

## Chapter 1 The Plant Cycle

I need to begin by discussing the life cycle from seed to plant, to its last dying day.

**In order to feed, water, and nurture the plant, using natural methods, we have to understand the entire process and its inner workings.** We'll go over each component of the plant and its process. **This is a must before we even think about applying the Brown Thumb Green Thumb (BTGT) theorem.**

You may want to skip this chapter, but you'll probably come back to it. Like a kid learning how to drive, s/he doesn't care about all of its inner workings, they just want to get behind the wheel and go. However, If the car breaks down, they won't know what to do to get back on the road again, and if you don't understand it, you can't fix it. This could be as simple as changing a tire or replacing a fuse in a car on the side of the road.

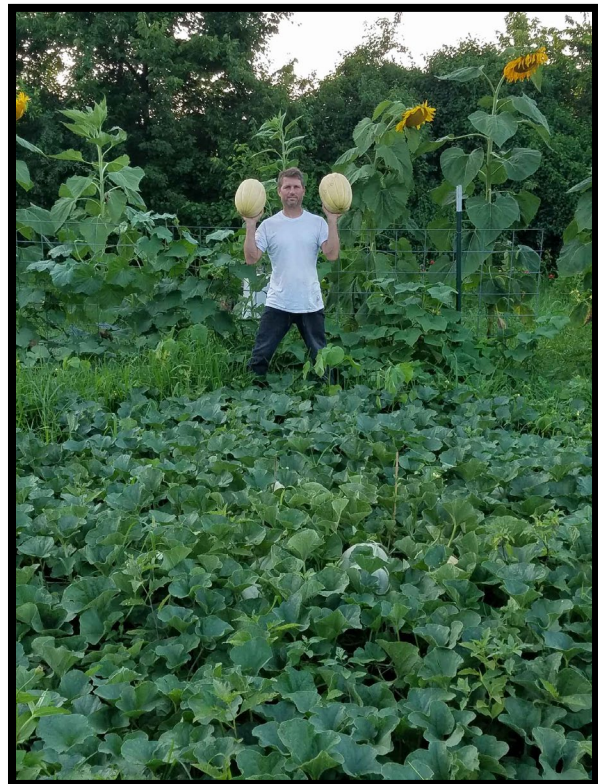
This is important in order to have a thriving garden. Plants don't have a brain and cars don't either (relatively speaking). WE are the brains behind vehicles and plants.

Plants only react to the environment they grow in. A car only reacts to the way we control it. We convey to the plants in the garden how we want them to grow by where we place them, what we feed them, how we water and prune, and so on. **BTGT is not a theory I created.** It's what I'm calling my perspective of nature and methodology for growing plants.

Like I said in the intro, everyone has their way of growing. I hope you get their perspective as well as mine. I'm only writing and sharing because I know the frustrations and struggles you have, even if this book only serves as one piece of the puzzle you've been looking for.

**Pay close attention and write notes if you need to,** because this process will play a big role in how we prepare, feed, water, and maintain the plant throughout the growing season. I think you'll be extremely excited to get started after reading this book and applying nature, like you see in the pictures below.

