



# From Pods to Plate

## Lesson Plan

### Nebraska AFNR:

Standard 4: Students will apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant industries.

### Nebraska Science Standards:

SC12.3.1: Students will investigate and describe the chemical basis of the growth, development, and maintenance of cells.

### Objectives:

- The student will understand and identify steps in the process soybeans take from seed to end product.
- The student will understand and identify some of the products produced from soybeans.

### Materials:

Soybean Timeline worksheet (1 per student)

### Additional Enrichment Resources or Source Files:

- Soy products source:  
[www.hopkinsmedicine.org/healthlibrary/conditions/allergy\\_and\\_asthma/soy\\_allergy\\_diet\\_85,P00036/](http://www.hopkinsmedicine.org/healthlibrary/conditions/allergy_and_asthma/soy_allergy_diet_85,P00036/)

## Overview of the Process

Students will enter this lesson with varying backgrounds and knowledge pertaining to soybean production from seed to end product. For this lesson, all videos are applicable; use best judgment as to which video(s) to watch. (As with all content on the internet, please preview it prior to viewing with the students.)

- From Pod to Plate: Planting  
[https://youtu.be/eh1X\\_5gUKjl?list=PL50E8551EF42331F9](https://youtu.be/eh1X_5gUKjl?list=PL50E8551EF42331F9)
- From Pod to Plate: Growing  
<https://youtu.be/XTkj3iHSR-w?list=PL50E8551EF42331F9>
- From Pod to Plate: Harvest  
<https://youtu.be/xXtGojxV3tY?list=PL50E8551EF42331F9>
- From Pod to Plate: Elevators & Trains  
<https://youtu.be/0fa1BL5fZ2s?list=PL50E8551EF42331F9>
- From Pod to Plate: Trucking  
<https://youtu.be/FQfvmuC5r28?list=PL50E8551EF42331F9>
- From Pod to Plate: Soy Processing  
<https://youtu.be/RCeAjEPDwpg>
- From Pod to Plate: End Uses  
<https://youtu.be/Rdj9IILAvJI?list=PL50E8551EF42331F9>





1. Students will complete the Soybean Timeline worksheet, beginning with planting soybeans, and ending with a soybean product of their choice after reviewing the videos.
    - a. Note: students may add as many steps within the timeline as they see fit.
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## Soybean Products

What products on the grocery shelves and in your kitchen begin with the humble soybean plant?

- Products that contain soy may have the following names: Hydrolyzed soy protein, Miso, Edamame, Natto, Soy albumin, Soy cheese, Soy fiber, Soy yogurt, Soy ice cream, Soy bean (curd, granules), Shoyo sauce, Soy flour, Soy grits, Soy nuts, Soy milk, Soy sprouts, Soy protein concentrate, Soy protein isolate, Soy protein hydrolyzed, Soy sauce, Tamari, Tempeh, Textured vegetable protein (TVP), Tofu, Hydrolyzed plant protein, Hydrolyzed vegetable protein, Vegetable broth, Vegetable gum, Vegetable starch, Flavorings may be soy-based, Vitamin E contains soybean oil
1. Have students go home and take a survey of items in their kitchen. Students will write down all the items that contain soy as an ingredient in some manner. Within the next class period, students will report and discuss.
  2. *Optional Lesson Extension:* Take a field trip to a local grocery store. Divide students into teams to go into different sections of the store (i.e. cereals and snacks, household cleaners, dairy case, baking aisle, etc.) to note items with soy as an ingredient. Report and discuss.
    - a. Optional extension questions:
      - i. How does soy shape the food industry?
      - ii. What could happen if soybeans were somehow taken out, or their numbers greatly reduced, of the food system?
      - iii. Does a multi-use product like soybeans hurt or help the U.S. economy overall?
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- Sample key stakeholders in the soybean industry: seed companies, distributors, and salesmen; farmers; chemical companies, distributors, and salesmen; equipment companies and dealer ships; grain facilities; transporters (rail, truck, etc.); processing companies; consumers; etc.

1. Students will choose one of the key stakeholders and take a few minutes to reflect on the questions below in relation to their stakeholder:
  - a. How does this stakeholder affect the entire soybean production process?
  - b. Does this stakeholder have influence in the U.S., internationally, or both? How?

Stakeholders aren't the only influencers in the soybean production process. There are many other factors that affect the process, most of which cannot be controlled by a single person or group. Factors like the weather or environment, supply and demand, politics, economic decisions, and consumer choice are all important to consider when thinking about the entire soybean production process.

1. Students will brainstorm risk factors for soybean production (not including known stakeholders). Working in small groups, students will create a skit or creative representation of how soybean production is affected by these risk factors.
  - a. Example: Students could create a parody of a popular song that addresses the risk factors.

*Optional:*

1. Invite an individual or group with knowledge of the soybean production process to visit and allow students to ask questions. If an in-person visit is not available, look to online resources such as Skype to make the experience personal.

**Optional Lesson Extension Activities:**

1. Research soybean import and export markets in your home state, both within the U.S. and internationally. Look at influencing factors that are specific to your state.
2. Contact your state's Soybean Association or Department of Agriculture by phone or email to see what commodity trade opportunities are available for participation (i.e. annual trade conference, routine publications, etc.).
3. Keep abreast of the legislative actions that involve trade of agricultural commodities within your state and in the U.S., and how that will affect you as a producer and/or consumer.



Name: \_\_\_\_\_

# Soybean Products Worksheet

