

What factors can help sustainable farmers sell their produce and successfully compete with supermarkets?

PROJECT PUMPKIN (gr 3-5)

Marketing Farm Products

(ILS 7, 11, 12)

Overview

This curriculum explores the relationship between people and the food they eat. By growing pumpkins in a garden plot, the curriculum takes teachers and students through six features of sustainable agriculture that separate it from conventional farming. If the entire curriculum is completed, students will gain an understanding of sustainability and people's place in the food chain.

Sustainable Agriculture, for the purpose of this curriculum, shall be defined as "a system of food production, supported by consumers, where farming operations, practices and technologies work in harmony with the natural systems that sustain life on earth."

Suggested Grade Level

This curriculum is designed for 3rd through 5th grade levels. The topics covered can be built upon in complexity throughout that age range.

Approximate Time

Session 1 requires 40 minutes; session 2 takes 30 minutes. Sessions 3 and 4 are optional and require at least 30 minutes each. Session 5 takes 45 minutes. Planning and arranging to set up a farm stand involving the students is an ongoing project.

Objectives

1. The students will work in groups to study grocery store ads from local newspapers.
2. The students will take one item grown locally and one brought in from far away and find out the various steps necessary to get the item from harvest to supermarket.
3. Students will investigate costs and energy uses with each step.
4. Students will use the same process to investigate the costs involved in producing a food sold at a farm stand or farmers' market.
5. Students will use information gained to go through the same steps needed to determine the price for the pumpkins they have grown.

Activity Abstract

Students will work in teams to find out the price of fresh produce advertised in grocery ads from a local newspaper. They will find out transportation and packaging costs for grocery produce and use above information to determine prices to set for pumpkins (or other produce) they will grow and sell at their farm stand.

Background Information

The following considerations must be made when calculating the final price of an item of produce. Not all will apply to the produce selected from the newspaper ad and even fewer will apply to the pumpkins grown by the students.

Losses may occur before produce ever reaches the market if poor harvesting techniques and bad handling on the farm. Bruising and sun exposure can damage produce and keep it from having appeal for the trader. This is an important part of the discussion for students since some damage may occur to the pumpkins from pests and diseases and handling at harvest.

Produce must be harvested and moved to a staging area for preparation that includes cleaning, trimming, sorting, curing (for onions, garlic or potatoes), and grading to separate into similar sizes and qualities. Sometimes produce is waxed or wrapped to preserve it or make it more appealing. Students must decide how much of this they want to apply when selling their pumpkins. Will they want to wipe dirt off the pumpkins and separate them into size and quality for selling at the farm stand?

Packaging is another price consideration. It's likely not to be a consideration for the selling of pumpkins, but it is important for students to know its purposes. It is convenient for handling and transporting, provides protection, and can be used to sort produce into convenient, more attractive units for customer appeal. Packaging can be simple or sophisticated -- costs rise with sophistication. Depending on how many links there are in the chain to market, produce may be repacked several times, by the farmer, the trader, and the retailer.

Once packed, produce is transported by a variety of means but usually by truck. A farmer living close to a main highway will have lower transportation costs than one who lives at the end of a rough road that causes damage to the truck. Price of fuel will affect the price at the market. The farmer might own a truck or might have to pay a driver to carry produce to market on a "per piece" basis. "In many cases transport will be the most important marketing cost." (<http://www.fao.org>) Relate the discussion to the savings to consumers because their pumpkins will not have to be transported very far, thus having minimal impact on the price. Connect this with similar cases of farmers who set up stands near their fields, avoiding large transportation costs for their customers.

Many products must be stored to extend their freshness and availability if they are not to be sold immediately. This, too, adds to the price depending on the length of storage time and how efficiently the storage unit is used. Where it is used frequently to full capacity, costs per unit will be low. While produce is in storage there may be losses in quality or quantity due to bad or careless storage, especially for fresh produce.

