

California Walnuts

A Walnut Orchard Through the Seasons

Grades 2-3



A partnership project of
California Walnut Board and
California Foundation for Agriculture in the Classroom

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A Walnut Orchard Through the Seasons

Learning Objectives

Students will gain an understanding of the changes that take place in a walnut orchard through the different seasons of the year by reading and discussing a story about a walnut farm.

Students will complete an activity sheet to learn the meaning of important vocabulary words.

Grade Level

2nd and 3rd

Time

50 minutes

Materials

For the teacher:

- ▶ Vocabulary List

For each student:

- ▶ Story: Walnut Wonderland
- ▶ Reading Worksheet: Walnut Wonderland
- ▶ Walnut vocabulary match-up (optional)

Background Information

Walnuts are one of the oldest tree foods known to humans and are good for snacking and cooking. The trees originated in ancient Persia (now known as Iran) where walnuts were reserved for royalty. These walnuts were transported to ports around the world by the English merchant marines and so the “Persian Walnut” came to be called the “English Walnut.” Walnuts were introduced to California by the Franciscan fathers who planted walnut trees in the 1700’s during the establishment of the missions. There are also types of walnut trees that are native to California called California black walnuts. The nuts of one type of black walnut, Northern California black, are used by nurseries for growing rootstock, but black walnut trees are not grown commercially for edible nuts because they are not as good to eat as the English walnut. The eastern black walnut is grown for edible nuts in the Midwestern United States.

California produces 99% percent of all U.S. English walnuts, primarily in the San Joaquin and Sacramento valleys, but also along the Central and North Coasts and in the Sierra Foothills. It also supplies three-quarters of the world trade. Over 30 different cultivars of the English walnut have been developed for their shell characteristics, walnut meat content, pest tolerance, and harvest time. A cultivar is a plant or grouping of plants selected for desirable characteristics that can be maintained by propagation. The five primary cultivars grown are Chandler, Howard, Hartley, Serr, and Tulare. Walnut trees thrive in fertile, deep, well-drained soil. They begin to bear fruit four to five years after being planted and can continue to grow and bear fruit for a century or more.

Walnuts are harvested using mechanical shakers that shake the nut to the ground during harvest time in September through November. Machines sweep the fallen walnuts into rows, and then the nuts are collected and taken to a processing plant where they are dried, sorted, and cleaned. Walnuts may be sold with their shells intact (“inshell”) or removed (“shelled”). Shelled walnuts are sold whole, in halves, or in pieces of various sizes.

Procedure

1. Distribute the story, “Walnut Wonderland” to each student.
2. Read the story as a class, pausing during each section to discuss the content.

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- ▶ A Walnut Tree's Life - Word Search (optional)

Standards

This lesson supports California Standards for Common Core English Language Arts.

2nd Grade

RI.2.1, RI. 2.2, RI.2.3,
RI.2.4 RI.2.6.
RL.2.5, RL.2.7
W.2.3, W.2.8
SL.2.2

3rd Grade

RL.3.1, RL.3.3
RI.3.1, RI.3.2, RI.3.3,
RI.3.4, RI.3.7
W.3.2
SL.3.2
L.3.4

3. Write key vocabulary words on the board and discuss the definition as it pertains to agriculture.
4. Pass out student worksheets for reading comprehension and vocabulary. Do the first couple of questions together as a class, and then have students complete the rest of the questions on their own.
5. After students have completed their worksheets, instruct them to pair up and compare answers with a partner. Call on groups around the room to check for accuracy.

Extension Activities

1. Take your class on a fieldtrip to visit a local walnut orchard.
2. Ask a walnut farmer to come to class and share what he or she does in the orchard.
3. Ask students to take a blank piece of construction paper (8" x 12") and divide the paper into four sections. Ask the students to draw a walnut tree in each section to represent each season of the year.

Walnut Wonderland

Name _____

There is nothing I enjoy more than visiting my Uncle Wally and Aunt Wendy at their walnut farm in the San Joaquin Valley of California. There are many walnut **orchards** in this area of the state and Uncle Wally and Aunt Wendy told me that walnut trees grow well here because of the rich, **fertile** soil with full sun and long summers.

