

FOURTH GRADE

# A STORY OF AGRICULTURE LESSON PLANS



AGRICULTURE

The Historical Society of Palm Beach County and  
Richard and Pat Johnson Palm Beach County History Museum  
300 N. Dixie Highway, West Palm Beach, FL 33401  
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# **A STORY OF AGRICULTURE**

## **LESSON PLANS-TEACHER COPY**

**GRADE LEVEL:** 4th grade and can be adapted for other grades

### **INTRODUCTION:**

This section provides a brief history of how agriculture developed in Palm Beach County.

### **PURPOSE:**

To examine what agriculture is and provide students with a better understanding of the important role it plays in Florida.

### **OBJECTIVES:**

- Students will be able to define what agriculture is.
- Students will learn what types of crops are grown in Florida.
- Students will learn about significant individuals that contributed to the success of the agricultural industry in Florida.
- Students will learn about how farming practices have changed.
- Students will learn about the challenges that face farmers now and in the future.

### **SOCIAL STUDIES STANDARDS:**

**SS.4.A.6.1:** Describe the economic development of Florida's major industries.

**SS.4.A.6.2** Summarize contributions that immigrant groups made to Florida.

**SS.4.A.9.1:** Utilize timelines to sequence key events in Florida history.

**SS.4.A.9.In.a:** Complete a timeline to sequence important events in Florida history.

### **LANGUAGE ARTS STANDARDS:**

**LAFS.4.RI.1.1:** Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

# A STORY OF AGRICULTURE

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**LAFS.4.RI.1.2:** Determine the main idea of a text and explain how it is supported by key details; summarize the text.

**LAFS.4.W.1.3:** Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

### **MATHEMATICS STANDARD:**

**MAFS.4.OA.1.2:** Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

### **MATERIALS:**

- HSPBC's *A Story of Agriculture* pages 8-19 (included)
- Answer Key (pages 5-7)
- Quiz (page 3)
- Quiz Answer Key (page 4)
- Computer

### **INSTRUCTIONS:**

1. Students are given *A Story of Agriculture* Student Copy PDF.
2. Students read and complete the activities in *A Story of Agriculture* (included). Once completed, the answers are submitted to the teacher. Answer Key is on pages 5-7.
3. Students take the Quiz (page 3) and submit it to the teacher. Answer Key is on page 4.

# A STORY OF AGRICULTURE QUIZ

**Instructions:** Read pages 1-10 of *A Story of Agriculture* and answer the questions below in a separate document. When you are finished, submit your answers to your teacher.

Name:

1. When was the Lake Worth Drainage District established?

- A) 1900
- B) 1910
- C) 1915
- D) 1920

2. How can farmland be created?

- A) irrigation
- B) dredging
- C) railroads
- D) planting

3. What is one method for controlling pests on farms?

- A) mice
- B) insects
- C) owls
- D) eagles

4. What type of farming utilizes technology that includes Global Positioning Systems(GPS), robotic drones, agricultural machinery, and sensors?

- A) precision farming
- B) cooperative farming
- C) pastoral farming
- D) dry farming

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## ACTIVITIES FROM PAGES 3 AND 4 OF *A STORY OF AGRICULTURE*

### READING CHECK:

1. What is the EAA?

**Answer: The Everglades Agricultural Area**

2. The root words for *agriculture* are from what language?

- a. Spanish
- b. French
- c. German
- d. Latin**

3. What is the most popular sweet pepper?

**Answer: The bell pepper is the most popular sweet pepper in the United States.**

4. What happens to a pepper when it changes color?

**Answer: As a pepper matures, its color changes from green to red and it becomes sweeter.**

### WRITING:

Write a poem about your favorite fruit or vegetable.

**Answer: Students answers will vary.**

### VOCABULARY:

**Answer: Students answers will vary.**

### READING CHECK:

1. How many crops are grown in Palm Beach County?

**Answer: There are more than twenty-six crops grown in Palm Beach County.**

2. Who founded the Yamato Colony? What was the purpose of the colony? What fruit did they first focus on growing?

**Answer: It was an agricultural settlement. They grew pineapples.**

3. Which business was first in the Glades, fishing or farming?

**Answer: fishing**

## ACTIVITIES FROM PAGES 5 AND 6 OF *A STORY OF AGRICULTURE*

### RESEARCH:

2. Radish is related to what plant?

- a. rice
- b. celery
- c. mustard**
- d. cucumber

3. Lettuce is a member of what family?

- a. radish
- b. sunflower**
- c. grass
- d. none of the above

### SHORT ANSWER:

1. List three fruits that are citrus.

**Answer: oranges, tangerines, and grapefruits**

2. What breed of cow is a cross between a Hereford and a Brahman?

**Answer: A Braford is a cross between a Hereford and a Brahman.**

### THINK AND SOLVE:

1. Sugarcane stalks average 10% sugar by weight. If a farmer gets 4,000 pounds of sugarcane stalks from his field, how much sugar will he be able to produce from the stalks?

**Answer:  $4,000 \times .10 = 400$  pounds**

2. If Florida Crystal's Okeelanta plant processes 22,000 tons of sugar a day, how many tons of sugar will be processed in 30 days?

**Answer:  $22,000 \times 30 = 660,000$**

## ACTIVITIES FROM PAGES 6 AND 7 OF *A STORY OF AGRICULTURE*

### READING CHECK:

1. What kind of predator bird is being used to control rats and mice in the Glades?

**Answer: owl**

2. In 2014, one farmer supplied 155 people. How many people can five farmers supply? Nine farmers?

**Answer: Five farmers can supply 775 people ( $155 \times 5 = 775$ )**

**Answer: Nine farmers can supply 1,395 people ( $155 \times 9 = 1,395$ )**

### THINK AND SOLVE:

1. If you have 1,500 dairy cows and they give 7,000 gallons of milk a day, how many gallons of milk does each cow give a day?

