



THE W. GARFIELD WESTON
FOUNDATION

Seeds of
Diversity



Semences du
patrimoine

Training of Trainer's Seed Saving Primer



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The program seeks to lay the foundations for a secure, diverse and sustainable seed system. It is delivered by USC Canada, in partnership with Seeds of Diversity Canada and through the support of The W. Garfield Weston Foundation. The Initiative will provide educational resources for farmers and gardeners to help expand the production and conservation of local, ecologically grown, bio-diverse seed.

Organic Seed Alliance (OSA) is a non-profit organization in the United States. OSA's mission is advancing the ethical development and stewardship of the genetic resources of agricultural seed.

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INTRODUCTION

Welcome to the Training of Trainers Program. Thank you for investing in a secure and diverse seed system through your commitment to spreading accurate seed saving knowledge. The curriculum, with its component parts provides a comprehensive training tool. As a *trainer*, you will develop the capacity to create learning experiences for others. The goal is twofold: 1) to fully engage *participants* in seed saving concepts and practices so they will retain what they learn and continue practicing it, and 2) to train seed saving instructors (*the trainers*) to spread this important skill.

Presenters will continue to refine the program, and update this guide, based on feedback from *trainers* and *participants*. The development of this curriculum is an ongoing process and the collaboration between USC-Canada and OSA.

How the Training of Trainers Program is Structured: The program has two nested functions. Principally, it is a curriculum for teaching seed saving workshops. Those workshops will provide *participants* with the basic information and processes needed to save seed. The ***Seed Saving Curriculum***, divided into 6 modules or lesson plans can be adapted in several ways. It is designed to provide instruction at both the basic and intermediate seed saving level and includes an array of activities and materials that enhance the training. A major component is the PowerPoint (PP) and all materials can be tethered to it. The lesson plans have been designed for use in the field—a garden or farm setting—without the PP, or in a classroom with the PP. The lesson plans are included in the primer and also are available in a separate PDF for easy copying. The OSA *Seed Saving Guide for Gardeners and Farmers* is the reference source recommended for the workshop. *Presenters* comfortable with a different reference can alternately provide that to *trainers* and *participants*.

At a second level, the program outlined in this primer includes a curriculum to train people how to teach seed saving. The ***Trainer's Curriculum*** describes the trainer's role and responsibilities, provides teaching methods, and principles of effective com-

munication that can be used by experienced seed savers to teach seed saving to future instructors.

For the sake of clarity we will use the following terms. *Presenters* are experienced seed savers who act as mentors and deliver training workshops; they train the *trainers*. The *trainers* begin by learning the materials in the Seed Saving Curriculum and the teaching methods in part one of the primer. *Trainers* then go on to conduct workshops, sharing seed saving practices and concepts. *Participants* are people taking the seed saving workshop. *Participants* can become *trainers*, and *trainers* can become *presenters*.

Recommended options for using this primer: A key goal of this training program is to provide consistency in seed saving workshops while also providing flexibility to meet the different needs of *participants*. Furthermore, the level of experience of the *trainers* will guide how both of these curricula are used. Ultimately, whether *trainers* use the PowerPoint presentation, adapt it, or decide not to use it, they must be familiar enough with the material and the seed saving curriculum to assure that their workshop is consistent with the program. It is important for *trainers* to review the material prior to leading each workshop.

The Training Curriculum can, and must, be adapted to the experience level of the *trainers*. For example, if the potential *trainer* has only some seed saving experience, he could first attend the One-Day Seed-Saving Workshop as a participant to become more familiar with the material presented in the workshop. The next day he could attend the training workshop offered by a *presenter* to review the curriculum, learn teaching skills, practice leading the different learning activities, participate in group activities and/or use reflective journaling to discover what works best for him based on his learning and teaching style.

Alternately, if the *presenter* is working with *trainers* who are more experienced seed savers, she could customize the training curriculum to simply review the contents of the PowerPoint and spend more time exploring learning activities. These *trainers* would look at new models of learner-centered education and practice teaching skills including public speaking, leading activities, fielding questions, and time

management. The next day, several *trainers*, under the guidance of a *presenter* could lead a seed-saving workshop for the general public.

As a third option, individuals who are already experienced in teaching seed saving, could review all the material on their own.

Goals of the Training of Trainers

Seed Saving Primer:

1. Develop an expanding pool of *trainers* capable of using and adapting the Seed Saving Curriculum.
2. Assure that seed saving workshops provide accurate, useful, and consistent information.
3. Expand the public's skill, knowledge, and appreciation of seed saving.
4. Expand the production and conservation of high quality local and bio-diverse seed.
5. Utilize workshop feedback to further improve the program.

PART I: TRAINING OF TRAINERS

1. Pedagogy

Pedagogy refers to the method and practice of teaching. Current research has shown that we learn best when we are engaged. Listening to long lectures is not as effective as listening and then doing an activity, or solving a problem, or reflecting and writing about what we have learned. The more styles of training you can load into a learning experience the better everyone learns. Individuals may have certain brain-style preference for learning styles, so everyone learns when multiple approaches are offered. The pedagogy of this training curriculum was developed based on this assumption.

Think of *participants* as active agents, not just people acquiring knowledge. Think of the *trainer* as a coach guiding the process. The goal is for people to fully engage so what they learn can be practiced again, with confidence. Offer some information and then let *participants* engage. Real learning is the ability to use information to solve problems that arise and to retain it long after the initial practice. *Participants* commit to making the knowledge their own through

continued practice.

This is one reason the PowerPoint does not come with a script out of the box. This is an opportunity for you as a trainer to really hone your skills and make the workshop a reflection of your knowledge. It is better for *participants* to grasp a few ideas really well than to be flooded with information that is beyond them. Know your audience and you will know what level of depth to explain underlying principles. The primer provides questions to gauge *participant* level. When the group you are training has a similar skill set and interest level, you can select which slides in the PowerPoint or Lesson Plans to skim over and which to focus on. Recommended activities have also been geared to different levels.

2. Trainers' Role and Responsibilities

It's the action, not the fruit of the action, that's important. You have to do the right thing. It may not be in your power, may not be in your time, that there'll be any fruit. But that doesn't mean you stop doing the right thing. You may never know what results come from your action. But if you do nothing, there will be no result.

Mahatma Gandhi
(1869-1948)

Trainers take on a leadership role. They are responsible for creating a trusting environment so participants can learn. As a *trainer*, you will be presenting information, encouraging questions and engaging *participants* in activities. *Trainers* are not expected to know everything. If you convey a sense of relaxed awareness, *participants* will relax too. The more you develop ease with challenges that arise, the more the group will feel comfortable. The ability to plan ahead and encourage others to participate and engage in the plan requires leadership skills. Everyone can benefit from developing a level of confidence and competency in leading others.

Logistical Responsibilities

Trainers are responsible for being organized:

Have a protocol: clearly explain the day's agenda,

and describe logistics (bathrooms, food, parking, cell phones off) so participants have a sense of ease and you are able to avoid distractions while you teach. State your intention for the group to have a productive day together. Explain that activities are more than entertaining times to stretch; they are essential components that reinforce new concepts. Handle any logistical issues participants might have. Starting the day this way demonstrates to the group that the workshop will be an effective use of their time. An organized trainer will cultivate the group's respect and attention.

Trainers are responsible for preparing the training: The Training of Trainers program offers a wide array of materials to adapt to a specific seed saving workshop. The garden cart inventory list is a useful tool for organizing materials to bring to the event. The lesson plans form the backbone of the curriculum. Create your own notes or script for the PowerPoint. Assemble participant folders including a printed copy of the OSA Seed Saving Guide or an alternative seed saving guide if there is one you prefer.

Know your audience's skill level. You may advertise your workshop toward a specified audience, for example, beginning seed saving for gardeners, or intermediate seed saving for farmers, in order to attract participants of a certain level. Alternately, you may want to advertise the workshop more broadly and then gauge participant's skill level through questions on a registration form before the workshop. Finally, you can assess the audience on the day of the event through introductions, but in this case you will need to be able to adjust your instruction and discussion accordingly without time for prior preparation. Determine the participant's general skill level and gear the workshop accordingly.

Plan for the size of the group; 20 participants can be a comfortable size to work with. Workshops in the field with more than 20 people may require a megaphone. Larger workshops offered indoors benefit from support staff. These assistant trainers can be a real help in guiding activities. Determine the following variables and select accordingly: indoors or farm and garden setting, and the season the workshop is offered. If you are uncertain about topics review OSA's *Seed Saving for Gardeners and Farmers Guide*. The logistics section in the primer provides

additional information.

Trainers have the responsibility to manage time and keep the group on task: Use your discernment. Let the group know that there is a lot of material to cover and that we will need to keep to the schedule to cover it all. If questions come up that will be covered later in the workshop you may want to ask participants to be patient and hold off on that topic. If discussions are wandering off topic or going over schedule, you may ask participants to table the discussion for after the workshop or during a break. If time is being spent on worthwhile topics that participants want to explore, consider your options. Put it to a vote. Tell the group that there is a tight schedule and while you are willing to take time away from the scheduled agenda, determine what priorities require attention and what material can be dropped. Determine ahead of time what material can be omitted if the workshop runs late. Always give priority to topics that include a hands-on component because engaged participants learn more than passive ones. Participants will be more engaged and committed if the trainer mentions why they are being asked to do a specific activity. Be sure to announce the activity objective listed in the lesson plan.

Toward the end of the day if the group's attention wanes encourage them that they have covered a lot, there are some final concepts to touch on, and that you are almost done.

Leadership Responsibilities

Trainers are responsible for establishing a positive environment and a sense of cooperation. Adult learners might feel vulnerable and thus hesitate to open up in a workshop. The introductions in the opening module are an opportunity for each *participant* to say something about who they are in a role other than a learner. Some people need that recognition of their experience and expertise before they can relax. During the PP presentation ask questions to determine if participants are keeping up with the information. Always respond positively, even if the answer given is different from your expectation. Provide praise and encouragement. Trainers can encourage a sense of safety.

Trainers have the responsibility to engage with the participants. Invite people to share their thoughts. Remind participants there is a full day and ask them to keep their comments brief. Engaging with the participants includes such basics as not turning your back to the group and speaking to the screen or the flip chart. Far more important is how a trainer field's questions and comments. Don't ignore them. Respond and notice if you are getting frustrated or defensive. See the tips below for how to defer questions. Encourage but do not force everyone to participate in activities. Remind participants that by engaging their senses they reinforce what they are learning.

Trainers have the responsibility to be honest. Admit when you don't know something and offer to find out either after the class or during a break. Or ask the person to email the question to you. Becoming defensive signals to the listeners that you are unsure of the facts, and participants, may lose confidence in your ability. No one expects you to know everything. Relax.

3. Developing Effective Training Skills

Effective communication comes naturally for some and is a learned skill for others. But for all *trainers*, practice will improve your teaching skills. The more workshops you deliver the better you will be able to articulate principles, respond to questions, and facilitate discussions. For new trainers, whenever possible give your first seed-saving daylong presentation with a *presenter* or a *co-trainer*. If public speaking is not your forte then just present the easier parts, letting the more experienced speaker give the introduction and lead the activities. Take turns with the PowerPoint. The more relaxed speaker can present the complicated concepts. As a new trainer taking a less active role, you have the opportunity to develop good listening skills as one step toward improving your communication skills.

