

The background is a light blue gradient with several realistic water droplets of various sizes scattered across the surface. Some droplets are at the top, some at the bottom, and some on the sides, creating a fresh and clean aesthetic.

# THE JOY OF SOWING SEEDS

**BY**

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# Introduction and Nomenclature

GERANIUM OR PELAGONIUM?





# HARDY PERENNIAL CRANESBILL



Photos by V. Shipp





Pelargós







# PELAGONIUMS



*Pelargonium x hortorum* (zonal)



# APPLEBLOSSOM HYBRID





# PINTO PREMIUM LAVENDER



Photo by V. Shipp

# GETTING STARTED

- ✓ Use any clean, empty plastic container
- ✓ Puncture holes in bottom
- ✓ Keep hinged lids for time being





# GETTING STARTED

- ✓ Soiless mixture of sphagnum peat moss and perlite





# GETTING STARTED

## INGREDIENTS

This product is formulated from sphagnum peat moss, perlite, fertilizer (see below) and a wetting agent.

In Georgia this product is formulated from 85-95% sphagnum peat moss, perlite, fertilizer (see below) and a wetting agent.

NET WEIGHT 2.8 lb (1.27 kg)

® Seed Starting Potting Mix 0.03-0.03-0.03

## GUARANTEED ANALYSIS

F 1144

Total nitrogen (N) ..... 0.03%

0.015% ammoniacal nitrogen

0.015% nitrate nitrogen

Available phosphate ( $P_2O_5$ ) ..... 0.03%

Soluble potash ( $K_2O$ ) ..... 0.03%

Derived from: ammonium nitrate, ammonium phosphate, calcium phosphate and potassium sulfate.

Information regarding the contents and levels of metals in this product is available on the Internet at <http://www.regulatory-info-sc.com>

- ✓ **Nitrogen** promotes growth and enables chlorophyll production in dark, green leaves
  - ✓ Necessary for photosynthesis
- ✓ **Phosphorus** promotes early, rapid root growth and blooming
  - ✓ Improves water uptake by roots
  - ✓ Helps store and transfer energy
  - ✓ Is essential in DNA
- ✓ **Potassium** (or potash) promotes stronger growth and development
  - ✓ Helps plants fight disease
  - ✓ Makes plants more winter-hardy

