

Seed Saving & Storage

Techniques: Seed Processing
for Wet and Dry Seeds



Seed Saving Supplies



A fine strainer



Mason Jars (4oz, 8oz, 16oz)



Paper plate/coffee filters



Rubber bands



Carpenters tape



Paper towels



Containers (baskets, bags, buckets)



A writing utensil



Tools for cutting and slicing
(Garden shears & knife)



Seed Screens



STEM
PRE-ACADEMY



SEEDS
OF HONUUA

Labeling



Label your seeds with the following information:

- School and Location, include grade level or course name, optionally include names of students
- Type of plant and or variety name
- Date of harvest (**month and year**)
- Original source of the seed
- Suggested planting depth and spacing (**optional**)

Healthy Seeds

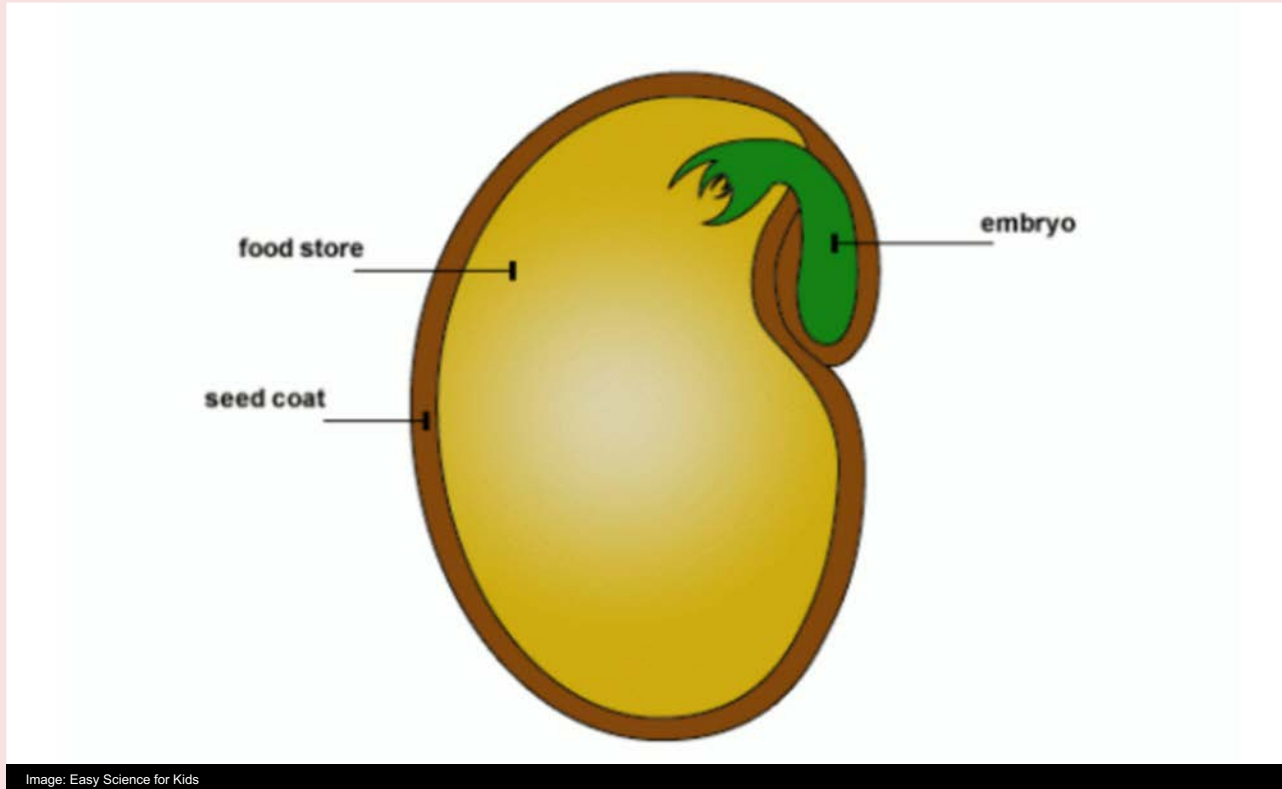


Image: Easy Science for Kids



Seed Saving - Native vs Non-native



Image: Ukuleles by Kawika



Image: Mother Earth News

Seed Classifications for Seed Storage

- Recalcitrant - Short storage lifespan
- Orthodox - Long storage lifespan
- Intermediate - Varying lifespans