**Answer: Each cow would give 4.6 gallons of milk a day ( $7,000 \div 1,500 = 4.6$ )**

### THINK AND WRITE:

1. If you were a farmer, which farming method would you practice: organic farming or hydroponic farming? Why?

**Answer: Student answers will vary.**



## STANDARDS:

**SS.4.A.6.1:** Describe the economic development of Florida's major industries.

**SS.4.A.6.2** Summarize contributions that immigrant groups made to Florida.

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## INTRODUCTION

Palm Beach County covers more than 2,383 square miles, or 1,525 million acres, including land and water. That makes our county one of the largest in the State of Florida.

Palm Beach County has been known by several nicknames, but the most important is “Winter Vegetable Capital of the United States.” When most of the nation is under snow and ice and too cold to grow vegetables, Palm Beach County farmers can still grow crops, about twenty-six different kinds.

Where do our farmers grow their produce? It happens all across Palm Beach County. A total of 451,375 acres are used for agriculture, more than any other county in Florida.

The western section of the county is commonly referred to as “the Glades” because it is land that was formerly part of the *Everglades*. Notice how the word “glades” forms part of the word *Everglades*. The Glades is part of a larger farming area in south Florida known as the *Everglades Agricultural Area* or EAA. The EAA covers 700,000 acres in four counties. The Glades portion, which is in Palm Beach County, contains more than 400,000 acres.

There are also farms and other agricultural businesses in the eastern half of the county. Most are in or near Boynton Beach, Delray Beach, Boca Raton, Wellington, Jupiter, and Loxahatchee.

Agriculture is very important to everyone. Farmers grow vegetables and fruit, and raise the cows that supply the milk and meat that we drink and eat.



Farmers picking cabbage

Courtesy of HSPBC

These are sold to companies that process, package, and sell the final product to grocery stores and restaurants. From the planting of the seeds, to the selling of the food in stores, to serving it in restaurants or at home, a lot of jobs depend on agriculture.

And, remember this: if it were not for farmers, you would have to grow your own food or walk through fields and forests hunting for something to eat. Now that we know how important farming is, let us examine what agriculture is.

## WHAT IS AGRICULTURE?

The English word *agriculture* comes from the Latin words *ager* (field) and *cultura* (cultivation). Agriculture is the practice of cultivating the soil for the purpose of producing crops and/or raising livestock. It also includes the preparation of these products for consumption.

Agriculture, or farming, simply means that farmers acquire a piece of land and clear it of native vegetation. Then, with tractors and other equipment, the farmers till the soil to make it loose. Then, they plant seeds, such as sweet

corn or watermelon. Farmers sometimes apply fertilizer, such as manure, to help the plants grow. Crops are then cultivated with equipment or sometimes sprayed with herbicides to kill weeds. Farmers also spray pesticides to kill predatory insects that would eat the crops before the farmer could harvest them.

Some farmers plant trees, such as oranges or apples. These trees live for many years and once each year, the farmer picks the ripe fruit and sends it to market. Other farmers plant pastures for livestock such as cows and sheep. These farmers sell milk, meat, and wool. There are other types of farms including poultry, sod, fish, horse, landscape plants, honey, and sugar. Some experimental farms try to develop crops that can be cheaply converted to ethanol and used instead of gasoline.

Now that we know what agriculture is, let's explore the history of agriculture in Palm Beach County.

## THE ROLE OF THE LAKE WORTH DRAINAGE DISTRICT-COURTESY OF LWDD

In the early 20th century it became necessary to drain water from the land for building and farming. Early efforts to drain the land involved both companies and private landowners. In 1915, the Lake Worth Drainage District (LWDD) was established to manage land reclamation within its boundaries.

The new drainage district was rectangular in shape. It was twenty-six miles long, eight miles wide, made up of 129,317 acres of land, and 3,400 acres of water. Originally made of wood, water control structures were built and operated during the rainy season to drain the land to protect homes



and crops from flooding. Among the population of 6,500 property owners, about 400 were farmers cultivating vegetable crops on about 5,000 acres.

The LWDD's chief engineer, Orrin Randolph, submitted a report stating that water would have to be "artificially" drained to prevent "destruction of crops." His report, "Plan of Reclamation," was adopted by the LWDD and would forever change the landscape.

Their careful water management resulted in the continued prosperity of the region.

Today the Lake Worth Drainage District covers 200 square miles and provides water supply and flood control for more than 700,000 residents. The LWDD is bounded by the Arthur R. Marshall Loxahatchee National Wildlife Refuge on the west; Interstate 95 on the east; Okeechobee Boulevard on the north; and the Hillsboro Canal on the south. It includes all or part of thirteen municipalities: Atlantis, Boca Raton, Boynton Beach, Delray Beach, Greenacres, Golf, Haverhill, Lake Clarke Shores, Lake Worth, Palm Springs, Royal Palm Beach, Wellington, and West Palm Beach.

## GROWING THINGS IN THE EAST: THE COASTAL AREAS

Agriculture in Palm Beach County was first practiced along the shore of Lake Worth by the Seminoles. During the Second Seminole War (1835-1842), U.S. soldiers scouting the lake area found Seminole

fields of pumpkin, squash, and other vegetables. In the 1860s, the keepers of the Jupiter Inlet Lighthouse and their families were too far from places where they could buy fresh vegetables, so they planted their own vegetable gardens.

In the 1870s the first permanent settlers arrived on the island now named Palm Beach. They began clearing land to farm and thought



the area was a "Garden of Eden." The sandy soil was so fertile that anything would grow. The early farmers discovered that tomatoes did not grow very well in the muck west of Lake Worth. However, if they added the ashes of hardwood trees to the soil, their tomato crops would thrive.

In 1878 the Spanish ship Providencia was driven aground on the shores of where the first pioneers were living and farming. It was carrying animal hides, log wood, and 20,000 coconuts. Since coconuts are the seeds for coconut trees, many of the settlers thought by planting the coconuts in groves and harvesting them, they would have a cash crop to sell. They planted the coconuts and in less than a decade, the area was covered with thousands of coconut palm trees. That is the origin of the name of our county: Palm Beach.

