



GROWER'S CALCULATOR



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VEGETABLE ACADEMY

INTRODUCTION

A great garden starts with a great plan.

A poor garden plan always leads to wasted time, money, and even food. That's why planning skills are so critical for every serious vegetable grower. The task of planning requires a bit of math and some creative problem solving, but if you take your time here, you can really set yourself up for success down the road.

This workbook is designed to accompany the mini lesson about our first major breakthrough in the free workshop.

The exercises and resources introduced here will help you lay out a basic organized plan for your garden space. Be sure to watch the video lesson for more guidance and examples on this subject.

CONTENTS

The Planning Process 2

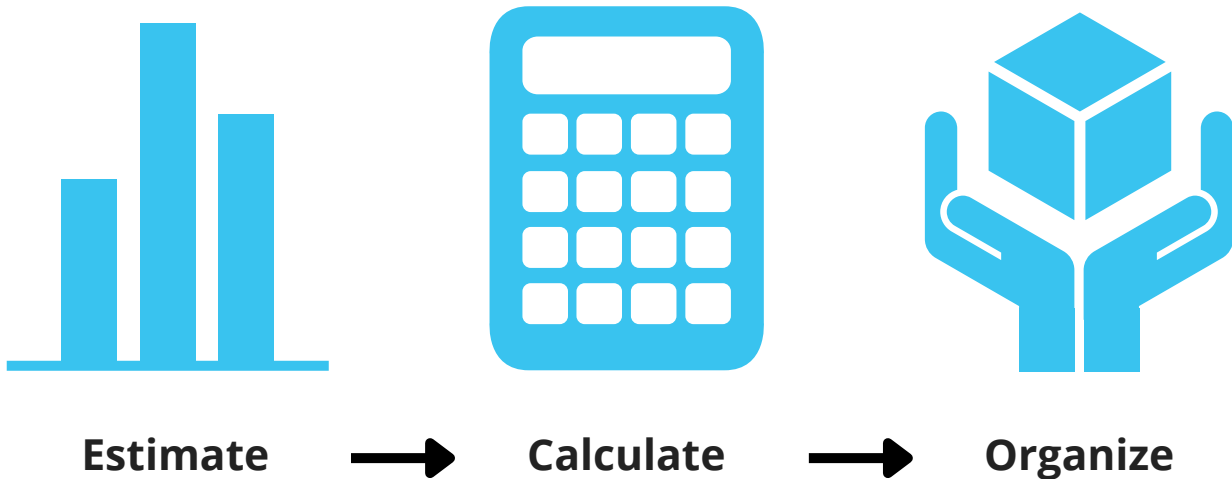
Garden Optimization 6



THE PLANNING PROCESS

To get the results you want, you must know your numbers.

This section will guide you through the process of estimating your seasonal vegetable consumption and using that information to plan your garden at an appropriate scale.



The task of planning a garden from scratch can seem overwhelming so the following pages will guide you through this planning process one step at a time. It's also impossible to plan anything accurately without some concrete expectations of how much harvest you can expect from each crop for each square foot of growing space you use, so I have got those numbers for you as well. If you follow each of these steps and trust the process, you will end up with a standardized garden plan that is customized to your growing needs.

If you are ever tempted to skip this planning process and just wing it, consider that planning a garden is just like planning a grocery shopping list, but you only get to do it once per year. If you only had one chance to visit a grocery store each year, would you trust your memory to pick up every item you need in the right quantities, or would you take a few minutes to write down a list and crunch some numbers first?

The relatively small amount of planning time you invest upfront will reward you with much greater efficiency, accurate crop portions, and reduced waste in the garden.

Now let's turn that crop list of yours into a standardized garden plan that you can use to grow the food you need. Turn the page to get started.

HOW TO CREATE A BASIC GARDEN PLAN

Some simple math is all that is needed to make a basic garden plan that matches your family's consumption. What most people are missing are the expected production rates for each crop, but I can provide you with those numbers. Use the following steps and the resources on the next couple of pages to determine the production area required for each crop and lay out a draft of your garden plan.

Step 1: Estimate your consumption of each crop.

How much of each crop you expect to consume in one year? Start by estimating your consumption on a monthly basis. Then add up the numbers in each month to find the total. It's perfectly fine to consume summer grown crops in the winter if you plan to store some of your harvest, but for crops that you'll probably only eat fresh, like lettuce, just estimate your consumption during the growing season.

Step 2: Set your production targets.