A. Practice Before Delivering a Workshop

1. Practice, practice, practice -- the more you practice talking through the material, the more comfortable and clearly you will be able to teach.
2. Use a recording device and note if you speak clearly in a well-modulated voice.

3. Practice giving part of the workshop to family or friends. Ask for feedback.
4. Smile, speak clearly and at a relaxed pace, pause after making key points.

B. Tips for Presenting a Workshop

1. Be well rested, and relaxed. Some people feel more confident when they are well groomed, while others enjoy wearing their everyday work clothes.
2. Avoid reading the slides: they should provide talking points and headings. As the *trainer* you can explore the topic and elaborate with supporting points and anecdotes.
3. While speaking make eye contact with participants. Look directly at people for several seconds, it helps them feel seen and keeps them engaged.
4. Encourage participants to talk about concepts, to figure out what they do or don't understand.
5. Relax, relax, relax, and enjoy yourself. That way the participants will also become more relaxed and enjoy themselves—and probably absorb more information.
6. Humor helps everyone to relax. Tell one-liner jokes.
7. Keep it real -- always relate theory to practical experience. Describe the mistakes you have made in seed saving. Tell stories to demonstrate your points.
8. Know the material well enough to be able to improvise.

C. Communication Skills

The following advice for developing good communication skills is based on learning theories and the experience of other trainers. There is no one correct way to lead a workshop. Some people have a charismatic quality, while others can find humor in everything. It is important to honor your own presentation style. Review these suggestions, practice some and decide what to adapt into your repertoire.

Principles of effective communication:

- Use language the listeners understand.
- Clear concise sentences are easiest to understand.
- Present information in simplest manner possible.
- Present information in a logical order.
- The objective is for the listeners to gain insight into the details.
- State the purpose, this encourages listeners to pay attention.

- Rephrase it with expressions like: “The point I want to emphasize...”, “In other words...”, “My main concern with this technique is...”.
- Use supporting points to strengthen main point.
- List supporting points first, then return and provide details.
- Use colorful explanations and visual aids.
- Use reasoning that is familiar to listeners.

Check to see if listeners understand the message:

Use phrases like,

- “Can anyone give me an example of this principle?”
- “Which of these methods do you think are most important?”
- “Does anyone disagree with that conclusion?”

Make sure you understand the questions:

- If you are unsure of a question’s meaning, ask the listener to repeat it.
- If you are still unsure, use phrases like, “Do you mean...?”, “I’m not sure I understand the question, but I think you are asking...”.

Options for handling questions that are outside the scope of the workshop:

- Be prepared to table questions that might divert the training. You might respond with phrases like, “That is beyond the scope of this workshop, but I’d be happy to discuss it afterward.”
- A flip chart paper where you ‘parking lot’ off-topic questions to address at the end of the workshop.
- Staying an extra 30 minutes to speak with individual participants.
- Providing your contact information for follow-up questions.
- Suggest another source of information for topics that you do not wish to discuss or feel unqualified to discuss.

D. The Value of Listening

...Technical skills and self-mastery alone allow you to be an outstanding individual contributor. But to lead you need an additional interpersonal skill set: you’ve got to listen, communicate, persuade, and collaborate.

Daniel Goleman,
Emotional Intelligence

As a *trainer* you clearly lead the workshop, but you also engage with *participants*. Consider the day-long workshop as a two-way conversation, not simply a lecture. Establishing a rapport with each *participant* from the beginning develops trust and motivates *participants* to become more committed to seed saving and sharing their skills with others. One way to do this is in the first session of the day during the introductions. Give the *participant* your attention and nod or smile to indicate that you are listening. *Trainers* direct workshop *participants* in activities, facilitate discussions, and respond to *participants’* questions; these are all opportunities to practice leadership. The ability to plan ahead and encourage others to participate and engage in the plan requires leadership skills. Everyone can benefit from developing a level of confidence and competency in leading others. Listening is one of the first steps to leadership.

Listening enables us to obtain information, determine issues, make decisions, and resolve conflicts. As a *trainer* you will listen to *participants*: seeking more information, sharing techniques that they have developed, or expressing doubts or opinions about your statements. Often when we listen our attention is focused on analyzing and judging rather than listening compassionately for the underlying needs the speaker is expressing. Listening skills include recognizing one’s own emotional responses in a conversation. Good listeners can continue to listen carefully even when they disagree because connecting with the individual is the priority. Responding openly to *participants’* questions can lead to a greater degree of communication.

Another form of listening is through observing people’s responses to the lecture part of the workshop. As you present new information, look for signs of comprehension. Are any *participants* nodding in agreement or smiling? Be aware of signs of fatigue or inability to concentrate. Notice if someone who previously made eye contact is now flipping through materials or looking around the room. Are people texting? Overloaded messages cause *participants* to reach a saturation point and stops learning. Be attentive to the participants and gear your training accordingly.

E. Integrating Participant Activities Into the Workshop

Section II includes activities that have been paired with the lessons. Activities help us think and process what has just been shown. Games not only lighten the mood and allow people to get up and move; games engage our senses. The activities are suggested for gardeners, beginning-level seed savers and intermediate-level seed savers. Trainers leading the activities will be asked to comment on how useful these categories are in grouping participants. Knowing how long an activity could take helps *trainers* to better manage the schedule, so please consider keeping a record. Note the following: time an activity takes, number of participants, and practical tips and suggestions for improving the flow of an activity for future *trainers'* benefit.

Suggestion for leading activities:

Workshops with twenty to thirty people form groups of no more than three to five. This size encourages each person to participate.

- Break into groups: First activity form groups by counting off one, two, three, four.
- All ones in same group; all twos in the next.
- Second activity people can work with those sitting near them.
- When you assign the exercise or activity someone should record the group's conclusions and one person should be designated spokesperson.
- Walk around and eavesdrop on the groups to make sure they are on the right track. Give pointers if a group seems to be going astray based on the activity objective.
- After a certain number of minutes, announce, "sixty seconds left..." so they can finish up.
- Ask each group spokesperson for a two-minute conclusion. Remind participants of the full schedule and the need for brevity.

After leading several workshops and using a specific activity consider improvising and keeping notes of the result. Exercises that provide an element of surprise are the ones that participants learn the most from. If participants engage in an activity that seems like it should work, but then has an unexpected outcome, the event is long remembered. If you are unsure of tampering with the activity, consult a *presenter* for advice.

F. Reflective Journal Writing

Reflective journal writing is a powerful tool frequently used in educational and training programs. It is used as part of experiential learning that includes:

- Concrete experience
- Reflective observation
- Active experimentation

By reflecting on a question at the end of each module and writing in the journal provided, participants can reinforce the general principles presented here. Some participants find this a rewarding way to learn. The writing can be a way of making sense out of complex concepts. At first the new material is just information. By reflecting on it, rewording it, linking it to something we already know and then applying it to something new, we begin to make the information our own. It is one step toward embodying the new material and developing a sense of confidence. The trainer can choose to include one or more of the writing activities, or suggest participants do them at home.

G. Know Your Audience: Skill and Competency Levels

The seed saving workshop has so much information we want to use everyone's time most effectively. By creating groups of participants with the same skill level presenters and trainers can gear the instructional content and activities to the participants needs. The PP is packed with information, some it over the heads of newbies. For these participants, more time spent on activities is recommended.

Just as the seed is the culmination of a plant's life, so too, seed saving can be considered the apex of a gardener's knowledge and practice. A gardener's maturation can be compared with that of a plant's: a seed germinates, grows into a crop, and flowers. Later it produces ripe seed. The early education of a gardener starts with digging in the earth, planting seeds and developing an intuitive awareness of ecosystems and the practice of ecological gardening. After several seasons of raising a garden, building the soil, contending with pests, harvesting crops, the gardener develops a sense of the cycles and is ready to move on to becoming a seed saver. The garden-

er commits to planning and producing seed for the next season, reserving enough space for a population of non-edible seed crop.

The workshop registration form will be designed by each organization. Consider including this section to help determine what skill and interest level participants have.

A Level. I value local food, food sovereignty and am relative newbie to gardening (three to four years) experience. Want to save seeds and learn more about them. Have saved flower and herb seeds. Have saved seeds of vegetables that inadvertently went to seed.

Trainer: Go to AA below

B Level. All of the above and/or Have already been saving lettuce, beans, or tomatoes for a year or two. Have read *Seeds of Diversity Handbook* or *Seed To Seed* by Suzanne Ashworth. Still a little confused about open-pollinated and why hybrids are so difficult to breed. Want to understand more about isolation distances. Would like to save seeds from biennials. **Trainer: Go to BB below**

C Level. All of the above and/or I have already saved seeds and recognize that planning is the first step. I am still learning about population size and isolation distance. I want to explore concepts of preserving genetic integrity (keeping the lines pure, or maintaining pedigree) and the value of landraces (allowing for more variation). I have been saving heirlooms and am committed to preservation seed saving. **Trainer: Go to CC below**

AA Goals for New Gardeners

New gardeners can learn about seed saving to have a deeper appreciation for what seed growers provide. The benefit of taking a seed saving workshop for the average gardener:

- Understand the need for open-pollinated seed saving. Make the commitment to buy open-pollinated seeds.
- Recognize and appreciate the valuable contribution of small-scale seed companies.
- Develop the literacy to ask informed questions at seed swaps.

Points to emphasize

Sure bets for beginning seed savers— Self-pollinat-

ed vegetables that are annuals complete their cycle the first season, for example-beans, lettuce, and peas. Gardeners eager to start will be encouraged to work with self-pollinating crops like beans, tomatoes and lettuce.

BB Seed Savers

It is more important for participants to thoroughly learn a few new concepts and come away with a few practical tips than to be flooded with too much content. The curriculum is full. This is why we suggest screening the participants' applications and group them with others of similar skill level. It will be possible to participate in this seed saving workshop several times and learn more.

Points to emphasize

When you have more confidence and are willing to experiment, explore these variables: cross-pollinating varieties and biennials.

CC Potential Trainer/Soon to be Presenter

Points to emphasize

Suggested background for potential trainers:

- Hands-on education with mentors or other seed experts
- Several years experience with seed-saving techniques
- Basic understanding of fundamental concepts
- Ability to simplify complex ideas
- Ability to provide in-depth information when solicited by students

The application form could include the following note: We will notify you when there are ten to twenty people available at the same skill and interest level.

H. Logistics for Presenters

Pre-workshop Planning

Organizing and managing a training course:

- Invite potential trainers for training workshop.
- Publicize Seed Saving Workshops.
- Create application form with questions to identify participant skill level. (See section on know your audience.)
- Locate facility for event, consider room layout.

- Select and notify participants or trainers of the dates, time, and place.
- Print Participant folder or Trainer folder, OSA's *Seed Saving Guide for Gardeners and Farmers*.
- Decide if lunch, snacks and beverages will be included. (When participants eat in the afternoon workshop starts on-time.)
- Arrange training equipment: see Garden Cart Checklist in appendix.
- Arrange training room: seating arrangements, position of easel, screen, et cetera.