Pioneer farmers planted pineapples, pumpkins, coconuts, peas, beans, radishes, tomatoes, lettuce, and other vegetables. When the crops were ripe, they were harvested and boxed for transportation to northern cities. However, getting the crops to market took a long time. First, the farmers had to put their shipment on a boat, sail to the north end of

## ACTIVITIES!

### READING CHECK:

1. What is the EAA?
2. The root words for agriculture are from what language?
  - a. Spanish
  - b. French
  - c. German
  - d. Latin
3. What is the most popular sweet pepper?
4. What happens to the pepper when it changes color?

### WRITING:

Poet Ogden Nash wrote this poem about celery:

Celery raw,  
Develops the jaw,  
But celery, stewed,  
Is more quietly chewed.

Write a poem about your favorite fruit or vegetable.

## DID YOU KNOW?

Florida farmers produce 800 million ears of sweet corn annually. Palm Beach County produces approximately 398 million ears of sweet corn a year, which can feed a population of 38 million.



## DID YOU KNOW?

In the 1600s, European settlers brought celery to America. Celery is a cool season crop, with growing concentrated in California, Florida, Michigan, and Texas. Florida ranks second in the nation. Most of Florida's celery crop is grown in Palm Beach County.

## ACTIVITIES!

### VOCABULARY:

Define the following using a dictionary:

1. Biomass
2. Ethanol
3. Horticulture
4. Hydroponics
5. Organic
6. Bagasse

Lake Worth, unload the boxes onto wagons, and haul them overland about seven and a half miles to Jupiter. Then, they loaded the boxes on boats again, which sailed north up the Indian River to Titusville or Jacksonville. It would be many weeks before a farmer learned if his crop arrived safely and was sold. If the shipment was rotten, the farmer received nothing for his crops (imagine all that work for nothing!). If he was lucky, he received much needed money. For example, in 1879 the Dimick and Geer families were able to get a shipment of tomatoes to market in good condition and made \$480 an acre. This was a small fortune at the time. Even though many shipments never made it to market before rotting, the farmers refused to give up.

A faster mode of transportation arrived in the 1890s when Henry Flagler built his Florida East Coast Railroad down Florida's east coast to Miami. Farmers were able to get more perishable vegetables like tomatoes and bell peppers to market before they rotted. The railroad also allowed for greater

expansion of agriculture because it was so easy to ship the produce to the northern markets.

By 1890, pineapple was a major local crop. Since pineapples, nicknamed "pines," needed sandy soil, the eastern section of the county was a perfect location for them. In the 1890s, the pineapple fields of the Windella Pineapple Plantation were located on land just north of the historic 1916 Court House in what is now downtown West Palm Beach. By 1929 there were only a few farmers planting pineapples because plant diseases and freezes destroyed the crops and other, more profitable crops were being planted. Also, farmers could not compete with cheaper pineapples imported into the U.S. from the Caribbean.

Through the years, Palm Beach County has had a number of farmers planting a variety of commercial crops from Jupiter to Boca Raton. In Jupiter, the Pennock family had both a dairy farm and an asparagus fernery (a type of fern). The fernery supplied greens to florists across the United States. At times, the

fernery made as much in a year as the dairy.

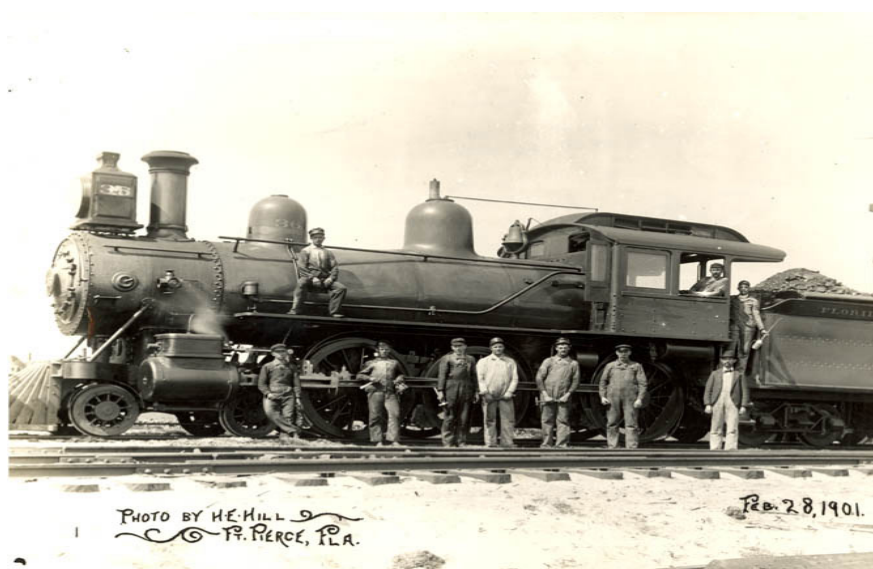
Some pioneers experimented with different fruits to create new varieties. In the mid-1880s Elbridge Gale, a retired professor of horticulture came to the Lake Worth area. He homesteaded 160 acres in the area south of 45th Street in West Palm Beach. He planted several mango trees. From these mangoes, Gale produced an improved variety of fruit called the *Haden mango*. Because of Gale's work with mangoes, we have a town named Mangonia Park.

In Boca Raton, surveyor and farmer Thomas Rickards planted 5,000 citrus trees on fifty-five acres. Another early farmer in the Boca Raton area was Frank Chesebro. He planted potatoes, tomatoes, and banana trees on his farm. Too much rain, grasshoppers, and worms destroyed his crops. Yet he and his family continued to farm, and eventually, the Chesebros had one of the largest farms in Boca Raton.

Clint Moore had the largest farm at 1,600 acres. Nearly 500 farm workers lived on his property. He grew lima beans, peppers, eggplants, and snap beans. Years later, a road in Boca Raton was named after him.

Sixteen dairy farms prospered in the eastern part of the county. One dairyman, M.A. Weaver, milked his cows by hand, bottled the milk, and delivered the milk himself to homes in West Palm Beach.

