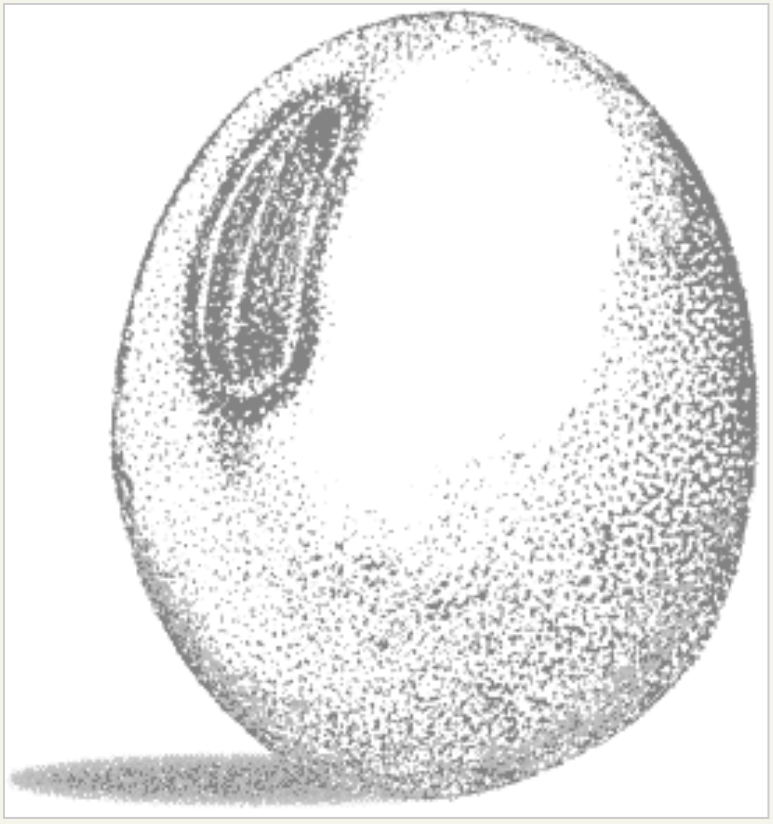
Super Soybeans!

Lesson Booklet to complement
The Super Soybean by Raymond Bial

LESSON INDEX:



Welcome to the world of the Super Soybean! This IAITC booklet was created to complement the book

<u>The Super Soybean</u> by Raymond Bial.

The soybean has many important roles in our lives, from the food we eat to even some of the products we clean with.

This booklet is designed with the student audience in mind. These activities can be used in your classroom as supplemental learning in the areas of science, social studies, and math.

The following lessons and activities are correlated to the Illinois State Learning Standards and Assessment Framework.

A visual key has also been created and used with each activity to indicate its subject area. The topics include: hands-on, science, health and nutrition, reading , math, social studies, writing, and art.

Hands-on

Writing

Science

Reading

Social Studies

Art

Math

Health and Nutrition

Learning Standards and Assessments

  **La Soja Super** **The Super Soybean**	**Illinois Learning Standards:** Social Studies: 17A.1a; 17A.2a English Language Arts: 1.A.2a; 1.C.2f; 15.C.2a-2c; 15.D.2a **Illinois Assessment Framework:** Standard 1A 1.5.02
  **From Seed to Soy**	**Illinois Learning Standards:** English Language Arts: 1.B.2b; 1.C.2a; 1.C.2d Science: 12.A.2a **Illinois Assessment Framework:** Standard 12A 12.4.03; 12.4.04; 12.4.05
 **Soaring Soybean**	**Illinois Learning Standards:** Science: 11.A.2c; 11.A.2d; 11.B. 2b; 11.B.2f; 12.A.2a; 12.E.2a; **Illinois Assessment Framework:** Standard 11A 11.4.01; 11.4.02; 11.4.03; 11.4.04 Standard 12A 12.4.03; 12.4.04; 12.4.05
 **Summarizing Soy**	**Illinois Learning Standards:** Reading: 1.B.2b; 1.C.2b; 1.C.2d; 2.A.2b **Illinois Assessment Framework:** Standard 1B 1.4.09; 1.4.10; 1.4.13; 1.4.14
 **"Bean"-ificial Math**	**Illinois Learning Standards:** Math: 6.B.2; 6.C.2a; 6.C.2b; 8.C.2 **Illinois Assessment Framework:** Standard 6B 6.4.10; 6.4.12; 6.4.14 Standard 6C 6.4.16
 **Rounding It All Out**	**Illinois Learning Standards:** Math: 10.A.2a; 10.A.2b; 10.A.2c; 10.B.2b; 10.B.2c **Illinois Assessment Framework:** Standard 10A 10.4.03

La Soja Super

(The Super Soybean)

Social Studies

Grade Level: 4-6 Social Studies

Objective: Students should be able to accomplish the following task after reading The Super Soybean and completing this lesson: Identify vocabulary words relating to the soybean in both English and Spanish.