If one is growing some sort of grain like rice it must be processed before going to market. Processing reduces the amount of the original product available due to trimming losses. Processing changes a product from one form to another, often reducing the weight of the original item, and increases the price of the product. There is sometimes a by-product resulting from processing that can be sold, increasing profits. At this point students might discuss what by-products they might derive from their pumpkins and how this might be a consideration if they do not sell all of their pumpkins. For example, they might be able to harvest the pumpkin seeds, roast them and sell them at school as snacks. In general, however, processing will not be a concern for pumpkin farmers.

Throughout the marketing chain it is a fact that losses will occur because some produce will be wasted due to damage in transit, temperature variations inside the delivery vehicle, bad handling, and weight loss due to moisture loss. Other losses can occur due to over-production. According to the FAO (Food and Agriculture Organization of the United Nations), “Losses will probably be highest in the main season when ‘gluts’ of produce mean that much has to be thrown away unsold. In general, the longer the distance between farmer and consumer, the higher the likely loss.” This is not a factor for this project but is an issue that student should know about.

There are other costs that consumers are not aware of such as capital cost, (very complex to calculate) interest that a trader pays on money borrowed from the bank; fees, commissions, taxes, and the like.

To simplify the price calculating process, the following cost categories can be used:

- Farmer harvests crop.
- Produce is trucked to a packager.
- Packaged produce is transported for storage.
- Packaged produce is stored in a refrigerator.
- Refrigerated produce is transported to the supermarket for stocking on the shelves.
- Consumer purchases produce off supermarket shelf.

See Appendix B for more marketing background.

Materials

- Science notebook
- Price comparison worksheet for each student (Appendix A)
- Grocery ads from local newspapers—for every group of four
- List of locally grown fruits and vegetables (available from County Agricultural Extension or by visiting the United States Department of Agriculture website (www.fsa.usda.gov) for localized information).
- Computers with internet connections for students to do research
- Map of the US.

Set-up

Sessions 3 and 4 involve guest speakers to the class – a grocery store manager and a farmer, respectively. These arrangements should be made in advance if the visits are desired.

Procedure (Session 1)

1. **Tap prior knowledge and Share with neighbor.** Have students discuss the following questions. Where do the fruits and vegetables (produce) that students eat come from? Does all their food come from the supermarket? How does it get to the supermarket? How far must the food travel to get to the supermarket? How many people have to handle the food before it gets to their homes? Do any students get their food from a farm stand or farmer’s market? How is a farm stand food different from supermarket food? Is there a taste difference? What are the

- advantages/disadvantages to buying fresh produce from a farm stand or farmer's market? How do they think that the supermarket and the farmers determine the prices for their produce?
2. Divide the class into groups of four.
 3. Explain that they will be doing some research to help them decide how to sell and price the pumpkins they are growing.
 4. **Hands-on experience.** Distribute ads to each group and worksheets to each student. Have the students fill in the worksheets, noting all information they can find in the ad.
 5. **Introduce Scientific Principle.** Have each group compare prices for produce grown far away and produce grown closer to home. Review the scientific definition of "variable," reminding students that to have an accurate comparison, everything must be kept constant but the variable you are testing, so they must compare the same type of food being sold in the same units, etc. (You can't compare apples and oranges, after all!)
 6. **Conclusion/Wrap-up.** Have groups share their results with the class and discuss the trends in the data they found. Is it cheaper to buy food that's grown closer?

Teacher Note: Students should be growing some type of produce for this Activity. See the "garden growing" Activities in the Edible Garden Program (6-8th grades).

Procedure (Session 2)

1. **Tap prior knowledge.** Review session 1. Have each student look at the price comparison that their group did.
2. **Hands-on experience/ Introduce scientific principle.** Have the students use the US map to figure out the approximate distance, in miles, the produce has traveled.
3. Use the internet to estimate costs associated with traveling this distance. How much will be spent on gas? (Requires knowing price of gas and gas mileage of an 18-wheeler.) How many hours of driving will it take? How much will the truck driver need to be paid? How much produce can fit on a truck? How much packaging is required? What percentage of produce is damaged in transit?
4. **Conclusion/Wrap-up.** Discuss this information in relation to the pumpkins the students are growing. What costs will they incur, and which will not apply to them?

