



SEASON EXTENSION

GLOBAL GARDEN REFUGEE TRAINING FARM, CHICAGO IL

Summary

This guide helps trainers deliver a series of trainings or activities to refugee farmers on season extension in temperate regions. The trainings were designed as a package, but each session or activity can be done independently. Graphics can be used both during and after the activities.

The need: Extending the vegetable growing season provides an opportunity for additional food production and farm income.

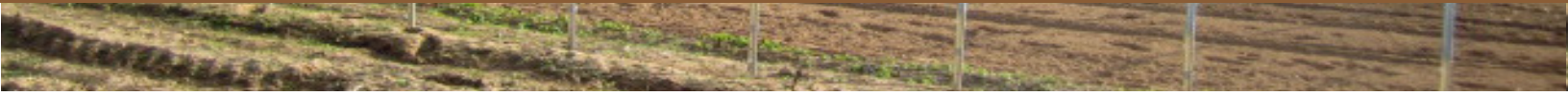
Global Garden
Refugee Training Farm



This resource was prepared by ISED Solutions - a fiscally sponsored program of TSNE MissionWorks – and supported by grant no. 2015-70017-22886 from the USDA National Institute of Food and Agriculture.

Who made this guide?

Collaboration and testing



ACKNOWLEDGMENTS: This teaching resource was developed by Linda Seyler of Global Garden Refugee Training Farm in Chicago Illinois, in partnership with the Institute for Social and Economic Development (ISED Solutions). Refugee farmer training programs across the country provided feedback on this lesson, which is now integrated throughout the guide. From 2015 to 2017, ISED partnered with twelve refugee farmer training programs through a USDA BFRDP educational enhancement grant, to support the design and testing of new and shareable teaching resources for culturally and linguistically diverse farmers. To learn more about this project, or to access the whole list of newly developed teaching resources for refugee farmer training programs, see the [New American Resource Library at https://nesfp.org/new-american-resources](https://nesfp.org/new-american-resources). For more in-depth explanations of the teaching approaches and activities used in these materials, please see the [‘Refugee Farmer Teaching Handbook’](#). While these resources were designed with refugee audiences in mind, they can be adapted and used in any farmer training or incubator setting.

VARIATION:

Throughout this guide, boxes (like this one) contain variations and adaptations that serve varying programs and farmers. They are suggestions and reflections from other programs based on how they made this workshop work for them.

TEACHING TIP:

Throughout this guide, boxes (like this one) contain teaching tips to help you better facilitate farmer learning. Most come from other programs who have tested and reflected on using this lesson.

ICONS: You will find the icons below throughout this guidebook. They are there so you are prepared for the activity and can get an idea of what it will bring at a glance.



WORKSHEETS



VOCABULARY



POWERPOINT

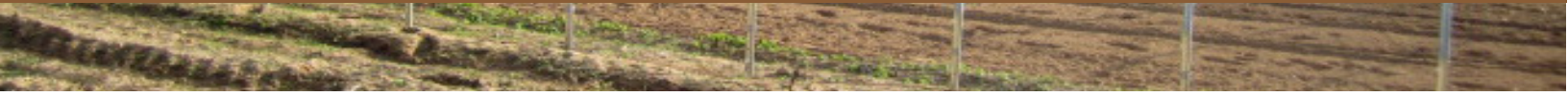


OUTDOOR



DISCUSSION

Reviews and objectives



WHAT TESTERS SAY: “Great graphics, vocabulary sheet, lesson layout - all helpful.”

- *Southside Community Land Trust, Providence RI*

“The comprehensiveness of this is perfect. Everything from building the structure to building out the crop plan makes it a very cohesive unit. All objectives are constructed so that farmers can demonstrate achievement.”