Illinois Learning Standards: Social Studies 17.A.1a and 17.A.2a. English Language Arts 1.A.2a; 1.C.2f. **Assessment Framework:** Standard 1A 1.5.02

Suggested Reading Materials:

The Super Soybean By Raymond Bial

AITC Soybean Ag Mag

Introduction:

The soybean is one of the most versatile seeds grown in the world. In the book The Super Soybean author Raymond Bial shows readers all the aspects of this super plant. With the soybean being a global plant, readers learn that soybeans are not just in Americans' everyday life but in other cultures as well. Soybeans can be found in ink, paints, plastics, food and livestock feed all over the world. Asian countries have been eating soybeans and using by-products from this plant for thousands of years. Argentina and Brazil are in the top five soybean producing countries, making soybeans a valuable commodity to their culture. The following activity will allow students to learn the Spanish terminology for words related to the production of the soybean.

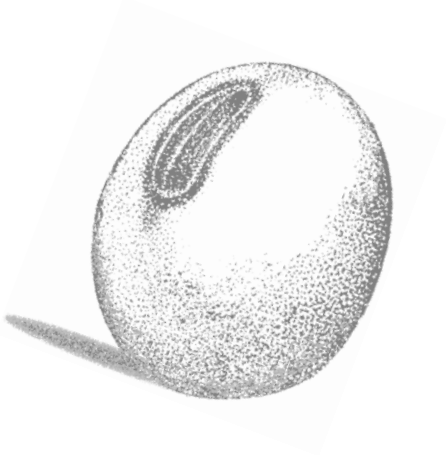
Lesson Extenders!!!

Smash it: A simple review game. Take either side of the flash cards and tape them to the chalk board. Divide students up into groups. Have students face off like they would in the game show "Family Feud." Each student will face each other while you are asking the question. The two students in the challenge get a fly swatter. Ask the students a clue to one of the words on the board. The first student to swat the correct flash card gets two points for their team. You can leave the cards up if you have multiple questions per word or choose to take them down as the students smash them, then reverse them for game two.

Bulletin Board: Have students create a bulletin board that allows them to share their new Spanish words and soybean facts they have learned. Create the bulletin board for other classes or the school. Assign each student a flash card and have them find materials or pictures that relate to each word. They will display their finds next to their flash card on the board. Display the clue side of the card and then next to it the Spanish word. Have students attach an envelope containing the word bank terms to the board. Make the center of the board a world map and have students glue soybeans on countries that grow soybeans. Color the Spanish soybeans red with a marker so that they stand out. The flash cards will be spread out around the map.

Flash Card Answer Key:

The super seed	Soybean	Soja
This is what is planted	Seed	Semilla
This is what a soybean is planted in	Soil	Suelo
Soybeans are planted in this month	May	Mayo
Provides warmth to the seedlings	Sun	Sol
Provides moisture for the plant	Water	Agua
This puts the seeds in the ground	Planter	Plantador
Month soybeans are harvested	October	Octubre
Human nourishment	Food	Comida
Liquid precipitation	Rain	Lluvia
Season following summer	Autumn	Otoño
Protects the seed when it's growing	Pod	Vaine
Flour made from soybeans	Soy Flour	Harina de soja
Unwanted Plants	Weeds	Hierbajos
Another name for America	United States	Estados Unidos
A temperature that is not cold and not hot	Warm	Caliente
Color of soybean	Yellow	Amarillo
Season following winter	Spring	Primavera



La Soja Super

(The Super Soybean)

Materials Needed:

Scissors

Glue

Flash card handouts

Word bank handouts

Activity Instructions: Soybean Flash Cards

1. Cut out each flash card by cutting on the lines. This will ensure that all of your flash cards are the same size.

2. Once all the cards are cut lay them out with the English statement side facing up.

3. From the English word bank find the term that best fits the statement and paste it on your flash card. Your completed card would look similar to the one below:

Number One Soybean Producing Country United States _____	**Estados Unidos**

4. Once you have completed pasting your flash cards together, find a partner and practice learning your new Spanish soybean terms!