Farming in eastern Palm Beach County continues today, although there are fewer farms every year. One eastern farm is the 900-acre Yee Farm, Inc. This family-owned farm grows Chinese vegetables, which are shipped from their



Courtesy of HSPBC

Henry Flagler's East Coast Railroad



George Morikami

*Courtesy of HSPBC*

Atlantic University.

One Japanese colonist remained after World War II. George Morikami purchased and farmed 200 acres in Delray Beach until his death in 1976. He donated his land to Palm Beach County. Today the Morikami Museum and Japanese Gardens is America's foremost center for Japanese culture.

### CITRUS GROVES

Citrus includes fruits such as oranges, tangerines, grapefruits, lemons, and limes. Citrus is not native to Florida. The citrus industry

began when the Spanish settled Florida. They planted the first citrus groves in St. Augustine in the 1500s. Grapefruit seeds were first brought to Florida and planted in the 1820s.

Today, oranges and other citrus varieties are one of the state's most important industries. There are about 569,000 acres of citrus groves and more than 74 million citrus trees. Palm Beach County once had thousands of acres of citrus fruits, including the largest lemon grove in Florida. By 2000, most citrus groves were gone. The owners sold their land so developers could build houses. For example, on Lawrence Road between Gateway Boulevard and Lantana Road, there were three citrus groves: Ridgeway Groves, Palm Beach Groves, and Knollwood Groves, one of the oldest groves in the county. Now, all three are residential communities.

## GROWING THINGS IN THE WEST: THE GLADES

### FISHING BEFORE FARMING

Before agriculture came to the Glades, fishing for catfish was the business of the day. Along the wild shores of Lake Okeechobee fisherman established fishing camps. Before 1910, several fishing companies were founded and the million-dollar industry employed 1,500 people. At its peak, the business shipped out an amazing 6.5 million pounds of catfish a year. By 1912, Lake Okeechobee had been fished out and the industry was gone. Today the lake supports sport fishing and has been called the "Bass Fishing Capital of the World." When the fishing industry died, farming took its place in the Glades. However, before this area could really support farming, the land had to be drained.

### DREDGING

By draining swamps, it was possible to create farmland. In 1881, Hamilton Disston purchased four million acres of land from the State of Florida. It stretched from Orlando to south of Lake Okeechobee. Disston paid one million dollars, or twenty-five cents per acre. Draining the swamps would expose fertile muck, perfect for growing crops.

In order to completely drain the land, several large canals had to be dug from the Atlantic coast to Lake Okeechobee. Those canals are the Miami, North New River, Hillsboro, West Palm Beach, and the St. Lucie canals. For each mile that was cut, canals drained about 900 acres. Once the water drained off and the rich muck soil was

## ACTIVITIES!

### READING CHECK:

1. How many crops are grown in Palm Beach County?
2. Who founded the Yamato Colony? What was the purpose of the colony? What fruit did they first focus on growing?
3. Which business was first in the Glades, fishing or farming?

### RESEARCH:

1. Radish is related to what plant?
  - a. Rice
  - b. Celery
  - c. Mustard
  - d. Cucumber
2. Lettuce is a member of what family?
  - a. Radish
  - b. Sunflower
  - c. Grass
  - d. None of the above

### SHORT ANSWER:

1. List three fruits that are citrus.
2. What breed of cow is a cross between a Hereford and a Brahman?

packinghouse in western Boynton Beach to customers all over the United States.

### THE YAMATO COLONY

The Yamato Colony was an agricultural settlement of Japanese farmers. In 1904, Joseph Sakai introduced the farmers to north Boca Raton. They called the land that they settled *Yamato*, which is an ancient name for Japan. In the beginning, the colony focused on growing pineapples because they could get high prices for the fruit. They also grew citrus and vegetables. Gradually they grew less and less pineapple because of plant diseases and low prices.

By World War II, most of the Yamato colonists returned to Japan because they had saved enough money. The colony ended when the few remaining farmers were forced to sell their land to the government because the land was to be cleared and turned into an army base. It is now part of Boca Raton Airport and Florida



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Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

## ACTIVITIES!

### THINK AND SOLVE:

1. Sugar cane stalks average 10% sugar by weight. If a farmer gets 4,000 pounds of sugar cane stalks from his field, how much sugar will he be able to produce from the stalks?
2. If Florida Crystal's Okeelanta plant processes 22,000 tons of sugar a day, how many tons of sugar will be processed in 30 days?

### READING CHECK:

1. What kind of predator bird is being used to control rats and mice in the Glades?
2. In 2014, one farmer supplied 155 people. How many people can five farmers supply? Nine farmers?

exposed, people began moving in and planting their crops.

Canals were also beneficial because they were a means of transportation. Settlers would take boats to their new land and farmers would ship their produce to the cities. However, there were times when boats could not travel the canals because they easily got clogged with silt (dirt). Once roadways and railroads were built to Lake Okeechobee, travel on the canals stopped. Canals continue to serve an important function today. The canals hold rainwater so the land does not get flooded.

### FARMING IN THE GLADES

Agriculture in the Glades started when people were able to drain the land. Beginning in about 1904, some of the very first farms in the Glades were established on Ritta and Torry Islands, at the south end of Lake Okeechobee. Farmers planted vegetables, sugar cane, banana, grapefruit, and avocado trees. One of the larger farms on Torry Island covered 700 acres. The owners had to cut down the pond apple trees (mistakenly called *custard apples*), to plant peppers, eggplants, and tomatoes.

South of the lake, farmers began settling Okeelanta. By 1917 it was the largest community in the area. It had 110 families, a hotel, town hall, lumberyard, blacksmith, and a barber. South Bay, on the lake's shore, had at that time only twelve families.

To the northeast of Okeelanta, in what is now the downtown business area of Pahokee, farmers were protected by a high natural ridge. In February 1917, farmer



Frederick E. Bryant in a sugarcane field

Courtesy of HSPBC

J. R. Poland was ready to harvest his peas, beans, peppers, and potatoes. He heard that a frost had damaged crops throughout Florida. But Poland's crops were not affected because the high ridge protected the farm. Other farmers in the area were also unaffected and made large sums of money for their cabbage, beans, and tomatoes. When word spread that the vegetable fields had not been damaged in Pahokee, people started buying muck land to establish farms in the area. By 1920, there were 624 farms on the eastern side of Lake Okeechobee with over 12,000 acres of crops.