# ELEMENTS AND NUTRIENTS PLANTS NEED

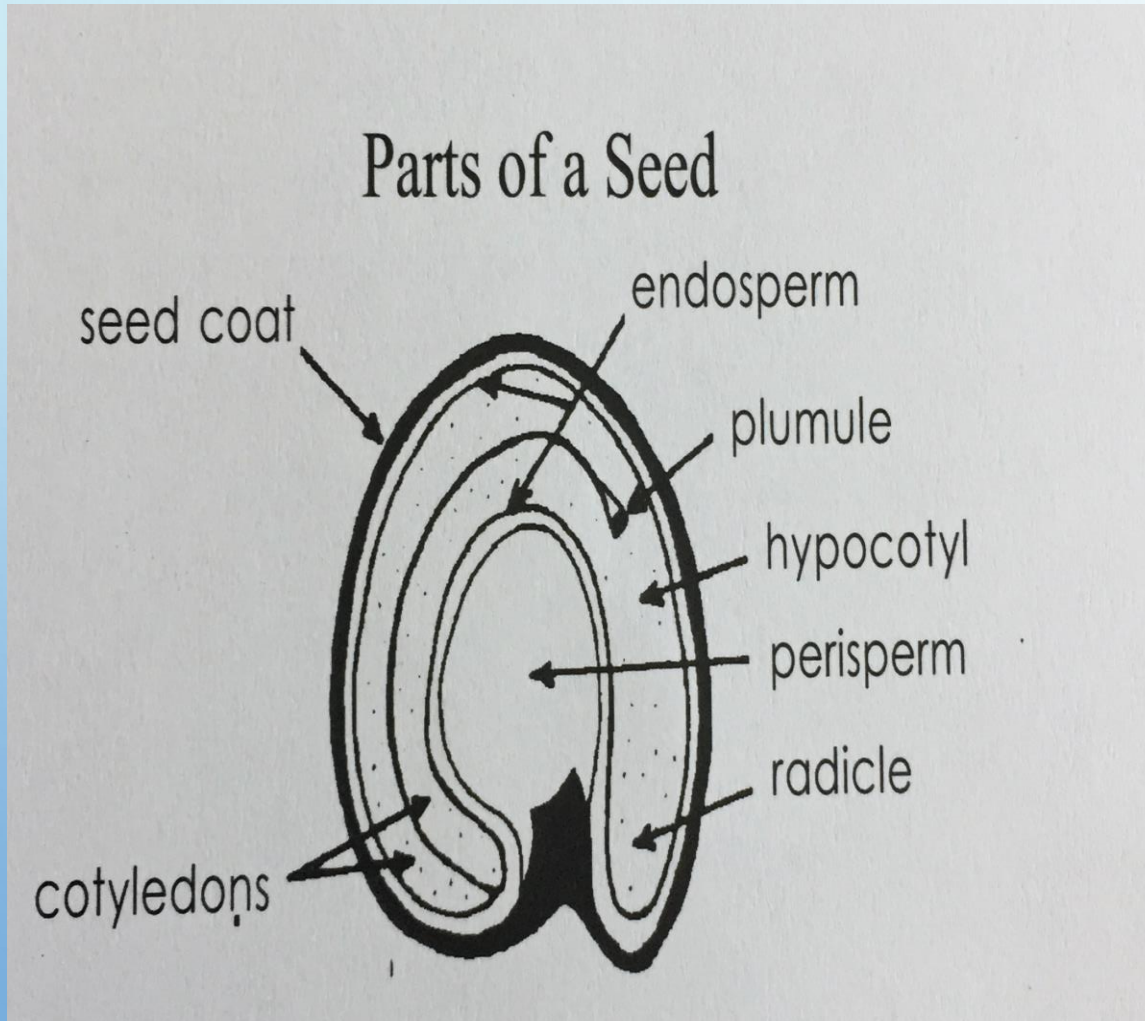
- ✓ Carbon dioxide ( $\text{CO}_2$ ), water ( $\text{H}_2\text{O}$ ) and oxygen ( $\text{O}_2$ )
- ✓ Plants take in nutrients through root hairs
- ✓ Three most important major elements:
  - ✓ Nitrogen, Phosphorus and Potassium = NPK
  - ✓ Also needed are Calcium, Magnesium and Sulphur = Ca, Mg and S

# GERMINATION

- ✓ Seed coat receives water to initiate embryonic growth
- ✓ Key environmental conditions for growth:
  - ✓ Oxygen
  - ✓ Favorable temperature
  - ✓ Water
  - ✓ Light (not all seeds require light for germination)