- *Alex, Cultivating Community, Portland ME*

CORE SKILLS:

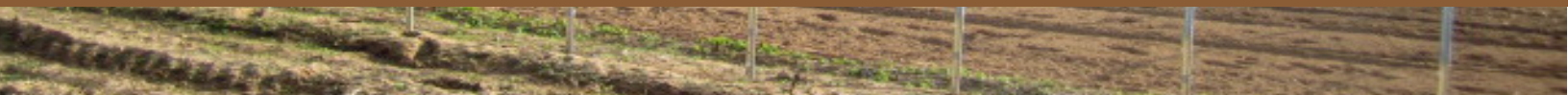
- Season extension vocabulary
- Appropriate crops for tunnels
- Season identification and description
- Vegetable seasonality identification
- Interpreting a graphic
- Vegetable name core skill
- Reading a calendar
- Days to harvest concept & calculation
- Identifying first and last frost dates on calendar
- Day light length concept

OBJECTIVES: At the end of this module, growers will be able to:

- Determine the relationship between calendar dates and day length.
- Locate calendar dates for late season winter harvest vs. spring harvest.
- Understand the role of heat vs. light in determining length of growing season.
- Name types of extension tools and reasons for using them.
- Understand greenhouse effect (i.e., trapped light turns into heat we can use).
- Understand difference between low and high tunnels.
- Name at least four vegetable crops suitable for winter harvest.
- Determine the last date a crop can be planted for winter harvest.
- Choose how much to plant in late summer/fall for continuous winter harvest.
- Identify articles of clothing for winter protection.

Table of Contents

Adaptable except where noted.



4 IS THIS GUIDE RIGHT FOR YOU

- Audience and Objectives
- Resources needed

7 HEAT, LIGHT & TIMING / ACTIVITY 1 / 90 MINUTES

Powerpoint and discussion

- Learn how temperate weather and day length patterns affect plant growth.

9 GREENHOUSE EFFECT & LOW TUNNEL CONSTRUCTION / ACTIVITY 2 / 1-5 HOURS

Powerpoint and optional outdoor activity

- Learn how greenhouses and low tunnels work, and build a low tunnel (optional, 4 hours).

12 COLD WEATHER CROPS / ACTIVITY 3 / 1-2 HOURS

Flash cards and discussion, optional shared meal

- Introduction to cold weather crops with live specimens, flash cards and by preparing and sharing a simple dish.

13 PLANTING DATES FOR WINTER & SPRING HARVESTS / ACTIVITY 4 / 2 HOURS

Flash cards and worksheets

- Review concept of days-to-harvest, and use calendars to decide when to plant crops for winter and spring harvests.

16 DRESSING FOR COLD WEATHER / ACTIVITY 5 / 20-30 MINUTES

Discussion

- Discuss experiences with cold weather, and learn do's and don'ts for enjoying winter weather in comfort and safety.

VARIATION:

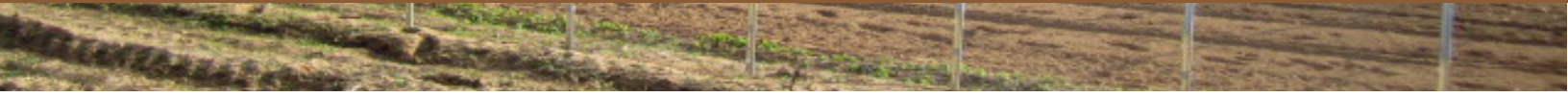
Go on a field trip! Bring farmers to a four season grower who knows winter production and has already invested in all the infrastructure. This gives farmers a tangible way to connect concepts with practices they can undertake.

VARIATION:

Pick and choose sections that best fit the needs and skill levels of the farmers you work with. For example, condense Activities 1, 3 and 4, supplemented with graphics from other activities. Use what works for you!

Audience and Objectives

Adaptable except where noted.



WHO: Refugee farmers and growers

LANGUAGE / LITERACY Beginning to fluent / pre-literate to literate

With interpreter, this training can be done with any level of English language speakers. Appropriate for most literacy levels because it requires very little text. Supplemental written materials can be given to literate farmers.

