
SEED

Overview

Breeding crops for organic and seed production are a small piece of organic agriculture with a potentially large impact. This mini module includes a seed search assignment where students build a farm scenario and search for organic seed as outlined by the National Organic Program. A discussion prompt and additional readings and resources are provided on the topics of organic breeding, seed production and seed saving.

Learning Objectives

Concepts

- Organic producers must perform a seed search in an effort to source organic crop seeds.
- Crops bred specifically for organic production may have different traits than those bred for conventional production.

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Assignment: Organic Seed Search

To get started, watch and read the following resources and answer these questions.

1. Watch the short (5 minute interview) with Dr. John Navazio, an organic plant breeder
<https://www.youtube.com/watch?v=kPnVkvCsHOA>
2. Next read through the super quick case on searching for organic seed provided by Oregon Tilth (a certifier):
<https://tilth.org/resources/lessons-learned-series-organic-recordkeeping-for-seed-sources/>

Why might an organic farmer need to buy untreated non-organic seed? Give specific examples of how this could arise.

Now, to acquaint you with organic seed sources, you will develop a farm scenario and perform a seed search.

3. Choose a location in the United States where you will be farming. Be precise – including the name of the nearest town and state. Where is your farm?
4. Use the plant hardiness map to determine your growing zone:
<http://planthardiness.ars.usda.gov/phzmweb/interactivemap.aspx>

What is the growing zone for your farm location? What is the average annual extreme minimum temperature for your zone?

5. How big will your farm be (rough acreage) and what will you grow? (i.e. field crops, vegetables, fruits, grains, forages). Even if you are “more of an animal person” you can do this assignment focused on forages and pastures. Make sure that your idea makes sense with your location. If you need to, do a little research on the Web, perhaps through a state’s Department of Agriculture or University Extension sites, to make sure your idea makes sense with the regional limitations.

6. Now, choose two specific crops that you will grow. Tell me how you plan to market them (i.e. processed, fresh, direct to consumers). This will likely impact the variety that you choose to grow.

7. For these 2 specific crops, search 3 different organic seed suppliers to see if they sell what you need. Record the following information: crop, variety, supplier, and cost.

8. Do the organic seed suppliers from #7 breed seed in your region? If no, try to find regionally-bred seed for your operation that is certified organic. If you cannot, are you able to find regionally-bred seed for your operation that is untreated? (search for this, and record the name of the seed supplier if you find one). Why might it be advantageous for seed to be regionally-bred?

Optional Extension – Students build their farm scenarios to include considerations such as certification and marketing. The following prompts and questions could be added to this assignment, or continued at a later date when these topics are being covered in more detail.

9. Use the internet to research who would be a likely certifier for your farm. Ideally, you would find a certifier who is regionally-based, however this is not necessary. **Identify the certifier and explain why you think this certifier is a good fit.** You can use Google or use or the Organic Integrity Database (<https://organic.ams.usda.gov/Integrity/>). This database lists USDA certified operations and their certifier and can be searched by city and state.

10. Farmer associations can be a good resource for transitioning or certified farmers. **Find the nearest farmer association to your location selected for your “farm scenario.”** Keep in mind that this could be an organic farmer association or also a sustainable farming association of some sort that is supportive of organic farmers. **List one event or program that they provide that would benefit you.**

11. Use the Organic Integrity database to find other producers in the region of your pretend farm. If there aren't any in the specific city, expand your search state-wide and look for

nearby locations. **Are there a lot of certified organic producers? Generally, which products are sold from these operations? Are they similar or different to what you described in your farm scenario? What advantages or disadvantages would this community provide you as a producer?**

12. The National Sustainable Agriculture Coalition advocates for federal policy reform to advance sustainable agriculture. One of their priority areas is organic agriculture. Visit this site: (<http://sustainableagriculture.net/our-work/issues/organic-agriculture/>) to learn more about their priorities regarding organic agriculture. **Does any of this work make certification more or less feasible for farmers? Why or why not? Explain,** using specific examples of programs, efforts, etc.
13. Noncompliance is an issue of major concern for some consumers and can cause decreased confidence in the organic certification process. Watch this short 4 minute video about noncompliance (<https://www.youtube.com/watch?v=CKgtbi79n78>). **What are 2-3 main take-home messages for you from this video?**
14. Now it's time to start thinking about marketing. Read this overview of different marketing channels (<http://articles.extension.org/pages/18381/direct-marketing-channels-strategy-for-organic-products>). **How do you go about deciding what marketing strategy to use? Use 3-5 sentences to discuss at least 3 considerations when it comes to deciding how to market your product(s).** Keep in mind the location of your farm, surrounding community, scale of operation, and crops grown. You do not need to choose marketing strategies for your farm, but instead describe some important things you'll need to figure out so you can make an informed decision about how to market.
15. What's your farm's name?
16. Give your farm a motto.

