key topic in the garden tour via an infographic.
  - For an auditory learner they may prefer providing a synopsis of a key topic in the garden tour via an oral report.
  - For a kinesthetic learner, have them demonstrate a key topic in the tour (i.e. demonstrate how to vaccinate a beef steer).

### 4. Learning environment

- This varies, but providing a quiet space is key. Since our garden tour e-learning material is related to agriculture, take your students outside to demonstrate some of the topics mentioned (i.e. look for pollinators, create a feed mix, load a syringe, etc.)

## Assessment Resources

\*These questions exclude content found in the bonus videos

### Plot #1

1. How many garden plots are showcased in the virtual garden tour map?

**Answer: 12**

2. What are the four main crops grown in the United States?

**Answer: Corn, Soybean, Wheat, Cotton (any order)**

3. The United States is the world's largest producer of what three livestock species?

**Answer: Beef, Dairy and Poultry (any order)**

4. The U.S. pork industry is the third largest pork producer in the world. (True/False)

**Answer: False, second**

5. 8% of U.S farmers market their food locally, direct to consumers. (True/False)

**Answer: True**

6. 25% of U.S. farm products are exported each year. The five leading export market countries for the U.S. include: Canada, China, Mexico, \_\_\_\_\_ and \_\_\_\_\_.

**Answer: European Union and Japan (either order)**

7. The U.S. fruit and vegetable sector is a \$5 billion dollar industry each year. Provide two examples of how this industry has expanded its market to consumers in the last decade?

**Answer: (either of these three, in any order)**

1. **Online grocery shopping**
2. **Meal kits**
3. **Growing organic market**

8. According to A.G. Kawamura, a California fruit and vegetable producer featured in this tour, creating transparency within our food system means what is occurring between the consumer and the producer?

**Answer: When there is transparency there is learning being established between the consumer, the end user and the actual producer.**

9. A.G. further detailed the challenge of no transparency between the consumer and producer. Explain one challenge he mentioned if we as agriculturists don't maintain transparency?

**Answer: There can be confusion, misguided information, and lack of support for our food system by our peers/consumers**

10. Maintaining transparency between the producer and consumer can lead to a more knowledgeable consumer that can become a stronger supporter of our food and agricultural system. (True/False).

**Answer: True**

### **Plot #2**

1. Explain two main purposes of precision irrigation within the agricultural industry, highlighted in this video?

**Answer:**

- 1. Allows remote monitoring and control of crop needs (during volatile weather changes)**
- 2. Only applies the necessary amount of water.**

2. The farmer showcased in this irrigation module highlighted the risk related to investing in irrigation. What is the initial risk of establishing an irrigation system? What is one reward in taking this risk?

**Answer: Expense/cost of the system; protecting your operation when the weather/climate fluctuates**

### **Plot #3**

1. The two largest agricultural crops grown in the U.S. are corn and soybeans. Where is the largest proportion of corn grown in the United States?

**Answer: The Heartland region.**

2. Although bees and other pollinating bugs can often be found near corn, pollination is primarily carried by the wind. (True/False)

**Answer: True**

3. The silky strands at the top of an ear of corn are attached to each developing kernel on the cob. These silks are present to aid in what process?

**Answer: Pollination**

4. Severe weather such as high winds or heavy rain during corn's pollination stage of development can damage the silks on the corn and ultimately hinder the production of what on the cob of corn?

**Answer: Kernels (leads to lots of "empty" kernels).**

5. Explain the difference in use/purpose between sweet corn and field corn?

**Answer:**

- 1. Sweet corn is often what consumers eat right off the corn, or what is packaged in the freezer or canned in the grocery store.**
- 2. Field Corn: used for livestock animals, also used for food products such as corn meal, corn chips and corn syrup**

6. Soybeans represent \_\_\_\_\_ percent of oilseed production in the United States.

**Answer: ninety (90)**

7. Soybean is an oilseed crop grown in the United States, what are two additional common oilseed crops grown in the U.S. and mentioned in this module?

**Answer: sunflower and peanuts**



8. What's one colorful product, highlighted in the video that is produced using soybeans?

**Answer: Crayons**

**Plot #4**

1. Farmers work in a uniquely close way to natural resources. List three resources that farmers and producers work hard to maintain healthy.

**Answer: Soil, water and air**

2. Livestock producers additionally take strides towards protecting the \_\_\_\_\_ of their animals.

**Answer: well-being (health could work as well).**

3. Danny Murphy, from Murphy Farms, was featured in this module. Initially the land his grandfather purchased was not very valuable, but what three practices did his family farm establish over time to improve their land?