English Word Bank

Yellow	Autumn
Pod	Warm
Sun	United States
Water	Food
Soybean	May
Planter	Rain
October	Seed
Soil	Spring
Soy Flour	Weeds

The Super Seed

_____

This is what is planted

_____

This is what the soybeans are planted in

This is the month soybeans are planted

_____

Provides warmth to seedlings

_____

Provides moisture for the plant

_____

Semilla	**Soja**
Mayo	**Suelo**
Aqua	**Sol**

This puts the seed in the ground

_____

Month soybeans are harvested

_____

Human nourish-ment

_____

Liquid precipita-tion

_____

Season following summer

_____

Protects the seed when it's growing

_____

Octubre	**Plantador**
Lluvia	**Comida**
Vaine	**Otono**

Flour made from soybeans

_____

Unwanted plants

_____

Another name for America

_____

Color of the soy-bean

_____

A temperature that is not cold and not hot

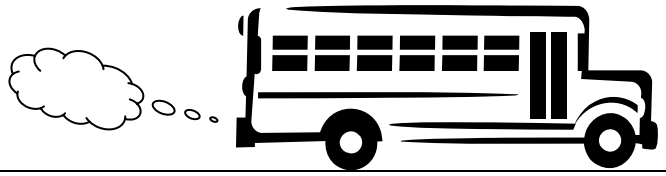
_____

Season following winter

_____

Hierbajos	**Harina de Soja**
Amarillo	**Estados Unidos**
Primavera	**Caliente**

From Seed to Soy!!



Grade Level: 4-6 Social Studies

Social Studies

Objective: The purpose of this exercise is to allow students to practice putting events in sequence. Students will also learn the steps involved in the growth and development of a soybean seed.

Illinois Learning Standards: English Language Arts: 1.B.2b; 1.C.2a; 1.C.2d; Science: 12.A.2a **Assessment Framework:** Standard 12A 12.4.03; 12.4.04; 12.4.05

Suggested Reading Materials:

The Super Soybean by Raymond Bial

AITC Soybean Ag Mag

Plant m**AG**ic kit lessons

Growing a Nation CD lessons 3 and 4. Can be found at www.agintheclassroom.org

Introduction:

The book The Super Soybean details the history of the soybean and its trials to become an important crop in the United States. Read the book with your students and learn how the soybean goes from a seed in the ground to the fuel in their school bus.

Lesson Extenders!

1. Growing a Nation CD: this CD covers the history of agriculture, would be great for extending the lesson. CD also comes with other lessons to make a whole unit on the history of agriculture. Growing a Nation can also be accessed from the IAITC website: www.agintheclassroom.org

2. Have students create a poster using the cut out sequence cards. On the poster have them create a picture or drawing along with each statement. Along with having the written time line, they would have a visual one as well.

Sequence Answer Key:

1. Soybeans can be planted in mid-May to early June when soil temperatures are at least 55 to 60 degrees Fahrenheit.
2. Soybeans are poured into the planter, which is pulled behind a tractor.
3. The planter drops seed beans one at a time about two inches apart and covers them with a layer of soil.
4. Soybeans need temperatures between 70 to 80 degrees Fahrenheit to grow.
5. Plants grow quickly, it takes about four months from planting to harvest.
6. The soybean grows a little tail-like root called a radical. This becomes the plant's main root.
7. The soybean also grows a cotyledon, a stem with a little round leaf, it pops through the ground.
8. The soybean is now growing as much as an inch a day.
9. Chemicals are applied before the soybean plants begin to canopy.
10. The tiny flowers begin to form small pods containing soybeans. Each plant may have 60 to 80 pods. Each pod has 3 to 4 seeds.
11. It's time to "walk the beans" or cultivate the soil with a tractor to remove the weeds that were missed with the herbicides.
12. As the plants are growing, farmers will scout them to make sure that they are not being damaged by insects or disease.
13. Soybean plants have grown to three feet tall.
14. Soybeans are beginning to ripen: the process of the soybean plants fading from green to a yellowish-brown.
15. The leaves on the soybean plant fall off and flutter away.
16. Seedpods dangle from the stems and the soybeans inside become hard and dry.
17. Soybeans dry to the moisture level of 13 percent.
18. Soybeans are harvested by a large combine.
19. Soybeans are hauled to the local grain elevator where they are weighed and a moisture sample is taken.
20. Soybeans are driven off the weigh scales and dumped from the farmers' truck into the "hopper."
21. The farmer is paid market price for his soybeans minus the fees for handling and storage at the grain elevator.
22. Once soybeans are clean and dry they are shipped to processing plants like Archer-Daniels-Midland. Some soybeans get shipped down barges on the Mississippi River to go to other countries.
23. Soybeans are processed into products such as plastics, soaps and soy-based Biodiesel.
24. Biodiesel is purchased by your school and used to fill up your school buses.

From Seed to Soy!!

Materials Needed:
Scissors
Sequence Sheet
11x18 construction paper or two $8^{1/2}$ x 11 pieces of construction paper taped together.
Optional Materials for lesson extender:
Poster Board
Magazines
Glue
Colored pencils

Activity Instructions: From Seed to Soy

1. Read <u>The Super Soybean</u> by Raymond Bial. As you are reading, pay close attention to the different steps of the soybeans' growth.
2. Cut out all the sequence statements.
3. Once your sequence statements are cut out, lay them down in front of you on your desk. Put the slips of paper in the correct order. You can use the book to help you line the statements out in the correct order.
4. Once you have the statements in the order that you think they happen, raise your hand and have your teacher come around and check the sequence.
5. Now that you have the statements in the correct order glue them on the construction paper.

