Part 1: Creating a Calendar

GOFARM HAWAI'I
UNIVERSITY OF HAWAI'I

GROW EAT THINK
GET local
UH COOPERATIVE EXTENSION

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Summary

Grade/Level

Grades 7 – 12

Objectives

Students will understand:

- the purpose of making a crop plan
- the most important elements to include
- how to research information
- how to calculate dates for important tasks that must be completed in order to meet the harvest goal.

Activity Type

Students will create a crop plan worksheet and a master task calendar.

Est. Lesson Time

30 minute lesson and one activity assignment

Phenomena

Looking for teacher input on applicable scientific phenomena that drive this lesson.

Next Generation Science Standards

Looking for teacher input on applicable NGSS standards for this lesson.

Introduction

This lesson will take us through the journey of creating a plan for a specific crop harvest goal we have. Planning is critical to any business and the crop plan is the foundation upon which a successful farming business is built. Farming in Hawaii can produce a steady flow of an endlessly changing variety of vegetables all year. Dealing with the unique needs of dozens of crops and hundreds of different varieties can be overwhelming. Without a plan, gardens are fun but can become a chaos of different crops maturing at different times without being able to align with a specific harvest goal. What is our goal? Do we have a specific event or set of dates that we want to have produce available for harvest? Crop planning should allow you to have an idea of what needs to get prepared, seeded or transplanted to meet the needs of your harvest goal.

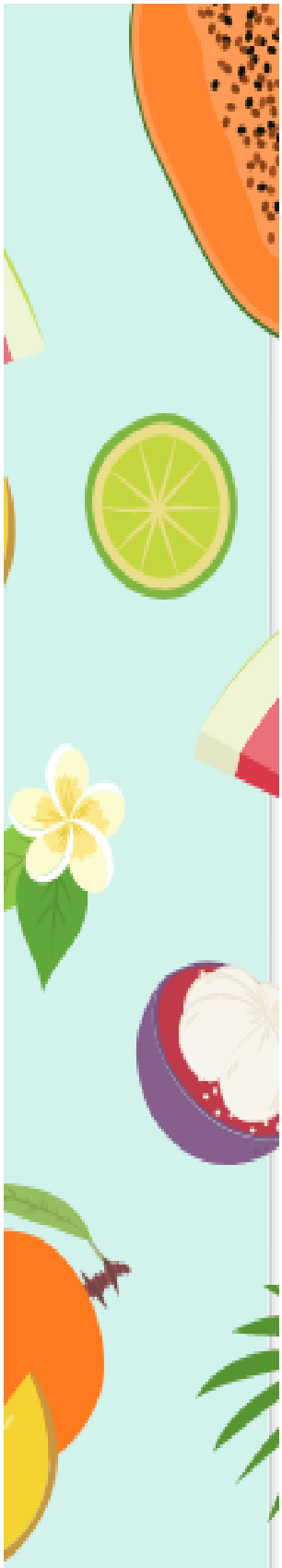
Materials & Resources

- Materials: Several small calendars and 1 large desk calendar for the year you are planning for, paper, pencils, colored pencils, calculators and laptops

- Resources:
  - Johnny's Selected Seeds Catalogs and/or website
    - see "Growing Information" section for each crop for information on nursery time, days to maturity (DTM), & other relevant information
    - https://www.johnnyseeds.com/
  - Target Harvest Date Calendar
    - Determine seeding date relative to a specific harvest date.
    - Download here: https://www.johnnyseeds.com/growers-library/calculator-seeding-date-targeting-specific-harvest-date.html

Goals

- Discuss the goals of a crop plan and calendar.
  - What is the event we want to grow produce for?
  - What are the dates of the event? Is it a onetime event or does it cover a range of time?
  - How do we know when to plant this crop?
  - When do we prepare the garden beds for planting this crop?



Activity 1: Crop Planning Chart

Use the steps below to walk you through how to complete the chart on page 5 & 6.

Step 1: Choose your Crops

- What crops and specific varieties of these crops are suitable for our location, climate and available timeframe?
  - Crop Selection: A teacher can choose the crops and share why these were chosen or the group can review the **Crop Variety Selection Lesson** (part 4 of the Crop Plan Lesson unit) prior to this lesson, discuss potential crops and decide together what will be grown.
  - In general, vegetables often lend themselves as crops that are easy to grow in a school semester timeframe. For longer term crops like kalo, u'ala, olena, cassava, etc., planning further in advance is essential as will be made clear by completing the activity of this lesson.