Checklist for organizing training:

Date	Chore

Last-Minute Reminders for Trainers:

- Maintain good eye contact, speak clearly and make sure everyone can hear you.
- Move around the room and gesture.
- Locate visual props where everyone can see it.
- Write boldly and clearly on the flip chart.
- Bridge one topic to the next.
- Encourage questions and keep the group focused on the task.
- Recap at the end of each module. Summarize complicated concepts with simple explanations, offering more info in the seed saving manual.
- Remind participants that this is an overview, think of it as instructions for using a driver's manual.
- Remember to use good time management.
- Check to see if your instructions are understood. Be aware of the participant's body language.

PART II: SEED SAVING WORKSHOP

Using and Adapting the Seed-saving Workshop Curriculum

Lesson Plans: The six modules have been converted into lesson plans that can be utilized by the presenters if they have access to a garden or farm site and wish to present their teaching in the field. These plans will provide you with a list of key concepts, materials needed, and suggested activities to support the instructional goals.

Participant Folders: In the appendix you will find a list of materials followed by six files or master copies that can be copied or printed from a PDF. Select which ones to include to with the day's curriculum and provide one copy for each participant. The OSA *A Seed Saving Guide for Gardeners and Farmers* is the reference source recommended for the workshop. Presenters comfortable with a different reference can alternately provide that to *trainers* and *participants*. Participant folders include a copy of a seed saving guide, copies of the lesson plans for each module, copies of the *major vegetable family albums*, a glossary of terms, a resource list, the instructions for games and activities, the workshop agenda and schedule, and workshop evaluation form. Determine which of these files will best support your workshop based on all the variables. Please review this folder before teaching and use the masters to create a folder for each participant.

Using and Adapting the Power Point Presentation

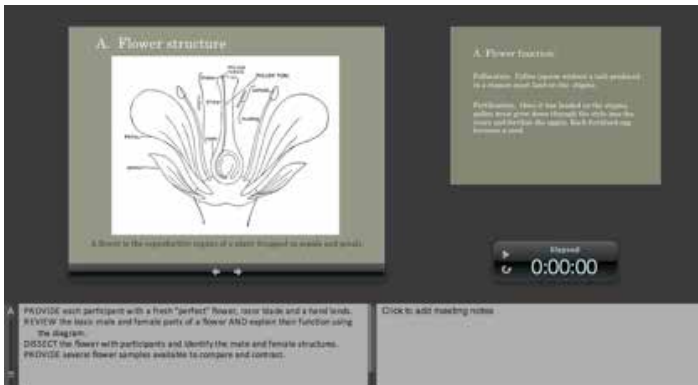
The PowerPoint is divided into six modules. Each module introduces key concepts, follows that with a guided practice activity to reinforce skills, and ends with a reflective journal exercise to apply concepts and skills to the resources of each participant.

Presenter's View of the PowerPoint provides:

- A visual of the slide being presented
- Additional information resources to assist the teaching and learning
- The next slide in sequence
- Timer
- A section for the *trainer* to add notes.

Your Presentation

The PowerPoint slide presentation is the backbone of an indoor seed saving workshop, but there is not a script out-of-the-box. Preparing your own presentation will require some time and practice. It will be yours and participants will value the authenticity. Each module comes with a lesson plan. Read each one thoroughly before your presentation. Determine how knowledgeable and comfortable you are with each module. If you are a long time seed saver chances are you have a good understanding of most of the topics.



The PowerPoint provides the essential data. Learn to utilize the presenter's view and you will have a strong foundation for a clear and coherent presentation. A professional can look at one slide in this PP and speak for 10 minutes. The important thing is to study this material and develop a level of ease. Giving a presentation that will keep participant's interest alive depends on several factors. The PowerPoint is a great aid providing the basics. The presenter and activities will engage people.

Lesson 1:

Why I Save Seed

Lesson 1, slide 1-9

Overview

- Introduction to workshop, trainer agenda, and teaching pedagogy shared
- Introduce Bauta Initiative
- One-minute participant introduction
- Logistics, schedule

Objectives

- To review the goals and objectives of the training
- To acknowledge the personal, biological and ecological reasons for saving seed

Instruction

- Review the goals of the training and the fundamental ideas that support it. Review the agenda, primer, modules, journal and folder. Explain the approach that will be utilized in the training. Review activity format.

Activities

- Discuss fundamental ideas of slide four.
- Introduction using five questions: Name, occupation, Foodshed, history/experience with seed saving, goals of the workshop.
- Review the goals of the training and the fundamental ideas that support it. Discuss the four questions that at the core of the training: 1. Why am I saving seed? 2. What seed is best for me? 3. What biological principles are basic to seed saving? 4. What are the skills and techniques need to grow and save seed?
- Review the agenda, modules, journal and folder. Explain the pedagogy or teaching approach that will be utilized in the training.
- Brainstorm a list of responses to the question “Why save seed?”

Journal Reflection

- Construct two scenarios: If current trends in the seed industry continue, describe seed sources and seed quality in five years. What might be different if you save seed and/or train others to save seed?

Module 1 Why I Save Seed

Lesson Plan

Date

Materials

PowerPoint and equipment necessary to project the slideshow

Participant handouts

Board or easel for recording

One-minute egg timer

Other Resources

If you have access to the internet and can display a website during your presentation, consider any of the following: www.seedmatters.com provides a simple, elegant, artistic display of the 12,000-year history of seed saving.



Activity: Reflective Journal Writing

Indoor/outdoor Level A, B, C Fall, Winter, Spring, Summer

Module 1, 2, 3, 4, 5, 6 or
post-workshop

Lesson Plan

Date

Materials

Journal notebook

Description

- At the end of a module, participants reflect on pertinent questions as they write in their journal

Objective

- To explore new concepts presented in a module

Trainer Background

- Reflective journal writing is a powerful tool to process and reinforce new concepts through reflection and linking to previous knowledge and experience. Trainers select from the following lessons based on an understanding of the group's needs.

Action

- At the end of each module, the trainer suggests certain question that participants can write about. Participants can choose to write about a different topic that is more relevant to them

Lesson 1

Construct two scenarios: If current trends in the seed industry continue, describe seed sources and seed quality in five years. What might be different if you save seed and/or train others to save seed?

Lesson 2

If you already save seed, are you drawn to saving heirlooms? Can you imagine making the commitment to a rare vegetable variety and growing it out every couple of years to ensure that the genetic integrity won't be lost? Imagine several decades into the future. You are passing this seed to a young gardener. What would you tell her or him?

Lesson 3

Select any vegetable crop that you might consider growing to seed. You have planted 100 seeds and are observing them as they grow. Describe the traits that you would like to see and would choose to save. If you are going to "save the best and eat the rest", describe the ones you will eat and the ones you will save for seed.

Imagine you are a bee, what flowers would you be drawn to? Think of your farm or garden; what challenges and advantages does it have in regards to isolation distances?...*continued on page 16*



Activity: Reflective Journal Writing (cont.)

Module 1, 2, 3, 4, 5, 6 or
post-workshop

Lesson Plan

Date

Lesson 4

Did you already know about plant families? If so, was there a significant experience that reinforced the concept? What is your favorite family and why?

If the idea of grouping plants together based on common characteristics is new to you, are there ways this will influence your gardening? Consider focusing on learning about one family at a time. Can you think of other characteristics that plant families might share? Perhaps culinary and medicinal qualities, attracting pollinators, cultivation requirements...

Are you familiar with any native plants in the crop families?

Lesson 5

Landrace is a term for a population of a species maintained by traditional farmers. In plant breeding, the term refers to a large number of different genetic characteristics that are well adapted to its habitat. Some seed savers refer to landraces as commonly to them as “Adaptivars”. These plants have variable characteristics and are allowed to continually cross within the population.

Germination Testing: Seeds with low vigor may not be able to withstand the environmental challenges of field conditions, including exposure to uneven soil moisture, soil surface crusted over, attack by disease organisms, or being planted too deeply. Have you ever observed two batches of the same variety responding differently in the garden? Have you ever suspected low viability?

Lesson 6

Now that you have completed the workshop would you answer any of the four questions differently?

Why am I saving seed?

What seed do you view as best?

Which concepts reviewed today will support me as I begin and/or expand my seed saving skills?

What are the skills and techniques will I be using to save seed?

Materials

Journal notebook



Lesson 2: What Seed Is Best For Me?

Module 2 What Seed is Best for me?

Lesson Plan

Date

Lesson 2, slide 10-12

Overview

- Introduction/discussion of the options for seed choices: open-pollinated, hybrid, GMO, heirloom, annual, biennial, and perennial

Objective

- Clarify the difference between hybrids and open-pollinated. Lead participants to an understanding of why open pollinated seed is the best choice for seed saving
- Discuss GMO as it is relevant to the seed growers in your area

Activities

- Discuss the implication of choosing OP vs. hybrid
- Discuss the implications of choosing annual crops vs. hybrid crops



Activity: Glossary Game

Indoor/outdoor Level A, B, C Fall, Winter, Spring, Summer

Description

- Participants give a creative fabricated definition of a seed term

Objective

- Create enjoyable ways to strengthen participants' seed-saving vocabulary

Trainer Background

- Participants select a down-turned card with a glossary term. A few minutes later they are asked to provide a creative interpretation of the word. Other participants try to guess. They may dance, recite a poem, use a simile, as long as they don't use the term.

Preparation

- Copy template and cut up cards

Action

- Ask participants to select a card
- Participants find the definition from the glossary in their handout
- Take a few minutes to compose a creative definition
- Each person performs the term written on their card (large workshops divide into groups of 5 participants)
- Participants can choose a different term or pantomime clues as in charades.

Reflective Journal

- Write about any of the performances that were particularly memorable

Module 2 What Seed is Best for me?

Lesson Plan

Date

Materials

Cards with glossary terms are on a template form located in appendix.



Activity:

Seed Buyer's Guide

Indoor

Level A

Fall, Winter, Spring, Summer

Description

- Participants will choose seeds for their garden based on several variables

Objective

- To recognize the value of purchasing local seeds and to discover local seed companies
- To recognize different seed choices including best adapted vegetable varieties, type of seed (OP, hybrid), and seed be able to define seed terms including, organic, treated (F1) hybrid

Trainer Background

- Small, regional seed companies have sprouted throughout North America. Supporting these companies' benefits the consumer and support regional food security.

Preparation

- Invite participants to call out seed choices and trainer write them on board

Action

Best Choices	Good Alternatives	Avoid
Your own saved seeds	Regionally grown	Industrial (F1) hybrid
Locally grown seeds	Open-pollinated	Treated seeds
Open-pollinated	Non-hybrid	GMO
Non-hybrid	Heirloom	Chain store seed racks
Heirloom	Organic	Corporate seed companies
Organic		
Certified naturally grown		

...continued on page 20

Module 2 What Seed is Best for me?

Lesson Plan

Date

Materials

Local and national seed company catalogs

List of vegetables that do well in your area

Cards with definitions:

Heirloom

Hybrid

Open-pollinated

Organic, Treated

GMO

Other Resources

Gardens of Destiny with Dan Jason. A Feature Documentary by Jocelyn Demers

The Gift, Jean-Marc Abela

"David Suzuki Speaks Out Against Genetically Modified Food", CBC radio interview. <http://tinyurl.com/9e7qtgg>



Activity: Seed Buyer's Guide (cont.)

Discussion or Reflective Journal

- Seeds from catalogs may be kept fresher than seed from garden centers and retail stores where temperature and humidity levels often fluctuate.
- Regional seed was grown under the same climatic conditions and pest and disease constraints that your garden is exposed to. Seeds from large seed companies may have been outsourced to other continents.
- Purchasing organic seeds is important, but also consider the need to maintain diversity. Many rare heirloom seeds are not yet available as organic seed. Choose some and grow them organically. Then understand the requirements for maintaining genetic purity, such as isolation distance and population size. Save the seed and share them.

Module 2 What Seed is Best for me?

Lesson Plan

Date

Materials

Local and national seed company catalogs

List of vegetables that do well in your area

Cards with definitions:

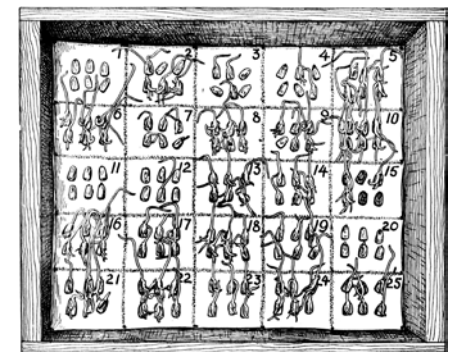
Heirloom
Hybrid
Open-pollinated
Organic, Treated
GMO

Other Resources

Gardens of Destiny with Dan Jason. A Feature Documentary by Jocelyn Demers.

The Gift, a film about Dan Jason by Jean-Marc Abela.

"David Suzuki Speaks Out Against Genetically Modified Food", CBC radio interview.
<http://tinyurl.com/9e7qtgg>



Lesson 3A: Floral Anatomy

Lesson 3, slide 13-21

Overview

- Review of the reproductive parts of angiosperms. Techniques and core concepts that support reproductive success and maintain crop genetics are covered

Objectives

- Recognize floral anatomy as a foundation for understanding pollination and fertilization

Instruction

- Using a drawing or diagram of a flower, go over the major structures and their functions.
- Explain pollination and fertilization. Discuss any hurdles the plant must overcome to make these processes complete.
- Explain and give examples of perfect flowers (bisexual), imperfect flowers (unisexual), monoecious and dioecious plants, self pollination, cross pollination, inbreeding plants, outbreeding plants. Discuss the advantages and disadvantages of each.

Activities

- Guide a dissection of a perfect flower to identify male and female parts

Module 3A Crop Rotation

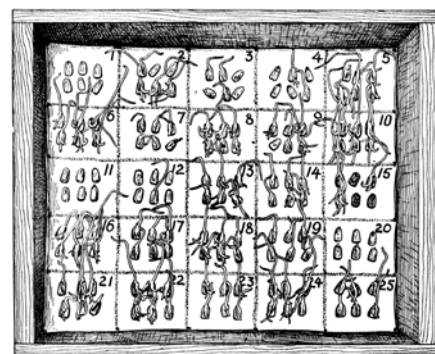
Lesson Plan

Date

Materials

Glossary

Drawing of flower



Activity: Floral Anatomy

Indoor/outdoor Level A, B, C Fall, Winter, Spring, Summer

Description

- Participants dissect flowers

Objective

- Recognize floral anatomy as a foundation for understanding pollination and fertilization. Recognize perfect and imperfect flowers, basis for learning concepts of outbreeding and inbreeding.

Trainer Background

- This activity is a tangible way to learn important vocabulary words that form the underlying foundation of seed saving.

Preparation

- Invite participants to call out seed choices and trainer write them on board.

Action

1. Pass out flowers, razorblade, pin, and magnifying glasses
2. Draw a perfect flower and an imperfect flower. Post on easel and pad
3. Define parts

Module 3A Crop Rotation

Lesson Plan

Date _____

Materials

Flowers, one per participant (may be purchased from floral section of supermarkets if not available in field. Find large flowers with both male and female parts. Alstromeria is a good choice. In spring look for buttercups in lawns) Pea family flowers include a tiny pod inside, and the anthers are wound up tight—indicator of self-pollination.

Razorblade and pin

Magnifying glasses or loop

Easel

Pad And Marker



Lesson 3B: Mating Systems

Lesson 3, slide 22-29

Overview

- Review the life cycle of angiosperms

Objectives

- Explain and give examples of perfect flowers, imperfect flowers, monoecious and dioecious plants, self pollination, cross pollination, inbreeding plants, outbreeding plants. Discuss the advantages and disadvantages of each.
- Explain the techniques of isolation, population size and roguing and how they are applied to seed saving in particular varieties.
- Reference Crop Specific Guide in OSA manual, page 25-27. Use this as the basis for a discussion on inbreeding depression.

Activities

- “We are seeds” game. See activity folder for directions. Cards in appendix.

Module 3B Crop Rotation

Lesson Plan

Date

Materials

Glossary

We are Seeds Cards

Other Resources

The Xerces Society
www.xerces.org/
International, nonprofit organization that protects wildlife through the conservation of invertebrates and their habitat.



Activity:

We Are Seeds Game

Indoor/outdoor

Level A, B, C

Fall, Winter, Spring, Summer

Description

1. Participants play a game to recognize selection pressures and genetic variability

Objective

- To understand the value of population size for saving seeds

Trainer Background

- Seeds exhibit traits when exposed to environmental conditions

Preparation

- Cards are found in the appendix in the trainer's section.

Action

1. Each participant is given a card. They are all spinach seeds that have just been planted.
2. Ask participants to stand, to represent germination.
3. Trainer calls out certain weather conditions and pest problems that occur during the spinach plant's life.

EXAMPLE:

Early spring: cold

Summer conditions: Unusually wet. Soils become water-logged.

Pest problems during the growing season: aphids and downy mildew.

4. If the participant's card has a trait that matches the conditions, the participant remains standing. If not, the plant dies and the participant sits.
5. Of the remaining people standing, trainer asks who is female.

Discussion

- How could this game be modified? What other selection pressures could be included? Farmer Jane could rogue the plants for leaf size and color. She could rogue for early bolting plants. What if the only remaining plants at season's end are all female?

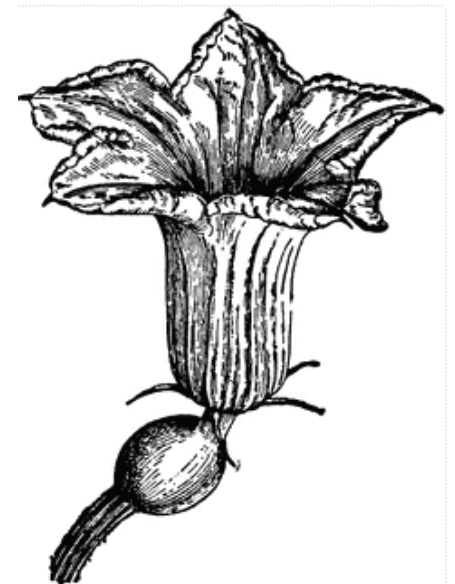
Module 3B Crop Rotation

Lesson Plan

Date

Materials

Cards with traits: Male or Female, description of hardiness and resistance to problems.



Lesson 3C: Planning Strategies for Preserving Your Crops' Genetics

Module 3C Crop Rotation

Lesson Plan

Date

Lesson 3, slide 30-36 expand for intermediate *participants*

Overview

- Techniques and core concepts needed to support reproductive success and maintain crop genetics are covered

Objectives

- Creating desired genetic results through population size, isolation distances and techniques of roguing
- Understand reasoning and practices behind the following concepts: isolation, population, roguing

Description

- Explain planning techniques and practices: isolation distances, population size, and roguing to maintain or create certain genetic results

Trainer Background

- Explain that selecting and roguing are two sides of the same coin



Activity: Save the Heirloom

Indoor/outdoor

Level C

Fall, Winter, Spring, Summer

Description

- *Participants*, guided by the *trainer*, determine the best plan for saving a hypothetical heirloom seed variety

Objective

- To develop a planning strategy for preserving a crop's genetic purity and avoid inbreeding depression

Trainer Background

- This exercise allows participants to understand the variables that affect a crop's genetic purity and consider the strategies and techniques to maintain an open-pollinated variety. Trainers determine the group's skill level, and either guide participants through the process or allow them to work in groups of 2-3. Genetic "purity" is the trueness of the type, the lack of mixing, or the uniformity of the variety. This relates to isolation distance. Population size impacts the genetic diversity of the crop and a large population will help avoid inbreeding depression.

Preparation

- Select and prepare a written description of an heirloom plant.
- Create a hypothetical site and its environmental conditions: describe any physical barriers or extreme weather, including those that will effect crop's vernalization requirements (steckling, or overwinter in ground).

Action

- Participants are asked to describe their course of action, when given 300 hypothetical heirloom carrot seeds (or any other crop that the trainer chooses) with the instruction to keep the lines pure.

...continued on page 27

Module 3C Crop Rotation

Lesson Plan

Date

Materials

Isolation charts page 25 in OSA's *A Seed Saving Guide for Gardeners and Farmers*.



Activity: Save the Heirloom (cont.)

Indoor/outdoor

Level C

Fall, Winter, Spring, Summer

Discussion

- What qualities will you try to select for? What traits?
- How and when will you select (or rogue) plants?
- How many plants do you need to grow to avoid inbreeding depression and conserve adequate genetic diversity of the crop?
- How much isolation distance do you need to maintain to protect the genetic purity of the crop?
- Why so many?
- What challenges for seed crop?
- What special techniques could be more effective?
 - Planting criteria
 - Pollination criteria
 - Distance or Isolation
- What challenges does this crop have when caging?

Module 3C Crop Rotation

Lesson Plan

Date

Materials

Isolation charts page 25 in OSA's *A Seed Saving Guide for Gardeners and Farmers*.



Lesson 4: Biological Principles: Plant Taxonomy

Module 4 Biological Principles

Lesson Plan

Date

Lesson 4, slide 37-49

Overview

- Introduction and review of the science of taxonomy and its importance to seed saving
- Discussion of binomial nomenclature and the components in accurate record keeping
- Review of the major vegetable families, their members and common characteristics

Objectives

- To understand and use the scientific names for our seed crop
- Appreciate the science of taxonomy and accurate record keeping
- To recognize that a species name includes both the genus and species
- To note the patterns and similarities among and between the major vegetable plant families and their seeds

Activities

- Lecture: Review taxonomy, the classification hierarchy of a vegetable variety. Explain the significance of the scientific names for seed saving. Explain that the important taxonomic levels are family, genus, and species.
- Ask participants to suggest methods of isolation within a greenhouse where two varieties of the same species are growing.
- Review the major agricultural families. Support this with other family members, if they are available.
- Play Crossing Game: Show pictures of plant pairs and ask if they will cross.

• Reflective Journal

Did you already know about plant families? If so, was there a significant experience that reinforced the concept?

- What is your favorite family and why?
- If the idea of grouping plants together based on common characteristics, is new to you, are there ways this will influence your gardening?
- Are you familiar with any native plants in the crop families?

Materials

Displays of the major vegetable families. If fresh samples are not available, use the “album” photos provided in the PowerPoint.

Glossary for key terms included in this module.

Other Resources

The Xerces Society
www.xerces.org/
International, nonprofit organization that protects wildlife through the conservation of invertebrates and their habitat.



Activity: Crossing Game

Indoor/outdoor

Level B, C

Fall, Winter, Spring, Summer

Module 4 Biological Principles

Lesson Plan

Date

Materials

Photos of vegetables, or in-season crops

Description

- Participants look at slides or photos of crops and determine which ones can cross. Actual crops can also be used if seasonally available

Objective

- To recognize which crops are at risk of cross-pollination
- To recognize how closely related some crops are—many share the same species name

Trainer Background

- This game reinforces the value of plant classification and knowing the botanical names of crops. It also gets participants thinking about managing isolation distances.

Action

- Instructor presents two crops and asks if they can cross. (Don't give botanical name until participants stop guessing.)

1A Swiss chard, *Beta vulgaris*

1B Lacinato kale, *Brassica oleraceae*

2A Kabocha squash, *Cucurbit maxima*

2B Watermelon *Citrullus lanatus*

3A Beets, *Beta vulgaris*

3B Swiss chard, *Beta vulgaris*

4A Amaranth, *Amaranthus* spp.

4B Beets, *Beta vulgaris*

5A Broccoli, *Brassica oleraceae*

5B Scotch kale, *Brassica oleraceae*



Lesson 5: Skills and Techniques for Seed Saving

Lesson 5, slide 50-75 *Harvesting and Cleaning Techniques*

Overview

- Review and guided practice of: seed harvesting techniques, dry and wet harvesting methods, proper storage of seeds and germination tests
- Structure and function of the seed as it relates to saving seed

Objectives

- To understand the difference between dry seeded and wet seeded plants
- To practice harvesting and cleaning methods
- Reinforcement of skills needed for proper seed saving
- Increase comfort of participants in expanding their seed saving skills with new varieties

Lesson 5, slide 76-79 *Storing Seeds*

Overview

- Seeds stored properly last longer

Objectives

- Review reasons and techniques for storing seed properly

Reflective Journal

- Seeds with low vigor may not be able to withstand environmental challenges of field conditions including exposure to uneven soil moisture, soil surface crusted over, attack by disease organisms, or being planted too deeply. Have you ever observed two batches of the same variety responding differently in the garden? Have you ever suspected low viability? What steps could be taken to increase germination of rare seeds?

Module 5 Skills and Techniques for Seed Saving

Lesson Plan

Date

Materials

OSA's A Seed Saving Guide for Gardeners and Farmers.

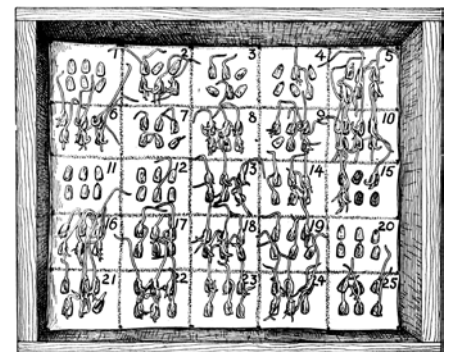
Clean and unclean seed, box fan, bowl, thresher, screens, storage containers, labels, jars, envelopes

Germination test in progress
Soaked beans

Other Resources

Seed to Seed: Seed Saving and Growing Techniques for Vegetable Gardeners by Suzanne Ashworth and Kent Whealy is an excellent reference the “shelf life” and viability of properly stored seeds.

Fermentation removes the germination-inhibiting gel coat. In nature this ensures that seeds don't germinate in the rotting fruit. Often birds are attracted to berries and act as dispersal agents for transporting seeds. Now humans perform this for tomatoes.



Activity: Seed Cleaning

Indoor, Outdoor

Level A, B

Fall, Winter

Module 5 Skills and Techniques for Seed Saving

Lesson Plan

Date

Description

- Trainer demonstrates and participants practice seed cleaning techniques

Objectives

- To demonstrate and practice dry-seed and wet-seed techniques

Trainer Background

- Depending on the time of year, this activity could last an hour or more. Ideally the trainer would set up several stations during the break. Then the trainer demonstrates several techniques each of threshing and winnowing.
- The details depend on the type and quantity of available dried plant material. Tomatoes could be store bought to demonstrate technique. Experienced seed savers will know the techniques. Trainees could help with set-up and demonstration.

Preparation

- Start fermenting wet-seeded fruit 2 days before. Make checklist list of tools and materials available. Pack everything the night before. Set up stations during break. Ask for volunteers.

Action

- Available material to clean will depend on the time of year. It is possible to demonstrate wet seed method from store bought fruits.
 1. Set up several stations
 2. Trainer demonstrates
 3. Participants form small groups and practice at one of four stations for fifteen minutes and then rotate

Materials

Tarp or old sheets

Two buckets or totes

Box fan

Large bowl

Pruners

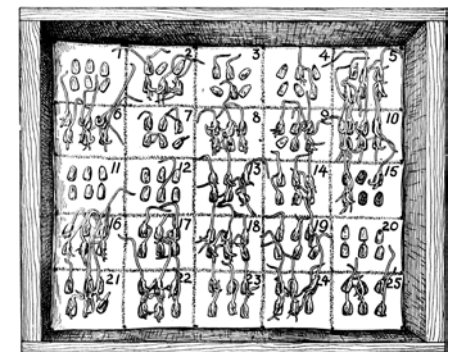
Window screen

Seed screens or hardware cloth

Small container for wet fruit fermentation

Storage container for finished seeds

Indelible marker and masking tape for labeling



Activity:

Peel the Bean

Indoor

Level A, B

Fall, Winter, Spring, Summer

Module 5 Skills and Techniques for Seed Saving

Lesson Plan

Date

Materials

Dry bean seeds

Description

- Participants examine a soaked bean

Objectives

- To identify seed parts; to demonstrate that seeds are alive; and to understand what conditions encourage seed growth while the opposite conditions encourage healthy dormant seeds

Trainer Background

- This activity demonstrates germination and the conditions for seed longevity

Preparation

- Soak beans in water the day before activity

Action

1. Pass out a bean to each participant, and have everyone follow as you dissect the bean
2. Remove the outer layer or seed coat
3. Split the bean lengthwise with fingernail or razor
4. Identify the seed coat; the root, shoot and leaves (together they form the embryo); and food (endosperm)



Activity:

Germination Testing

Indoor

Level A, B

Winter, Spring

Module 5 Skills and Techniques for Seed Saving

Lesson Plan

Date

Description

- Participants place one hundred seeds in a moist environment to the number sprouting

Objectives

- To determine seed lot viability by evaluating the germination percentage

Trainer Background

- Seeds deteriorate over time. Germination testing can be used as a tool in several ways. For cultivating edible crops, the test indicates how densely to sow seeds, either in the ground or in a flat for transplanting.
- Advanced seed savers grow seed for preservation purposes, that is, to keep an heirloom or rare variety viable. Since seeds are alive they cannot just be stored indefinitely. Testing seed germination rates is an indicator for when to grow out these seeds.
- It is recommended that when only sixty to eighty-five out of one hundred seeds germinate, the preservation seed saver grows the variety to keep it healthy.

Preparation

- Start a germination test one week prior to the workshop and bring it for demonstration purposes. This will show participants what the outcome of germination testing can be.

Action

1. Each group of four participants counts out one hundred seeds to be tested
2. Make sure to label the seeds being tested with their name, date, and number of seeds
3. Dampen the paper towel or cloth
4. Evenly space the seed in a grid for easy counting
5. Roll the seeds up in damp paper towel or t-shirt, or place in plastic dish if using blotter paper method
6. Place in protected location and keep temperature close to twenty degrees Celsius or seventy degrees Fahrenheit
7. After seven days (number of days depends of type of seeds being tested), open box or bag and count sprouted seeds. That number equals the germination rate.

Materials

Spray bottle and water

Blotter paper, unbleached paper towels, or old t-shirts

Plastic boxes or quart-size Ziploc bags



Lesson 6: Review

Module 6 Review

Lesson Plan

Date

Lesson 6, slide 80-81

Overview

- Return to the four initial questions asked of each participant and use these to monitor and adjust for any needed instruction or clarification

Objectives

- Check for an understanding of concepts and skills

Activities

1. Place questions on the screen or board
2. Ask participants to review the questions individually with the option of recording answers in their journal
3. Share and discuss
4. Ask the question, "How will this workshop change how your farm or garden?"
5. Ask if their goals for the training have been met
6. Reinforce the use of the materials and resources in the folders
7. Evaluate the instruction



APPENDIX

1. Participant Folder List

We recommend providing each participant with a folder including the following:

1. Schedule/agenda of the day
2. Seed Saving Glossary
3. Lesson Plan Handouts (6)
4. Nine major vegetable family albums
5. Digging deeper resource list
6. Workshop Evaluation form
7. Invitation to stay involved form
8. Copy of *A Seed Saving Guide for Gardeners and Farmers* by OSA
9. Journal provided by trainer on site

For a free download of the OSA *A Seed Saving Guide for Gardeners and Farmers*, visit <https://www.seedalliance.org/Publications/publication-download-forms/download-form-1/>

For another seed saving handbook available as a free download, visit The Seed Ambassadors Project site at <http://seedambassadors.org/category/seed-saving-guide/>

The American Community Gardening Association has a free slide show, *How To: Seed Saving* available at <http://www.slideshare.net/PX8>.

The Training of Trainers program offers a wide array of materials to adapt to a specific seed saving workshop. Find out who the participants are by reviewing the application forms before the workshop. Determine the participant's general skill level and gear the workshop accordingly. Determine the following variables and select accordingly: indoors or farm and garden setting, and season. If you are uncertain about topics review the OSA *A Seed Saving Guide for Gardeners and Farmers*. The logistics section in the primer provides additional information.

- The garden cart inventory list is a useful tool for organizing materials to bring to the event.
- The lesson plans form the backbone of the curriculum.

- Create your own notes or scrip for the PowerPoint.
- Assemble participant folders including a printed copy of the OSA *A Seed Saving Guide for Gardeners and Farmers*.



1A. Seed Saving Workshop Agenda Schedule

Introductions and Overview

8:00 a.m. – 8:45 a.m.

INSTRUCTION: Slide 1-6

Overview of day, logistics

Module 1 *Why Save Seed*

8:45 a.m. – 9:00 a.m.

INSTRUCTION: Slide 7-9

Module 2 *Choosing the Right Seed*

9:00 a.m. – 9:30 a.m.

INSTRUCTION: Slide 10-12

ACTIVITY

Beginner: Seed Buying Guide

Beginner: DVD on GMO

Intermediate: Legacy of an Heirloom

Coffee Break

Module 3 *Floral Anatomy*

10:45 a.m. – 11:45 a.m.

INSTRUCTION: Slide 13-17

ACTIVITY: Floral Anatomy

Module 3 *Crop Mating*

11:35 a.m. – 12:30 p.m.

INSTRUCTION: Slide 18-29

Perfect and Imperfect

Inbreeding and Outbreeding

ACTIVITY: We are Seeds

Lunch 12:30 p.m. – 1:15 p.m.

Module 3 *Isolation, Population Size*

1:15 p.m. – 1:45 p.m.

