

# PLANT UNIT: Seeds - 3<sup>rd</sup> grade

**Scientist** – a person who observes, predicts, measures, explores, and asks lots of questions and wonders WHY the world is the way it is! In the school garden we are ALL scientists!

**Botanist** – a scientist who studies plants

**Botany** – the scientific study of plants

(vs. agriculture/farmer, horticulture/horticulturalist or gardener, landscape architect, landscaper, nursery manager (propagates plants), herbology/herbalist, floriculture/florist, etc.)

## WHY are plants important?

- give us air to breathe (oxygen) and absorb carbon dioxide during photosynthesis – we exhale CO<sub>2</sub> and they ‘inhale’ it, they ‘exhale’ O<sub>2</sub> and we inhale it!
- Give us food (either we eat them or we eat the animals that eat them!)
- Give us medicine (site examples!)
- Provide shade (trees)
- Keep erosion in check (by holding down soil with their roots)
- Provide beauty (in our homes, landscapes, celebrations, decorations etc.)
- Provide shelter for animals
- Give us wood for paper/building/burning – give us material (cloth) for clothing/weaving (cotton!)
- Give us color for dyes (site examples!)
- Can students brainstorm other things plants do for people???

## Plant Life Cycle -

Students review 6 stages of life cycle:

1. Seed
2. Dispersal
3. Germination
4. Seedling
5. Mature Plant
6. Death

## Parts of a Plant -

Students review 4 plants parts and functions of each:

Flower – makes seeds (reproduction)

Leaf – makes energy from sun (photosynthesis)

Stem – holds plant uprights (stability)

Roots – anchors plant into ground and absorbs water/nutrients

**Photosynthesis** = the process by which plants make energy from sunlight

<http://www.pbs.org/wgbh/nova/nature/photosynthesis.html>

## Parts of a Seed –

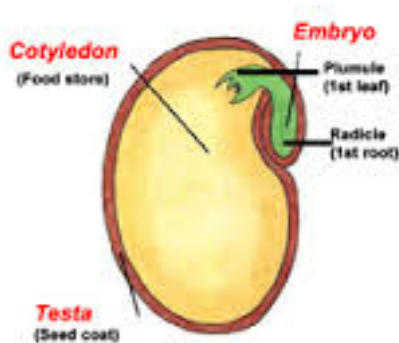
Seeds need water and air to germinate (some need more specific requirements like fire, scarification (a nick or scratch of the seed coat), cold too!)

Students review 3 seed parts and functions of each:

Cotyledon – provides food (energy) for seed to start growing/germinate

Embryo – undeveloped baby plant in the seed

Seed Coat (Testa)– protects the seed



## Seed Dispersal –

Why is it important for seeds to disperse? (unlike animals and people, plants can't move, they are stuck where they are growing so they need to figure out ways for their seeds to travel to new locations to grow – how do they do this?)

Students review 5 ways seeds can be dispersed and locate example in garden:

1. Floaters – **water** – devil's heads from Hudson River
2. Windsurfers – **wind** – maple tree helicopters (samaras), dandelions, milkweed, cotton
3. Exploders – **explosion**/propulsion – Jewel Weed
4. Hitchhikers – **animals/people** – burrs/Burdock
5. Edibles – animals/people – fruits, berries, nuts (pokeweed)
6. Droppers – gravity – climbing beans and gourds

Food for thought: Have students stand in one spot for a moment with their legs 'rooted' to the ground. How would they move? How would they get something from one place to another?! (throw, spit, blow etc.)

Lesson: <http://wonderwise.unl.edu/02teach/urbanact.pdf#page=18>

*\*\*Expansion – Do all plants make seeds? Or are there other ways plants reproduce? Show example of Mother of Thousands plant in the garden that clones itself. People clone plants all the time by taking cuttings – this is called propagating – plants can do*

*this because unlike humans/animals plant cells are undifferentiated meaning they can 'become' or grow into anything, like human stem cells that are in a baby's umbilical cord still at birth. If we chop off an arm and stick it in the ground it won't grow a body, head, legs and turn into a person, but you can chop off a piece of a plant, stick it in the ground, and grow a brand new genetically identical plant!*

**\*\*Also READ: the Amazing Seed article – download pdf under 3<sup>rd</sup> grade lessons**

For seeds to grow, they need to travel to new places in the ground. Here are some ways that they travel:

