Science - Year 5

Living Things and their Habitats – Block 5LvH

The Art of Living

Session 2
Resource Pack

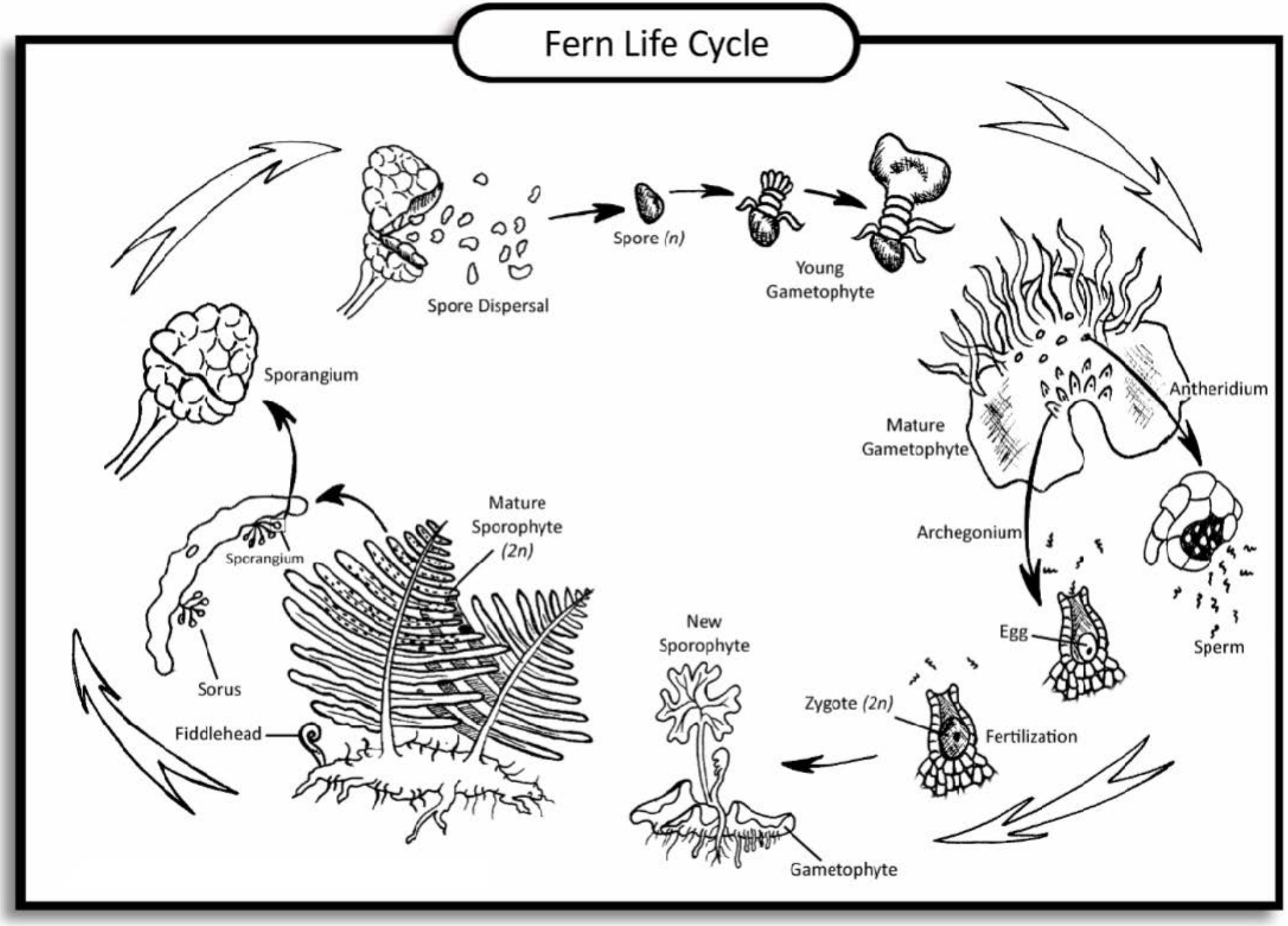
Images of non-flowering plants

Mosses

Liverworts

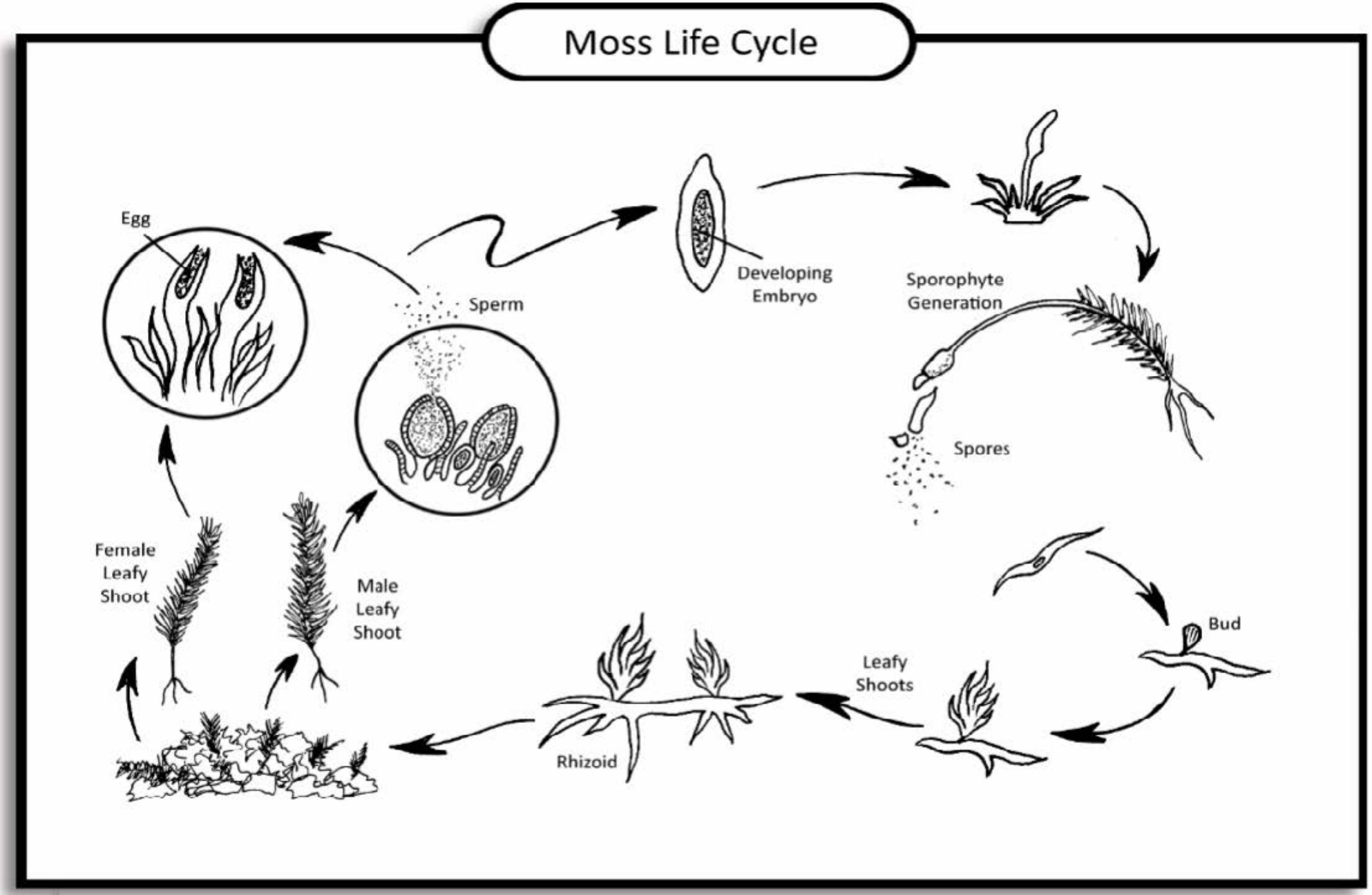