# SO, WHAT IS A SEED?



Drawing from Master Gardner handbook

The embryo is a miniature plant in a dormant state

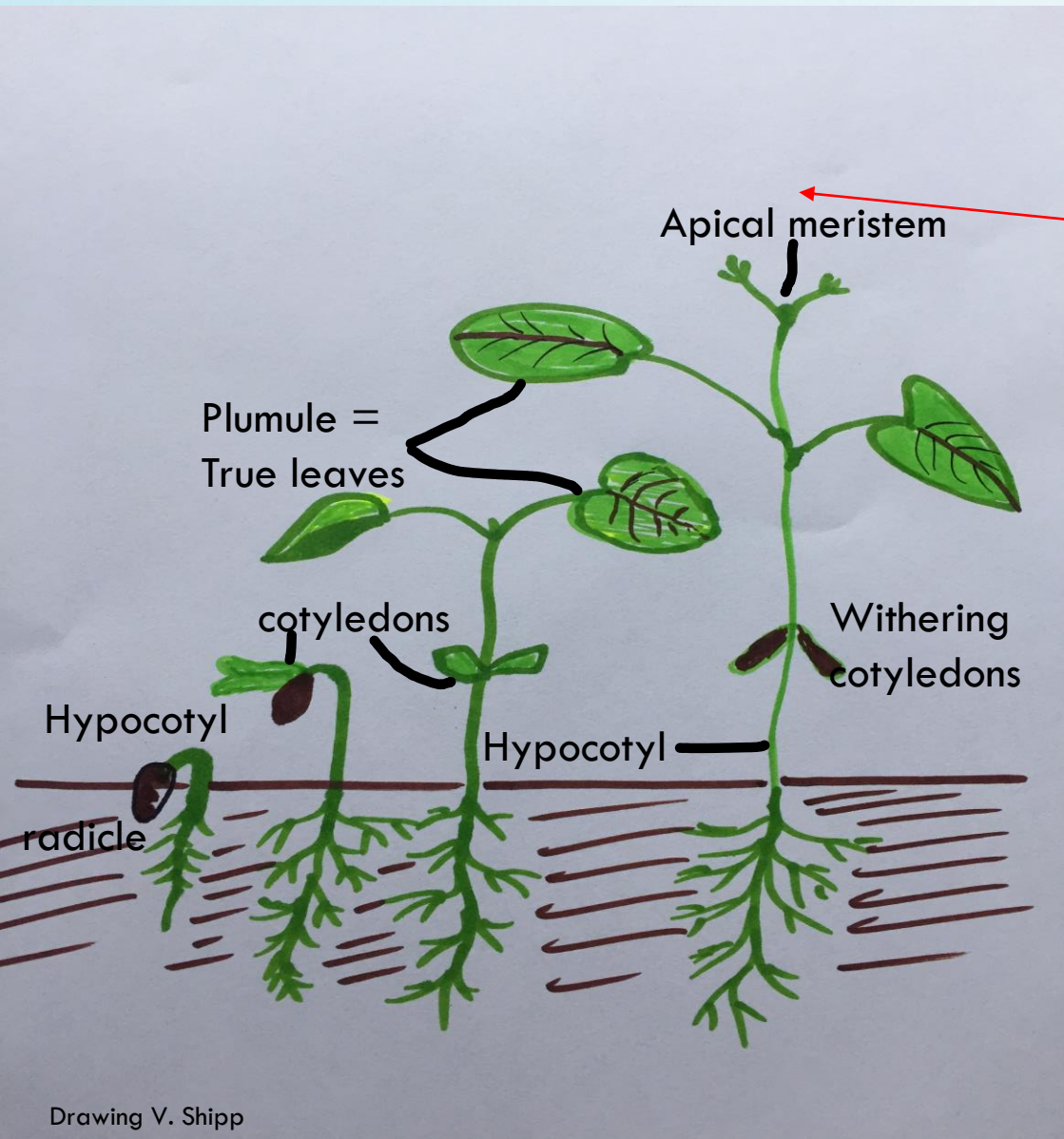
and

the seed or mature ovule is made up of 7 parts

and

Not all seeds are the same size

# PARTS OF A SEED AND HOW IT GROWS



- ✓ Apical meristem is where the active growth cells are located between the xylem and phloem.
- ✓ This tissue will increase the stem's girth as it produces the xylem and phloem



## DAY 2



Seeds planted on January 31st, 2019

- ✓ Water planter before planting seeds
- ✓ Pick up seeds with tweezers if small
- ✓ Lay seeds on top of soil
- ✓ Toothpicks placed to identify positions
- ✓ Place container on a heat pad (24/7)
- ✓ Close lid at night
- ✓ Place in a sunny location during the day



## DAY 4



- ✓ There are 11 seeds in each container
- ✓ The radicle has come out of the seed to enter the soil and the hypocotyl is just emerging
- ✓ Remember to keep the soil moist.

# DAY 7

- ✓ Seedlings have first set of leaves called cotyledons





# DAY 14

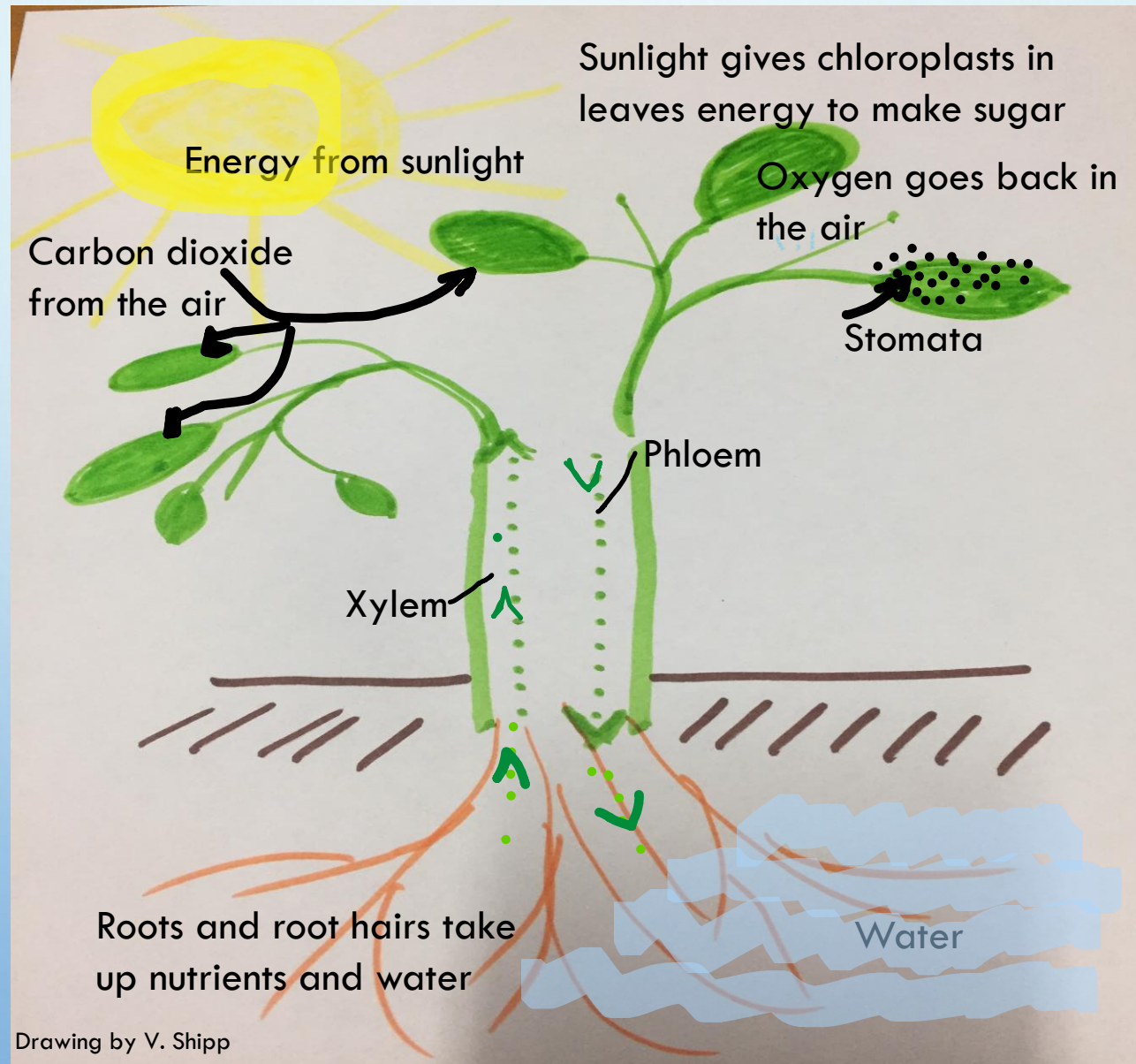


✓ Third leaves are appearing





# WHAT IS PHOTOSYNTHESIS?



## DAY 24



- ✓ Seedlings now have four leaves, two cotyledons and two true leaves
- ✓ You can see how the cotyledons are not the same as the true leaves