Notes for Instructors

Discussion: Seed Saving in Organic Agriculture

Additional Background

Given that farmers should use organic seed (as long as it is available) some farmers have turned to producing their own organic seed on farm, growing their own seed organically and saving it for the following year. This is referred to as "seed saving." If you've never heard of seed saving, you might take a minute here to peruse resources to learn more about what it entails: <http://www.seedsavers.org/learn>

For large scale production, seed saving (including harvest, processing and storage) can take a lot of time and specialized equipment. These are important considerations for farmers, and the time and money needed to ensure high quality seed can be prohibitive. SavingOurSeeds.org has a publication on "Seed Processing and Storage" that covers this topic in more detail and can be found online here:

http://www.savingourseeds.org/pubs/seed_processing_storage_ver_1pt6.pdf

There are a number of reasons organic seed is important for organic producers including growing plants adapted to greater pressure from pests and a changing climate, and reduced reliance on the consolidated seed industry. Read this summary "Why Organic Seed" from the Organic Seed Alliance (an advocacy group) to learn about this in greater detail: <https://stateoforganicseed.org/why-organic-seed/>

(Note to Instructors: There may be current news articles on organic seed or further consolidation of seed companies that might also serve as additional reading for this discussion.)

Notes

This discussion can be done in a face-to-face classroom or online in discussion threads. In our experience, online discussions are most fruitful when each student is required to post their initial thoughts without being able to see the posts of their fellow students. This tends to yield more detailed and thoughtful work from each student. We then require students to respond to at least one other student with questions, comments, or supporting information.

For in class discussions, it may similarly be helpful for students to bring an initial written response with them to be checked at the start of the period to hold them individually accountable for the reading and to encourage participation in the group discussion. If you observe that your students are shy to participate in large group discussion, another strategy to break the ice and increase confidence would be to begin with a "talk to your neighbor" or "think-pair-share" type exercise. For this activity, students would first answer a prompt in conversation with just their neighbor or a small group before bringing it back to a large group discussion.

Discussion Question

- After conducting your own seed search and reading the above articles, do you think organic farmers should or should not save seed? Explain the advantages and disadvantages of seed saving.

Resources

Print

Hansen, Anne Larkin. 2010. "Plants 101" The Organic Farming Manual: A comprehensive guide to starting and running a certified organic farm. Storey Publishing, 127-154.

This resource is a guide for running a certified farm, and therefore provides practical information such as how to select, source and save seed (starting on page 139).

Lammerts Van Buren, Edith T. and James R. Myers. 2012. Organic Crop Breeding. Wiley-Blackwell.

This textbook covers in depth organic-specific issues in plant breeding and does not cover basic plant breeding.

Ohio Ecological Food and Farm Association (OEFFA). 2010. Sourcing Seeds and Plants for an Organic Farm.

PDF available online at:
<http://certification.oeffa.org/certfiles/facts/Seed%20Sourcing.pdf>
This short facts sheet outlines the National Organic Program regulations (205.204a) pertaining to seed and planting stock.

White, Rowen and Bryan Connolly. 2011. Breeding Organic Vegetables: A Step-By-Step Guide for Growers. Northeast Organic Farming Association of New York (NOFA-NY).

This five-chapter publication covers why and how to save seed and the basics of breeding for hardy and disease resistant varieties. Also included is an appendix with additional resources and a glossary.

Zavazio, John and Jared Zystro. 2014. Introduction to On-farm Organic Plant Breeding. Organic Seed Alliance.

PDF available online at:
http://www.ofrf.org/sites/ofrf.org/files/Introduction_to_On-farm_Organic_Plant_Breeding.pdf
This guide is geared towards farmers and covers the basics of plant breeding and provides examples of breeding programs for organic systems.

Web

eXtension Plant Breeding in Organic Farming Systems Page

<http://articles.extension.org/pages/59457/plant-breeding-in-organic-farming-systems>
This page by eXtension contains an updated list of videos, webinars, articles, and resources related to organic plant breeding.

Organic Nation – 'What's Special About Organic Seed?' featuring John Navazio

<https://www.youtube.com/watch?v=kPnVkvCsHOA>
In this episode, Organic Nation visits Nash Organic Farm in Washington to talk with John Navazio about the importance of breeding organic seed.

Organic Seed Alliance

<https://seedalliance.org/>
The Organic Seed Alliance is an organization focused on education, research and advocacy for organic seed and breeding. Their website contains reports on the state of the organic seed industry.

Saving Our Seed

<http://www.savingourseeds.org/publications.html>

The 'Publications' page offers seed production manuals geared towards growers in the Mid-Atlantic and South. The 'Organic Seed Processing and Storage' publication gives a detailed overview of all the considerations in large scale seed production.

Seed Savers Exchange

<https://www.seedsavers.org/learn>

The 'Learn' page on the Seed Savers Exchange website provides how-to information on seed-saving.