The tiny flowers begin to form small pods containing soybeans. Each plant may have 60 to 80 pods. Each pod has 3 to 4 seeds.

Chemicals are applied before the soybean plants begin to canopy.

Soybeans are harvested by a large combine.

Biodiesel is purchased by your school and used to fill up your school buses.

Soybeans are poured into the planter, which is pulled behind a tractor.

Plants grow quickly, it takes about four months from planting to harvest.

Soybeans are beginning to ripen: the process of the soybean plants fading from green to a yellowish-brown.

Farmer is paid market price for his soybeans minus the fees for handling and storage at the grain elevator.

Soybeans dry to the moisture level of 13 percent.

The soybean is now growing as much as an inch a day.

As the plants are growing, farmers will scout them to make sure that they are not being damaged by insects or disease.

Soybeans are driven off the weigh scales and dumped from the farmers' truck into the "hopper".

Soybeans are processed into products such as plastics, soaps and soy-based Biodiesel.

Once soybeans are clean and dry they are shipped to processing plants like Archer-Daniels-Midland. Some soybeans get shipped down barges on the Mississippi to go to other countries.

Soybeans are hauled to the local grain elevator where they are weighed and a moisture sample is taken.

Soybeans are planted in mid-May to early June when soil temperatures are at least 55 to 60 degrees Fahrenheit.

The planter drops seed beans one at a time about two inches apart and then covers them with a layer of soil.

The leaves on the soybean plant fall off and flutter away.

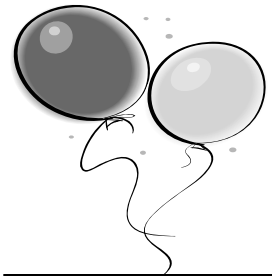
Seedpods dangle from the stems and the soybeans inside become hard and dry.

The soybean also grows a cotyledon, a stem with a little round leaf, it pops through the ground.

It's time to "walk the beans "or cultivate the soil with a tractor to remove the weeds that were missed with the herbicides.

The soybean grows a tail-like root called a radical. This becomes the plant's main root for absorbing water and nutrients.

Soybeans need temperatures between 70 to 80 degrees Fahrenheit to grow.



Soaring Soybean

Grade Level: 4-6 Science


Science

Objective: To allow students to study the growth of the soybean and how surroundings can effect growth. Students will also examine the process of photosynthesis as it occurs in the balloon.

Illinois Learning Standards: Science: 11.A.2c; 11.A.2d; 11.B. 2b; 11.B.2f; 12.A.2a; 12.E.2a; **Assessment Framework:** Standard 11A 11.4.01; 11.4.02; 11.4.03; 11.4.04 Standard 12A 12.4.03; 12.4.04; 12.4.05

Suggested Reading Materials:

The Super Soybean by Raymond Bial

AITC Soybean Ag Mag

Bean Book on the AITC website under "Make & Takes" at www.agintheclassroom.org

Kids, Crops, & Critters in the Classroom Teacher resource guide provided by the IAA Foundation. Pg.85-87 "A Bean Named Soy"

Introduction: In this activity students will be growing a soybean in a clear balloon. This is a great exercise to allow students to study the growth of a soybean, it is also a great way to investigate the role of CO_2 in photosynthesis. Review with students the anatomy of the soybean and the steps of growth. Also review photosynthesis, discuss Oxygen's and CO_2' s role. This activity could fit right in with the study of phototropism, geotropism and even hydrotropism with some slight alterations. *Use the student worksheet as an assessment after the seeds have grown or have students answer questions by finding the answers in the reading of The Super Soybean.*

Lesson Extenders!

1. Make a few extra super soybean balloons but vary the experiment. Place one balloon in a closet, make one with too much water, make one with too little water. Question the students on the variables of the experiment that they would like to change and what effects they might have on plant growth. Changes in variables would allow for graphing exercises to be incorporated.