## DAY 31

- ✓ Fifth leaf appearing with marking of pelagonium



# POTTING MIX

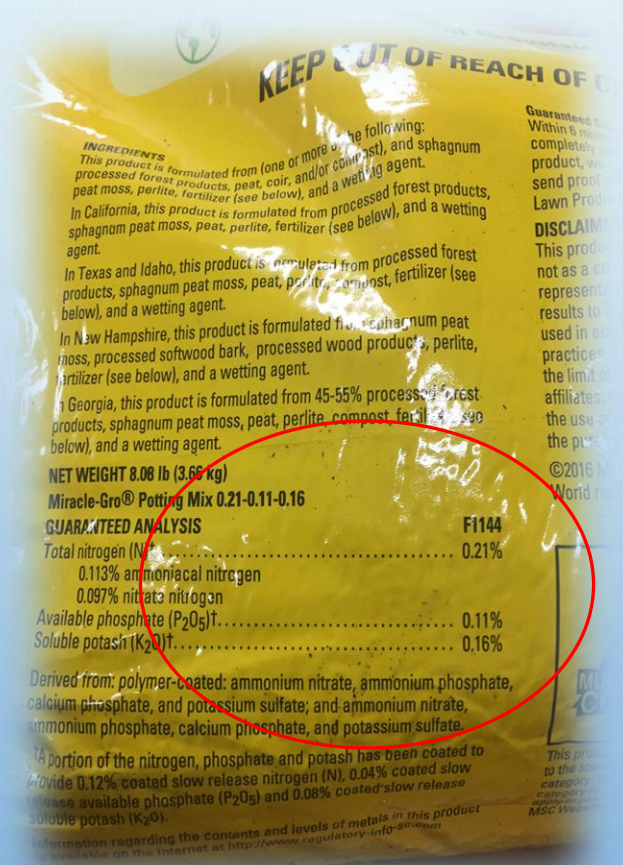


Grows Plants  
Twice As Big!™





# POTTING SOIL WITH AN INCREASED NPK OF .21/.11/.16



# POTTING UP THE SEEDLINGS

- ✓ Separate the seedlings carefully
- ✓ Use an old knife to cut the soil into “squares”





# POTTING UP

- ✓ March 2<sup>nd</sup>, 31<sup>st</sup> day of their lives
- ✓ Put them into 3" clean, plastic pots



# POTTING UP

- ✓ Make a hole in the center of the pot larger than the “square”
- ✓ Insert the seedling and press soil firmly around it
- ✓ Write the labels









# ALL POTTED UP



- ✓ 22 pots of 5 leafed seedlings
- ✓ Keep in bright light, but out of direct sunlight