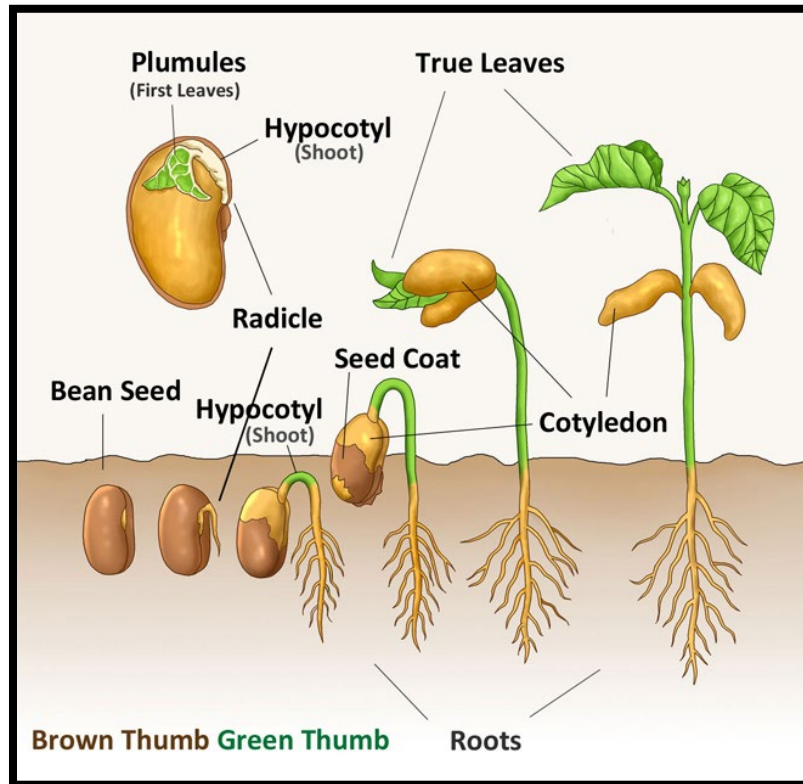
# Brown Thumb Green Thumb



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## Seeds

I'll first begin by discussing the 6 cycles of plants, then add one more. Like every part of the plant, the seed is one of the most fascinating to me. It may not be seen from the naked eye, but the seed is actually an identical clone of the plant. It's just in a much different shape, but all of its components are there.



Why is this important? We want to nurture the seed like we would the plant that we want to grow. It'll have all the same basic needs (light is not needed yet), whether you start the germination process from a standalone dry seed, to sprouting directly out of the body of the fruit (wet seeds).

Assuming preferred temperatures are in place, a seed needs three things:

- Water
- Food
- Oxygen

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**Water** can come in many forms of moisture. Water is needed to penetrate the hard outer shell (seed coat) and begins the process of moving food throughout the seed.

**Food** is the sugars that are stored within the seed and make up most of the seed. The two leaves that first emerge, are called dicotyledon (di – meaning two). This food source allows the seed to grow without light for a period of days, not that you should let that happen.

*Note:*

A seed planted too far into the soil has a higher risk of running out of food supply before it reaches the top where it'll be in desperate need of photosynthesis.

**Oxygen** allows the germination process to begin. Without air/oxygen the seed will not germinate or grow at all. Oxygen is the fuel for the food and isn't any different than humans, animals, or even cars. Plants need oxygen like they need carbon dioxide.

After the two cotyledons have emerged, and we see a noticeable stem (shoot or hypocotyl), it's now a seedling.

## Seedlings

A seedling is the vegetative components of full-grown plants without the flowers, fruit, or any other reproductive parts. It basically consists of:

- Roots
- Shoot
- Dying dicotyledon
- Leaves

There are other scientific identifiers, but they're not relevant to this chapter.

A **root** sprouts from the seed, known as the radicle. It grows downward and horizontal (X axis is important for later) becoming elongated and sending out branches of roots.

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These roots will grow tiny hair-like cells as it matures. The root hairs are about 15 micrometers in size, compared to human hair that is about 50 microns. That's small enough to intake bacteria but filter out larger harmful microbes.

Root hairs perform most of the water absorption and are able to act as a filter due to their small size. It wouldn't be good for a plant to suck up everything in its path. It does this to ensure that only beneficial microbes and nutrients are drawn in.

Phosphorus is an important element at this stage as it energizes rooting as well as flowering. A bigger root system will allow maximum nutrient uptake.

A **shoot** emerges almost as soft and tender as the root. As it grows taller and thicker into the stem, the outer vascular system dies and mainly becomes a channel way for water.

The **dicotyledon** that stored the initial fuel/food will usually turn yellow and wither away, sometimes falling off.

The first **leaves** shoot up from the cotyledon in anticipation to begin their main function of photosynthesis, using light and CO<sub>2</sub> to produce food (sugar) for the vegetative growth process.

**Without light there can be no plants. That's half of the equation.** For those that grow indoors, I'll get into this discussion in more depth as we discuss the full spectrum of the rainbow. Light will be one of our biggest factors for plant growth and carbon fixation.

## Vegetative

The vegetative or growth stage will be the most crucial phase as the plant is now beginning to grow rapidly by sending out more roots and root hairs vertically and horizontally as it searches out nutrients within the soil.

Which direction roots grow can depend upon where the available nutrients are located in the surrounding soil at that particular time.