Soaring Soybean

Lab Activity

Name_____ **Today's Date**_____

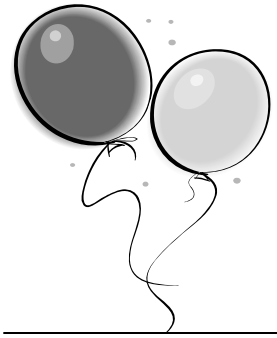
Materials Needed:

Large clear balloons
Soybean seeds (2-3 per balloon)
4-5 Funnels
String (one per balloon)
Potting soil or Moisture Plus watering crystals
Water 1/4 cup per balloon
Plastic or paper cups

Activity Instructions: Soaring Soybean

1. Have your partner hold your balloon firmly by the neck (the neck is the long straight part). Place the funnel tip inside the neck of your balloon and poor in 1/2 cup of soil. If using watering crystals use only four to five spoonfuls. *It is important* ***NOT*** *to turn your balloon over from this point on.*
2. With your partner still holding the balloon by its neck add about 1/4 cup of water through the funnel. Make sure all of your soil is wet. Soil should be wet but not look soupy.
3. Next drop your soybean seed into your balloon. Don't turn the balloon over!!
4. If your balloon is dirty on the outside wipe it down carefully with a washcloth. Making sure to get the neck and opening clean.
5. Now its time to fill your balloon with air! Keep holding the balloon gently by the neck and keep the soil on the bottom, you still **cannot** turn your balloon over.
6. Your balloon should be blown up only about 1/2 way. Now tie a knot in the neck to keep the air in the balloon. Inflating balloon too much will cause the balloon to pop!
7. Tie the string around the knot at the top of your balloon. Now with the help of your teacher hang the balloon **near** a window. Placing balloon directly on the window will cause the balloon to pop!!
8. Now repeat exercise holding your partner's balloon.

Original idea adapted from the University of Wisconsin 4-H extension.



Soaring Soybean

Student Worksheet

Name_____ **Today's Date**_____

Directions: Carefully answer the following questions as they pertain to your soaring soybean project.

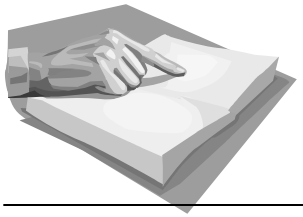
1. Name the three things the soybean seed needs to grow?

2. What is the name of the plant structure that emerges in four to seven days from your soybean?

3. Why do you think it was important not to turn your balloon over? Could it have effected your seeds' growth?

4. Do you think your seedling would look different if you would have stored it in a closet and not next to a window, if so why?

5. How long do you think your soybean can grow in your balloon and why?



Summarizing Soy

Grade Level: 4-6 Social Studies & Reading

Reading 

Objective: This activity is designed to help students become more familiar with the format of a short passage reading followed by multiple choice questions found on the Illinois Standards Achievement Exam.

Illinois Learning Standards: Reading: 1.B.2b; 1.C.2b; 1.C.2d; 2.A.2b **Assessment Framework**: Standard 1B 1.4.09; 1.4.10; 1.4.13; 1.4.14

Suggested Reading Materials:

The Super Soybean by Raymond Bial AITC Soybean Ag Mag

Kids, Crops, & Critters in the Classroom Teacher resource guide provided by the IAA Foundation. Pg. 185-191 "The Most 'Bean'-ificial"

Plant m**AG**ic kit

Introduction: This lesson was designed to resemble a short reading passage that could be found on the ISAT test. The lesson has a short excerpt from Raymond Bial's book The Super Soybean. The reading is followed by four short questions laid out in a format similar to the one students will see when taking the ISAT.

Lesson Extender!

1. Create a PowerPoint presentation on the beginning of soybeans in the United States. Start with George Washington Carver and go through the decades to the present time where we now consider the once forgotten seed as our "Super Seed". The assignment could be made more specific by giving groups of students different individuals that played a role in the popularization of the soybean, such as: William J. "Bill" Morse, Dr. Charles V. Piper, and Palemon Howard (P.H.) Dorsett.
2. Complete the George Washington Carver exercise in the m**AG**ic kit; Social Studies lesson two.

Answers Key:

Fourth Grade 1. **(B)** 2. **(C)** 3. **(C)** 4. **(A)**

Sixth Grade 1. **(D)** 2. **(B)** 3. **(B)** 4. **(C)** 5. **(A)** 6. **(B)**

The Super Soybean
By
Raymond Bial

In 1904, George Washington Carver began studying soybeans at the Tuskegee Institute in Alabama. Although he is best known for his work with peanuts, Carver discovered a method of extracting soybean oil and found many ways to use it. He later invented a process for making paints and stains from soybeans. Most importantly, he encouraged farmers in the South to plant soybeans, along with peanuts and other legumes, to help keep the soil fertile so that cotton and other important crops could be successful.

Most farmers ignored soybeans, but that was about to change. In 1907, William J. "Bill" Morse joined the United States Department of Agriculture, where he studied soybeans as an assistant to Dr. Charles V. Piper. Morse devoted his life to studying soybeans. He was a founder of the American Soybean Association. He wrote more than eighty publications about soybeans, including The Soybean, published in 1923, written together with Charles Piper.