INSTRUCTION: Slide 30 – 36

ACTIVITY: Intermediate level Save the Heirloom

Module 4 *Taxonomy and Plant Families*

2:15 p.m. – 2:45 p.m.

INSTRUCTION: Slide 37– 49

ACTIVITY: Crossing Game

Module 5 *Harvesting and Drying*

2:45 p.m. – 3:00 p.m.

Harvesting Wet and Dry Crops

INSTRUCTION: Slide 50-53

Break (Trainer sets up seed cleaning stations for participants rotation)

Module 5

3:00 p.m. - 3:30 p.m.

INSTRUCTION:

Slide 54-59 Biennials

Slide 60-61 Timing of Harvest

Slide 65-68 Wet-seeded crops

Module 5C *Cleaning Techniques*

INSTRUCTION: Slide 69-75

ACTIVITY: Cleaning seed

Module 5D *Storage and Germination Test*

3:15 p.m. – 4:40 p.m.

INSTRUCTION: Slide 76-78 Seed storage

ACTIVITY:

Beginners: Peel the Bean

Intermediate: Seed Germination Test

Module 6 *Review*

4:40 p.m. – 5:00 p.m.

INSTRUCTION: Slide 79-80

Recap

Evaluation

1B. Glossary

Annual: Plants that are started from seed and produce seeds themselves within one growing season.

Biennial: Plants that require two growing seasons to complete a life cycle, usually exhibiting vegetative growth during the first year and producing seed during the second.

Bolt: Go to seed

Chaff: Anything that is not seed and needs to be separated from the seed in order to produce a pure amount of seed.

Cultivar: A variety of a cultivated crop. Short for “cultivated variety.” See *Variety*.

Dioecious: Plant species that produce male and female parts on separate plants.

Fermentation: The chemical conversion of carbohydrates into alcohols or acids.

Fertilization: Fusion of a sperm from the pollen tube with the egg from an ovary.

GMO: A genetically modified organism (GMO) or genetically engineered organism (GEO) is an organism whose genetic material has been altered using genetic engineering techniques. These techniques are generally known as recombinant DNA technology. With this technology, DNA molecules from different sources are combined into one molecule to create a new set of genes. This DNA is then transferred into an organism, giving it modified or novel traits. (Wikipedia)

Genotype: The genetic composition of a plant.

Germination: The resumption of growth by the embryo and development of a young plant from seed.

Germplasm: A collection of plant genetic resources for a species. This serves as a reservoir of traits able to be inherited for breeding or crop improvement.

Heirloom: An open pollinated variety of seed that has been passed down from generation to genera-

tion, usually a long time family favorite.

Hybrid: Seed of the first filial generation after the cross of two true breeding parental types. Hybrid varieties are the result of crossing two stable parental populations of the same species.

Hybrid vigor: The increase in vigor of hybrids over their parental inbred types.

In-Breeding Depression: Loss of vigor and variation due to the crossing of two genetically similar plants.

Inbreeding Species: Species that tend to self-pollinate rather than cross-pollinate. Inbreeders are less subject to inbreeding depression and require less isolation distance to maintain genetic purity. Seed may be saved from fewer plants than outbreeding species.

Isolation: Separating one plant (or group of plants) from another to prevent cross-pollinating.

Isolation Distance: The distance required to prevent cross-pollination between two plants of the same species.

Landrace: A population of species maintained by traditional farmers. In plant breeding the term refers to a large number of different genetic constitutions that are well adapted to the environmental conditions of its habitat.

Monoculture: Producing or growing only one crop over a large area.

Monoecious: Plant species that produce male and female flowers on the same plant.

Open Pollinated Variety: A stable variety that breeds true from seed, grown allowing plants to freely pollinate with others in the population under field conditions.

Organic: Produced according to certain production standards. For crops, it means they were grown without the use of conventional pesticides, artificial fertilizers, human waste, or sewage sludge, and that they were processed without ionizing radiation or food additives.

Outbreeding Species: Species that tend to cross-pollinate rather than self-pollinate. Outbreeders are subject to inbreeding depression if genetic diversity is not maintained. Seed needs to be saved from a greater number of plants than inbreeding species.

Perennials: Any plant that lives more than two years, usually producing flowers and seeds from the same root year after year.

Peduncle: The part of the plant that attaches the seed head to the stem.

Pollination: The process by which pollen is transferred from an anther to the stigmatic surface of the pistil of a flower.

Population: A collection organisms of a particular species living in a given geographic area.

Rogue/Roguing: The removal of an off-type or diseased plant.

Steckling: The trimmed root of a biennial crop like carrots, beets, or parsnips that are prepared for replanting using the root-to-seed method.

True-to-Type: A plant (or group of plants) than conforms exactly to the known characteristics of that particular variety, the basis or standard for comparison.

Umbel: A flat-topped or rounded flower cluster

Variety: Closely related plants with nearly identical characteristics, which form a subdivision of a species.

Vernalization: The exposure of a plant to cold temperatures causing it to become capable of flowering.

Viable: Capacity for survival or germination.

Vigour/vigor: The intensity at which a seed, when planted, will germinate, and a measure of the increase in plant growth or foliage volume through time after planting.



AMARANTHACEAE FAMILY

CROP MEMBERS

Amaranth, Spinach, Beets,
Swiss Chard, Quinoa, Orach

FLOWER DESCRIPTION

Regular symmetry,
often without petals

LIFE CYCLE

Mostly biennial

FRUIT TYPE

Capsule, dry,
indehiscent

MATING SYSTEM

Very outbreeding

POLLINATORS

Primarily wind

FORMER NAME

Chenopodiaceae

Botanical Names			
Genus	Specific Epithet	Common	
Amaranthus	spp	amaranth	
Beta	vulgaris	beets Swiss chard	
Spinacia	oleracea	spinach	
Chenopodium	quinoa	quinoa	
Atriplex	hortensis	orach	





AMARYLLIDACEAE FAMILY

CROP MEMBERS

Leek, onions, garlic

FLOWER DESCRIPTION

Symmetrical, perfect, umbell

LIFE CYCLE

Biennial

FRUIT TYPE

Capsule

MATING SYSTEM

Primarily outbreeding

POLLINATORS

sweat bees, leafcutter bees, flies, wasps

Botanical names		
Genus	Species	Common name
Allium	ampelo-prasum	leek
Allium	cepa	onions
Allium	sativum	garlic





APIACEAE FAMILY

CROP MEMBERS

Carrots, fennel, parsnips, parsley, celery, cilantro, celeriac, dill

FLOWER DESCRIPTION

Regular symmetry, umbell, perfect

LIFE CYCLE

Mostly biennial

FRUIT TYPE

Dry, indehiscent

MATING SYSTEM

From partially to very outbreeding

POLLINATORS

Flies, wasps, small sweat bees

FORMER NAME

Umbelliferae



Botanical Names		
Genus	Specific Epithet	Common
Daucus	carota	carrot
Apium	graveolens	celery, celeriac
Foeniculum	vulgare	fennel
Pastinaca	sativa	parsnip
Petroselinum	crispum	parsley
Coriandrum	sativum	cilantro
Anethum	graveolens	dill



ASTERACEAE FAMILY

CROP MEMBERS

Endive, escarole, chicory, cardoon, artichoke, sunflower, lettuce

FLOWER DESCRIPTION

Tiny flowers in heads can be either symmetrical or asymmetrical

LIFE CYCLE

Varied

FRUIT TYPE

Achene, dry, indehiscent with a pappus (fuzzy parachute)

MATING SYSTEM

Variable within the family

POLLINATORS

Many self fertile

FORMER NAME

Compositae

Botanical Names		
Genus	Specific Epithet	Common
Chichorium	endiva	endive, escarole
Chichorium	intybus	chicory
Helianthus	annuus	sunflower
Lactuca	sativa	lettuce





BRASSICACEAE FAMILY

CROP MEMBERS

Cabbage, kale, mustard, rutabaga, broccoli, cauliflower, collards, kohlrabi, turnip, radish, rocket

FLOWER DESCRIPTION

Symmetrical, perfect, four petals that form a cross

LIFE CYCLE

Mostly biennial

FRUIT TYPE

Silique (dry splitting)

MATING SYSTEM

Very outbreeding

POLLINATORS

Insects

FORMER NAME

Cruciferae

Botanical Names		
Genus	Specific Epithet	Common
Brassica	oleracea	broccoli, brussel sprouts, cabbage, cauliflower, klaw, collards, kohlrabi
Brassica	rapa	broccoli raab, chinese and napa cabbage, turnips
Brassica	junceae	mustard greens
Brassica	napus	rutabaga, rape, siberian kale
Raphanus	sativus	radish
Eruca	sativa	rocket





CUCURBITACEAE FAMILY

CROP MEMBERS

Summer Squash, Winter squash, melons, cucumbers

FLOWER DESCRIPTION

Symmetrical, imperfect, monoecious, ovary below female flower

LIFE CYCLE

Annual

FRUIT TYPE

Fleshy with hard rind

MATING SYSTEM

Primarily outbreeding

POLLINATORS

Squash bees, honey bees, bumble bees

Botanical names		
Genus	Species	Common name
Cucurbita	maximum	banana, butternut, hubbard, turban
Cucurbita	moschata	butternut, cheese golden, cushaw
Cucurbita	pepo	acorn, crookneck, delicata, pattypan, spaghetti, zucchini





FABACEAE FAMILY

CROP MEMBERS

Soybean, lentils, runner beans, lima bean, common bean, garden peas, fava, peanuts,

FLOWER DESCRIPTION

Asymmetrical, classic pea shape banner and keel

LIFE CYCLE

Annuals

FRUIT TYPE

Legume, dry splitting on two seams

MATING SYSTEM

Various inbreeding

POLLINATORS

Mostly self pollination, occasionally bumble bees

Botanical names		
Genus	Species	Common name
Phaseolus	coccineus	runner beans
Phaseolus	vulgaris	common beans
Pisium	sativum	garden pea edible pod pea
Vicia	fabia	fava bean broad bean
Arachis	hypogaea	peanut
Glycine	max	soybean
Lens	culinars	lentil





POACEAE FAMILY

CROP MEMBERS

Wheat, corn, oats, barley, rye, teff, millet

FLOWER DESCRIPTION

spikelet flower

LIFE CYCLE

Annual

FRUIT TYPE

Grain

MATING SYSTEM

Very outbreeding

POLLINATORS

Wind

Botanical names		
Genus	Species	Common name
Eragrostis	tef	teff
Hordeum	vulgare	barley
Triticum	aestivum	bread wheat
Zea	mays	corn
Avena	sativa	oats
Secale	cereale	rye
Panicum	miliaceum	millet





SOLANACEAE FAMILY

CROP MEMBERS

Tomato, tomatillo, Sweet pepper, Eggplant, potato

FLOWER DESCRIPTION

Symmetrical, five united petals, 5 stamens, anthers split lengthwise

LIFE CYCLE

Annual

FRUIT TYPE

Berry

MATING SYSTEM

Varies among species

POLLINATORS

Buzz pollination by bumble bees for some species

Botanical names		
Genus	Species	Common name
Capsicum	annuum	sweet pepper chili pepper
Physalis	ixocarpa	tomatillo
Solanum	lycopersicum	tomato
Solanum	melongena	eggplant
Solanum	tuberosum	potato



