Squanto's Fertilizer

Florida Ag in the Classroom

A Reading for Content Lesson

Science, Language Arts ***Good Neighbors – Lesson #1***

Grades: 2-5

Brief Description: Many view the current modern methods of plant nutrition as artificial, unnatural and/or high tech. Yet, the basic principals may have been in use by different cultures for thousands of years. This reading selection and reading for content questions based on the FCAT link cultural, scientific and language understandings and capabilities.

Objectives: By the end of this unit the students will be able to:

1. Read the attached passage, analyze the information and answer the questions provided; and
2. Apply the information to the plant nutrient lessons.

Life Skills: 1. Reading Comprehension
2. Understands Systems

Materials:

Copies of Squanto's Fertilizer
Copies of test questions

Next Generation Sunshine Standards Met:	
LA.2.1.7.3	The student will summarize information in text, including but not limited to main idea, supporting details, and connections between texts.
LA.3.1.6.9 LA.4.1.6.8 LA.5.1.6.9	The student will determine the correct meaning of words with multiple meanings in context.
LA3.2.2.2 LA.4.2.2.2 LA.5.2.2.2	The student will use information from the text to answer questions related to explicitly stated main ideas or relevant details.
LA.3.6.1.1 LA 4.6.1.1	The student will read informational text (e.g., graphs, charts, manuals) and organize information for different purposes, including but not limited to being informed, following multi-step directions, making a report, conducting interviews, preparing to take a test, and performing a task.
SC.3.L.14.1	Describe structures in plant and their roles in food production, support, water and nutrient transport, and reproduction.

Standard Reinforced or Skill Utilized
LA.2.1.6.1, LA2.1.6.9, LA 2.1.7.1, LA.2.2.2.2, LA3.1.7.4, SC.2.L.16.1, SC.2.L.17.1, SS.2.A.2.1, SS.2.G.1.1, SS5.A.3.2

Preparation:

1. Make copies of the student handouts including the map.
2. Make copies of the test questions

Time: **Activity One:** 30 minutes

Activity Two: 20 minutes

Vocabulary: legume, nitrogen, Pilgrims, Plymouth/Plimoth, Squanto, Samoset, smallpox

Background

At Thanksgiving time, as we recognize the challenge colonists had to survive, many students learn the story of Squanto and how he helped the Pilgrims by teaching them to hunt, fish and grow native crops. Oftentimes this story is simplified and details of both his life and the importance of what he taught are lost in the dialogue. This story does not avoid the unpleasantness of his repeated capture, loss of his whole village nor reasons why he taught the planting techniques as he did. This is a link to explain to students that one can overcome terrible circumstances and at the same time teaching the science of farming at that time and its relation to techniques used today. As Squanto taught the colonists the planting methods of his people, he was laying the foundation of modern fertilizer methods. The fish added while planting provided phosphorous and nitrogen from the same sources used today – the earth and atmosphere. Planting the corn, beans and squash/pumpkins/gourds together had scientific applications. The corn needs a rich source of nitrogen. This is provided partially by the fish as its protein biodegrades and also by the bean plant. As a legume, beans fix atmospheric nitrogen into a form that plants can use. At the same time the corn provides the climbing beans with a trellis as it weaves up the corn stalk. The squash and pumpkins also benefit from the nutrients and as they grow, there large leaves shade the ground and reduce competition from weeds. Anyone who has gardened knows that this is not a perfect system and that the people still need to work hard to keep competition from weeds from ruining the crops by staling nutrients and water.

Activity One – Squanto's Fertilizer

1. Have the students read ***Squanto's Fertilizer***.
2. Have the students complete the questions using the reading selection and map.

ANSWER KEY

Reading for Content - Squanto's Fertilizer

1. B.
2. D.
3. D.
4. C.
5. C.
6. B.
7. A.
8. D.
9. D.
10. B.

Activity Two- Today's Connection

1. After the students complete activity one, discuss the information with them and have them explore how this information connects with the other lessons provided in this unit about plant nutrition.
2. Ask the students to identify what Squanto had to overcome and have them speculate as to what characteristics he possessed to do so.
3. Have a discussion about where their food comes from and whether or not they could survive as the pilgrims did.
4. Celebrate Thanksgiving.

Extensions or Alternatives:

1. Have the students research the Pilgrims or Plimoth plantation and write reports on the lifestyle and how it compares with today.
2. Use the lesson in Keeping Florida Green about travel yesterday or today. Use the PowerPoint presentation.