Image: Hawai'i Island Seed Bank



Image: New Scientist



Image: Gardening Know How



Additional information: Orthodox, Intermediate, and Recalcitrant Seed

Wet and Dry Seed



Image: Dave Stokes



Image: Gwenyn Hill Farm





Wet Seed

A wet seeded crop has seeds that are embedded in the flesh of succulent fruits

- ❖ Melons
- ❖ Squashes
- ❖ Cucumbers
- ❖ Tomatoes
- ❖ Eggplants
- ❖ Peppers
- ❖ Akala
- ❖ Mamaki
- ❖ Maiapilo



Image: Pixabay



Image: Forest & Kim Starr



Image: Native Hawaiian Garden

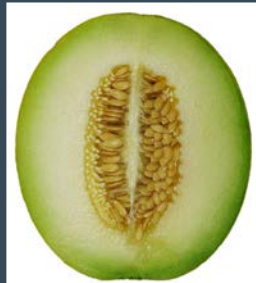


Image: Encyclopedia of Life



Image: Pixabay



Image: Pixabay



Wet Seed

Are your seeds mature?

1. Color of the fruit

2. Firmness of the fruit

3. Ease of fruit detachment



Image: Gardening Know How



Image: In Country Value Oman

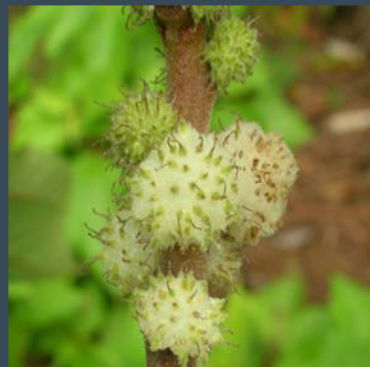


Image: Hawai'i Nature Journal



Image: University of California, Berkeley



Image: TreeHugger



Image: SF Gate



Image: Hawai'i Horticulture

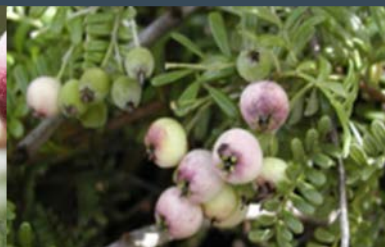


Image: City Mill

Tomato Pre- workshop Activity

Highlights by Clyde Kobashigawa,
Retired 8th Grade Science Teacher,
Niu Valley Middle School

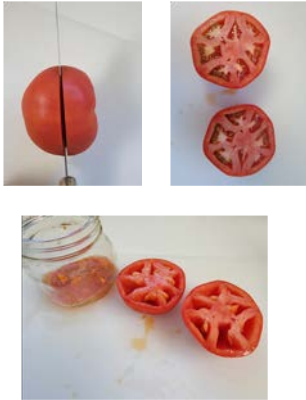


Save Seeds, Save Our Future: Tomato Seed Saving Activity

My tomato seed collection and processing photo story

Clyde Kobashigawa, Retired 8th Gr Science Teacher, Niu Valley Middle School

Seed extraction and preparation



Fermentation process



Cleaning process



Initial Drying Process



My Comments

- I did the Pre-Activity 2 times. The first time, I followed the directions as close as possible and left the jar open during the fermentation process. The second time, I closed the jar and swirled the contents periodically.
- When cleaning the seeds the 2nd time, I ran a slow stream of water into the jar of which most of the floating mold, pulp, and non-viable seeds floated out of the jar. This resulted with cleaner seeds than the first trial.