At this time, there were about twenty different varieties of soybeans in the United States. From August 1924 through December 1926, Palemon Howard (P.H.) Dorsett collected soybeans in China and sent back fifteen hundred different varieties. In 1929, Morse traveled on, in northeast China and Korea. From this expedition about forty-five were sent back to the United States.

Name_____ Today's Date_____

4th Grade

1

Why did Washington-Carver encourage farmers in the South to plant soybeans?

A To help them get rich.
B To help keep the soil fertile.
C To replace cotton.
D So Carver could study soybeans.

2

This story is mostly about —-

A how a soybean grows.
B who invented the soybean.
C early researchers of soybeans.
D products made from soybeans

3

Which of the following researchers devoted his life to studying soybeans?

A George Washington Carver
B Dr. Charles Piper
C William J. "Bill" Morse
D Palemon Howard Dorsett

4

Which of these did the author use in this story?

A Narrative
B Humor
C Rhyme
D Flashback

Name_____ Today's Date_____

6th Grade

1

After reading the title, what should you expect to learn from this selection?

A About a plant with super powers.
B A giant soybean.
C A soybean with healing powers.
D Why the soybean is super.

2

If *discourage* means "to deter or stop," what does encourage mean as used in paragraph one?

A To stop or discontinue.
B To urge or motivate someone.
C To increase confidence.
D To insist on doing something.

3

The author would most likely agree with which of the following statements?

A Soybean research did not start until the 1940's.
B That Carver started the research revolution on the soybean.
C That most soybean varieties came from the U.S.
D That the first soybean was found in Japan.

4

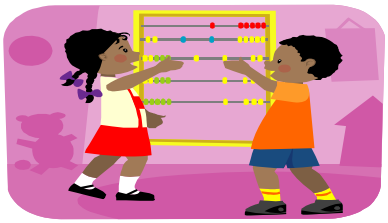
Paragraph three of this selection is mainly about —

A what soybeans should be used for.
B who discovered soybeans.
C how many soybeans the U.S. had and how many were being sent back to the U.S.
D China's soybean production.

5

True or False —Palemon Howard Dorsett was the only scientist to research soybeans and send them back to the U.S.

A True
B False



"Bean"-ificial Math

Grade Level: 4-6 Mathematics

Math

Objective: The purpose of this activity is to allow students to work on the order of operations in solving math problems and basic math skills. Also upon completion of this activity students should be conscious of some products made with soybeans.

Illinois Learning Standards: Math: 6.B.2; 6.C.2a; 6.C.2b; 8.C.2 **Assessment Framework:** Standard 6B 6.4.10; 6.4.12; 6.4.14 Standard 6C 6.4.16

Suggested Reading Materials:

The Super Soybean by Raymond Bial

AITC Soybean Ag Mag

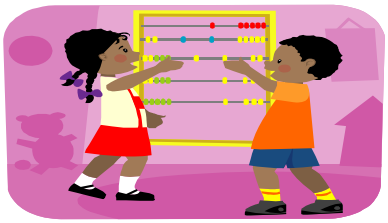
Introduction: The soybean has been called the "super soybean" and the "miracle bean" and this is because of the vast number of products it provides consumers. The purpose of this exercise is to allow your students to practice their math skills while learning more about products made from the soybean. Through solving math problems students will find a letter which will allow them to learn the products in the clues.

Lesson Extenders!

1. Have students create a collage that contains photos of products made from soybeans.
2. Obtain "What's Inside My Candy Bar?" activity off the IAITC website. Maybe even collect other food products made from soybeans and read their labels.
3. Assign students different products that contain soybeans. Have them investigate how the product was made. To put a math spin on this activity, have students try to figure out what percent of the product(s) contains soybeans.

Answer Key:

1. Soap and shampoo
2. Biodiesel
3. Candle
4. Chocolate
5. Deodorant
6. Crayons
7. Paint
8. Ink
9. Soybean meal
10. Margarine



"Bean"-ificial Math

Name_____ **Today's Date**_____

Soybeans are grown to provide hundreds of products for consumers to use. To discover more about these products, fill in the blank words by doing the math problems and using the answer code to fill in the letters. Good Luck!

30	16	22	9	45	80	11	75	54	43	27	66	42	19	33
R	**B**	**S**	**A**	**T**	**L**	**M**	**U**	**Y**	**D**	**E**	**F**	**G**	**I**	**P**

18	36	20	44	90	88	59
C	**N**	**O**	**H**	**J**	**K**	**W**

1. Use these two products to keep yourself clean:

____	____	____	____	and	____	____	____	____	____	____	____
11x2	2x10	3x3	(10x3)+3		(6x5)-8	(2x2)x11	(3x2)+(2+1)	15-4	(9x4)-(3x1)	(2x2)x5	(5x5)-5