You don't have to try to grow everything you eat...yet! So your production targets don't have to match your consumption estimates exactly. Maybe you grow all of the garlic you need but only half of the carrots you expect to eat. The production target column is the space where you declare how much of each crop you aim to produce. Just pick numbers that seem reasonable to begin with. You'll come back to this column later to make adjustments if needed.

Step 3: Calculate the growing area required for each crop

Now that you know how much food you want to grow, you can calculate approximately how much garden space you will need for each crop. This step is impossible without knowing the production rates of each vegetable but thanks to years of record keeping, we can give you some pretty accurate production rates to use for this step.

Step 4: Organize your garden space.

Draw your garden space to scale on page 9 and arrange your growing areas for each crop within that space. Experiment with different arrangements considering factors like sun exposure and any walkway space needed.

Step 5: Make adjustments.

It's very unlikely that your production area won't match your available garden space perfectly, so head back to step 2 to adjust your crop selection and/or your production targets as needed.

PRODUCTION CALCULATOR

Convert your vegetable wish list into planting instructions.

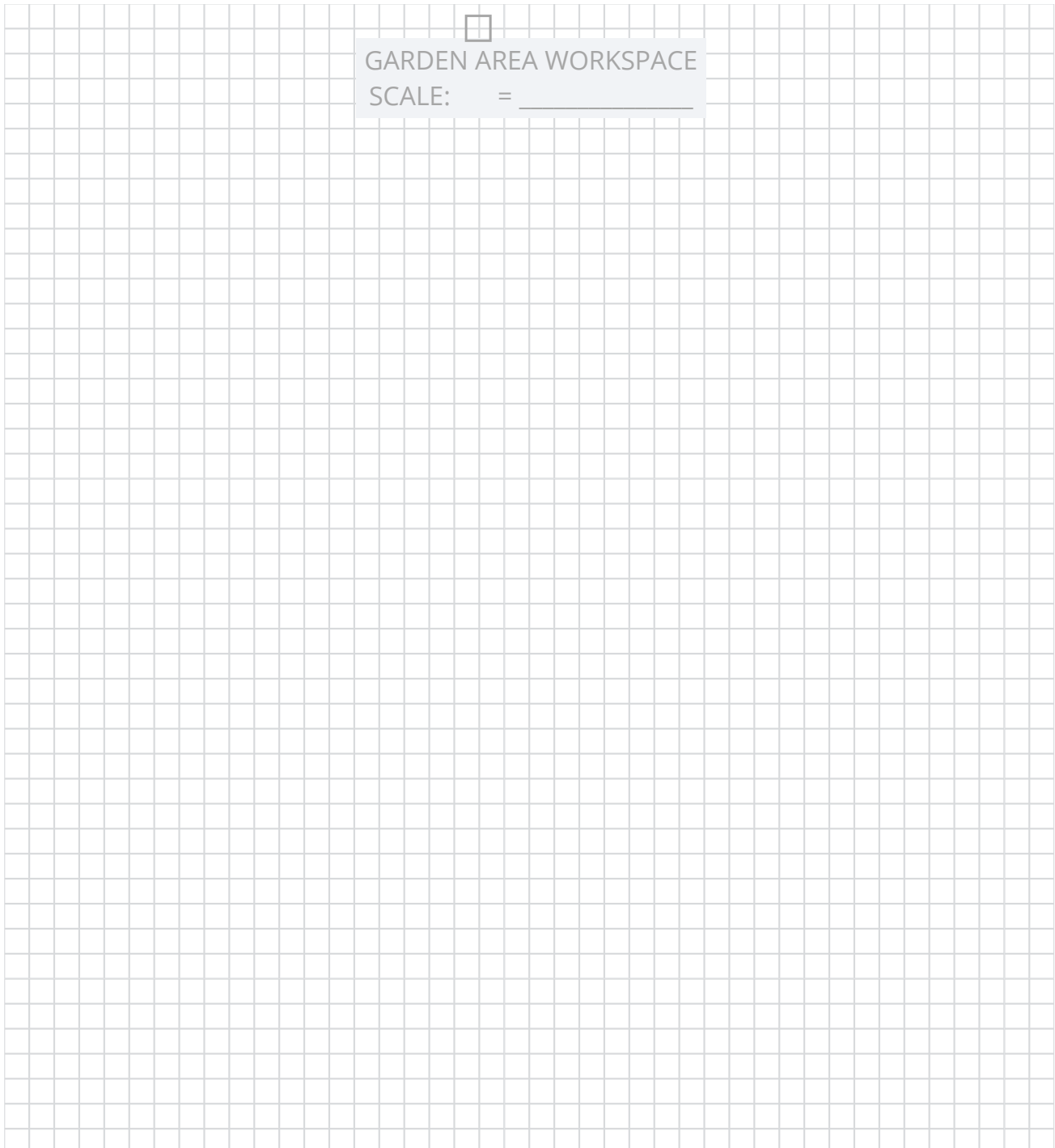
Use the average crop production rates on this table to calculate the appropriate production area needed to meet your production targets.