***Take away:** This hands on activity is engaging and can be completed in several days. Great opportunity to develop observation skills, following directions, learn about the fermentation process, and other vocabulary regarding seed saving.*



Wet Seed

Seed Processing

- Soaking
- Fermentation
- Decanting
- Rinsing



Image: Lee Valley Tools



Wet Seed

Soaking



Image: SSE Heritage Farm



Image: Whole Food Gluten-Free Paleo Recipes



Image: Growing in the Garden

- **Soaking** involves placing contents of wet seeded fruit (including seeds and pulp) into a container full of water.



Wet Seed

Fermentation



Images: Garden Gate Magazine

Image: Chicago Botanic Garden

- **Fermentation** is a processing technique for wet seeded crops that **1)** makes seed cleaning easier, **2)** removes germination-inhibiting gel from the seed, and **3)** destroys specific diseases.



Wet Seed

Decanting



Images: Restoration Seeds



Images: Southern Exposure



- **Decanting** is a process that utilizes a lot of water to both clean seeds and separate lightweight, less viable seed from viable, heavier seeds.



Wet Seed

Rinsing



Images: Unsplash



Image: Sow True Seed

- **Rinsing** further separates pulp from seed with the use of a colander and pressurized water



Dry Seed

A dry seeded crop has seeds enclosed in pods or husks that dry in place on the plant

- ❖ Lettuce
- ❖ Beans
- ❖ Asian Greens
- ❖ Brassicas (cabbage, kale, broccoli)
- ❖ Flowers
- ❖ Koa
- ❖ Ilima
- ❖ Pua kala
- ❖ 'Ohi'a



Image: Wildlife of Hawai'i



Image: West Hawai'i Today



Image: University of Hawai'i at Mānoa



Image: Dave's Garden



Image: WikiWand



Dry Seed

Are your seeds mature?