Teacher Note:

Websites listed below will help with some of this information.

- <http://www.fao.org/docrep/u8770e/U8770E00.htm#Contents>
- <http://www.iptv.org/mtom/story.cfm?Lid=358>
- http://www.papermart.com/?GOCMP=Papermart_Campaign+%231&GOMTC=Phrase&GOKEY=Packaging (paper grocery bags)
- http://www.papermart.com/?GOCMP=Papermart_Campaign+%231&GOMTC=Phrase&GOKEY=Packaging

Procedure (Session 3) – OPTIONAL

1. Invite a produce manager from a local grocery store to come and talk to the class (or arrange a class trip to the grocery store to speak with the store and produce manager.) Have students generate interview questions for the produce manager about aspects of the job related to sessions 1 and 2. Questions might include, From where do you buy produce? How do you decide which produce to buy?

- Does it matter where in the world the produce was grown? How do you determine the price of the produce?
2. Review interview etiquette. The class should know that it is not appropriate to ask questions such as the manager's salary.
 3. Conduct the interview at the scheduled visit time. Video taping the interview would offer the students the opportunity to review their interview.
 4. Discuss what the class discovered from the interview. Does it fit in with what they learned on the internet?

Procedure (Session 4) – OPTIONAL

1. Invite a farmer to come and talk to the class (or arrange a class trip to meet the farmer at her/his farm).
2. Have students generate interview questions for the farmer about how he/she determines pricing. Questions might include, Where do you sell your produce? How much is sold locally? How do you package and prepare your produce? How do you determine the selling price for the items she/he sells?
3. Review interview etiquette. The class should know that it is not appropriate to ask questions such as the farmer's salary.
4. Conduct the interview at the scheduled visit time. Video taping the interview would offer the students the opportunity to review their interview.
5. Discuss what the class discovered. Does it fit in with what they learned on the internet? With what they learned from the produce manager?

Procedure (Session 5)

1. **Tap prior knowledge/ Share with neighbor.** Direct a discussion of the findings from the research and interviews. How easy or difficult is it to determine how much to charge for produce? What would happen if one of the people in the food system makes an error in calculation? Which steps are eliminated when a farmer sells his/her own produce directly to the consumer? Which of the steps in the process will they apply in pricing the pumpkins for sale at the farmstand? Which will they **not** need? How will they market them?
2. Determine all the costs associated with the pumpkin growing project: seeds, plowing service, number of hours students spent in the field preparing the beds and planting the seeds, time spent watering by the Pumpkin Day Care families (summer care). It will be important for this information to be kept in a log over time so students can use it to determine the selling price of the pumpkins. Part of the discussion should include whether to price them in a range by size (small, medium, large) or by weight.
3. Have the class plan ways to make the pumpkins appealing, how to "advertise" them and get publicity, arrange a volunteer sales schedule, how to keep track of the money, how to calculate change, whether they will bag them for customers and how much bags will cost (see website below). In addition, students should discuss what they will do with leftover pumpkins and entertain the possibility of harvesting the seeds as mentioned earlier. This then produces a whole new discussion about how to price the seeds. Since they are a by-product, will they add profit or will the effort be too labor-intensive?



4. **Hands-on experience.** Enact the plan for selling the pumpkins!

Extensions (optional)

1. Research “green” packaging for produce, i.e., options to Styrofoam.
2. Invent a new form of packaging that will keep tomatoes, peaches, other perishables from being damaged in transit and can be used as a sales package, preventing another handling of the items.
3. Older students: “comparison shop” the supermarket ads. Find best produce prices. Interview produce manager to discover the possible reason for price discrepancy.