Ferns

Conifers

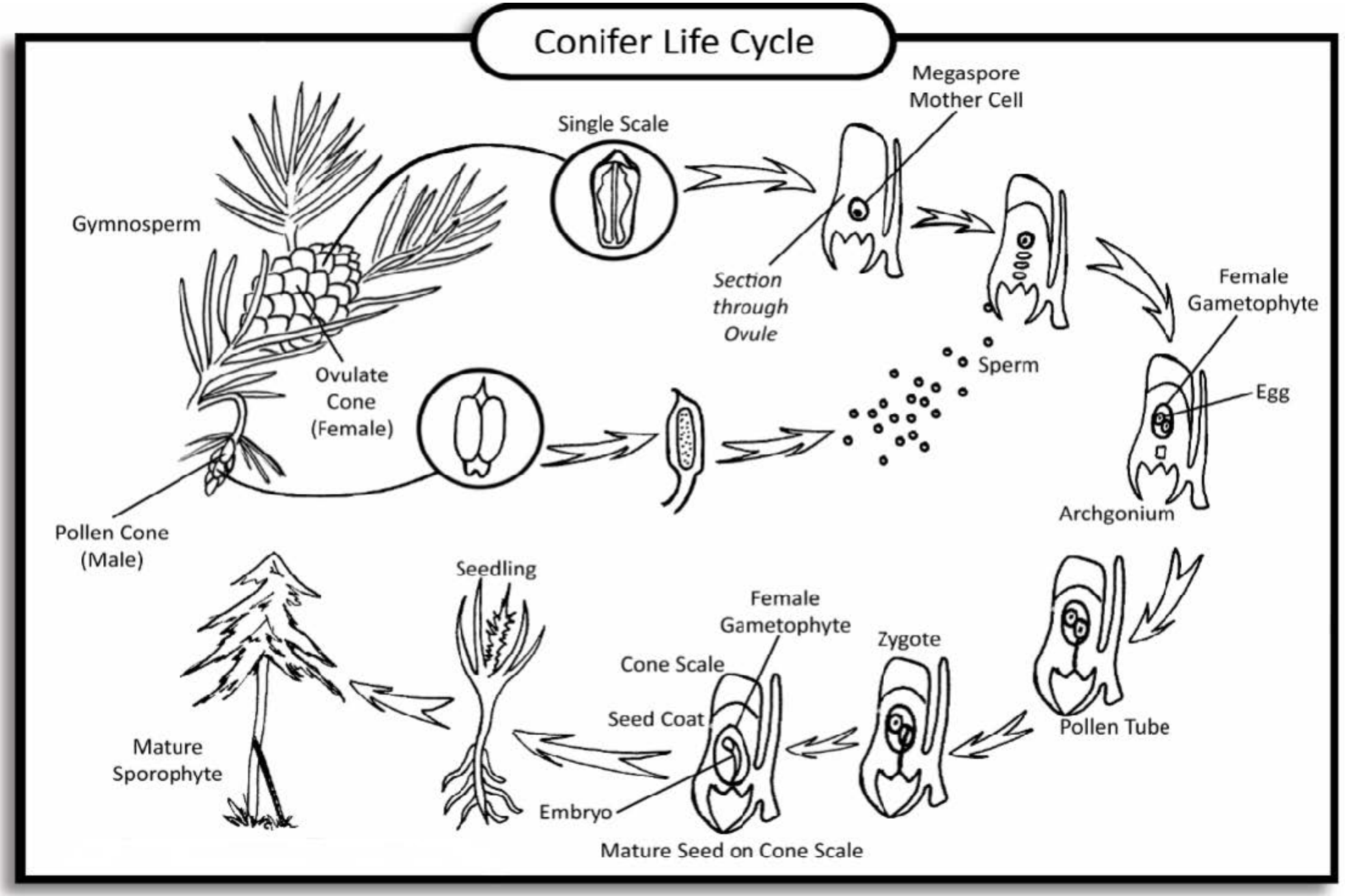


Non-flowering plant life cycles

Moss Life Cycle

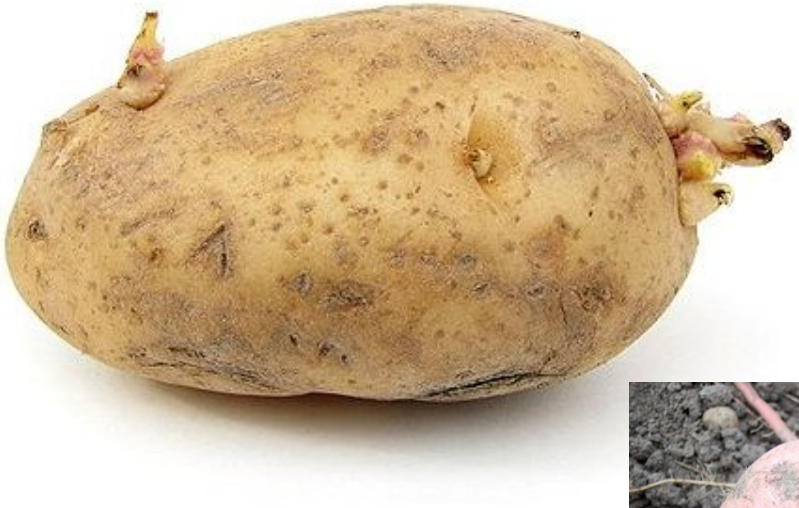


Conifer Life Cycle



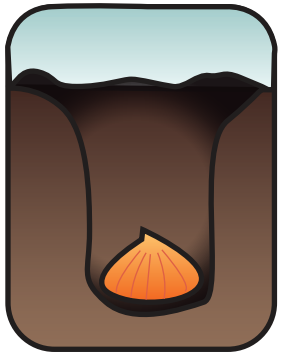
Bulbs and corms

Tubers