Fall

Late fall is a beautiful time of year. As my mom drives to the farm I start to wonder how the walnut trees will look. Walnut trees are **deciduous**. This means that every year, during the fall, the leaves of the trees change color from green to orange, red, and gold before they eventually fall off the tree. Uncle Wally is always in a good mood near the end of fall because the walnut **harvest** is over. I can hardly wait to find out what he and Aunt Wendy have planned. They always make my visits extra special.

When we arrive at the farm the sun was beginning to set. Uncle Wally greets me with a big hug and tells me he needs my help in the kitchen. He is the best cook ever! I especially love his freshly baked chocolate chip cookies with toasted walnuts. After washing my hands, Uncle Wally lets me crack open the hard walnut shells to get out the nut (meat). I then sprinkle the walnuts over the green salad that Aunt Wendy had made earlier that day. The kitchen smells delicious and I am very hungry.

Aunt Wendy enters the kitchen with a big smile. She is happy because it has been a very good growing year and the trees have **produced** more walnuts than ever before, a big **yield**. As we sit down for dinner, Uncle Wally tells me that he has something special planned for me in the morning. I can hardly wait!

I wake up to birds chirping. The sun is rising and I can see it is going to be a beautiful day. I get dressed and run out to the walnut orchard to find Uncle Wally. Farmers usually wake up early because there is so much work for them to do. Uncle Wally greets me with a big smile and a giant rope swing! Wow! This is one special surprise. Walnut trees are very big and strong. I jump on the swing and immediately start to pump my legs so I can get higher and higher. On a count of one, two, and three, I jump into a big pile of leaves!

Winter

Winter on the walnut farm is the quietest time. When I visit, I find that Uncle Wally and Aunt Wendy have been hard at work **pruning** the trees and cutting down broken branches. They are also making sure that there are no **pests** damaging the trees. During the wintertime, the trees are **dormant** and look like they are dead because all of their leaves have fallen to the ground. It is the perfect time to watch tree squirrels climb up the tree and **scavenge** for walnuts that were not taken at harvest time. Empty bird nests are seen in the trees as bird families have **migrated** to warmer areas.

Spring

I go to visit the walnut farm during spring break. The young walnut trees are fast growing and can grow up to three feet in one year! The older trees are blossoming and new leaves are beginning to sprout. Walnut trees have both boy (male) and girl (female) flowers. When the female flower of one kind of walnut tree gets pollen from a boy flower from another type of walnut tree, **pollination** will occur and a walnut will grow. Wind can easily carry pollen to far away flowers because it is so small in size.

Walnut Wonderland *(continued)*

Summer

My favorite time to visit Uncle Wally and Aunt Wendy's farm is in the late summer. They show me how to make sure the trees are getting enough water. The San Joaquin Valley is very hot in the summer, but the leaves of the walnut trees are full of beautiful green leaves that create a thick **canopy**. It is fun to make a fort under the canopy and enjoy the cooler temperature where there is shade. Walnuts have a bright green casing called a **hull** that covers the nut. The hull of a walnut is Mother Nature's way of protecting the nut from harm. When the weather cools a little in late summer, almost like magic the hull cracks open, exposing the walnut when it is almost time to harvest. As the farm safety inspector Aunt Wendy makes sure all of the equipment is being maintained in good working order and that workers attend a farm safety meeting once a week to go over procedures that will keep them from getting hurt on the job.

Fall

It is now late September and Uncle Wally, Aunt Wendy, and their workers are spending many hours working in the walnut orchard. The harvesting machinery is cleaned and Aunt Wendy and the workers make sure the ground beneath the walnut trees is clear of **debris** as part of a food safety step for when the walnuts fall off the trees.

Uncle Wally tells me that the **mechanical** shaker is oiled and ready to go. I give him a confused look and he explains that each tree is shaken with a machine that has a mechanical arm that attaches to the tree's trunk. As the tree is shaken, the ripe walnuts fall to the ground. Another machine sweeps the walnuts into piles of long rows on the ground so they can be collected and taken to a **processing** plant. Here, the walnuts are placed on **conveyor** belts while workers sort the best walnuts to be shelled and packaged for **consumers** to eat.

