

# THE SOLANACEAE

## LESSON SIX

### Growing the Solanaceae

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In this lesson we will learn about growing different members of the Solanaceae. Remember, younger members have to grow one type of Solanaceae, older members have to grow at least two members. In this lesson there is growing information on tomatoes, peppers and potatoes. Read the information and answer the questions at the end of the lesson for the plants you are growing. Parts of the lesson are underlined. Younger members can ignore these parts. **Make sure you do everything that is in bold print**, answer all the questions and do one of the projects at the end of the chapter. WORDS PRINTED IN ALL CAPITALS are in the glossary at the end of the chapter.

## INTRODUCTION

Before we study the specifics about growing potatoes, peppers, and tomatoes, we need to understand some basic ideas about how and when plants grow. As we learned in Lesson Two, potatoes, peppers, and tomatoes are ANNUALS or PERENNIALS grown as ANNUALS. They are also WARM SEASON PLANTS.

### A. WARM SEASON PLANTS

Vegetable gardeners as well as farmers must carefully observe the proper planting times for vegetables. In the United States, temperature is the most important environmental factor which determines planting times. Plants are divided into two groups, WARM SEASON and COOL SEASON plants.

WARM SEASON, also called TENDER, plants do best in the warm summer months. They cannot withstand FROSTS or FREEZES. FROSTS and FREEZES will injure or kill WARM SEASON plants. WARM SEASON plants must be planted, or transplanted outside, after all danger of FROST has passed. WARM SEASON plants have to produce their crop before any FROSTS in late summer or fall.

What is a FROST or a FREEZE? The classification of FREEZE temperatures is based on the effects of the temperature on plants. LIGHT FREEZES (29 to 32 F) will kill TENDER plants, but have little effect on other vegetation. LIGHT

FREEZES are considered FROSTS. MODERATE FREEZE (25 to 28 F) is destructive to most vegetation, especially to fruit blossoms, tender and semi-hardy plants. A SEVERE FREEZE (24 F and below) will damage most plants.

At <http://www.victoryseeds.com/frost/oh.html> (Attachment A) you will find a chart with the average last and first FROSTS for our part of Ohio. Based on statistics, there is a 10% chance that a frost will occur outside the dates listed. Use the attachment to answer these questions.

**When do you think you can plant WARM SEASON PLANTS?** \_\_\_\_\_

**What is the latest date by which WARM SEASON plants must produce their crops?** \_\_\_\_\_

The number of days between the last FROST and the first FROST determines the number of GROWING SEASON days. Right next to Lake Erie, the GROWING SEASON is 200 days long. In central Ohio it is only 140 days long.

**Why is there such a difference?**

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WARM SEASON plants include many of our other favorite garden vegetables, for example corn, squash, melons, and cucumbers.

The opposite of WARM SEASON plants are COOL SEASON plants. COOL SEASON plants need lower temperatures to perform their best and can tolerate the below-freezing temperatures of Ohio's spring and fall seasons. COOL SEASON vegetables include carrots, onions, peas, lettuce, and members of the cabbage family.

## **B. ANNUALS**

Many of the Solanaceae are ANNUALS or are PERENNIALS grown as ANNUALS. **Do you remember the definition of an ANNUAL? Write it below:**

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**What other ANNUALS do you find around your home or in your garden?**

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Many of our garden vegetables are not ANNUALS. Some are PERENNIALS. The best example of a PERENNIAL vegetable popular in Ohio is asparagus. Remember, PERENNIALS live for many years and produce seeds many times.

Most of the vegetables that are not ANNUALS, or grown as ANNUALS, are BIENNIALS. You can probably figure out which plants are the BIENNIALS. Which plants do you grow for leaves or roots rather than fruits? Most of the members of the cabbage family, for example broccoli, cabbage, cauliflower are biennials. Other BIENNIALS are carrots, beets and celery. All these plants must be grown for two years before seeds are produced.

## **C. GROWING TOMATOES, PEPPERS, AND POTATOES**

### **Tomatoes**

Tomatoes are the most popular vegetable grown in home gardens. There are several reasons for their popularity. Tomatoes can be used in a number of ways, both fresh and in cooked dishes. They can be frozen as well as canned. Tomatoes are easy to grow and have large yields.

In Ohio, gardeners usually start tomatoes indoors or they buy plants. Because seeds have to be started 8 to 10 weeks before the last frost, buying plants is very popular.