1D. Other Resources

Seed Saving Organizations

Seeds of Diversity: People Protecting the People's Seed

<http://www.seeds.ca/>
Canada's heritage seed program

Seed and Plant Sanctuary for Canada

<http://www.seedsanctuary.com>
Charitable organization dedicated to preservation and promotion of heritage seeds

Organic Seed Alliance

www.seedalliance.org

Seed Savers Exchange

www.seedsavers.org

Native Seed Search

www.nativeseeds.org

Organic Farming Organizations

Canadian Organic Growers

<http://www.cog.ca/>

Master Gardeners of Canada

Alberta www.mgab.org

British Columbia www.mgabc.org

Ontario www.mgoi.ca

Manitoba www.mgmanitoba.com

Maritime Provinces

www.atlanticmastergardeners.com

Quebec

<http://www2.ville.montreal.qc.ca/jardin/en/memu.htm>

Saskatchewan

<http://ccde.usask.ca/mastergardener>

Yukon

<http://www.yukoncollege.yk.ca/ce/info/gard010>

Seed Banks, Seed Libraries, & Seed Swaps

Seed Library Public Library of Richmond, California, USA

<http://www.richmondgrowsseeds.org/index.html>

"How to Organize a Community Seed Bank"

www.seedmatters.org

"Seed Swaps"

www.seedmatters.org

Seed Saving Webinars

Organic Seed Resource Guide, Washington State University Extension

<http://www.extension.org/pages/18340/organic-seed-resource-guide-introduction-and-table-of-contents>

GMO

"GMO News"

Sanctuary Seeds owner, Dan Jason speaks out against GMO

<http://ccseedsavers.wordpress.com/2011/10/15/seed-news-salt-spring-seeds/>

"Open Letter from World Scientists to All Governments Concerning Genetically Modified Organisms"

Institute of Science in Society letter signed by 828 scientists from 84 countries

www.i-sis.org.uk/list.php

"Vandana Shiva on the Problem with Genetically Modified Seeds"

Bill Moyers video interview with Vandana Shiva, July 13, 2012

<http://billmoyers.com/segment/vandana-shiva-on-the-problem-with-genetically-modified-seeds/>

Ecological Principles

Center for Ecoliteracy

<http://www.ecoliteracy.org/essays/ecological-principles>

Native Pollinators

Pollination Canada

<http://www.pollinationcanada.ca/>

Pollinator Partnership Canada

<http://pollinatorpartnership.ca/index.html>

The Xerces Society

<http://www.xerces.org/>

Pollinator Conservation Resource Center

<http://www.xerces.org/pollinator-resource-center/>

Bug Guide

<http://bugguide.net/node/view/15740>

Site run by dedicated naturalist volunteers, website hosted by Iowa State University

Soil Maps

Canadian Soil Information Service

<http://sis.agr.gc.ca/cansis/index.html>

National Soil DataBase (NSDB)

<http://sis.agr.gc.ca/cansis/nsdb/index.html>

1E. Further Reading

The structure of this seed saving workshop follows *A Seed Saving Guide for Gardeners and Farmers* by Organic Seed Alliance. This is available free online and is under the Creative Commons license. The following books are also useful resources.

Seed Saving Basics

How to Save Your Own Seeds: A Handbook for Home Seed Production, 5th ed. Diane Joubert and Bob Wildfong, editors. 2005.

Organic Seed Grower: A Farmers Guide to Vegetable Seed Production. John Navazio. Chelsea Green, 2012.

Seed to Seed: Saving and Growing Techniques for Vegetable Gardeners. Suzanne Ashworth. Seed Savers Exchange, 2002.

Politics

Manifesto on the Future of Food and Seeds. Vandana Shiva, editor. South End Press, 2007.

Pollinators

Attracting Native Pollinators: Protecting North America's Bees and Butterflies. The Xerces Society Guide. Storey Publishing, 2011.

The Forgotten Pollinators. Stephen Buchmann and Gary Paul Nabhan. Island Press, 1996.

Plant Breeding

Breed Your Own Vegetable Varieties: The Gardener's and Farmer's Guide to Plant Breeding and Seed Saving. Carol Deppe. Chelsea Green Publishing, 2000.

Ethnobotany

Enduring Seeds: Native American Agriculture and Wild Plant Conservation. Gary Paul Nabhan. North Pointe Press, 1989.

Where Our Food Comes From. Gary Paul Nabhan. Island Press, 2011.

Heirloom Vegetables

Cornucopia II: A Source Book of Edible Plants. Stephen Facciola. Kampong Publications, 1998.

Garden Seed Inventory. 6th edition, Seed Saver's Exchange, 2004.

The Vegetable Garden. M.M. Vilmorin-Andrieux. Originally published 1885 Ten Speed Press, 1981.

Heirloom Vegetables: A Home Gardener's Guide to Finding and Growing Vegetables From the Past. Sue Stickland. Fireside Books, 1998.

Heritage Foods

Renewing America's Food Traditions: Saving and Savoring the Continents Most Endangered Foods. Gary Paul Nabhan, ed. Chelsea Green Publishing, 2008.

The Flavors of Canada: A Celebration of the Finest Regional Foods. Anita Stewart. Raincoast Books, 2006.

Nothing More Comforting: Canada's Heritage Food. Dorothy Duncan. Dundurn, 2012

The Laura Secord Canadian Cook Book. Whitecap Books, 2001.

Communication Skills

Toastmaster International has taught 4 million people worldwide to become competent communicators. www.toastmasters.org

Nonviolent Communication developed by Marshall Rosenberg www.cnvc.org or www.youtube.com/watch?v=-dpk5Z7GIFs

1F. Workshop Evaluation

Please take a few minutes to review the questions below. This will help us improve the workshop for the next group of participants.

Presenter_____

Location_____

Date_____

	10			5			0
Introduction Why Save Seeds							
Before this workshop my comprehension and competency of the subject was							
After the workshop my comprehension and competency of the subject was							
Module 1 Reasons for Saving Seed							
Before the workshop my comprehension and competency of the subject was							
After the workshop my comprehension and competency of the subject was							
Module 2 Choosing the Right Seed							
Before the workshop my comprehension and competency of the subject was							
After the workshop my comprehension and competency of the subject was							
Module 3 Crop Reproduction							
Before the workshop my comprehension and competency of the subject was							
After the workshop my comprehension and competency of the subject was							
Module 4 BOTANICAL FAMILIES: Recognizing Patterns							
Before the workshop my comprehension and competency of the subject was							
After the workshop my comprehension and competency of the subject was							
Module 5 Skills and Techniques to Grow and Save Seed							
Before the workshop my comprehension and competency of the subject was							
After the workshop my comprehension and competency of the subject was							
Module 6 Review							
Before the workshop my comprehension and competency of the subject was							
After the workshop my comprehension and competency of the subject was							

1G. Stay Involved

*Would you like to be part of the Bauta Family Initiative on Canadian Seed Security?
If so, please take a moment to fill out the form below now or mail to us soon.*

Interested in our email list to be notified of future events? If yes, please include your email address.

Are you interested in visiting farms that save seed?
Rate lowest 1 to 10 highest

Do you have experience writing grants or fundraising and could contribute to our cause?
Rate lowest 1 to 10 highest

Are you interested in other related agricultural pursuits: beekeeping, orchards?
Rate lowest 1 to 10 highest

Thank you,

Regional Coordinator contact info

2. Trainer Folder

2A. Trainer Folder List

1. Trainer Questionnaire
2. Implement Program Tracking Chart
3. Spinach Crossing Game Cards
4. Glossary Game Cards
5. Trainer Agenda
6. Garden Cart Inventory
7. Tips for Trainer's Talk

2B. Trainer Questionnaire

Location_____

Date_____

Specific questions for each workshop presented:

Lesson 1 *Why I Save Seed*

Did the PP slides work in tandem with the curriculum? Was the lesson easy to follow? Were you able to get through it all? Did you skip certain slides? If so, which ones and why? Did you practice any of the suggested activities?

Lesson 2 *What Seed is Best for Me?*

Did the PP slides work in tandem with the curriculum? Was the lesson easy to follow? Were you able to get through it all? Did you skip certain slides? If so, which ones and why? Did you practice any of the suggested activities?

Lesson 3 *Crop Rotation*

Did the PP slides work in tandem with the curriculum? Was the lesson easy to follow? Were you able to get through it all? Did you skip certain slides? If so, which ones and why? Did you practice any of the suggested activities?

Lesson 4 *Plant Taxonomy*

Did the PP slides work in tandem with the curriculum? Was the lesson easy to follow? Were you able to get through it all? Did you skip certain slides? If so, which ones and why? Did you practice any of the suggested activities?

Lesson 5 *Skills and Techniques for Seed Saving*

Did the PP slides work in tandem with the curriculum? Was the lesson easy to follow? Were you able to get through it all? Did you skip certain slides? If so, which ones and why? Did you practice any of the suggested activities?

Specific questions for seed saving workshop activities. Questions listed by each activity:

Activity: Reflective Journal Writing

Description: At the end of a module, participants reflect on pertinent questions as they write in their journal. Did participants respond favorably? Did the activity seem to fit the skill level of the participants? Was it easy for participants to grasp the objective? Did they have fun? Did the activity strengthen their understanding of the module? Were there any people confused and irritated by the activity? Did they say why?

Trainer's Background: Can you suggest a better way to inform the trainer?

Action: Were the steps clearly described? Do you have any suggestions for rewriting the sequence? Did you develop a different sequence?

Materials: Did you follow the list? Would you suggest deleting or adding any materials to the list?

Activity: Glossary Game

Description: Participants give a creative fabricated definition of a seed term.

Did participants respond favorably? Did the activity seem to fit the skill level of the participants? Was it easy for participants to grasp the objective? Did they have fun? Did the activity strengthen their understanding of the module? Were there any people confused and irritated by the activity? Did they say why?

Trainer's Background: Can you suggest a better way to inform the trainer?

Action: Were the steps clearly described? Do you have any suggestions for rewriting the sequence? Did you develop a different sequence?

Materials: Did you follow the list? Would you suggest deleting or adding any materials to the list?

Activity: Seed Buyer's Guide

Description: Participants will choose seeds for their garden based on several variables.

Did participants respond favorably? Did the activity seem to fit the skill level of the participants? Was it easy for participants to grasp the objective? Did they have fun? Did the activity strengthen their understanding of the module? Were there any people confused and irritated by the activity? Did they say why?

Trainer's Background: Can you suggest a better way to inform the trainer?

Action: Were the steps clearly described? Do you have any suggestions for rewriting the sequence? Did you develop a different sequence?

Materials: Did you follow the list? Would you suggest deleting or adding any materials to the list?

Activity: *Floral Anatomy*

Description: Participants dissect flowers.

Did participants respond favorably? Did the activity seem to fit the skill level of the participants? Was it easy for participants to grasp the objective? Did they have fun? Did the activity strengthen their understanding of the module? Were there any people confused and irritated by the activity? Did they say why?

Trainer's Background: Can you suggest a better way to inform the trainer?

Action: Were the steps clearly described? Do you have any suggestions for rewriting the sequence? Did you develop a different sequence?

Materials: Did you follow the list? Would you suggest deleting or adding any materials to the list?