# MIXING FERTILIZER

- ✓ Old Brita filter jugs make good containers

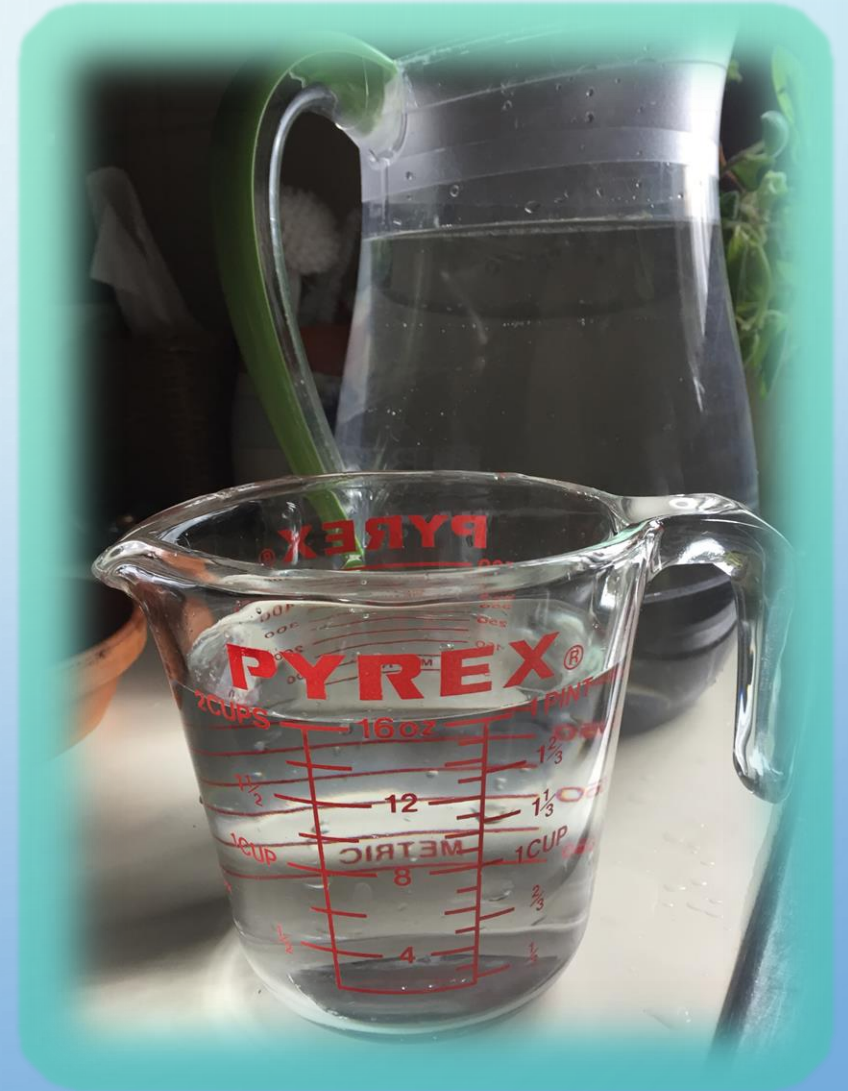




Photo V. Shipp

Fertilizer

# NPK OF 24/8/16

- ✓ Use 1/4 teaspoon to 1 gallon instead of 1 teaspoon
- ✓ Use this diluted mixture every other time seedlings are watered



Expert Gardener® All-Purpose Water Soluble Plant Food  
quickly and completely when mixed with water.  
Plant to feed through both its roots and leaves, for  
results and strong plant growth.

Expert Gardener All-Purpose Water Soluble Plant Food

## GUARANTEED ANALYSIS

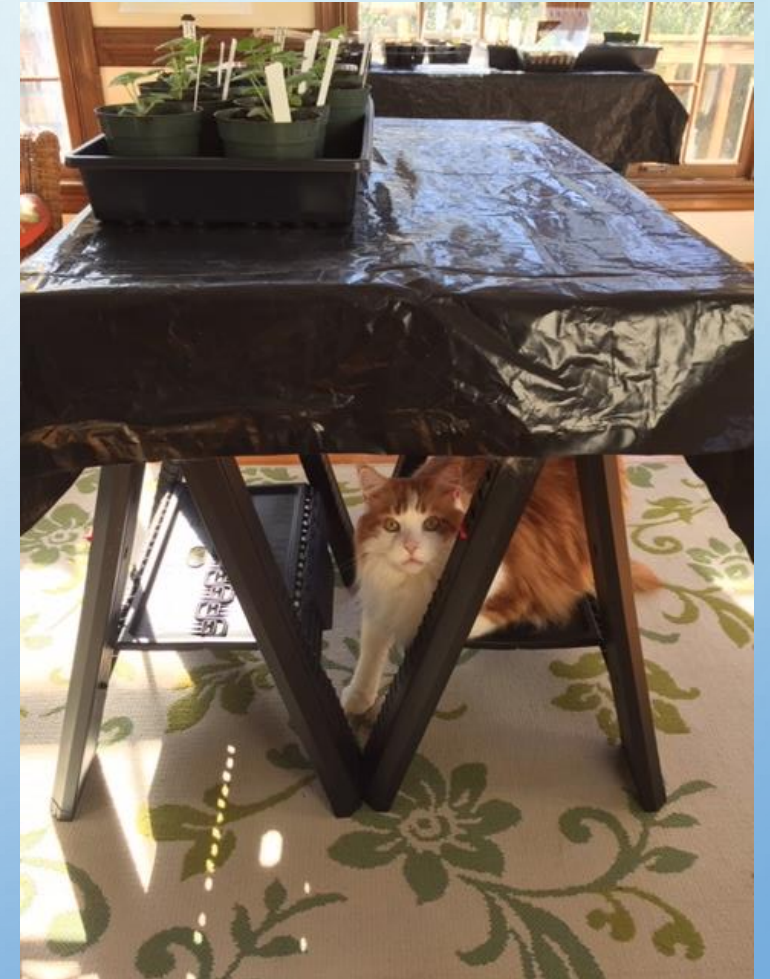
Total Nitrogen (N) .....	24.00%	
3.5% Ammoniacal Nitrogen		
20.5% Urea Nitrogen		
Available Phosphate (P <sub>2</sub> O <sub>5</sub> ) .....	8.00%	
Soluble Potash (K <sub>2</sub> O) .....	16.00%	
Boron (B) .....	0.02%	Derive
Copper (Cu) .....	0.07%	Mono
0.07% Water Soluble Copper (Cu)		Potas
Iron (Fe) .....	0.15%	Phosp
0.15% Chelated Iron		Sulfat
Manganese (Mn) .....	0.05%	Sodi
0.05% Chelated Manganese (Mn)		
Molybdenum (Mo) .....	0.0005%	Infor
Zinc (Zn) .....	0.06%	and
0.06% Water Soluble Zinc (Zn)		is av