FARMING EXPERIENCE: Previous experience outside in temperate regions

- Can be adapted as an introduction to cold weather.

PREREQUISITES: Skills and experience

- Reading a basic grid graphic (Left and Right columns). **Helpful, but not required. The lesson uses a grid/table to reinforce ideas.*
- Basic internet search on pre-selected site to check local frost dates, etc. (OPTIONAL).

REGION / CLIMATE: Northeast to Midwest / Temperate (specific data per Chicago)

Not adaptable to regions outside the Midwest or Northeast.

PROGRAM STRUCTURE: Can work for any structure / CSA, aggregate, etc.

Note: this is an introduction to season extension, and is not meant to help specific farmers get set up for season extension.

SEASON: Late Summer to Fall

This training can be given at any time, but is best done when it is cold.

Resources Needed

Adaptable except where noted.

TIME: 6 hours

Activities range from 20 minutes to 2 hours. Choose activities that make sense for your program, or break it up into multiple sessions.

STAFF / INTERPRETERS: One instructor and one interpreter

Interpreter not needed if farmers are emerging fluent or fluent.

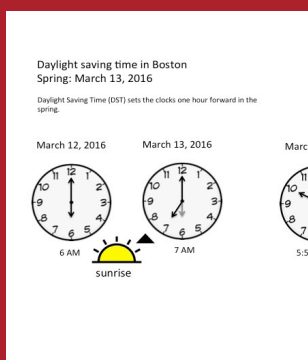
LOCATION: Partially inside a classroom, partially outdoors on a farm

SUPPLIES: Teaching materials

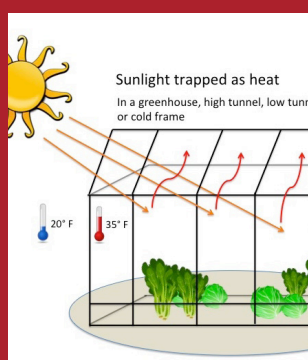
- GRAPHICS: daylight chart, hoop house, thermometer, frost dates (see below)
- POWERPOINT: photos showing construction of low tunnel
- POWERPOINT: photos of high tunnels, low tunnels and cold frames
- Veggie flashcards
- Samples of cold season vegetables
- Seed packets or catalogs that show days-to-harvest
- Large calendar for counting days-to-harvest, plus blank calendar worksheets
- POWERPOINT: photos of people enjoying normal outdoor winter activities
- Samples of clothing that will or will not keep one warm
- Examples of warm / waterproof jackets, boots, hats, scarves, gloves, sweaters
- Samples of waterproofing materials for leather

For the session

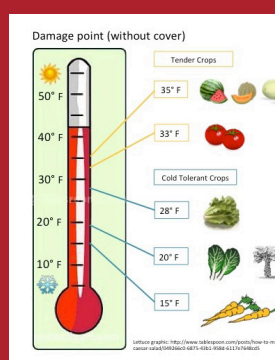
- Computer with internet
- Salad-making supplies
- Low tunnel building materials (for OPTIONAL activity)



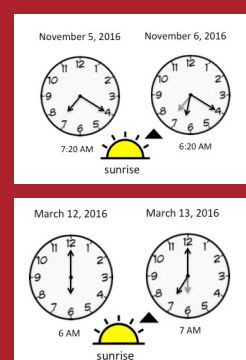
DAYLIGHT CHART



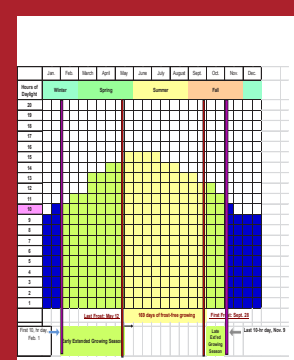
HOOP HOUSE GRAPHIC



THERMOMETER GRAPHIC



FALL / SPRING FROST DATES



DAY - LIGHT GRAPHIC



Month / Year:				
Sunday	Monday	Tuesday	Wednesday	Thursday

CALENDAR

Series of photographs of high tunnels, low tunnels, and cold frames

Season Extension module

SERIES OF HIGH / LOW TUNNEL PHOTOS

Winter

can be:

- Safe
- Comfortable
- Fun!