When the canal from West Palm Beach opened, farmers in the Glades were able to ship their crops by barge to West Palm Beach where the crates of produce were transferred to the railroad for shipment north. Western farms were so productive that they surpassed other areas of south Florida. In 1920 Fort Lauderdale farmers shipped thirty railroad cars of tomatoes, and Glades farmers shipped more than fifty-five from West Palm Beach. In

1924 Conners Highway, a toll road, opened. Travelers could drive from West Palm Beach to Lake Okeechobee and farmers could transport their crops faster and easier, which encouraged other people to take up farming in western Palm Beach County.

Over the years, more farms were established or sold to other farmers who were expanding. A. Duda and Sons came to Palm Beach County in the 1940s. Forty years later they had a 20,000-acre farm in Belle Glade and 7,000 acres in Hendry County. They grew celery, radish, lettuce, sweet corn, carrots, cauliflower, and sugar cane. Duda is one of the world's largest celery growers and produces close to 115 million pounds a year in Florida. Its fresh celery is sold under the Dandy brand. A. Duda and Sons have other farms in California, Arizona, Texas, and Mexico.

### SUGAR CANE: KING OF CROPS

Sugarcane is a tropical grass that was first grown in Asia over 4,000 years ago. The early settlers living along Lake Worth planted





Cutting sugarcane in a field in 1920

*Courtesy of HSPBC*

sugarcane, but the ground was too salty at the time which adversely affected the taste. In the 1920s, near Canal Point in western Palm Beach County, farmers began planting acres of sugarcane, but the 1960s saw the most growth in acreage for the crop. Sugarcane growers use some 440,000 acres in the EAA, mostly in Palm Beach County. It is the largest crop grown in the county.

One of the first people to invest in sugar cane was Frederick E. Bryant. During World War I, when there was a shortage of sugar, Bryant decided he would plant fields of cane. He convinced the U.S. Department of Agriculture to open a sugarcane breeding station at Canal Point. Bryant and his partner, E. T. Anderson, started the Florida Sugar and Food Products Company. They built the first sugar mill in the Glades near Canal Point in 1921. Bryant and Anderson merged their company with Southern Sugar Company, which was purchased by United States Sugar Corporation in 1931 just after U.S. Sugar was

established.

After Fidel Castro and the Communist Party took control of Cuba in 1959, they quickly confiscated all sugarcane farms in Cuba. Some of the Cuban sugar producers moved to the U.S. and started over. American growers in the Glades saw a chance to increase their sugarcane production. At that time, only 47,000 acres of sugarcane were planted in the EAA. Just four years later, growers harvested 138,000 acres of sugar cane. The following year, growers increased their output to 228,000 acres.

The Fanjul family was a Cuban family who had to start over following the Cuban revolution. Their company, Florida Crystals, started as a small farm in 1960 in Palm Beach County. Since then, it has become a fully integrated sugarcane operation.

The company plants and harvests sugarcane and then processes it at its sugar mills. Then, products are packed and distributed throughout the United States. Florida Crystals was the first to grow certified

organic sugar and they also pioneered growing organic rice in Florida. In its most recent harvest, Florida Crystals processed 5.7 million tons of sugarcane on 152,000 acres, yielding 676,000 tons of raw sugar and 30 million gallons of blackstrap molasses.

To help provide power for its mills, Florida Crystals has a renewable energy plant. The facility also provides power for tens of thousands of homes.

In the 1960s, other small and medium size sugar cane growers in the Glades area formed the Sugar Cane Growers Cooperative of Florida. The Cooperative works together to harvest and process their sugar cane and market the raw sugar. For forty years, the Cooperative had the largest sugar mill in the United States.

## PLANTING AND HARVESTING SUGAR CANE

South Florida's climate and soil are perfect for growing sugarcane. The planting season is from September through January. Cane stalks are harvested and cut into twenty-inch segments that are laid in furrows and then covered with soil. It takes a couple of weeks for sprouts to appear. Sugarcane grows in thick rows and will be ready to harvest in ten to twelve months. Sugarcane harvesting occurs between October and March.

Thanks to technology, new methods of growing sugarcane have become faster and more efficient. Pieces of the stem called

## ACTIVITIES!

### THINK AND SOLVE:

1. If you have 1,500 dairy cows and they give 7,000 gallons of milk a day, how many gallons of milk does each cow give a day?

### THINK AND WRITE:

1. If you were a farmer, which farming method would you practice: organic farming or hydroponic farming? Why?

## DID YOU KNOW?

The tomato, which is native to the Americas, is actually a fruit of the vine. In 1893, however, the U.S. Supreme Court ruled that it is a vegetable because we use it as a vegetable, and it is eaten as part of the main meal, not as a dessert like grapes. In the U.S., the average person eats about eighteen pounds of tomatoes a year.



## DID YOU KNOW?

In 1930, one U.S. farmer supplied food for 9 people.

In 1940, one U.S. farmer supplied food for 19 people.

In 1950, one U.S. farmer supplied food for 27 people.

In 1960, one U.S. farmer supplied food for 46 people.

In 1970, one U.S. farmer supplied food for 75 people.

In 1980, one U.S. farmer supplied food for 115 people.

In 1990, one U.S. farmer supplied food for 129 people.

In 2004, one U.S. farmer supplied food for 144 people.

Today, the average U.S. farmer supplies food for 155 people.

*cuttings* can now be planted and grown in laboratories under regulated conditions. Once they reach a certain age, they can be planted outdoors.

Years ago, field workers cut cane stalks by hand. They used a short machete to harvest the crop and wore metal guards on their hands and legs to protect themselves from getting cut. The metal protection looked very similar to the medieval armor worn by European knights. Since the 1990s, sugarcane harvesting has been done by combine-like machines. Mechanical harvesting cuts the stalks at ground level and transfers them to trailers, which are taken to sugar mills for processing.