Notes:

Squanto's Fertilizer

Squanto had spent a great deal of time among the English. As a boy in 1605, he had been captured while fishing off the coast of New England and taken to the elaborate mansion of Sir Ferdinando Gorges in England.

For three years he was held captive and taught to live as an Englishman. Gorges then sent Squanto and his friends back to America to serve as guides for further exploration and trade. His expert knowledge of rivers and natural harbors as well as the tribes and chieftains served the English explorers well. One day in 1612, the ship traveled to his native coastline and he asked Captain John Smith if he could go ashore to his home with the Patauxet (paw-TUX-et) Indians. His wish was granted. But his stay at his beloved bay and village was cut short a few weeks later by another ship and a second capture. This capture led to his sale as a slave in the Spanish slave port of Malaga. Fortunately, Squanto was sold to a monastery. The brothers who bought him did so to set him free.

He made his way to England and found work on another ship as a guide to the New World. Years passed. Once again, the ships travels found him off the coast of New England and his homeland. Once again, he was granted permission to go ashore. But as he ran to the bark-covered round-houses of his village, no one was there to greet him. All of the homes we empty. Samoset (SAM-o-set) a friend from a neighboring tribe told him that all had died from a disease brought by settlers (smallpox). Squanto was devastated. He wandered the forests for weeks and eventually went to live with his friend Samoset in a neighboring village.

Six months later in December, Squanto once again saw the white sails of a European ship. This time he did not greet them but hid. As he watched, he noted that these people were not dressed as the soldiers. These people did not have fancy clothes. They were dressed in plain dark colors with broad hats and white caps. Their black capes shielded them from the freezing winds. He also saw children. Squanto was watching 102 Pilgrims reach the New World. Before the leaves of spring appeared, he watched the new people come ashore and build houses on the very place where his village stood. The winter had been harsh and fewer than half had survived.

At Samoset's urging, the two decided to meet the villagers. The villagers fear at seeing Indians soon turned to amazement as Squanto spoke excellent English when introducing himself and Samoset with the words, "My name is Squanto. This is Samoset. We come in peace." Putting their muskets aside, the Pilgrims invited the two visitors to share their meager food.

When it grew dark and time to leave, Squanto told his friend that he was going to stay. "This is my village. These will be my new people."

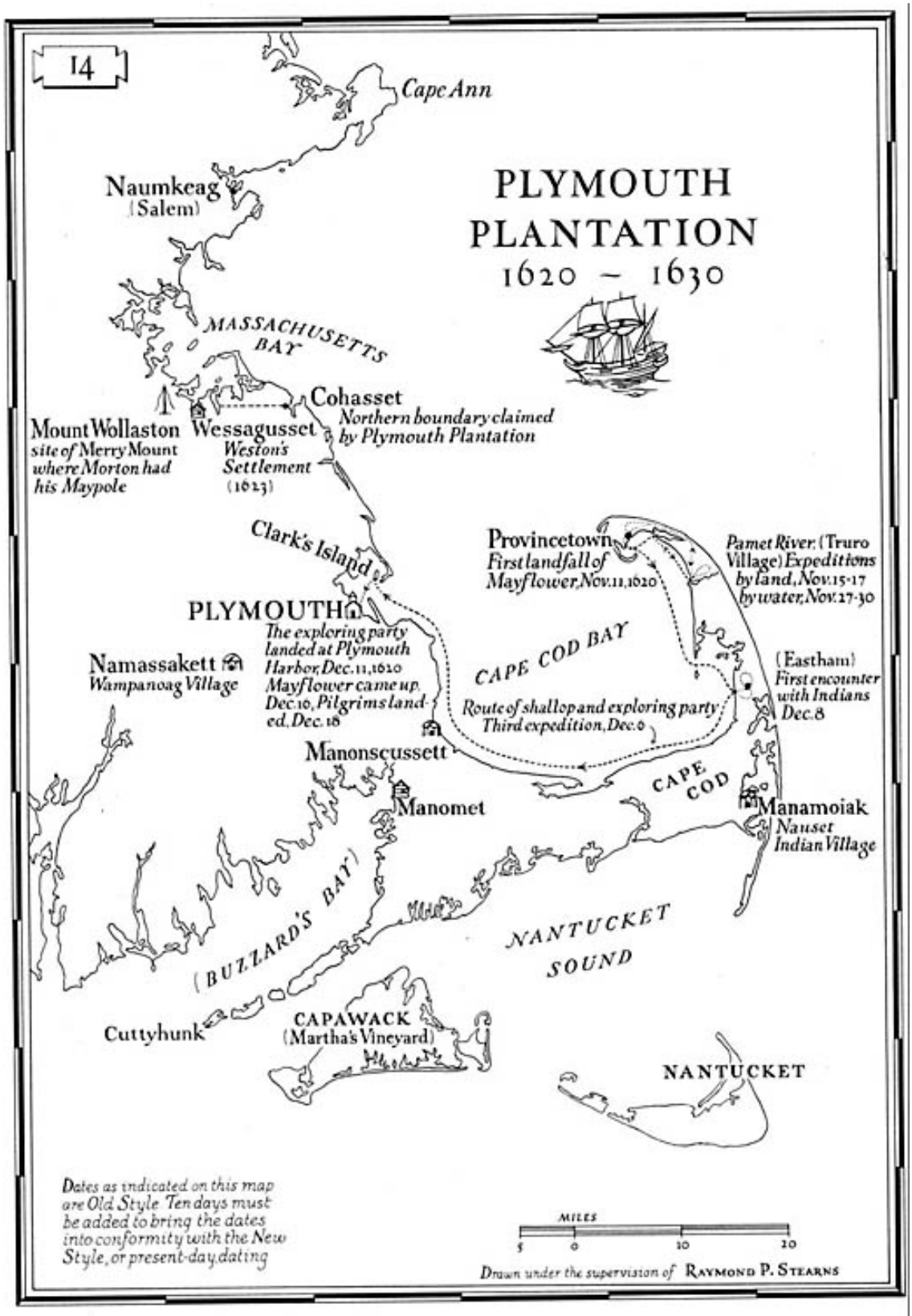
Squanto asked the Pilgrim's leaders if he could stay. He offered to help them find food in the forest. Taking careful consideration, the Pilgrims decided that the struggling colony had no choice but to trust Squanto and agreed. That spring and summer they learned that their decision