- How many harvests?
  - Is this a crop with a 1 time harvest? (i.e. a head of cabbage or lettuce that you cut and does not regrow)
  - Does this crop offer multiple harvests (i.e. can keep coming back to harvest like tomatoes or peppers).

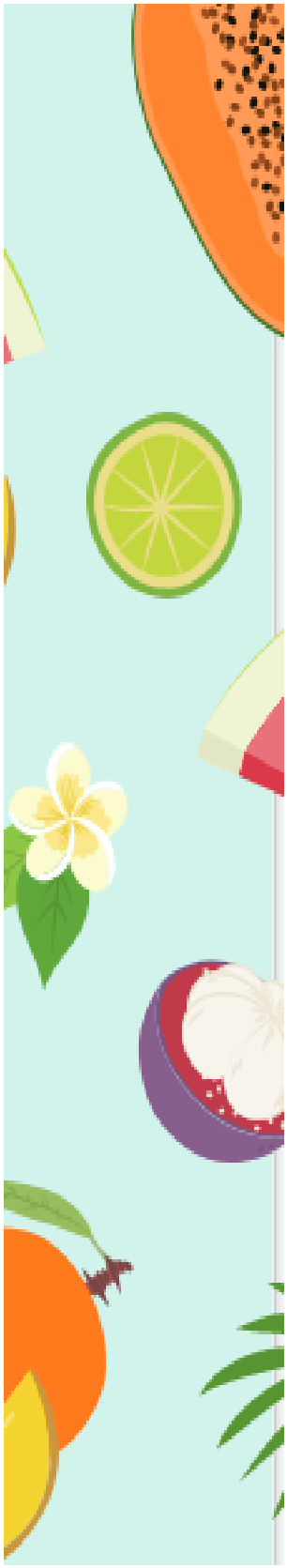
- It's important to note which specific variety and type of the crop you are growing as details vary even among the same crop. (i.e. a beefsteak type tomato has a longer DTM than a cherry tomato type)

- List your chosen crops in the **Crop Planning Chart**
  - For this exercise we will limit it to 3 crops, but feel free to expand as needed!

Step 2: Seed Source

- Where will you be buying or receiving your seeds from? A seed company? A friend or family member?

- For this exercise, we will use the Johnny's Selected Seeds as an example because their catalog offers detailed growing information for growers.



Step 3: First Harvest Date

- Think about the closest day you will be able to harvest to your event day.
  - Consider the time it will take to harvest, wash and pack and possibly cool before the event.
  - Does this mean you will harvest the same day? The day before?
  - If you would like all crops to be ready to harvest on the same day, this date would be the same for all crops.
  - Pro tip: To build in wiggle room for slight changes to your plan, set the harvest date for 1 week prior to the exact date you really need the crop.

- Enter this date in the chart for each of the chosen crops.

Step 4: Last Harvest Date

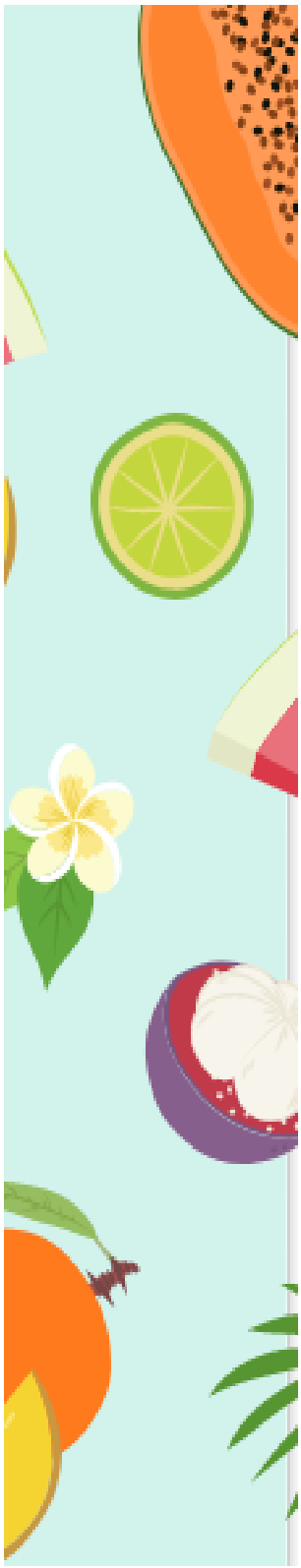
- When is your last harvest date?
  - If your event is only 1 day, then this will be the same as the first harvest.
  - If your crop can be harvested multiple times over a period of time. If it can be harvested again, then this date would represent the last date of your series of events.
  - If your event series is longer than 3 weeks, then plan on completing the **Succession Planting Lesson** after this lesson.