### **Choosing varieties**

At the nursery you will find that tomatoes fall into a few different groups. One set of groups is based on when tomatoes will be ready. Tomatoes take from 55 to 85 days to mature. Another set of groups is based on use characters. Think about the different groups that are described below before you buy your plants.

**Tomato Ladybug Hybrid**  
“The Sweetest Red Cherry Yet!”



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**Cherry** tomatoes are bite-size and very good fresh. They produce many tomatoes.

**Tomato Better Boy Hybrid**  
“Big Yields of Big Fruits”



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**Main Crop** tomatoes mature in mid season. They are high producers, have large tomatoes that are round and meaty.

**Tomato La Rossa Hybrid**  
“These Pear-shaped Treats are the Best for Sauces!”



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**Plum or Roma** are small and plum shaped with a pointy bottom end. They are not juicy. They are used to make tomato paste, sauce and ketchup.

**Tomato Big Beef Hybrid**  
“TWICE the Yields of Most Other Giant Beefsteaks!”



© Park Seeds. Used with permission  
**Beefsteak** tomatoes are extra big, flavorful, and juicy.

**Tomato Keepsake Hybrid**  
“Remains Sweet and Firm for Up to 6 Weeks After Harvest!”



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**Long Keepers** are usually small and yellow-orange. They can be stored for months in a cool dark place.

Some  
tomatoes  
to  
choose  
from!

## Growing tomatoes

Read the fact sheet *Growing Tomatoes in the Home Garden* – Attachment B (<http://ohioline.osu.edu/hyg-fact/1000/1624.html>)

Here are a few extra tips:

1. Tomato plants will be injured or die if there is a frost. If you know a frost is coming, cover your plants. Cheap and easy covers are large or extra large plastic disposable cups. Put the cups over the plants at dusk and take them off in the morning. If there is a frost and the plants were not covered, carefully spray the plants with water before the sun comes up. The water will melt the ice off the plants and may save them.
2. Tomatoes should be well watered. Deep watering is the best. Water the roots directly, try not to get water on the leaves. Dry leaves will help prevent diseases. Don't water at night.
3. Remember, some tomatoes do best when staked. Start staking early.
4. Once you have fruit, store the tomatoes in a cool dry place but not in the refrigerator. Tomatoes lose their flavor quickly when refrigerated. Do not put them in direct sunlight. In the fall, before frosts hit, pick green and orange tomatoes. Wash them and rinse them in a bleach solution (one tablespoon per gallon of water). Make sure they are dry and then place the fruit in a cool, dry and dark place. When you want to ripen these tomatoes, place them in a warm sunny window.

## Peppers

Peppers are becoming the second most popular vegetable for the home garden. Growing peppers is lots of fun. There are so many different kinds. They come in different shapes, sizes, and colors. Peppers are also used in some of our favorite types of foods, oriental and Mexican.




In Ohio, gardeners usually start peppers indoors or they buy plants. Because seeds have to be started 8 to 10 weeks before the last frost, buying plants is very popular.

## Choosing varieties

At the nursery you will find many different types of peppers. The first choice you must make is whether you want hot or sweet peppers. This is a matter of taste. Remember if you get hot peppers, not everyone can eat them. Also, remember peppers differ in how hot – there is hot to extremely hot. Peppers from Mexico, China and Thailand are often the hottest.

When you have decided on sweet and hot, choose the color. Peppers eventually turn red, but peppers turn a variety of wonderful colors first, including yellow, orange and even a purple.

Last but not least is shape. There are the traditional “bell” peppers, long and slender peppers, and the small round or cherry peppers.

<p><b>Pepper Cherry Pick Hybrid</b></p> <p><b>“At Last, a Sweet Cherry Pepper Good Enough for Park Gardeners!”</b></p>  <p>© Park Seeds. Used with permission</p>	<p><b>Pepper Giant Thai Hot</b></p> <p><b>“Wicked little 2-inch peppers really pack in the heat at 6,000 Scovilles.”</b></p>  <p>© Park Seeds. Used with permission</p>	<p><b>Pepper Park's Early Thickset Hybrid Improved</b></p> <p><b>Thick-walled, 3- to 4-lobed bright red fruit arises in clusters of a dozen or more!</b></p>  <p>© Park Seeds. Used with permission</p>
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Read the fact sheet *Growing Peppers in the Home Garden* – Attachment 3 (<http://ohioline.osu.edu/hyg-fact/1000/1618.html>)

Here are a few extra tips:

1. Peppers can be picked once they have reached their full size. You do not have to wait for them to turn color. They are great green too.
2. When harvesting fruit, use a knife or scissors. Pepper plants can be easily damaged. Don't rub your eyes if you are working with peppers. The oils can irritate your eyes and the skin on your face.
3. Peppers are self pollinating. However, sometimes they will be pollinated by insects. This is not a problem unless you want to save your seeds for next year. You may be surprised by the peppers resulting from your hot and sweet peppers.

crossing. To prevent this, plant your different peppers as far from each other as possible

## Potatoes

Potatoes are one of our favorite foods, from mashed to French to chips. What can't you do with a potato? It is surprising so few people grow potatoes. Most people will recognize a tomato plant, few would recognize a potato plant. Most people do not know that what they eat is a modified STEM.