Consumption Estimates (lbs)	Production Targets (lbs)	Production Rates (lbs/sqft)	Production Area (sqft)
_____ Beans	_____	÷ 0.88	= _____
_____ Beets	_____	÷ 1.32	= _____
_____ Broccoli	_____	÷ 1.32	= _____
_____ Broccolini	_____	÷ 1.00	= _____
_____ Cabbage	_____	÷ 1.43	= _____
_____ Carrots	_____	÷ 1.32	= _____
_____ Cauliflower	_____	÷ 1.32	= _____
_____ Celery	_____	÷ 2.64	= _____
_____ Corn, Sweet	_____	÷ 1.10	= _____
_____ Cucumbers	_____	÷ 2.20	= _____
_____ Garlic	_____	÷ 0.40	= _____
_____ Kale, Large Leaf	_____	÷ 2.85	= _____
_____ Leeks	_____	÷ 1.76	= _____
_____ Lettuce	_____	÷ 0.44	= _____
_____ Melons	_____	÷ 1.76	= _____
_____ Onions	_____	÷ 1.32	= _____
_____ Parsnips	_____	÷ 1.30	= _____
_____ Peas, Shelling	_____	÷ 0.33	= _____
_____ Peas, Snap	_____	÷ 0.44	= _____
_____ Peppers, Sweet	_____	÷ 1.76	= _____
_____ Potatoes	_____	÷ 1.32	= _____
_____ Radishes	_____	÷ 0.60	= _____
_____ Spinach, Baby	_____	÷ 0.22	= _____
_____ Squash, Summer	_____	÷ 2.20	= _____
_____ Squash, Winter	_____	÷ 1.76	= _____
_____ Strawberries	_____	÷ 0.40	= _____
_____ Tomatoes	_____	÷ 2.20	= _____

Total Production Area Required (not including walkways) _____ sqft

YOUR GARDEN LAYOUT

Alright, now we're getting to the fun part! You are ready to draft a bed layout for your entire garden. Start by sketching the outer dimensions of your garden space. Then organize your calculated production area for each crop neatly within those boundaries. Can you make it work? If your crops don't fit or you end up with extra space, revisit your production calculator to make adjustments as needed.