## PEST CONTROL

Insects, rats, and mice are a constant problem for farmers. Different methods are used to control these pests. One Glades sugarcane grower decided to try a natural method instead of poisoning them. About thirty-years ago, Wayne Boynton was losing crops to rats and mice. To rid his fields of them, he brought in barn owls. Boynton, now known as the *Godfather of Barn Owls* set up large birdhouses all over his sugarcane fields for the owls to nest in. As soon as the owls moved in, they began catching and eating the rats and mice. A pair of nesting owls can eat at least 1,500 rodents a year. This is one method of using Mother Nature to control pests instead of using chemicals.



Dairy cows in Florida

Courtesy of HSPBC

## NURSERIES

Agriculture also includes ornamental plants, like the flowers your mother gets on Mother's Day, or the shrubs in the garden at home. Nurseries have been in operation in our county since the early twentieth century. One particular flower grown in Palm Beach County had a festival named after it. The gladiolus flower (gladiolus-singular; gladioli-plural) is a brightly colored plant from Africa. The 1940s and 1950s were the heyday for gladiolus farming. Centered between Boynton Beach and Delray Beach, there were at least eleven nurseries growing gladioli.

With fourteen varieties of gladioli grown in Boynton Beach and Delray Beach nurseries, Palm Beach County became the leading source for the popular flowers in the 1950s. The yearly average of gladioli shipments to the north was about two million bundles. In 1957 a freeze in the area caused some growers to

retire or sell out to developers, because their flower crops were destroyed. There are now only a few gladiolus growers still here. You can still buy locally grown, fresh cut gladioli at the Delray Affair, one of the largest arts and crafts festivals in the southeast United States.

Nurseries continue to supply people and businesses with ornamental plants. In the 1970s, one Delray Beach nursery provided plants to all the flower shops in New York City. Floral Acres, a nursery in Boynton Beach, occupies 55 acres on two sites. The company focuses on growing: poinsettias, ferns, mandevillas, hydrangeas, easter lilies, impatiens, roses, bougainvilleas, and majesty palms.

## CATTLE, DAIRIES, AND HORSES

You would not know it today, but once there were large herds of cattle in Palm Beach County. As a matter of fact, the first dairy





Commissioner of Agriculture Doyle Conner and Ruth Wedgworth

Courtesy of HSPBC

in the county was located in Palm Beach. In the late 1890s, pioneer Harlan P. Dye brought the first dairy cows to the north end of Palm Beach on the grounds of what is now the Palm Beach Country Club. Dye later went to Cuba to operate a dairy to supply milk to U.S. troops stationed there after the Spanish American War (1898).

Just after World War II, there were about twelve dairy farms in the area between Atlantic Avenue in Delray Beach and Boynton Beach Boulevard and along Military Trail. A dairy located in western Delray Beach had 1,500 dairy cows producing 7,000 gallons of milk every day.

There were also cattle ranches in the county. In 1940, U.S. Sugar started one of the first large beef cattle ranches in the Glades. The King Ranch was another, located south of Belle Glade, where they had 40,000 cattle. They now have a large sod farm on the property that is one of the largest in Florida. King Ranch also grows sugarcane and vegetables.

By the 1990s, most dairies and cattle ranchers had moved out of the county to other areas in Florida to continue their dairy or beef cattle operations. Dairy men and ranchers sold their valuable land to developers, who then constructed residential communities and businesses on the former pastures.

The equine (horse) industry in Palm

Beach County brings in more than \$120 million dollars a year. There are about 6,500 horses in the county. During the winter season when equestrian events are held, the number climbs to over 13,000 horses. Almost 8,000 acres of land are used for horses. The industry is mostly located in Wellington, and it includes polo and professional horse jumping. Some of the world's best polo players come here with

their horses to play during the winter. Polo has been played here since the 1920s, but it was not until the last few decades that Palm Beach County has become an international polo destination. Wellington is also a major center for horse shows. One of the leading horse training centers is located in Boynton Beach. The facility includes 200 acres of training grounds for race and show horses. However, there is very little commercial horse breeding in the county. There are about 300,000 horses in Florida.

## THE WEDGWORTH FAMILY

The Wedgworth family came to Belle Glade in 1930. Herman Wedgworth was the first plant pathologist at the University of Florida Everglades Environmental Station. Two years later, Herman started his own farm. He then opened a fertilizer plant and the Wedgworth Supply House to provide supplies and equipment for local growers. In 1938 Herman was killed in a farming

accident.

Ruth Springer Wedgworth, Herman's widow, had to support three children. She quickly took charge of the family business. Their farm grew celery, sugarcane, and other vegetables in the Belle Glade area. Ruth gained respect in what was then considered a man's world by donning boots and joining the workers in the fields. During World War II, she received numerous awards for the high production of vegetables on the farm. She organized the Florida Celery Exchange and was a charter member of the Sugar Cane Growers Cooperative of Florida. Ruth served on the Governor's Committee on Migrant Workers and other groups devoted to health, education, and social services. Because of her hard work and innovation, Ruth was named Woman of the Year in Agriculture by *Progressive Farmer* magazine, received a Distinguished Service Award from the Florida Fruit and Vegetable Association, and was named Woman of the Year in Florida Agriculture. In 1988 Ruth was inducted to the Florida Agricultural Hall of Fame.

After graduating with an agricultural engineering degree from Michigan State College in 1950, George Herman



Loading trailers on the Wedgworth Farm

Courtesy of HSPBC



## DID YOU KNOW?

Crops grown in Palm Beach County grow best in certain types of soil. See below what crops are planted primarily in sand, muck, or both.

**MUCK:** lettuce, radishes, celery, beans, endive, parsley, cabbage, sugar, and rice

**SAND:** peppers, tomatoes, cucumbers, herbs, eggplant, and squash

**BOTH:** sweet corn

Wedgworth joined his mother Ruth on the family farm. Together they worked hard and developed Wedgworth Farms, Inc. George helped to build the first mobile celery-harvesting unit in 1950. Then they gradually changed to sugar production after Castro's takeover of Cuba in 1959.