had been a wise on. Squanto proved his worth many over and over. Much of the grain they brought to plant had been eaten during the harsh winter. The thin, rocky soils of Plymouth were far different than the soils of their home in England. It was doubtful that their ability to grow those crops would provide sufficient food for the next winter. Squanto led them to brooks when the herring and salmon were migrating upstream to spawn. He taught them to fish with traps, catch eels in their bare hands and how to stalk game in the forest. He taught the children what berries were safe to eat and when they were ripe to pick. He brought them native corn (maize), beans and squash seeds from a local tribe. But they had never seen these seeds and did not know how to grow them. So, Squanto showed them how to plant. He taught them to did a shallow hole and place a fish they had caught in the center. Above this they built the soil into a hill and poked three or four corn kernels into the soil about two inches under the surface. Nearby the hills they planted beans and squash seeds. These three crops are known as the three sisters. All are native to America. These techniques had been developed by the American Indian tribes over thousands of years. The trial an error method of progress led them to develop an excellent method to fertilize and limit weed competition in these crops.

Squanto had shown the Pilgrims how to fertilize their crops with the resources available and how to help those plants use the fertilizer with less competition. The fish placed in the shallow hole would provide phosphorous from its bones as it decomposed. This is the same source of phosphorous used today, but today's source is concentrated into a rock by the deposit of fish and shellfish in the ocean over thousands of years. The high protein content of the fish would also provide nitrogen fertilizer as it decomposed. The bean plant is a legume that would fix nitrogen as it grew. Some of that nitrogen would benefit the corn. The beans they planted were climbing beans and their tendrils would climb up the corn stalk – providing support. The squash (and pumpkins and gourds) grew plenty of large leaves that would shade the ground and slow the growth of weeds. Weeds compete with crops for nutrients and water. The first year they planted 20 acres of corn in this method. Without this assistance it is doubtful that the Pilgrims would have survived a second winter.

The success of their harvest led the Pilgrims to plan a feast of thanks to celebrate and thank God. Squanto was sent to invite the friendly chief Massasoit (MASS-a-soy-t) and his braves. As the Pilgrims thanked God for the venison, roast duck and goose, turkeys, shellfish, bread and vegetables they were about to eat, Squanto also heard them thank God for sending him. As they praised he who saved them from hunger and helped to establish their colony, Squanto stood with great pride.