☐
GARDEN AREA WORKSPACE
SCALE: = _____

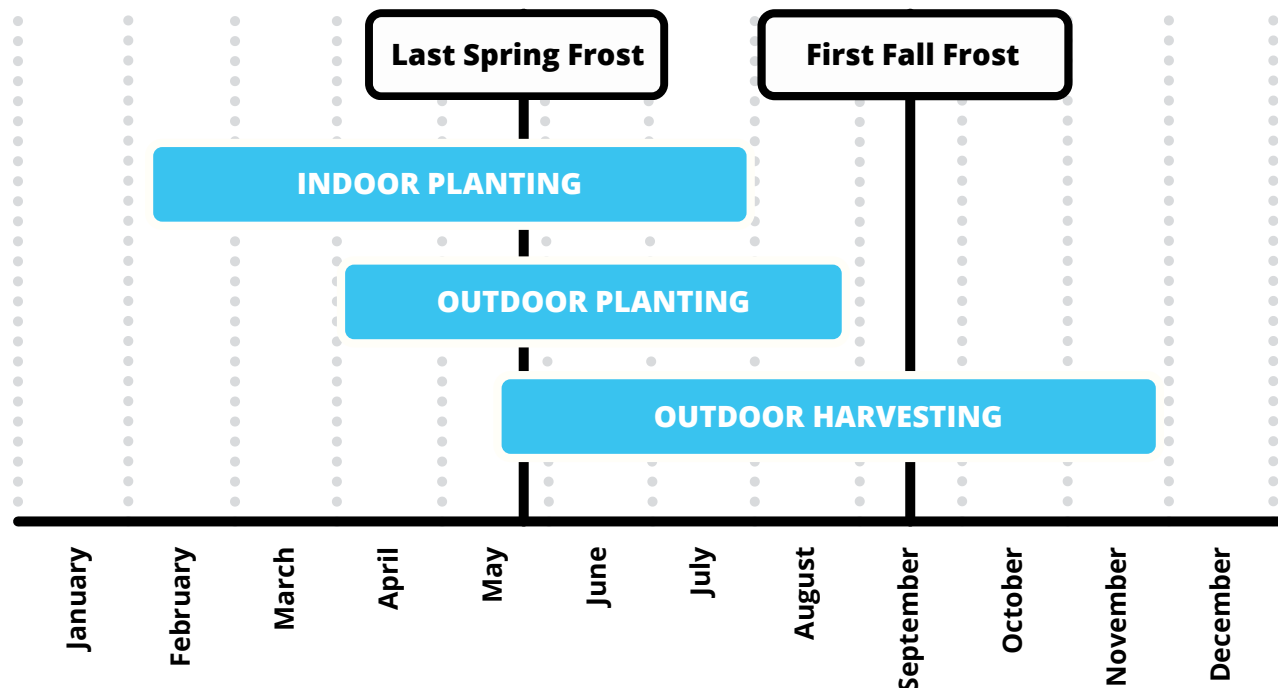
GARDEN OPTIMIZATION

Increasing production is a matter of timing.

The timing of your actions as a vegetable grower can make or break the performance of your garden. Perfectly healthy transplants can quickly perish if planted at the wrong time, and bumper crops can pass you by if you are unaware of the ideal harvest window. Alternatively, when you understand the importance of timing, a whole new world of gardening becomes available. New planning strategies open up growing space you never knew you had and the quality and quantity of your harvests can increase dramatically.

The common misconception about the timing of vegetable gardens is that the planting is done in the spring and the harvesting is done in the fall. While it really is that simple for the large scale grain farms that operate around us, small scale vegetable growing can operate on entirely different timelines. The timeline below shows how much larger the planting and harvesting windows can be for the small scale vegetable grower.

Our Planting and Harvesting Seasons in Saskatoon

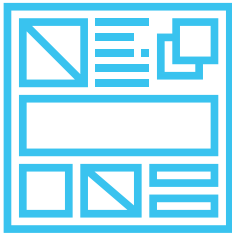


A TIME-BASED PLANNING SYSTEM

As a vegetable grower, you may be familiar with some major limitations when it comes to planning your garden space. Common planning tools like site plans and calendars can be helpful, but they also hinder the planning process by limiting your perspective.



The problem with a typical garden **CALENDAR** is that it doesn't show where all of your plants are spatially. Opportunities are missed and mistakes are made because it's so easy to lose track of your physical plan.

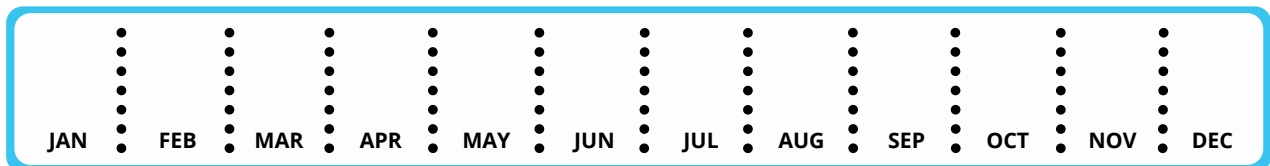


The problem with a typical garden **SITE PLAN** is that it doesn't show how the plan changes throughout the season. The layout drawn can represent your garden for one moment, but in reality, there are changes every week.

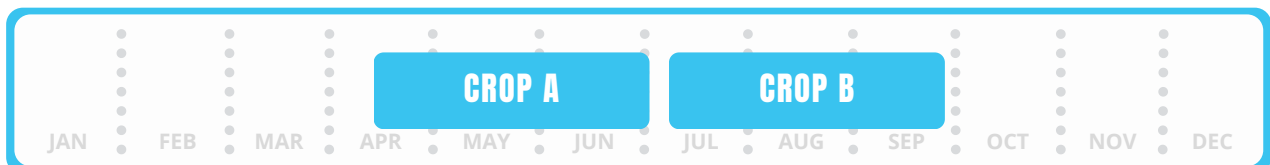
When you learn to represent both space and time with our garden planning system, you will become more aware of patterns and opportunities in your growing space, and that knowledge can help you take your growing to the next level. Plus, it's super fun!

The planning system we use today has evolved from paper, to magnet boards, and finally to a digital version to facilitate easy sharing. Here are the main principles.

First, a garden space is organized into standard sized bed labels designed to track time throughout the growing season.

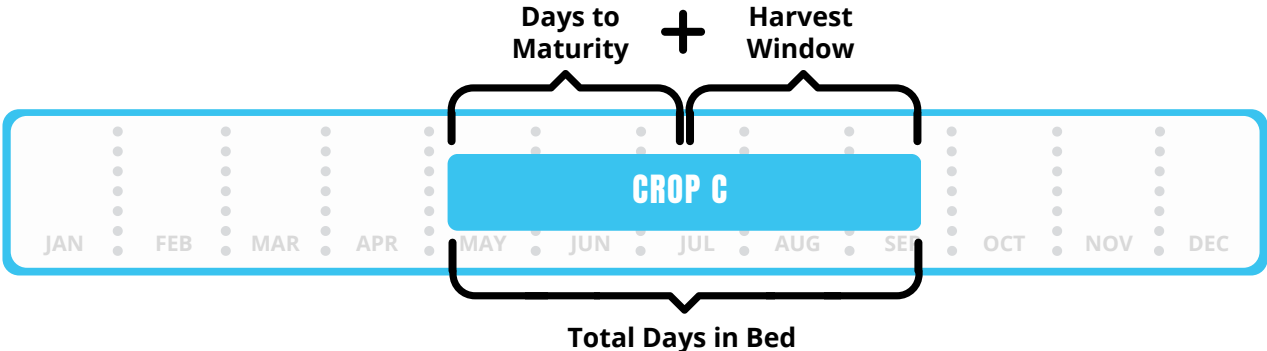


Next, these garden beds are "planted" with crop labels, and the length of each crop label corresponds to the length of time it will need to be in the bed.



BED TIMING

The first question growers usually have when using this time-based planning system is about how long the crop labels should be. The crop labels must simply account for growing and harvesting time, but if you are new to vegetable growing or you have not kept detailed records of your planting and harvesting dates, this information about crop timing is very hard to come by. In the future, your own records will be your best resource for timing information, but this page will give you a head start.



The table below lists common vegetables and the typical length of time they will need to be in a garden bed. The days to maturity number listed on seed packages is just the average length of time for a plant to reach maturity. The number of days to maturity DOES NOT include the harvest window, but our crop labels must account for this.

Crop	Total Days in Bed	Crop	Total Days in Bed
Beans, Bush (DS)	75	Lettuce (T)	30 - 45
Beans, Pole (DS)	120	Melons (T)	105
Beets (T)	75 -90	Onions (T)	105
Broccoli (T)	75	Parsnips (DS)	150
Broccolini (T)	150	Peas (DS)	75
Cabbage (T)	60	Peppers (T)	120
Carrots (DS)	75 - 90	Potatoes (DS)	105 -150
Cauliflower (T)	75	Radishes (DS)	30
Celery (T)	120	Squash, Summer (T)	120
Corn (DS)	90	Squash, Winter (T)	120
Cucumbers (T)	120	Spinach (DS)	30 - 45
Garlic (DS)	Overwintered	Swiss Chard (T)	150+
Kale (T)	150+	Tomatoes (T)	120
Leeks (T)	150+	Turnips, Salad (DS)	60

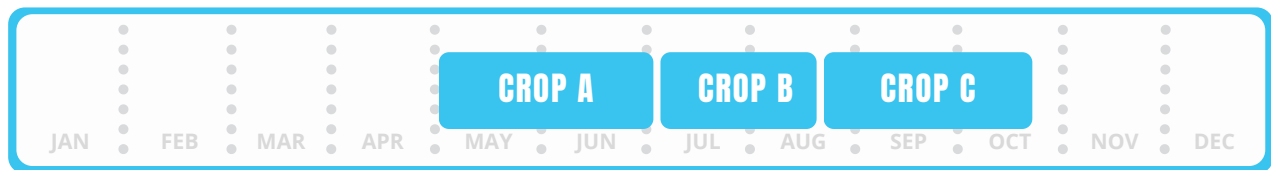
DS = Direct Seeded T = Transplanted

ADVANCED PLANNING TECHNIQUES

One of the real strengths of this time based planning system is that it gives us a language for expressing more advanced planning techniques. These techniques can make a massive difference in your ability to maximize production, perfect your timing, and avoid wasted space in your garden.