A year later George founded the Sugar Cane Growers Cooperative of Florida. Since George retired in 2013, his youngest son, Dennis, now manages the farm, and Wedgworth's Inc., is the state's largest fertilizer company.

George and his sisters, Helen and Barbara, gave \$1 million dollars to the Everglades Research and Education Center where their father and mother worked. At the center, a laboratory was named in honor of their mother and father, the Herman H. and Ruth S. Wedgworth Building. Following in his mother's footsteps, George was inducted to the Florida Agricultural Hall of Fame in 1994.

## THE ERICKSON FAMILY

Swedish immigrants Alfred



Bags of sugar from U.S. Sugar Corporation in Clewiston, Florida

*Courtesy of HSPBC*

and Amanda Elfrida Erickson homesteaded in 1911 on the eastern shore of Lake Okeechobee with their four children. By 1923, Alfred Erickson started farming and the whole family pitched in.

Although the hurricane of 1928 removed its roof, the original 1911 house remains in the family more than a century later.

Floyd Arthur Erickson, the youngest of Alfred and Elfrida's children, graduated from the University of Florida in 1933 with an agricultural degree. He and his brother William Emil Erickson

began farming vegetables to ship north. Floyd was interested in tropical fruits, and in 1961 he planted a grove of mango and avocado trees.

Floyd's youngest son, Dale Eric Erickson, took over the mango production in 1974 and added other tropical fruits and vegetables. Dale's daughters, Krista and Kimberly, continued the tradition of working in the family business.

In 2000, Krista Erickson began managing daily operations; her son, Brendan Erickson, shows

## GROWING CORN EXPERIMENT!

### MATERIALS:

1. Five to six corn kernels; 2. Paper towels; 3. One sandwich-size zipper-lock bag; 4. Water; 5. Black markers

### DIRECTIONS:

1. Wet a paper towel completely, then wring out excess water. 2. Put five to six corn kernels in the center of the paper towel. (Using this many kernels will increase the chances of sprouting.); 3. Put the paper towel and the kernels in the zipper-lock bag so that the kernels can be seen. Close the bag and label it.; 4. Lay the bag in a place exposed to natural daylight or a grow lamp, where you can observe it.; 5. Check on the bag regularly, water the kernels and watch the corn grow. (When the corn grows too tall for the bag, unzip the top.)

This activity was developed by 4H Cooperative Curriculum System: Visit [www.iowacorn.org/cornuse/cornuse\\_5.html](http://www.iowacorn.org/cornuse/cornuse_5.html)



Unmanned aerial vehicle (UAV) gathers images of crops.

Courtesy of Pixabay

an interest in everything that grows. Kimberly Erickson returned to the farm in 2007 to handle marketing and planning.

With one of the few mango groves left in south Florida, the Erickson family chose to focus on specialty varieties that were not found in grocery stores, as well as the winter vegetables that have sustained the Erickson Farm for four generations.

## FARMING NOW AND IN THE FUTURE

Twenty-first century farming in the Glades is now mostly sugarcane, with smaller fields for vegetables, sod grass, and rice. But growing vegetables presents challenges with the new laws that prohibit the use of certain chemicals and pesticides, and current restoration projects in the Everglades. Modern farming methods include industrial agriculture, which involves large fields and/or numbers of animals. It also includes a lot of pesticides, fertilizers, and high levels of mechanization.

The use of farm machines has made agriculture better. Because of mechanization, farming is more efficient and has a higher level of crop production. Other recent advances in agriculture include hydroponics, organic farming, better management of soil nutrients, and improved weed control.

Some growers practice organic farming. These farms use renewable resources, soil conservation, and water to help the environmental quality for future generations. As many as thirteen Palm Beach County farms grow organic vegetables. Florida Crystals practices organic sugar farming. They are the only sugar grower to produce certified organic sugar. The company is also a

pioneer in growing certified organic rice.

Pero Family Farms practices an advanced method of agriculture — hydroponics. They have 8,000 acres of farmland in Delray Beach. With today's year-round demand for fresh vegetables, Pero Farms uses a state-of-the-art hydroponic greenhouse operation to grow vegetables in a large airplane hanger. While farmers harvest only 13,000 bell peppers on one acre of land, the Pero's are able to pick 228,000 peppers from one hydroponic acre!

Swank Farms, located in Loxahatchee, is a hydroponic and organic farm growing 320 varieties of produce throughout the year. They sell their crops from Miami-Dade County to Orlando.

Some people have said that agriculture in the Glades will end because it depends on muck soil. The muck has subsided over the years from drainage and cultivation of the land, compaction by machinery, burning, oxidation, and shrinkage caused by dehydration.

Scientists and farmers are trying different ways to preserve the soil. Some growers practice what is called *successive planting*. Instead of harvesting a crop, tilling the soil, and then letting it sit bare, farmers plant the next crop right away. This helps preserve the muck. Another

method is to flood the field for several months.

## PRECISION FARMING

*Precision farming* is a way of managing a farm using targeted information and technology that improves crop performance and the quality of the environment. Crops, fields, and animal populations are closely monitored and controlled using different types of technology including Global Positioning Systems (GPS), robotic drones, agricultural machinery, and sensors. This approach increases crop yields, reduces cost, and optimizes efficiency.

## THE FUTURE OF FARMING

There are many issues farmers face in the future. These include how to produce enough food for a growing population, how to produce food on farms that are profitable, how to protect the environment and natural resources, and how to farm and avoid upsetting the Everglades Restoration Project with harmful chemicals from fertilizers. Farmers already limit the use of nutrients like nitrogen and phosphorus. Therefore, rainwater runoff will not carry as much contaminants into waterways and wetlands.

Farmers must decide what they will do in the future. They face muck subsiding and the westward movement of developments that surround their farms. Some of them sell their land for more money than they earn from farming. Others stay and create new ways to keep farming. Some sell their farmland to local or state governments who will protect and conserve it.

Those farmers that continue to grow vegetables in the face of these challenges will be the ones that come up with new methods to provide us with the food we eat. Though there are problems, farmers are smart and innovative, and they will rise to meet the challenges they face.