Sources: Historical facts about Squanto's (Tisquantum's) life are found in primary sources such as William Bradford's *Journal*, Capt. John Smith's *The Generall Historie of New England*, and Sir Ferdinando Gorges' *Brief Narration*. Information about the tree sisters and American Indian growing techniques can be found in museums and living history organizations of various tribes across the United States and Canada and research being conducted in Land Grant Universities. These same techniques are used by gardeners today, but fish meal is used in place of freshly caught fish.


14
Cape Ann
Naumkeag
(Salem)
PLYMOUTH
PLANTATION
1620 – 1630
MASSACHUSETTS
BAY
Cohasset
Northern boundary claimed
by Plymouth Plantation
Mount Wollaston
site of Merry Mount
where Morton had
his Maypole
Wessagusset
Weston's
Settlement
(1623)
Clark's Island
Provincetown
First landfall of
Mayflower, Nov. 11, 1620
Pamet River (Truro
Village) Expeditions
by land, Nov. 15-17
by water, Nov. 27-30
PLYMOUTH
The exploring party
landed at Plymouth
Harbor, Dec. 11, 1620
Mayflower came up,
Dec. 10, Pilgrims land-
ed, Dec. 18
CAPE COD BAY
Namassakett
Wampanoag Village
(Eastham)
First encounter
with Indians
Dec. 8
Route of shallop and exploring party
Third expedition, Dec. 6
Manonscussett
CAPE
COD
Manomet
Manamoiak
Nauset
Indian Village
(BUZZARD'S BAY)
NANTUCKET
SOUND
Cuttyhunk
CAPAWACK
(Martha's Vineyard)
NANTUCKET
Dates as indicated on this map
are Old Style. Ten days must
be added to bring the dates
into conformity with the New
Style, or present-day, dating
MILES
5 0 10 20
Drawn under the supervision of RAYMOND P. STEARNS

Name _____ Reading for Content
Squanto's Fertilizer

Read "Squanto's Fertilizer" and use the information to answer the questions below. Circle the correct answer.

1. The third time that Squanto saw the sails of a large ship he hid because:
   A. he believed they killed his family.
   B. he had already been captured twice and sent to Europe.
   C. he did not want to speak English.
   D. he was afraid that they might give him a disease like the one that wiped out his village.

2. The people Squanto and Samoset met were:
   A. English soldiers sent by Sir Fernando Gorges.
   B. Captain John Smith and his soldiers.
   C. Spanish slavers searching for captives.
   D. Pilgrims seeking a land to colonize.

3. Using the map and text the Pilgrims settled:
   A. where they first landed.
   B. on Nantucket Sound.
   C. where Boston is today.
   D. inside Cape Cod Bay near Clark's Island.

4. How did Squanto learn to speak English?
   A. The brothers of the Spanish monastery taught him
   B. Samoset taught him after all the people in his village died.
   C. He learned while held captive by Sir Ferdinando Gorges.
   D. He learned from the Pilgrims.

5. Which of these events happens first?
   A. The Pilgrims hold a feast of thanks.
   B. Squanto shows the Pilgrims how to plant corn and fertilize it with a fish.
   C. Squanto decides to remain with the Pilgrims at the site of his home village.
   D. Squanto brings corn (maize), squash and bean seeds for the Pilgrims to plant.

6. As Squanto taught the Pilgrims how to plant corn, beans and squash seeds, why did he place a fish in with the seed?
   A. to prevent weeds from growing.
   B. to fertilize the seeds and growing crop.
   C. the smell of rotting fish would chase away birds.
   D. to teach future generations about plant nutrients.

7. Fertilizer used by farmers today provides two of the same nutrients used by the American

Indians. The two nutrients provided by adding fish during planting are:

A. Phosphorous and Nitrogen
B. Potassium and Phosphorous
C. Nitrogen and Calcium
D. Legume and Protein

8. Planting the three sisters together would improve the yield of growing crops by
   A. providing support for the bean plant
   B. providing nitrogen for the corn and squash
   C. controlling weed competition
   D. providing support, nitrogen, and shade to reduce weeds.

9. Pilgrims most likely ate this favorite food at the first Thanksgiving:
   A. Yams with marshmallows
   B. Pumpkin pie
   C. Mashed potatoes
   D. Turkey

10. What does the term “brothers” mean in the sentence “The brothers who bought him did so to set him free.”?
    A. two men with the same mother and father.
    B. monks living in a monastery.
    C. priests in a cult.
    D. best friends.