DRESSING FOR WINTER PPT

BACKGROUND INFO: Required knowledge for trainers

- Days-to-harvest: definition, abbreviation (DTH), and location on seed packet or in catalog
- Local first and last frost dates and effects of frost on tender vs. hardy crops
- Hardiness zones and length of local growing season (169 days in Chicago)
- Difference between tender, cold tolerant and cool season crops
- What happens to plant tissue when it freezes?
- What happens to root crops when the ground freezes?

Heat, Light & Timing

1

TIME: 90 minutes

OVERVIEW:

Students will learn about how annual temperate weather and day length patterns affect plant growth.

MATERIALS NEEDED:

- GRAPHIC: Daylight chart showing changes in day-length, average temperature, frost dates, and first and last 10-hour days
- Computer with internet if sharing the optional daylight website (see below)

OBJECTIVES / LEARNING:

By the end of this activity, participants can:

- Determine correlation between calendar dates and day length in temperate zone
- Locate calendar dates for late season winter harvest vs. spring harvest
- Understand the role of heat vs. light in determining length of growing season

VOCABULARY

Winter

Spring

Summer

Fall

Light

Heat

Day Length

STEP 1: GROUP CONVERSATION: TODAY'S WEATHER



Start off by commenting on the day's weather, using some of these conversation prompts:

- "Do you like this weather?"
- "Is it similar to weather in your country?"
- "How do you feel about winter in Chicago (or your location)?"
- "Is there a season like winter in your home country?"
- "What seasons did you have in your home country?"
- "Was there a season when you could not plant or grow crops? Why? Too dry/hot/cold?"

TEACHING TIP:

One reviewer suggested introducing the concept of calendars and how to use them before engaging in this workshop. Understanding and using a calendar is its own explicit skill, and farmers will benefit from learning this to understand season extension and planting concepts.

STEP 2: GROUP CONVERSATION WITH QUESTION

Ask: "Why don't we grow vegetables here during the winter?"

Students are likely to say that it's too cold in the winter. Agree with this, and introduce the second reason in the next step.

STEP 3: GROUP CONVERSATION: LIGHT

Ask class about their observations on day length changes: long summer days vs. short winter days. How does this affect their mood and/or activities?

- “The longest day is mid-summer (June 21), when we have 15 hours of sunlight.”
- “The shortest day is mid-winter (December 21), when we have only 9 hours of sunlight.”
- “Between these two dates, day length changes just a little bit (between ~30 seconds and ~3 minutes/day each day, so we don’t usually notice).”

STEP 4: RESOURCE SHARING



- a. **Show class** the day light graphic, explaining the gradual change in day length each month. Show solstices, first and last 10-hour days, and frost dates.
- b. **Ask class:** “How do daylight changes affect growing vegetables?” Assess what they know, and fill in the gaps using the facts below:
 - Plants must have enough warmth to grow and stay alive and at least 10 hours of sunlight each day to grow.
 - Frost free dates are when crops have enough warmth and heat to grow. Crops have enough light to grow between the first and last 10-hour days. Crops can still grow during the days in between if they are protected from the cold.
 - The dark period is the time between the last and the first 10-hour day. During this time, crops can survive, but they will not grow.
 - During fall and spring there is enough day light, but it may be too cold for growth.

STEP 5: OPTIONAL ACTIVITY

Show class how to find daylight times for their region. (www.timeanddate.com; <http://www.isws.illinois.edu/atmos/statecli/index.htm>)

VARIATION:

Included in the resources is a blank daylight graphic that any program can add their own shading and cut off dates to. This tool can be adapted to different climates this way.

STEP 6: ASSESSMENT ACTIVITY

Use a large version of the daylight graphic to ask farmers specific questions about it:

- “How many hours of light do plants need to grow?”
- “What month do there start being enough hours of light for plants to grow?”
- “What month does there stop being enough hours of light for plants to grow?”
- Ask any additional questions to assess understanding of frost and light.

TEACHING TIP:

If you have a planted hoop house or low tunnel, you can conduct this lesson there to get a sense of the greenhouse effect.

Greenhouse Effect & Low Tunnel Construction

2

TIME: 60 minutes, plus 4 hours (optional)

OVERVIEW:

Learn about structures that extend the season, pros/cons of the most common options, and build a low tunnel together (optional).

MATERIALS NEEDED:

- GRAPHIC: light entering hoop-house and being trapped as heat
- POWERPOINT: differences between high and low tunnels
- Pictures or examples of cold frames
- Optional: materials to build low tunnel

OBJECTIVES / LEARNING:

By the end of this activity, participants can:

- Name types of extension tools and reasons for using them
- Understand greenhouse effect (i.e. trapped light turns into heat we can use)
- Know the difference between low and high tunnels: relative strength, labor and cost of materials

VOCABULARY

Greenhouse	Low tunnel	High tunnel
Cold frame	PVC pipe	

TEACHING TIP:

If you have a planted hoop house or low tunnel, you can conduct this lesson there to get a sense of the greenhouse effect.

STEP 1: GRAPHICS AND GROUP DISCUSSION



Using the Greenhouse graphic, explain how light is trapped as heat. Show examples of temperature differences, and ask farmers what crops they think can be grown this way during cold months. Correct misconceptions and engage in discussion.

VARIATION:

One tester says: “We used the example of jiffy seed starters or plastic egg cartons to start seeds early in your apartment.” This is a good way to teach the principles if you don’t have the use of a hoop house in your program.

STEP 2: POWERPOINT: COMPARE AND CONTRAST



- Using the PowerPoint slides of high and low tunnels and cold frames, use the talking points below to compare and contrast them for farmers.
- High Tunnels**
 - Pros: lots of room for crops, comfortable to work in

- Cons: expensive (e.g., our 60-foot hoop house cost \$3,000 to build. The plastic skin lasts 3-5 years and costs \$1,000 to replace)
 - Must be constructed properly for wind resistance and load bearing
 - Require careful management to maintain soil health and prevent insect and disease problems
- c. **Low Tunnels**
- Pros: inexpensive (PVC vs. steel pipes), easy and fast to build
 - Low height means less likely to blow down or collapse from weight of snow
 - Cons: Can be inconvenient for harvesting
 - Can/should be removed for normal soil management during regular growing season
- d. **Cold Frames**
- Pros: can be built to fit small spaces and can be built from scrap materials
 - If against a building, south or southeast location is usually best

TEACHING TIP:

One reviewer suggested adding that a pro of cold frames is that they can stay warmer (without a heater) than a low tunnel if it is against the south side of a building.

STEP 3: REFLECTION

To assess farmer understanding, ask them which one they would prefer on their farm and why. Encourage them to think realistically about space, finances, market options during the off season, etc.

TEACHING TIP:

One reviewer said: “We have experienced some difficulty conveying basic atmospheric stuff (clouds being made of water is one that comes to mind). The idea of light and heat from the sun getting trapped to warm crops may be a little tricky to navigate in a scientific sense. Using the analogy of a ‘blanket’ to keep things warm is simpler, though perhaps less accurate.”

STEP 4: ACTIVITY SUGGESTION

Bring vegetables that can be grown as winter crops and have the class make a salad to sample and share. Chard, kale, leeks, etc. are suitable. Many of these are unfamiliar to refugees from the tropics and subtropics, but can still be used in their traditional recipes. Provide a selection of seasonings so that they can flavor the dish to meet their taste.

STEP 5: OPTIONAL ACTIVITY: LOW TUNNEL CONSTRUCTION



Note: If you can't or do not want to construct low tunnels at this time, bring materials you will use (PVC pipes, plastic, floating row covers) to explain and demonstrate as much as possible.

VARIATION:

You may not be able to build the tunnel, but you could tour one on your farm or a neighboring farm, or give any supplies available to farmers to allow them to continue with self-directed learning.

- a. Lay two parallel lines 3 feet* apart and the desired length of your low tunnel. It is important that these lines be parallel so that the tunnel is straight, square, and able to shed snow. (*See Variation below.)
- b. Mark 4-foot intervals along each line. Again, it is important to keep the marks on each line exactly opposite each other so that the tunnel's ribs are perpendicular to the lines/length and parallel to each other.
- c. Cut 3/4" PVC pipe into 2- or 3-foot lengths (use the length that will work best in your soil) and hammer one into the ground at each 4-foot mark. Keep these stakes vertical. Again, each pair of stakes needs to be exactly opposite each other and the same distance apart as all the other pairs.
- d. Cut 1/2" PVC pipe into 5-foot* lengths. Insert each end of the 1/2" pipes into the 3/4" stakes to make the hoops. You should end up with a series of hoops, all nicely parallel to each other. Adjust how the hoops sit in the stakes so they are all the same height and shape. (*See Variation below.)
- e. Cover with sheet plastic and anchor it all around with soil, rocks, sand bags, or whatever heavy weight is available. Pull the plastic to fit snugly in both directions (slack in the plastic will create bowls where snow and ice can accumulate and become heavy enough to pull the tunnel down).
- f. Don't forget to plant something in your new low tunnel!

VARIATION:

Tunnel width and hoop length should be adjusted for your situation. The authors of this guide have 3-foot wide planting beds and 5-foot hoops, both work and are conveniently half of a 10-foot pipe.

STEP 6: LOW TUNNEL CONSTRUCTION FOLLOW UP ACTIVITY

- a. Seeing is believing. Invite students to look inside tunnels periodically to observe crop development and to harvest when crop is ready. Students will be able to feel the difference between temperatures inside and outside the tunnel.
- b. Ask students for ideas on how to keep crops even warmer (extra layers of plastic, artificial heat, etc.).
 - Discuss pros and cons of each idea.
- c. Ask students if they are warm and comfortable (assuming lesson is outside in cold weather)
 - If they are warm, ask them to explain what they have done to keep warm.
 - If they are cold or wet, ask them what they might do differently next time.
- d. Review concepts related to day-length, greenhouse effect, etc. as needed. Review names of cold hardy vegetables as needed.
- e. Share a hot drink. Ask students if this helps them feel warmer.

Cold Weather Crops

3

TIME: 60-120 minutes

OVERVIEW:

Students are introduced to cold weather crops with live specimens and flash cards and by preparing and sharing a simple dish.

MATERIALS NEEDED:

- Veggie flash cards
- Samples of cold season vegetables
- Salad making supplies

OBJECTIVES / LEARNING:

By the end of this activity, participants can:

- Name at least 4 vegetable crops suitable for winter harvest (and 2 which are not)
- Locate the last date a crop can be planted for winter harvest on a seed packet or calendar.

VOCABULARY

Veggie words! Kale, Cabbage, Leek, Scallion, Swiss Chard, etc...

Cold vs. Heat Tolerant

STEP 1: GROUP CONVERSATION



- Ask students** “Which kinds of vegetables do you think you will be able to grow during the winter?”
- If you have students from near the equator, mention that the crops they used to grow are probably not suitable (e.g., tender crops like tomatoes, peppers, eggplant, zucchini, green beans, etc.).

TEACHING TIP:

One tester suggested adding ethnic crops to this list. Farmers will want to know how hardy or not hardy some of their crops are in a colder climate compared to their home country.

STEP 2: ASSESSMENT ACTIVITY



Use flash cards and live specimens to quiz students on English names for new vegetables. Provide each student with a set of flashcards with six different winter vegetables (e.g., root crops like beets, carrots, or turnips).

TEACHING TIP:

One tester combined this with a matching word and vegetable picture activity, where farmers could also sort all vegetable pictures into cold- or warm-weather crop groups.

Planting Dates for Winter & Spring Harvests

4

TIME: 120 minutes

OVERVIEW:

After reviewing the concept of days-to-harvest, students use calendars to decide when to plant crops for winter and spring harvest.

MATERIALS NEEDED:

- GRAPHIC: Daylight chart
- Seed packets and/or catalogs that show days-to-harvest
- Large calendar for counting days-to-harvest
- Worksheets with blank calendars
- GRAPHIC: Thermometer marked with points for damage to tender vs. cold tolerate crops and freezing

OBJECTIVES / LEARNING: By the end of this activity, participants can:

- Choose how much to plant in late summer/fall for continuous winter harvest
- Determine last date a crop can be planted for winter harvest

VOCABULARY

Frost Freeze
Temperature

STEP 1: GRAPHICS AND GROUP DISCUSSION



Start class with a review of winter crop names using flash cards. For each card, have students give the English name and state whether or not it is suitable for cold season farming.

- Review days-to-harvest concept for crops which are direct seeded.
- Use seed packets and/or catalogs to locate this info for three different cold season crops.
- Lettuce - 55 days-to-harvest
- Kale - 60 days-to-harvest
- Leeks - 75 days-to-harvest
- Hakurei Turnips - 38 days-to-harvest
- Daikon Radish - 50 days-to-harvest
- Review last 10-hours-of-light day for your location. For Chicago: November 11, 2016
- Demonstrate how to determine the last possible planting date for lettuce by counting back 55 days from November 11 (or appropriate date for your area).
 - Use a large (monthly) calendar to show how to count 55 days back from November 11.

STEP 2: DISCUSSION



- a. **Ask class:** “What is the last possible planting date for a fall/winter harvest of Hakurei turnips?”
- Use a large (monthly) calendar to count 38 days back from November 11 (Answer: October 5).
 - Ask the class to repeat this process with one or two more vegetable crops.
- b. **Ask class:** “What is going to happen to the weather between the day we plant and November 11?”
- It’s going to get colder. Frost can be expected as early as September 21.
 - The first hard freeze (>28 F) is expected between October 1 and October 10.
 - We need to protect most cold-hardy crops from the cold before there is a hard freeze - especially above-ground, leafy crops like greens.
 - **Quiz.** Name one crop we do not need to protect in winter. Answer: garlic!
- c. **Discussion point:** we use low/high tunnels or cold frames to protect crops from the cold while there is still enough day length for them to grow. Low tunnels can increase temperatures by 10-20 degrees F above the outside temperature.



- d. **Use the THERMOMETER GRAPHIC** showing ‘light freeze,’ ‘freezing point,’ and ‘hard freeze (28 F)’ marks.
- Light freeze: 29 F to 32 F - tender plants killed, with little destructive effect on other vegetation.
 - Moderate freeze: 25 F to 28 F - destructive effect on most vegetation, with heavy damage to fruit blossoms and tender and semi-hardy plants.
 - Severe freeze: 24 F and colder - damage to most plants.



- e. **Ask class:** “What happens to crops when Chicago temperatures go below zero degrees F in January/February?”
- They will freeze and die unless we add heat. (Discuss possible heat sources and pros, cons, and safety precautions for each.)
- f. **Ask class:** “What if you want to harvest a bucket of Hakurei Turnips (days-to-harvest = 38 days) every week from November 1st through January 1st?”
- Plant a 10-foot row for each bucket of turnips. (10 feet = 1 bucket)
 - Plant one on September 21 to harvest on November 1.
 - Plant another on September 28 to harvest on November 8.
 - Plant 70 feet on October 5 so you can harvest 10 feet each week for the seven weeks starting on November 15.

TEACHING TIP:

Ask farmers to share experiences bringing crops early or late to market. What is it like to be the only one with carrots? Why do you try to plant things early? Allow them to reflect on the benefits of extending your season for certain crops.