References

“This Little Lettuce Went to Market.” Jaffe, R. and Appel, G. 1990. The Growing Classroom: Garden Based Science. Addison-Wesley Publishing Company, Menlo Park, CA

A guide to marketing costs and how to calculate them SEE LINKS BELOW

<http://www.fao.org/docrep/u8770e/U8770E00.htm#Contents>

<http://www.fao.org/docrep/u8770e/U8770E03.htm#What%20are%20marketing%20costs%20and%20why%20do%20they%20vary>

<http://www.fao.org/docrep/u8770e/U8770E04.htm>

<http://www.fao.org/docrep/u8770e/U8770E05.HTM#Handling%20costs>

<http://www.fao.org/docrep/u8770e/U8770E06.HTM#Transport%20costs>

<http://www.fao.org/docrep/u8770e/U8770E08.htm#Storage%20costs>

<http://www.fao.org/docrep/u8770e/U8770E0A.HTM#Capital%20costs>

<http://www.fao.org/docrep/u8770e/U8770E0B.HTM#A%20marketing%20cost%20calculation>

<http://ucce.ucdavis.edu/files/datastore/234-108.pdf>

<http://www.iptv.org/mtom/story.cfm?Lid=358>

http://www.papermart.com/?GOCMP=Papermart_Campaign+%231&GOMTC=Phrase&GOKEY=Packaging (paper grocery bags)

http://www.papermart.com/?GOCMP=Papermart_Campaign+%231&GOMTC=Phrase&GOKEY=Packaging (plastic produce bags)

www.fsa.usda.gov



Appendix A: Price Comparison Worksheet.

NAME _____ **DATE** _____

TRACKING SUPERMARKET PRODUCE

DIRECTIONS: Study the grocery ad and look for prices of selected produce.

<u>Store Name</u>	<u>Produce Item</u>	<u>Price per Unit</u>	<u>Where Grown</u>	<u>Date of Ad</u>

Appendix B: Additional Marketing Information

Farming has changed over the 350 plus years since our country was first inhabited by settlers from other countries. Agriculture formerly consisted of a collection of small-scale family farms; this is no longer the case. Over the past century, our country has become dominated by large-scale, corporate “factory” farms. Farming has become a business enterprise, and the financial bottom line is the main concern for corporate farms. This is especially true in California. Since 1910 the number of farms has declined from 6.3 million to 2 million today. However, the acreage in cultivation has remained relatively constant. Most of those that have disappeared are mid-size farms.

Today, large-scale industrialized farms are predominant, with regional variations in amount of capitalization and dependence on immigrant labor. Industrialized farms focus mainly on monoculture – the planting of just one type of crop -- or on a very limited amount of crops, leading to the potential for soil exhaustion, increase in erosion due to over-plowing, and increased pest infestation. This is avoided by a strong reliance on herbicides and pesticides that cause further problems to air and water quality. Contrary to industrialized farming there are some important practices that small farmers can follow: Soil health can be improved by conservation tillage, by use of compost, erosion control, contour plowing, and planting. Beneficial insects can take the place of harmful ones by consuming nutrients that the latter need to survive. Furthermore, they are necessary to pollinate certain crops such as those of the squash and other members of the cucurbit family. Because of increased demand for fresh fruits and vegetables, it is important that the farmer select crops that will travel well or that can be sold easily to a local market or other consumer. It has been learned that food in the U.S. travels an average of 1,300 miles and changes hands half a dozen times before it is consumer. This results in no consumer connection to the source of the food and its transport.

Although there are many small-scale farms, they do not exert a large influence on the overall food system and they are often not economically rewarding or even viable for the farmers who run them. The family farms that remain are perceived as a lifestyle, relying on the labor of family members rather than depending on migratory workers hired for short periods in which labor is needed. Appendix B lists ways that small farmers can make a profit.

U.S. farm policies make small farms less economically viable. Market competition and declining crop prices make small farms less profitable, squeezing some growers out of production and causing others to join the ranks of large farmers to make up for their lower profits. Large growers exert more political clout and wealth and have preferential access to the things that made them more successful to begin with. Farm subsidies by far favor the largest producers. There are social consequences caused by our food system, with large-scale grower-shippers and retail chains exerting powerful control in the food system, with consumer food prices increasing and commodities getting lower prices for growers. Small growers can't compete for market share with the middlemen who keep increasing profits and power. It is unfortunate that we do not have an institutional framework for rewarding food systems that promote long term social sustainability.