- Enter this date in the chart for each of the chosen crops.

Step 5: Days To Maturity (DTM)

- Days to Maturity means the number of days it takes from planting the seed until the first harvest date
  - You will find the DTM for the chosen crops in the growing information that seed companies provide in their catalogs or sometimes on the seed packet itself.
  - If the crop is from planting material (cutting, corm, etc), ask your source about DTM.

- Enter the DTM in the chart for each of the chosen crops.



Step 6: DS or TP?

- **DS** = direct sow (seed sown directly into field).
- **TP =** transplant (seed started in nursery in a seed tray).

- It is important to know whether it will be best to directly sow (DS) the seed into the garden or if it would be best to start the seed in a seedling tray and transplant (TP) it as a seedling into the garden.
  - Crops that take longer to germinate as well as those that we want more control over the exact placement in the garden, are best started as transplants in a seedling tray.
  - Crops that germinate quickly and are grown more closely spaced in the garden are best sown directly in the field.

- Write in the chart whether each crop is going to be DS or TP

Step 7: Field Planting Date (For DS crops)

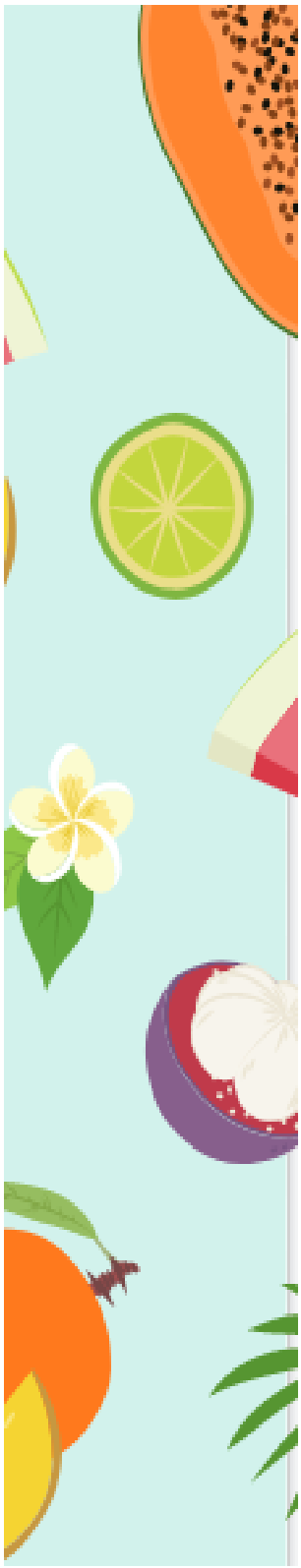
- Calculate the field planting date to direct seed into field by subtracting the DTM from the first harvest date.

- **First Harvest Date – DTM = Field Planting Date**
  - Use the DTM to count backwards on the calendar from your first harvest date

Step 8: Nursery Start Date and Field Planting Date (For TP crops)

- Nursery time simply refers to the number of days that a seedling will spend in the nursery before it is transplanted into the garden.

- Sometimes seed catalogs will give you DTM that already includes the nursery time (they assume you will be starting it in the nursery and there will be a note near where the DTM is listed in the catalog that tells you this). Other times they will not include this in the DTM and you will have to add the nursery time in yourself.
  - You can learn more about how much time crops take in the nursery from seed until they are ready to be transplanted into the field in the **Growing Healthy Transplants Lesson**



- If the nursery time is not included, assume nursery time will be 28 days (4 weeks), and you can add this on to the DTM from the growing information to enter the correct DTM into the chart.
  - First, calculate the Adjusted DTM that includes the time seedlings will spend in the nursery if not already included by seed source in DTM.
    - **28 + DTM = Adjusted DTM**
  - Second, calculate the date you will need to start seeds in the nursery by counting backwards on the calendar from your first harvest date:
    - **First Harvest Date – Adjusted DTM = Nursery Start Date**
  - Third, calculate the date to TP into the field. This is called the Field Planting Date.
    - **Nursery Start Date + 28 days = Field Planting Date**

Step 9: Field Preparation Date.