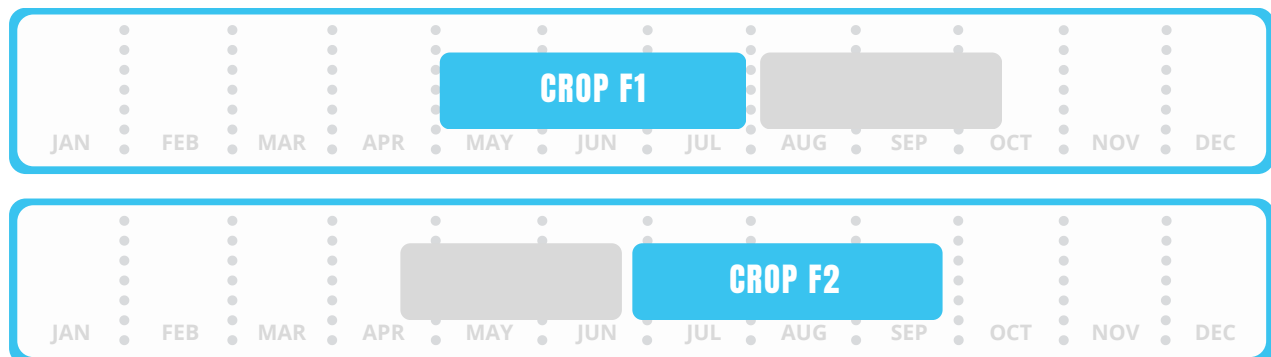
Relay Planting

Relay planting is the act of planting multiple crops in the same bed at different times in the same season. This practice can help you grow more food without increasing the size and cost your garden space. The time-based planning system makes it easy to keep track of the times during which each crop will occupy a bed. In the relay planting example below, the short bed label of crop A reveals that there is available bed space to be planted with additional crops later in the season.



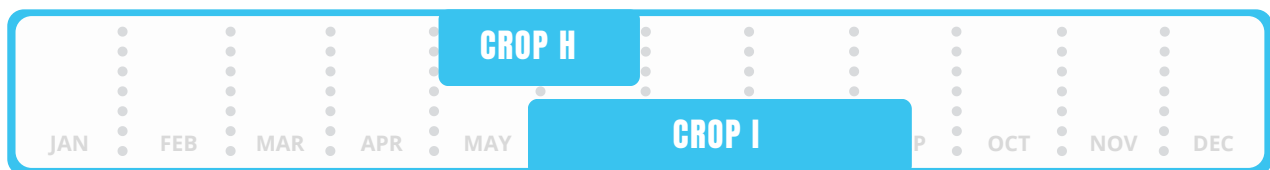
Succession Planting

Succession planting is the act of planting multiple beds of the same crop at different times throughout the season. This practice can help give you a continuous harvest of a crop that would otherwise only be available for a short period of time. The time-based planning system makes it easy to keep track of staggered planting dates of the same crop. In the succession planting example below, crops F1 and F2 could be an early and late planting of carrots. Their planting and harvest dates are clearly shown and the empty bed space before and after these crops is revealed.



Companion Planting

Companion planting is the act of planting multiple crops in the same bed during the same period of time. This strategy can complicate your planning process significantly, but it can also reward you with harvests from spaces you didn't think you had. The time-based planning system allows you to represent two crops in one bed at the same time and even specify the times when each crop will be planted and removed. In the example below, crops H and I occupy the bed at the same time during the month of June. Note that the orientation of the labels does not demand that crop H is on one side of the bed and crop I is on the other side. It simply indicates that they will both occupy the bed at the same time, in any desired planting configuration.



REACHING NEW HEIGHTS

We know now that gardens are simply not just planted in the spring and harvested in the fall. If we limit ourselves to a couple of dates on the calendar, we will miss many opportunities to grow more of our own food. Once you start to use a time based planning system and incorporate these advanced planning techniques, you will open up a whole new world of gardening that will help you customize the timing of your harvests, maximize the use of your space, and increase your production quantities without increasing the size of your garden.

The true limits of a garden space are not determined by certain dates on the calendar, but rather a gardener's ability to meet the needs of their plants. Therefore, every grower must have a solid understanding of the 5 core variables that influence plant growth. In the Grower's Toolkit, you will learn how to control these 5 core variables more effectively to grow healthier plants and stretch the limits of your growing season.