Now it is time for me to leave the walnut farm and go back to school. I tell Uncle Wally and Aunt Wendy that I love watching the walnut trees change throughout the year and eating the delicious walnuts that grow on the trees. Before I leave they hand me a package. I peek inside and find my favorite chocolate chip cookies with toasted walnuts. I think I will really enjoy my car ride home.

Walnut Wonderland

Reading Comprehension

Name _____

Walnut Wonderland tells the story through a child's eyes of what happens to a walnut tree during the different seasons of the year.

1. Can you list the seasons in the same order the story is told?

1. _____
2. _____
3. _____
4. _____
5. _____

2. The child in the story finds something special about each season. Please describe one example of what the child notices during each season with the walnut tree.

Summer _____

Fall _____

Winter _____

Spring _____

3. What sentence best describes this story? (Please circle your answer)

- A. Uncle Wally and Aunt Wendy like growing walnuts.
- B. Walnut trees change throughout the seasons.
- C. Chocolate chip cookies with toasted walnuts are delicious.
- D. Squirrels and birds like walnut trees too.

4. Circle True or False for each statement.

T or F 1. Walnut trees lose their leaves in the late fall.

T or F 2. Workers handpick walnuts and place them in barrels at harvest time.

T or F 3. When a boy flower is pollinated a walnut will grow.

T or F 4. Walnuts grow best in rich fertile soil.

T or F 5. Walnut trees can grow ten feet in one year.

T or F 6. When the walnuts trees are dormant the farmers are ready to harvest.

Answer Key

Walnut Wonderland

Walnut Wonderland tells the story through a child's eyes of what happens to a walnut tree during the different seasons of the year.

1. Can you list the seasons in the same order the story is told?

1. Fall
2. Winter
3. Spring
4. Summer
5. Fall

2. The child in the story finds something special about each season. Please describe one example of what the child notices during each season with the walnut tree. (May be more than one correct answer.)

Summer: very hot and trees need a lot of water; canopy, hulls crack open

Fall: trees lose leaves; harvesting machinery cleaned; ground beneath trees cleared of debris

Winter: quietest time on farm, work pruning trees, trees dormant

Spring: trees growing fast, leaves sprout, pollination

3. What sentence best describes this story? (Please circle your answer)

A. Uncle Wally and Aunt Wendy like growing walnuts.

B. Walnut trees change throughout the seasons.

C. Chocolate chip cookies with toasted walnuts are delicious.

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Vocabulary

A Walnut Orchard Through the Seasons

Canopy – a shade or shelter that grows over something

Consumer – a person who buys and uses goods

Conveyor – a mechanical device that moves things from one place to another

Debris – remains, garbage

Deciduous – during the fall every year, the leaves fall off the tree

Dormant – a period of time when there is reduced activity or growth

Fertile – producing vegetation or crops plentifully

Harvest – the gathering of a crop

Hull – the outer covering of a fruit or seed

Mechanical – done by a machine

Migrate – to move from region to another usually due to weather

Orchard – a place where fruit or tree nuts are grown

Pest – a plant or animal that can be harmful to other living things

Pollinate – to place pollen on the female part of a flower

Produce – to make

Processing – to change or prepare

Pruning – to reduce or get rid of unwanted matter

Scavenge – to collect usable things that were left behind

Yield – to bear as a natural product

A Walnut Tree's Life

Name _____

P R O C E S S I N G D S B Y H
E M V D D N R K N R X P D P V
J U E L R E C O A Z O R E O R
R L E T N C O H Y J C U C N E
M I C R A E C W G E N N I A M
Y P E Q R R D L M Z V I D C U
H P P B O O G E U T D N U Z S
T A Y O R R C I L J G G O N N
V P R M L H O P M T T Y U C O
J P A V A L D H U L L X S V C
Z N E I E T I P R O D U C E W
T P C S V S U N E L I T R E F
F A K F T S T Q A Z F K K E C
L E G N E V A C S T Q L G N O
D U K V V O V M I Z E G N S M