STEP 3: ASSESSMENT ACTIVITY



Farmers select one to three cold-hardy crop(s) they want to grow and determine last possible planting date(s). Then, using the blank calendar worksheets, plan actual planting date, when they will cover with low tunnel,

and when they expect to harvest. This can be done individually or as a group. For farmers doing this for the first time, consider planting no more than three crops as a group demonstration.

STEP 4: ACTIVITY SUGGESTION

As in Activity Two (“Greenhouse Effect & Low Tunnel Construction”), make another salad or dish with different winter vegetables. This is a great way to introduce refugees to new vegetables they might enjoy.

TEACHING TIP:

One reviewer suggested adding a reflection piece for farmers who have farmed in your climate before. Ask them what mistakes they have made where they lost a whole crop due to temperature, etc. What was that experience like? This is a great opportunity for peer teaching.

Dressing for Cold

5

TIME: Approximately 20 minutes

OVERVIEW:

Refugees from tropical and subtropical climates need coaching to deal with cold weather safely and with confidence. While it is important to prevent frost bite and hypothermia, there's no need to fear the outdoors. Students will discuss their experiences with cold weather and learn do's and don'ts for enjoying winter in comfort and safety.

MATERIALS NEEDED:

- Photos of people enjoying normal outdoor winter activities
- Samples of clothing items that will or will

not keep one warm (Ex. wool/thermal socks vs. cotton/fluffy synthetics; a warm, wind-resistant hat vs. something more fashionable)

- Examples of warm/waterproof jackets, boots, hats, scarves, gloves, sweaters, etc.
- Samples of waterproofing materials for leather.

OBJECTIVES / LEARNING:

By the end of this activity, participants can:

- Identify articles of clothing for winter protection.

VOCABULARY

Wool

Cotton

Polypro

STEP 1: PHOTOGRAPHS



Pin up photographs or show Powerpoint slides of people enjoying winter activities: sledding, skating, walking in the snow, making snow-people, etc.

STEP 2: GROUP CONVERSATION



Prompt discussion with the following questions:

- "How many winters have you experienced in the U.S.?"
- "Did you have weather like that in your home country?"
 - If yes, "What did you do to keep warm?"
- "Since coming to the U.S., what do you do in winter?"
- "Do you go outside? Why or why not?"
- Ask students to look at the pictures of people having fun in cold weather.
 - "Do these people look like they're having fun?"
 - "Do they look cold?"
 - "What have these people done to stay warm?"

STEP 3: DRESSING FOR COLD WEATHER

- a. **First: Wear a Hat**
 - 80-90% of body heat is lost from the top of your head.
 - Choose a warm, wind-resistant hat. Waterproof is good too.
 - Model a few inappropriate hats (ex. straw, open weave, baseball cap) and ask the students to explain why those will not keep a person warm in cold weather.
- b. **Second: Layers**
 - Layers trap warm air and can be adjusted as you need.
 - Outside layer should be wind and/or water proof.
 - Remove layers when you get too warm.
 - Demonstrate adding lots of layers to your indoor clothes.
- c. **Third: Stay Dry on the Outside**
 - Gloves should keep your fingers dry and warm (spare gloves are a good idea).
 - Shoes and boots should be waterproof.
 - Show some products for waterproofing leather boots.
- d. **Fourth: Stay Dry on the Inside**

(If you still have layers on, this is a good time to remove them)

 - Any moisture, including sweat, makes it hard to stay warm.
 - As you warm up, remove layers to avoid sweating.
 - When you go inside, take off coats and hats so you do not sweat.
 - Best high-tech investment: thermal socks that wick moisture away from your feet.

STEP 4: SAFETY

If you feel any of these things, go inside, change into warm and dry clothes, drink something warm, eat hot food, and get warm while you think about what will work better next time:

- Too cold and can't get warm
- Unpleasant or painful fingers or toes
- Numbness, especially in fingers or toes
- Confusion, fatigue, or sleepiness