- This is the date you will need to begin work to prepare the garden/field area for ideal planting.
  - Other lessons will cover what is involved in preparing a garden/field area to be planted (mowing, tilling, amending, bed formation and weed flushing) and how much time to allow for the various tasks.
  - For now we will assume that this will be 3 weeks (21 days).

- Calculate the field preparation date by counting backwards 21 days on the calendar from your field planting date
  - **Field Planting Date – 21 days = Field Preparation Date**

Crop Planning Chart: Key Dates and Information

	Crop 1	Crop 2	Crop 3
Crop name & variety			
Seed Source			
First Harvest Date			
Last Harvest Date			
Days To Maturity (DTM)			
Direct Seeded (DS) or Transplanted (TP)?			
<u>If DS,</u> Calculate the field date to direct seed into field. o **First Harvest Date – DTM = Field Planting Date** o Use the DTM to count backwards on the calendar from your first harvest date o Enter answer in right column.			

<u>If TP</u>, Calculate the Adjusted DTM that includes the time seedlings will spend in the nursery if not already included by seed source in DTM. o **28 + DTM = Adjusted DTM** o Enter answer in right column			
<u>If TP</u>, Calculate the date you will need to start seeds in the nursery o **First Harvest Date – Adjusted DTM = Nursery Start Date** o Count backwards on the calendar from your first harvest date to get the date you will need to start seeds in the nursery o Enter answer in right column			
<u>If TP</u>, Calculate field date to TP o **Nursery Start Date + 28 days = Field Planting Date** o Count forward 28 days on the calendar from your nursery start date to get the date you will need to transplant the seedlings into the field. o Enter answer in right column.			
Field Preparation Date: Calculate the date you will need to begin preparing the field so that it is ready by your field planting date. o **Field Planting Date – 21 days = Field Preparation Date** o Count backwards 21 days on the calendar from your field planting date. o Enter answer in right column.			

Crop Planning Chart Discussion

- Do you have enough time to grow the crops you chose for your event? Will you be able to begin preparing the field/garden on the dates you calculated?

- Discuss what else you may wish to include in your plan and task calendar. (Who is responsible for what tasks? Include harvest days, weeding days and days to scout for pests and disease? Weekly lesson plan themes?)

Activity 2: Creating the Master Task Calendar

- It is now time to transfer all of the dates you worked hard to calculate onto a calendar! Each week you can refer to the calendar to see what the most important focus should be and this will ensure that you stay on track with your goals.

- Keep the plan real!
    - Consider what your garden schedule is. What will be the best days to start seedlings? Plant into the field? If you need to make slight alterations to your calculated dates so that they fall on a good day of the week to perform a particular task, then do so. A few days on either side of the calculated date is usually fine.
    - i.e. If your calculated date for field planting falls on a Sunday, but you won't be in the garden until Tuesday, then change the calculated date to Tuesday.
    - Always take a peek at the next week to anticipate upcoming tasks and consider if the weather or another situation will interrupt completion of any of the tasks and if you may need to alter some of the dates.
    - There are several ways to make a calendar. What is most important is that it is easy to understand by all those working in the garden and easy to refer to.
        - For the purposes of this lesson, we suggest using a large desk calendar and transfer all of the dates from your chart into it.
        - Consider color coding your tasks (i.e. all nursery start dates in blue, all field planting days in red, etc.

Wrap Up

- Review what you have learned about crop planning and why it is important.
- What would happen without a plan?
- What will happen if things change?
- There are elements outside of our control that will prevent us from being able to follow the task calendar (weather, illness, schedule changes, etc) as well as things that don't turn out as expected (no seed germination, pest pressure, etc).
- How can the group plan on being flexible and resilient in the face of potential changes to the plan? (i.e. Are there other shorter term crops that can be used as a substitute if one of the crops fails?)
- Being flexible is as important as planning in order to be a resilient food producer.