1. Color of the seed or seed pod
2. Dryness of the seed or seed pod.
3. Ease of detachment of seed or seed pod.

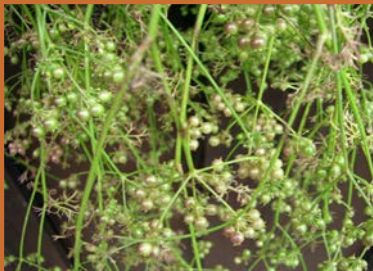


Image: My Darling Lemon Thyme



Image: Cabin Organic



Image: Flickr



Image: Ground to Ground



Image: Flickr



Image: Center for Plant Conservation



Image: Moloka'i Seed Company



Image: Hawaii'i Island Seed Bank



Dry Seed

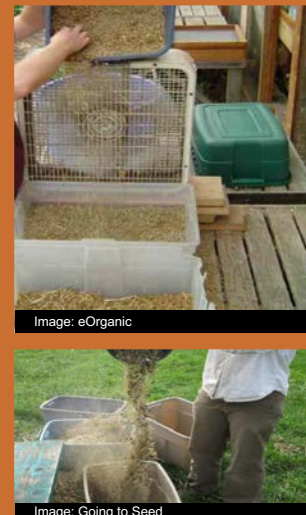
Seed processing



Threshing



Screening



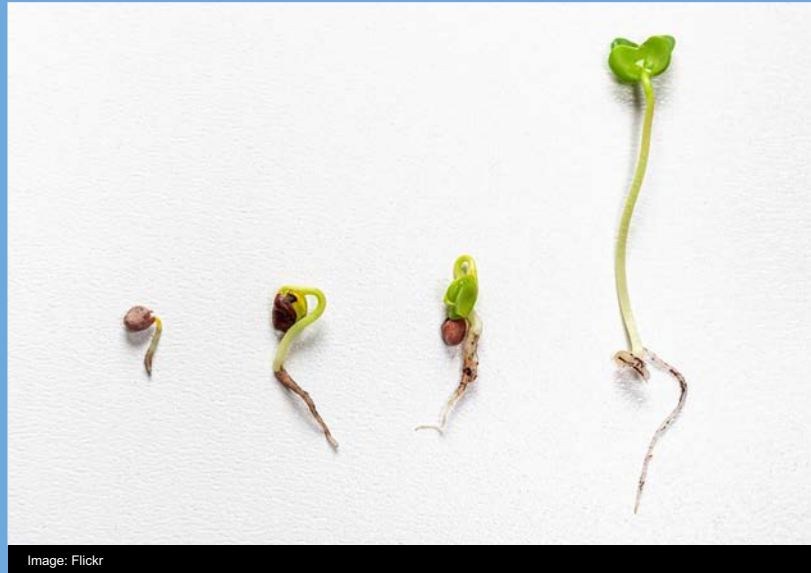
Winnowing

1. Threshing will remove seed from their protective outer covering.
2. Screening is a process that utilizes different sized screens to separate seed from non seed material.
3. Winnowing utilizes the air current to separate viable seed from lighter chaff or inviable seed.

Storage

What makes a seed dormant?

- Warmth
- Moisture
- Light



- Cool
- Dark
- Dry

or

Storage

Storage vessels and necessary preparation

- **Freezer:** When storing seed in the freezer it must be dried to a relative humidity between 25-35%.
- **Refrigerator:** When storing seed in the refrigerator it must be dried below 50% relative humidity.



Image: Science Photo

Seed Drying



Image: Willow Primrose



Image: Garden Gate Magazine



Image: Terraformation

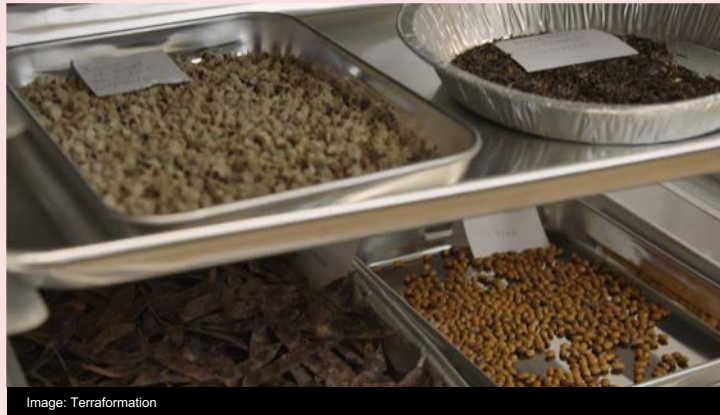


Image: Terraformation



Seed Drying

Humidity controlled refrigerators



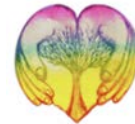
Image: Samsung

Seed Drying Kit

- 1 UC Davis DryCard
- 2 mesh bags (3" x 4") of ~100 mL silica beads
- 2 mesh bags (4" x 6") for "seed rubbing"
- 2 reusable plant tags
- 2 seed storage envelopes
- 1 mesh fruit collection bag (8" x 12")