Activity: *We Are Seeds Game*

Description: Participants play a game to recognize selection pressures and genetic variability.

Did participants respond favorably? Did the activity seem to fit the skill level of the participants? Was it easy for participants to grasp the objective? Did they have fun? Did the activity strengthen their understanding of the module? Were there any people confused and irritated by the activity? Did they say why?

Trainer's Background: Can you suggest a better way to inform the trainer?

Action: Were the steps clearly described? Do you have any suggestions for rewriting the sequence? Did you develop a different sequence?

Materials: Did you follow the list? Would you suggest deleting or adding any materials to the list?

Activity: *Save the Heirloom*

Description: Participants, guided by the *trainer*, determine the best plan for saving a hypothetical heirloom seed variety.

Did participants respond favorably? Did the activity seem to fit the skill level of the participants? Was it easy for participants to grasp the objective? Did they have fun? Did the activity strengthen their understanding of the module? Were there any people confused and irritated by the activity? Did they say why?

Trainer's Background: Can you suggest a better way to inform the trainer?

Action: Were the steps clearly described? Do you have any suggestions for rewriting the sequence? Did you develop a different sequence?

Materials: Did you follow the list? Would you suggest deleting or adding any materials to the list?

Activity: *Crossing Game*

Description: Participants look at slides or photos of crops and determine which ones can cross. Actual crops can also be used if seasonally available.

Did participants respond favorably? Did the activity seem to fit the skill level of the participants? Was it easy for participants to grasp the objective? Did they have fun? Did the activity strengthen their understanding of the module? Were there any people confused and irritated by the activity? Did they say why?

Trainer's Background: Can you suggest a better way to inform the trainer?

Action: Were the steps clearly described? Do you have any suggestions for rewriting the sequence? Did you develop a different sequence?

Materials: Did you follow the list? Would you suggest deleting or adding any materials to the list?

Activity: Seed Cleaning

Description: Trainer demonstrates and participants practice seed cleaning techniques.

Did participants respond favorably? Did the activity seem to fit the skill level of the participants? Was it easy for participants to grasp the objective? Did they have fun? Did the activity strengthen their understanding of the module? Were there any people confused and irritated by the activity? Did they say why?

Trainer's Background: Can you suggest a better way to inform the trainer?

Action: Were the steps clearly described? Do you have any suggestions for rewriting the sequence? Did you develop a different sequence?

Materials: Did you follow the list? Would you suggest deleting or adding any materials to the list?

Activity: Peel the Bean

Description: Participants examine a soaked bean.

Did participants respond favorably? Did the activity seem to fit the skill level of the participants? Was it easy for participants to grasp the objective? Did they have fun? Did the activity strengthen their understanding of the module? Were there any people confused and irritated by the activity? Did they say why?

Trainer's Background: Can you suggest a better way to inform the trainer?

Action: Were the steps clearly described? Do you have any suggestions for rewriting the sequence? Did you develop a different sequence?

Materials: Did you follow the list? Would you suggest deleting or adding any materials to the list?

Activity: Germination Testing

Description: Participants place 100 seeds in a moist environment to the number sprouting.

Did participants respond favorably? Did the activity seem to fit the skill level of the participants? Was it easy for participants to grasp the objective? Did they have fun? Did the activity strengthen their understanding of the module? Were there any people confused and irritated by the activity? Did they say why?

Trainer's Background: Can you suggest a better way to inform the trainer?

Action: Were the steps clearly described? Do you have any suggestions for rewriting the sequence? Did you develop a different sequence?

Materials: Did you follow the list? Would you suggest deleting or adding any materials to the list?

Can we contact you to discuss this? If so please include your name, email, and number.

Thank you for your contribution!

2C. Implement Program Tracking Chart *(metrics show multiplier effect)*

[illegible]

2D. Spinach Crossing Game *(cut up cards for game)*

Directions: *If you don't have a trait that matches the conditions called out by the game leader, then your plant does not survive and you sit down*

1. Early spring conditions: Cold 2. Summer conditions: Unusually wet, soils become water-logged 3. Pest problems: aphids and mildew		
1. Not cold hardy 2. Not Heat tolerant 3. Not resistant to downy mildew MALE	1. Not cold hardy 2. Heat tolerant 3. Not resistant to downy mildew FEMALE	1. Cold hardy 2. Not heat tolerant 3. Resists downy mildew FEMALE
1. Germinates in cold soil 2. Tolerates waterlogged soil 3. Withstands aphid attack MALE	1. Germinates in cold soil 2. Doesn't tolerate waterlogged soil 3. Doesn't withstand aphid attack FEMALE	1. Germinates in cold soil 2. Tolerates waterlogged soil 3. Tolerates drought 4. Doesn't withstand aphid attack MALE
1. Not cold hardy 2. Drought tolerant 3. Resistant to Downy Mildew MALE	1. Doesn't germinate in cold soil 2. Not drought tolerant 3. Not resistant to Downy Mildew FEMALE	1. Cold hardy 2. Not drought tolerant 3. Not resistant to Downy Mildew FEMALE
1. Cold hardy 2. Drought tolerant 3. Resistant to Downy Mildew FEMALE	1. Germinates in cold soil 2. Doesn't tolerate waterlogged soil 3. Doesn't withstand aphid attack FEMALE	1. Cold hardy 2. Not heat tolerant 3. Resists downy mildew MALE

2E. Glossary Game Cards

Annual	Open Pollinated Variety	Biennial	Heirloom
Fermentation	Inbreeding Species	Monoecious	Pollination
Chaff	Hybrid	Landrace	Rogue/ Rouging
Vigor	Dioecious	Cultivar	In-Breeding Depression
Isolation	Bolt	Population	Viable

2F. Trainer Agenda

Session 1

Introductions warm-up game overview
Trainer's role and responsibilities

INSTRUCTION: How to use this Curriculum: Build Your Own

1. A list of participants and their skill level
2. A list of the available plant materials to use for activities
3. You know your experience level with seeds and with training others
4. This workshop will be indoors

Know yourself: what support do you need?

- Three Tiers of Seed Saving: own use, swap or sell, genetic preservation
- Before the workshop: get the tools for the cart, understanding how we learn

GUIDED PRACTICE: Reflection or Group Interaction. Participants do the exercise and jot down reactions and questions

BREAK

Logistical Options Indoors or Outdoors

INSTRUCTION: How to use the basic PowerPoint presentation

GUIDED PRACTICE: How to teach an activity: Example Module 2 Make sure Garden Cart has flower from a florist, magnifying glass, glossary of plant parts

Trainers participate in half the modules to experience different components

BREAK

Session 2

Introduction
Working with the PowerPoint

FUNDAMENTAL IDEAS: Here is a chance to describe what is important to you

OUTLINE OF POTENTIAL DISCUSSIONS:

Seed Should Be Available To All

- Conglomerates controlling seed chart showing the Worlds Top 10 Seed Companies and quote from Hope Shand
- JOURNAL REFLECTION: In this David and Goliath story of seed, what are the major seed companies' priorities? Are you familiar with any small seed companies? What do they value? Plant breeding for organic farms and gardens is different from plant breeding for chemical farming -- how?

SEED CONSERVATION:

- Why are heirlooms important?
- What needs to be done to protect loss of genetic diversity?

Slide 5 Questions

Reflection or group interaction break into groups

ACTIVITY: We are Seeds, Crossing Game

REFLECTION OR GROUP INTERACTION:

Crossing game

- CROSSING GAME: nature selection, selecting
- JOURNAL REFLECTION: Select a seed and reflect on what traits it has for "natural" survival?

LUNCH

Session 3

Review Modules 4 through 6
Instruction
Guided Practice
Reflection or Group interaction

BREAK

Session 4

Instruction
Guided Practice
Reflection or Group interaction

Session 5

Wrap up feedback,
Questions and comments
More resources
Form network Google group for interested participants

Garden Cart Permanent Tools	Qty.	Return Qty.	Missing	Comment
Tote for tools and materials				
Folding Easel				
Large newsprint and markers				
Flip chart				
One-minute egg timer for introductions				
Participant folders				
<i>A Seed Saving Guide for Gardeners and Farmers</i>				
Journal for reflective writing				
Name tags				
Plant family packets				
8 Family ID cards				
Album				
Seed Saving PowerPoint				
Projector				
Support book: <i>Seeds of Diversity</i>				
Support book: <i>The Organic Seed Grower</i>				
Support book: <i>Seed to Seed</i>				
Flowers to dissect				
Dried plants or seed heads				
Germination Test: Seeds, spray bottle, Ziploc bags,				
Germination Test: Paper towels, marker				
Germination Test: Pre-sprouted seeds				
Peel the Bean: Soaked beans				
Crossing Crops or Photos: Amaranth, broccoli, pumpkin, kabotcha squash				
Crossing Crops or Photos: Swiss chard, beets, lacina-to kale				
7 Crop photos slides				
7 Crop photo laminated				
Seed Buyer's Guide: Local and national seed catalogs				
Seed Buyer's Guide: List of vegetable choices for the region				
Cleaning Seeds: Seed saving screens				
Save the Heirloom: <i>A Seed Saving Guide for Gardeners and Farmers</i> chart page 25				
Floral Anatomy: Large flower per student				
Floral Anatomy: Magnifying glass or loop				
Floral Anatomy: 1 large perfect flower per 2 participants				
Game Glossary, Cards				
Workshop Evaluation				

21. Tips for Trainers: *Developing a talk to accompany PowerPoint presentation*

Principles of effective communication:

- Clear and concise sentences are easiest to understand
- Present information in the simplest manner possible
- Present in a logical order

Effective oral communication:

- The objective is for the participants to gain insight into the details
- State the purpose, this encourages participants to pay attention
- Rephrase it with expressions like: “The point I want to emphasize...”
- “In other words...”, “My main concern with this technique is...”
- Use supporting points to strengthen the main point
- List supporting points first, then return, and provide details
- Use colorful explanation
- Use reasoning that is familiar to listeners
- At the end of a module summarize the main points

Options for handling questions outside the scope of the workshop:

- A flip chart paper where you ‘parking lot’ off-topic questions to address at the end of the workshop
- Staying an extra 30 minutes to speak with individual participants
- Providing your contact information for follow-up questions

Be sure participants understand the message:

Use phrases like,

- “What effect do you think this process will have?”
- “Which of these methods do you think are most important?”
- “Does anyone disagree with that conclusion?”
- If you are unsure of a question’s meaning, ask the listener to repeat it
- If you are still unsure, use phrases: “Do you mean...?”, “I’m not sure I understand the question, but I think you are asking...”

The Training of Trainers program offers a wide array of materials to adapt to a specific seed saving workshop. Find out who the participants are by reviewing the application forms before the workshop. Determine the participant’s general skill level and gear the workshop accordingly. Determine the following variables and select accordingly: indoors or farm and garden setting, and season. If you are uncertain about topics review the OSA Seed Saving Guide. The logistics section in the primer provides additional information.

- The garden cart inventory list is a useful tool for organizing materials to bring to the event
- The lesson plans form the backbone of the curriculum
- Create your own notes or script for the PowerPoint
- Assemble participant folders including a printed copy of the *OSA A Seed Saving Guide for Gardeners and Farmers*

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