**Answer:**

- 1. No-till (to minimize soil erosion)**
- 2. Adding cover crops**
- 3. Establishing terraces**

**Plot #5**

1. Overseeing the well-being of animals is complex. Producers measure and monitor many aspects of well-being. List two of the four elements producers measure and monitor for their animals' well-being?

**Answer: Nutrition, temperature, bedding and living quarters (any two of these four in any order)**

**Plot #6**

1. Pollinators move \_\_\_\_\_ from one flower to another, thereby fertilizing plants and allowing them to reproduce.

**Answer: Pollen**

2. Pollinators are vital to agriculture; in fact, \_\_\_\_\_ of food and fiber crops around the world depend on it to reproduce.

**Answer: 30%**

3. Land not used for agriculture that maintains a natural habitat of native grasses, trees and brush are areas farmers can protect for wildlife through programs such as conservation reserve programs (CRP). (True/False).

**Answer: True**

**Plot #7**

1. What is the order of freshwater use by industry from the largest percent user of freshwater down?

**Answer: 1. Agriculture 2. Industrial 3. Domestic use (drinking water and sanitation)**

2. Technology has helped farmers and ranchers manage their water use more effectively. Name two of the four strategies mentioned that have helped producers minimize their water usage?

**Answer: Precision irrigation, drought tolerant seed varieties, rotational grazing, conservation tillage (any two of these in any order).**

3. \_\_\_\_\_ zones with vegetation between cropland and bodies of water, keeps the soil intact (reducing erosion) and acts as a filter as the water flows from the field to the water way.

**Answer: Buffer**

4. A tile system is an earthen embankment or ridge built across a slope to intercept runoff water and reduce soil erosion? (True/False)

**Answer: False, terrace**

5. Tile systems are effective at reducing what?

**Answer: nitrates and other potential pollutants of water.**

#### **Plot #8:**

1. Technology has brought producers a long way in helping them protect their livestock animals and crops. Herbicides, seed technology, \_\_\_\_\_ and \_\_\_\_\_ have all played a significant role in protecting the health and value of both livestock and crops.

**Answer: Vaccinations, animal nutrition (either order)**

2. Threats to the health and value of livestock and crops are always evolving as mutations of certain diseases/viruses occur and resistance to builds against some vaccines or herbicides. (True/False).

**Answer: True**

#### **Plot #9**

1. Wheat is one of the most versatile and important grain crops around the world. In fact, it is in 20% of the \_\_\_\_\_ consumed by the people around the world.

**Answer: Calories**

2. What U.S. state is the largest producer of wheat?

**Answer: Kansas**

#### **Plot #10**

1. To build one inch of topsoil takes hundreds of years; to destroy it only takes a few \_\_\_\_\_.

**Answer: minutes**

2. Using practices including no-till and cover crops can help protect soil healthy and structure how?

**Answer: Conserve water, prevent soil erosion, and nutrient run-off**

3. No-till is a way of growing crops without disturbing the top soil through tillage. It provides a layer of plant matter left after the previous harvest on the surface of the soil. This protective layer helps with what?

**Answer: evaporation of water from soil, reduces weeds (hinders their growth) and insect populations.**

4. Cover crops are crops grown during or after a primary crop's season of growth, such as radishes or turnips. These are used in a variety of operations including conventional and organic operations. How do they help soil health?

**Answer: Deposits carbon (nutrients) in the soil, deep roots break up compacted soil, prevents erosion/run-off of soil**

#### **Plot #11**

1. Seed and herbicide technology reduce the use of \_\_\_\_\_ resources and aid in creating an affordable and abundant food supply.

**Answer: natural**

#### **Plot #12**

1. One in every \_\_\_\_\_ jobs are held by individuals within the agriculture and food industry.

**Answer: ten**

2. Draw/outline and briefly describe each point the journey from seed to table, farm to fork value chain.

**Answer:**

**1. Input companies:** All the companies essential to starting up a farm operation, it consists of the agribusiness sectors. Includes: seeds, fertilizer, crop protection, animal health and nutrition, crop insurance, food ingredients.

**2. Farmers/Producers:** Combine inputs to provide their main commodities within fuel, fiber and food.

**3. Traders:** Consolidate commodities from the producers (crops, meats, oils, meat and biofuels) to sell farther up the value chain to organizations that add value to create a consumer face product.

**4. Food companies:** (bakeries, meat and dairy processors and snacks). Craft products that meet the complex and changing demand of the consumer market.

**5. Retailers:** Provide platform and reach for consumers to purchase products

**6. Consumers:** End purchasers of the product, they send signals to the entire value chain based on their preferences, questions and general concerns.