## TIME POSTS

1830s

Seminoles plant small fields of pumpkins, squash, and other crops along Lake Worth.

1860s

Keepers of the Jupiter Inlet Lighthouse plant small vegetable gardens. Augustus O. Lang plants and cultivates lemons, limes, oranges, and guavas on what is now the island of Palm Beach.

1870s

First permanent settlers arrive on Lake Worth and clear land for farming. They grow pineapples, pumpkins, potatoes, coconuts, peas, beans, radishes, lettuce, tomatoes, and avocados.

1880s

Thousands of pineapples are planted in the Lake Worth region. Jupiter and Lake Worth Railroad opens. Vegetables are transported 7.5 miles by rail from Juno on the lake to Jupiter then transferred to steamboats traveling north.

1890s

Four freezes (1894, 1895, 1896, 1899) damage or destroy pineapples, green beans, peppers, citrus, and other crops. Henry Flagler extends his railroad from Titusville to West Palm Beach then to Miami. This allows for faster shipping of crops to northern markets.

1900s

Dredging and draining of the Everglades begins under Governor Napoleon Bonaparte Broward. Ritta Island, at the south end of Lake Okeechobee, is settled by farmers. Palm Beach County is formed in 1909.

1910s

Farmers start arriving in the Glades and begin clearing land and planting crops. Three-year drought (1917-1919) strikes the Lake Okeechobee area, lowering water levels.

1920s

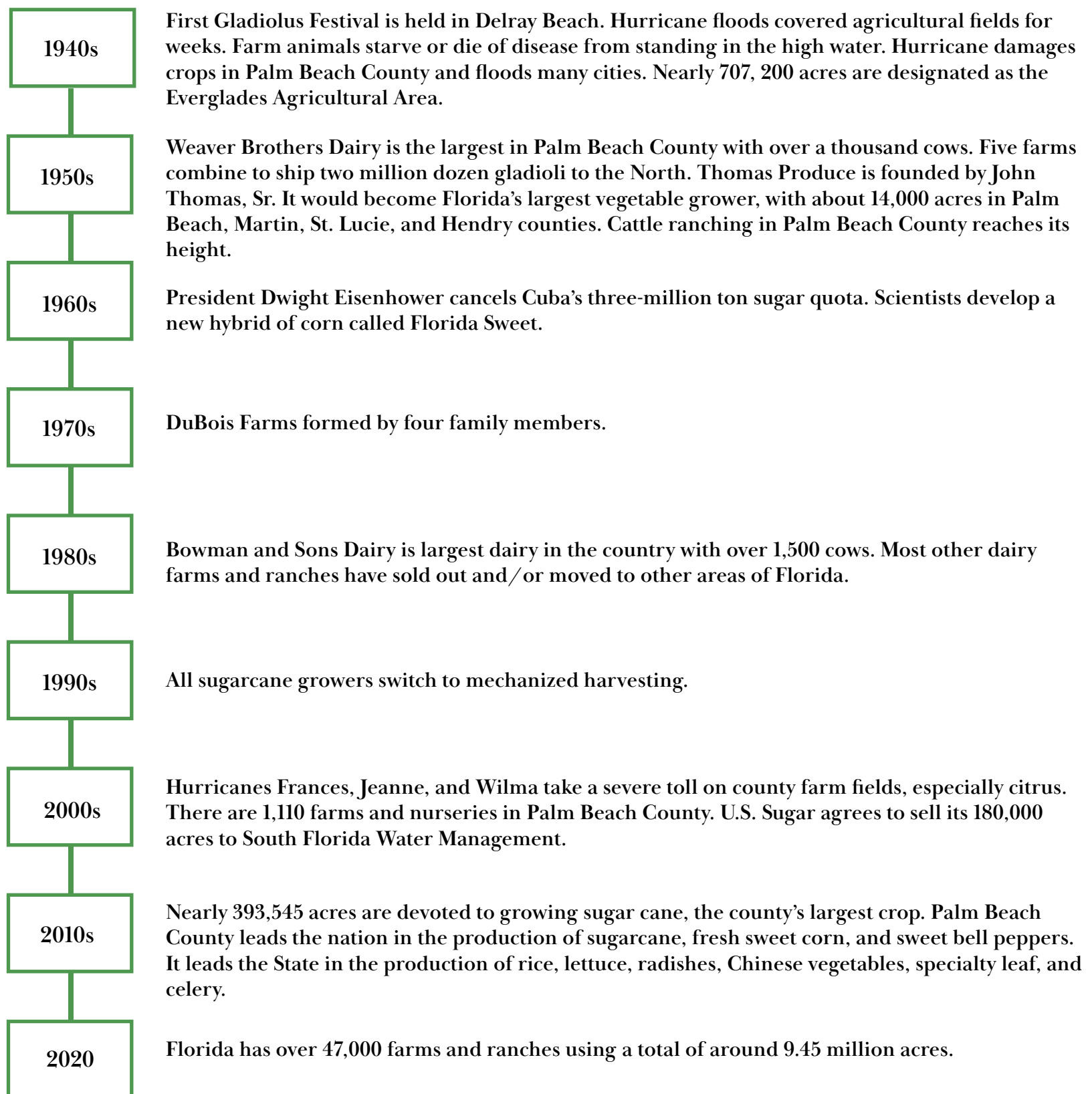
USDA opens sugarcane breeding station at Canal Point. First sugar mill opens in Canal Point. Pineapple growers total 101 in Palm Beach County, cultivating 925 acres. Florida East Coast Railroad extends line from Okeechobee City to Canal Point and Belle Glade. Farmers can ship crops from depots in the Glades.

1930s

Construction of Herbert Hoover Dike around Lake Okeechobee begins. Farmers start growing celery.

1940s

United States enters World War II. A camp is set up in Belle Glade for 200 German POWs working in a canning factory. Palm Beach County farmers are awarded the Army "A" Award for agricultural achievement. In the winter season of 1942-1943, \$22 million worth of vegetables are grown.



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