**KEEP OUT OF REACH OF**



# DAY 40

- ✓ Seedlings now have 6 leaves and are looking healthy
- ✓ Our 26 lb Maine Coon is keeping an eye on them!



# DAY 46



- ✓ March 17<sup>th</sup> Seventh leaf
- ✓ Remember to keep the soil moist to the touch
- ✓ Have been watering with the reduced fertilizer





# DAY 59



- ✓ Young plants doing very well
- ✓ The zonal markings are beginning to appear on more of the leaves
- ✓ The ninth leaf is appearing at the apical meristem
- ✓ The cotyledons are still there

## DAY 69

- ✓ Plants are growing so quickly now with the tenth leaf appearing
- ✓ After last frost (~ April 15<sup>th</sup>) move outside during the day to harden off for a few hours in shade

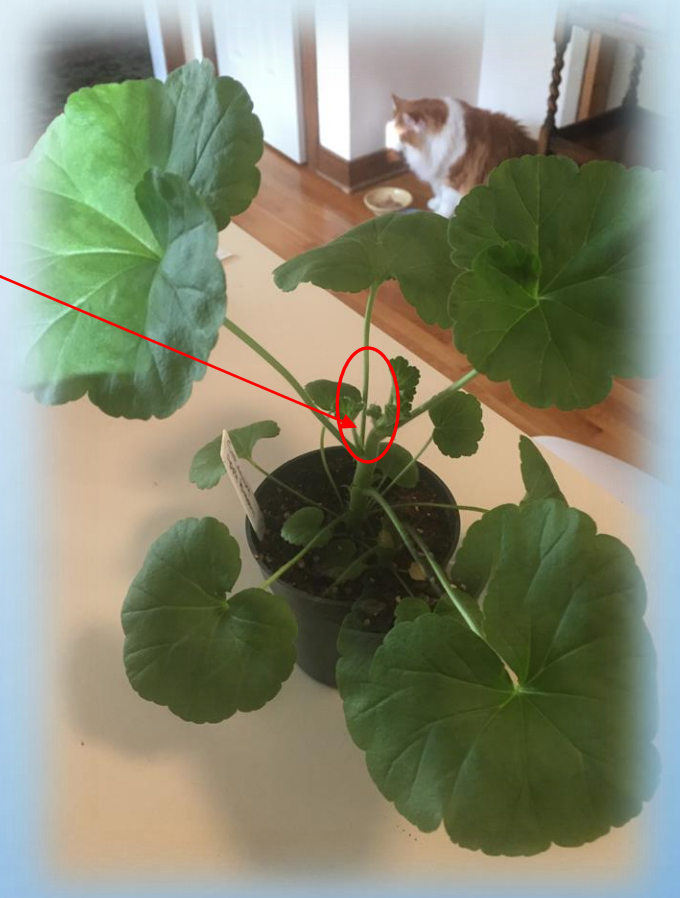




# DAY 82

Flower bud

From day 7 to day 82  
Just 75 days!













- Presentation information taken from:
- Master Gardener Hand Manual
- [www.wikipedia.org](http://www.wikipedia.org)
- [www.ssec.si.edu](http://www.ssec.si.edu)
- Drawing of stork from [www.pdclipart.org](http://www.pdclipart.org)