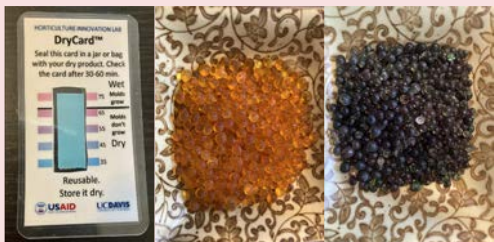
STEM
PRE-ACADEMY



SEEDS
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Seed Drying

Dry Kit Materials



Images: Tyler Levine



Image: STEM Pre-Academy



Images: Tyler Levine

Seed storage Prep

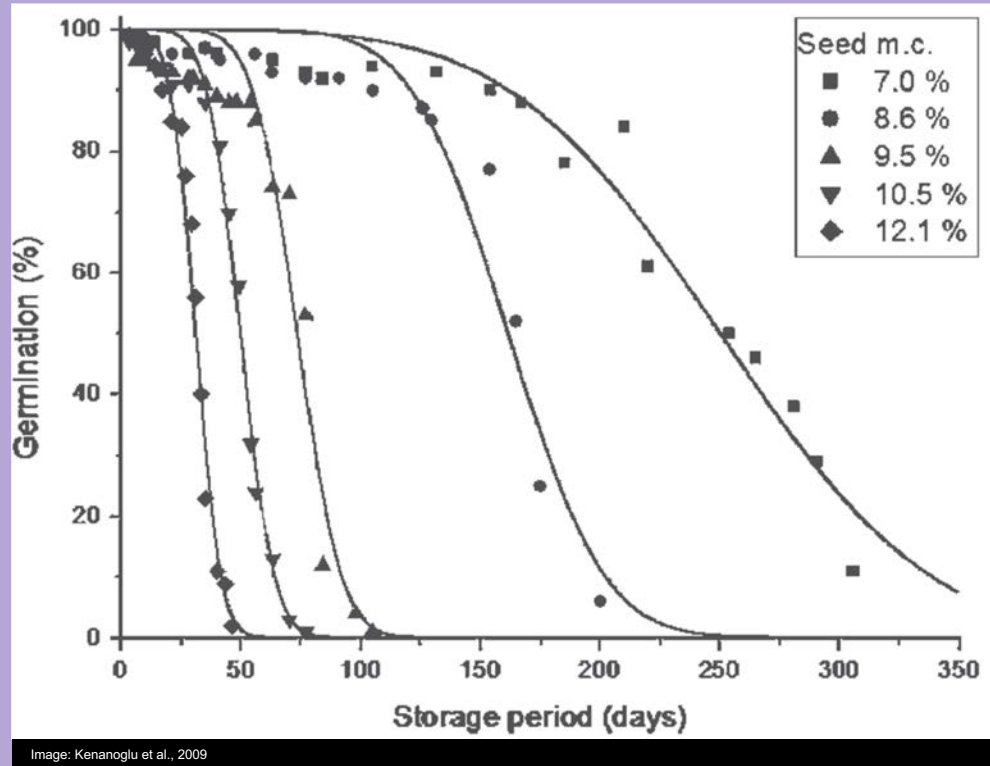


Images: Terraformation

- Seeds should be stored in airtight packaging or containers in the refrigerator or freezer



Seed Survival Curve



- Storing seeds in the right conditions will cause them to age slower than in their natural environment, however all seeds still age while in storage...



Germination Testing



Divide the number of sprouted seedlings by the total number of seeds in the test and multiply by 100.

$$\left(\frac{\text{Seeds germinated}}{\text{total seeds}}\right) \times 100$$

Example:

Lualualei pole beans on day #6. If 20 seeds germinated is 100% what % is 14 seeds?

Here's the formula:

$$(14/20) \times 100$$

$$0.7 \times 100 = 70\%$$



What lessons can seeds offer?



Image: Pexels

Seed Teaching Tools

HPSI Resources - The Kohala Center

- ❑ [Hawaii Heritage Seed Project- Lessons 1 & 2 \(Ilana Stout\)](#)
- ❑ [Basic Seed Saving Class Outline \(Lyn Howe\)](#)
- ❑ [A Handful of Seeds- Seed lesson plans and activities for Educators](#)

Additional Resources

- ❑ [School Curriculum | Global Seed Network](#)
- ❑ [Resources for Teachers – Kids Growing Strong](#)
- ❑ [Save Your Seeds \(kidsgardening.org\)](#)
- ❑ [Seed Saving Curriculum | Edible Learning Lab](#)
- ❑ [Life Lab » Blog Archive » Seed Saving Resources](#)

Q & A