### Choosing varieties

While tomatoes and peppers are chosen for eye appeal as well as taste, choosing potatoes is based on how it will be used. Remember these basics from Lesson Three.

**Idahos or Russets** are famous as baking potatoes

**White potatoes** can be used for everything

**Red potatoes** hold their shape and are great in salads and stews

**Yellow flesh** beautiful yellow color, great for many uses

**Blue or purple** interesting colored flesh and great nutty flavor

**Fingerlings**



Also remember, different varieties take different times to mature. Early varieties are ready in 70 to 90 days, mid season potatoes take 90 to 120 days, and late potatoes take 120 to 140 days.

## Growing potatoes

Read the fact sheet *Growing Potatoes in the Home Garden – Attachment 3* (<http://ohioline.osu.edu/hyg-fact/1000/1619.html>)

Here are a few extra tips:

1. The most common way to plant potatoes is in hills. Prepare and loosen the soil where you will make a hill. Place 2 to 3 SEED POTATOES onto the ground. Cover the SEED POTATOES with 3 or 4 inches of soil. Water the hill well. Hills should be one foot apart.

As the potato plant grows place more soil around the plant. You should do this every one or two weeks. Do not let the developing tubers be exposed to the sunlight.

You can use mulch, compost and black plastic around the plants.

2. After a few weeks, carefully dig down through the roots. If potatoes are large enough you can harvest some. Be careful not to cut the main root. Cover the disturbed area with soil. Once the plants are large, you can keep harvesting potatoes as you need them. The plant will keep growing.

3. After the plants have died because of frosts, you can dig up the entire plant and get the rest of the potatoes. Don't dig too close to the plant, you will slice the potatoes. You do not have to dig all the potatoes up at once. The potatoes can remain in the ground for weeks.

## QUESTIONS FOR LESSON SIX

Answer questions for the plants you are growing on a separate piece of paper.

### Tomatoes

1. What happens to flowers if night temperature are below 55 and days are above 90 degrees?
2. What happens if you use too much fertilizer?
3. When buying plants what should you look for?
4. How deep should you plant your transplants?
5. What happens to fruits when there is too much water?
6. What happens to fruits if there is not enough water?

## Peppers

1. What happens to flowers if night temperatures are below 60 and day temperatures are above 80 or 90 degrees?
2. What happens to flowers if there is not enough water?
3. When buying plants what should you look for?

## Potatoes

1. What is hilling?
2. Why do you need to “hill” the potatoes?
3. How should you apply fertilizer?

## PROJECTS FOR LESSON SIX

Do one of the following projects.

1. Using a seed catalogue make a list or a poster of warm and cool season plants.
2. Find a recipe using a Solanaceae. Make the dish and write a recipe card. Include the opinions of your family on the card.

## GLOSSARY FOR LESSON SIX

**annual** - Plants which completes its life cycle in one year.

**biennial** - Plant which completes its life cycle in two years

**cool season plant** – Plants which do best in cool weather and which can withstand frosts.

**Freeze** - Injury to plants due to low temperatures converting water to ice and bursting **cells**

**frost** – The air is below 32 F, but the ground is not. Plants are covered with a thin layer of ice crystals

**growing season** – The number of days between the last and first frosts.

**perennial** - A plant whose life cycle lasts for three or more seasons; lasting year after year

**seed potato** – A potato tuber kept for planting, from which a new potato plant grows

**warm season plant** – Plants which can not stand frosts, should be planted after the last frost and must produce before the first frosts.

**hard frost** – A frost where both the air and the soil are below freezing. Many plants will survive a light frost but cannot survive a hard frost.

**light frost** -A frost where the air has dropped below freezing but the ground has not. Many plants can survive a light frost but cannot survive a **hard frost**.

**tender-** Plants which can not stand frosts, should be planted after the last frost and must produce before the first frosts.