CANOPY
DECIDUOUS
HARVEST
MIGRATE
POLLINATE
PRUNING

CONSUMER
DORMANT
HULL
ORCHARD
PROCESSING
SCAVENGE

CONVEYOR
FERTILE
MECHANICAL
PEST
PRODUCE
YIELD

Answer Key

Word Search

PROCESSINGD++Y+
++++D+R++R+PDP+
++EL+++OA++REOR
++ET+++HY++UCNE
+I++A+C++E+NIAM
Y++++RD+M+VIDCU
H+P+OGE+++NU+S
+A+OR+CI+++GO+N
++RMLH++M+++UCO
+PAVAL+HULL+S+C
+NEIE+IPRODUCE+
T+CS+S+NELITREF
+A++T+T+A++++++
LEGNEVACST+++++
+++++E+++++

(Over, Down, Direction)

CANOPY(14,6,N)
CONSUMER(15,10,N)
CONVEYOR(14,9,NW)
DECIDUOUS(13,2,S)
DORMANT(7,6,SW)
FERTILE(15,12,W)
HARVEST(1,7,SE)
HULL(8,10,E)
MECHANICAL(9,6,SW)
MIGRATE(9,9,NW)
ORCHARD(5,7,NE)
PEST(2,10,SE)
POLLINATE(3,7,SE)
PROCESSING(1,1,E)
PRODUCE(8,11,E)
PRUNING(12,2,S)
SCAVENGE(9,14,W)
YIELD(1,6,NE)

Walnut Vocabulary Match-up

Name _____

Match the words to their definition:

- | | |
|--------------------|--|
| ___ 1. dormant | a. to move from one region to another usually due to weather |
| ___ 2. pollinate | b. to collect usable things that were left behind |
| ___ 3. pest | c. a period of time when there is reduced activity or growth |
| ___ 4. canopy | d. done by a machine |
| ___ 5. consumer | e. a plant or animal that can be harmful to other living things |
| ___ 6. orchard | f. a person that buys and uses goods |
| ___ 7. hull | g. to place pollen on the female part of a flower |
| ___ 8. conveyor | h. to change or preserve |
| ___ 9. scavenge | i. a shade or shelter that grows over something |
| ___ 10. deciduous | j. the outer covering of a fruit or seed |
| ___ 11. migrate | k. a place where fruit or nut trees grow |
| ___ 12. mechanical | l. during the fall every year, the leaves fall off the tree |
| ___ 13. processing | m. a mechanical devise that moves things from one place to another |

Sentence Structure:

Circle the correct word to complete the sentences.

1. The walnuts are gathered in the orchards and taken to the _____ (process, processing, processed) plant to be sorted and washed.
2. _____ (migrated, migrate, migration) is the process where animals move from one region to another usually due to weather.
3. The squirrels jump with glee from branch to branch of the walnut tree as they _____ (scavenge, scavenging, scavenger) for walnuts.
4. The walnuts are gathered by a _____ (mechanical, mechanic, machine) process and then taken to a building for processing.

Answer Key

Vocabulary Match-up

Walnut Vocabulary Match-up:

c	1. dormant	a.	to move from one region to another usually due to weather
g	2. pollinate	b.	to collect usable things that were left behind
e	3. pest	c.	a period of time when there is reduced activity or growth
i	4. canopy	d.	done by a machine
f	5. consumer	e.	a plant or animal that can be harmful to other living things
k	6. orchard	f.	a person that buys and uses goods
j	7. hull	g.	to place pollen on the female part of a flower
m	8. conveyor	h.	to change or preserve
b	9. scavenge	i.	a shade or shelter that grows over something
l	10. deciduous	j.	the outer covering of a fruit or seed
a	11. migrate	k.	a place where fruit or nut trees grow
d	12. mechanical	l.	falling off at the end of a growing season
h	13. processing	m.	a mechanical devise that moves things from one place to another

Sentence structure:

Circle the correct word to complete the sentences.

1. The walnuts are gathered in the orchards and taken to the **processing** (process, processing, processed) plant to be sorted and washed.
2. **Migration** (Migrated, Migrate, Migration) is the process where animals move from one region to another usually due to weather.
3. The squirrels jump with glee from branch to branch of the walnut tree as they **scavenge** (scavenge, scavenging, scavenger) for walnuts.
4. The walnuts are gathered by a **mechanical** (mechanical, mechanic, machine) process and then taken to a building for processing.