2. An alternative fuel used in tractors:

____	____	____	____	____	____	____	____	____
4x4	(9x2)+1	5x4	(6x6)+(3+4)	27-(4x2)	9x3	63-41	(10x2)+7	(7x11)+3

3. Around your house these will smell wonderful:

____	____	____	____	____	____
(3x3)x2	9x1	(3x2)x6	(6x7)+1	(20+20)x2	(5x2)x 2+7

4. Soybeans are a main ingredient in this food:

____	____	____	____	____	____	____	____	____
9x2	(11x2)x2	(5x2)x2	36-(9x2)	80/4	(5x4)+(12x5)	18-9	9x5	(3x3)x3

5. This is a product that keeps you smelling good:

____	____	____	____	____	____	____	____	____
(26+60)-43	(7x7)-22	20x1	(7x9)-20	(0x9)+20	(10x2)+10	(9x4)-27	96-(3x2x10)	5x3x3

30	16	22	9	45	80	11	75	54	43	27	66	42	19	33
R	**B**	**S**	**A**	**T**	**L**	**M**	**U**	**Y**	**D**	**E**	**F**	**G**	**I**	**P**

				18	36	20	44	90	88	59				
				C	**N**	**O**	**H**	**J**	**K**	**W**				

6. Always stay between the lines when using these:

____	____	____	____	____	____	____
72-(9x6)	15x2	83-74	(3x3)x6	88-68	6x6	(2x1)x11

7. Kindergarteners like to brush this on with their fingers:

____	____	____	____	____
26+7	8+1	38-(9+10)	72-(6x6)	(3x3)x5

8. Used in 1/2 of all newspapers:

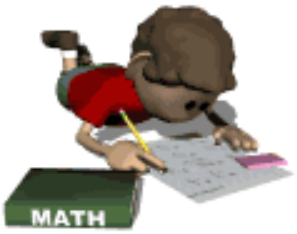
____	____	____
36-17	(2x6)x3	(20x4) + (5+3)

9. Livestock make a meal of this:

____	____	____	____	____	____	____	____	____	____	____
44-22	100-80	(9x2)x3	(2x4x3)-8	(10x2)+(4+3)	17-8	(2x2)x9	21-11	(9x6)-27	18-9	160/2

10. Looks like butter, taste like butter, but it's not butter:

____	____	____	____	____	____	____	____	____
6+5	(3x1)3	(9x8)-42	(7x8)-(7+7)	(9x2)-9	(10x6)-(5x6)	10+9	(9x3)+(3x3)	(7x2)+13



Rounding It All Out

Grade Level: 4-6 Mathematics

 Math

Objective: This activity will allow students to practice skills of rounding numbers to the nearest tenth and hundredth. Students should exhibit an understanding of mean, medium, and mode.

Illinois Learning Standards: Math 10.A.2a; 10.A.2b; 10.A.2c; 10.B.2b; 10.B.2c **Assessment Framework:** Standard 10A 10.4.03

Suggested Reading Materials:

The Super Soybean by Raymond Bial

AITC Soybean Ag Mag

Materials Needed

Graph Paper

Ruler

Colored pencils

Introduction: One of Illinois' most important cash crops is the soybean. This exercise allows students to practice rounding numbers in the ones, tens, hundreds, thousands, and even millions. Students will be able to see the actual production numbers for their home state and maybe even their county. Along with practicing rounding students will also be asked to work with mean, medium, mode and range.

Lesson Extenders!

1. Obtain a quart jar of soybeans from a local farmer or your local County Farm Bureau Manager. Count the number of beans in the jar. Have students determine how many beans are in the quart or how much the beans weigh in the jar.

Name_____ **Today's Date**_____

Below are recent soybean production numbers for select counties. Round the production numbers to the degree stated in the box nearest to your answer box.

Helpful Hint Chart		
Number	Name	How Many
100	One hundred	Ten tens
1,000	One thousand	Ten hundreds
10,000	Ten thousand	Ten thousands
100,000	One hundred thousand	One hundred thousands
1,000,000	One million	One thousand thousands

County	Total Soybean Production (2005)	Rounded Number to the Nearest	Your Answer
McLean	61,771,541	**Hundredth**	**1.**
Iroquois	59,763,200	**One hundred thousand**	**2.**
Henry	42,333,642	**One millionth**	**3.**
Bureau	49,978,200	**One thousandth**	**4.**
Livingston	53,358,800	**Ten thousandth**	**5.**
Whiteside	39,875,549	**Hundred thousandth**	**6.**
Sangamon	43,353,635	**Hundredth**	**7.**
Lee	45,251,000	**One hundred thousandth**	**8.**
Champaign	52,906,322	**One millionth**	**9.**

Continue ⟹

Questions:

1. What is the range of the nine counties that are listed in the graph?

2. Which county had the highest yield of soybeans?

3. Which county had the lowest yield of soybeans?

4. What is the mean in millionths?

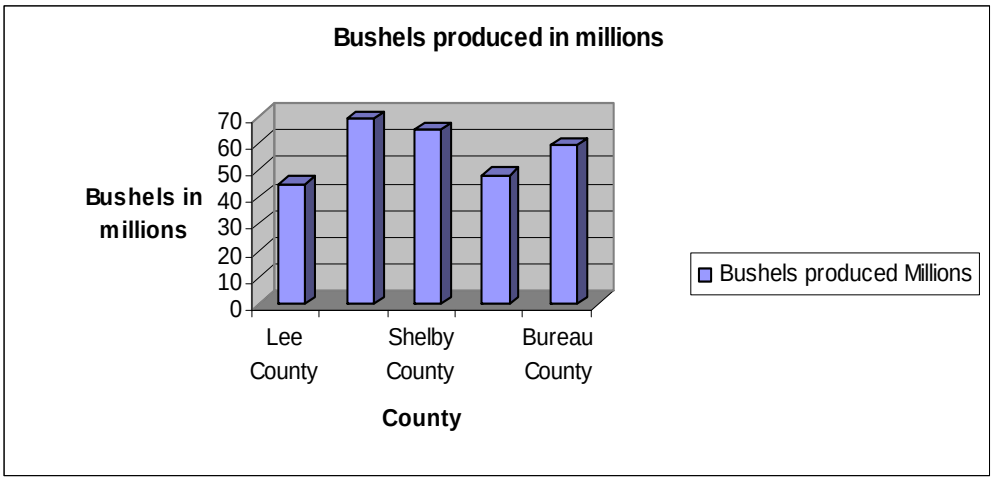
5. What is the median of the following counties:

Champaign	52,906,322
Bureau	49,978,200
McLean	61,771,541
Lee	45,251,000
Livingston	53,358,800

6. What is the mode of the following counties listed below:

Tazewell	45,526,352
Livingston	53,358,800
DeWitt	45,658,000
Whiteside	39,875,549

7. On the graph paper provided create a diagram that labels the county and the million bushels produced. Use the counties provided in the rounding exercise on page 29. Your graph should resemble the example below:



Answer Key:

County	Total Soybean Production (2005)	Rounded Number to the Nearest	Your Answer
McLean	61,771,541	Hundredth	**61,771,500**
Iroquois	59,763,200	One hundred thousand	**59,800,000**
Henry	42,333,642	One millionth	**42,000,000**
Bureau	49,978,200	One thousandth	**49,978,000**
Livingston	53,358,800	Ten thousandth	**39,360,000**
Whiteside	39,875,549	Hundred thousandth	**39,900,000**
Sangamon	43,353,635	Hundredth	**43,353,600**
Lee	45,251,000	One hundred thousandth	**45,300,000**
Champaign	52,906,322	One millionth	**53,000,000**

1. What is the range of the nine counties that are listed in the graph? **21,895,992**
2. Which county had the highest yield of soybeans? **McLean 61,771,541**
3. Which county had the lowest yield of soybeans? **Whiteside 39,875,549**
4. What is the mean in millionths? **49.2 million bushels**
5. What is the median of the following counties: **Champaign 52,906,300**

Champaign
Bureau
McLean
Lee
Livingston

6. What is the mode of the following counties listed below: **45 Million**

Tazewell	45,526,352	DeWitt	45,658,000
Livingston	53,358,800	Whiteside	39,875,549

Additional Resources

Internet Sites

Illinois Ag in the Classroom	http://www.agintheclassroom.org
Soya Foods (Soy food info)	http://www.soya.be
Illinois Center for Soy Food	http://www.soyfoodsillinois.uiuc.edu
Soy Food Council	http://www.thesoyfoodscouncil.com
Illinois Soybean Association	http://www.ilsoy.org
American Soybean Association	http://www.soy.org
Soybean Statistics	http://www.soystats.com

Curriculum Resources

The plant m**AG**ic kit and the Illinois m**AG**ic kit.

The mAGic (**M**ultidisciplinary **Ag**ricultural **I**ntegrated **C**urriculum) kits are multidisciplinary, all inclusive, and designed to bring agriculture to life in your classroom. The m**AG**ic kits address Illinois Learning Standards in math, science, English language arts and social studies.

If you would like more information of how to obtain these m**AG**ic kits please contact:

- Your local Agricultural Literacy Coordinator at www.agintheclassroom.org
- Your local High School Guidance Counselor
- A FCAE Advisor at www.agriculturaleducation.org
- Department of Agriculture, Natural Resources or Environmental Sciences at the college or university of your choice.

Illinois AGRICULTURE in the Classroom℠

ILLINOIS SOYBEAN ASSOCIATION

THE IAA FOUNDATION

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