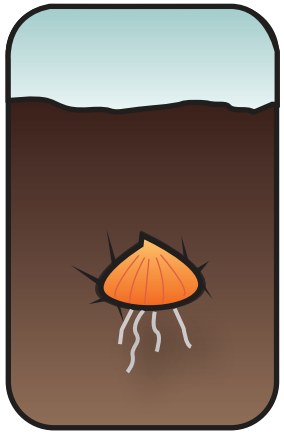


Runners

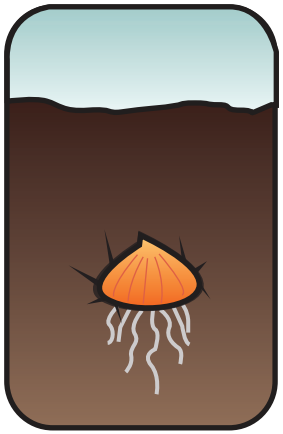
Tulip Life Cycle (bulb)



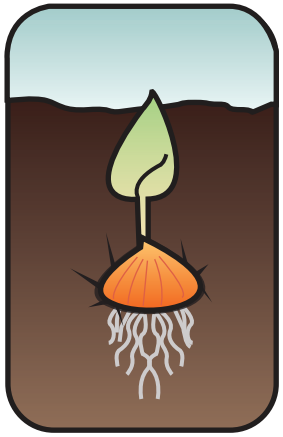
1. Planting time. No roots yet. (Sept - Oct)



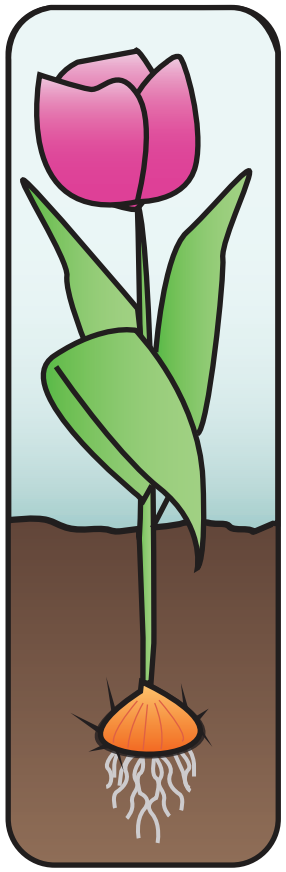
2. Roots start growing from the base. (Nov)



3. Resting period, bulbs rest during cool period. (Dec - Jan)



4. Bulbs begin to grow as starch and carbohydrates turn to sugar. Leaves and flowers gradually push out. (Feb - Mar)

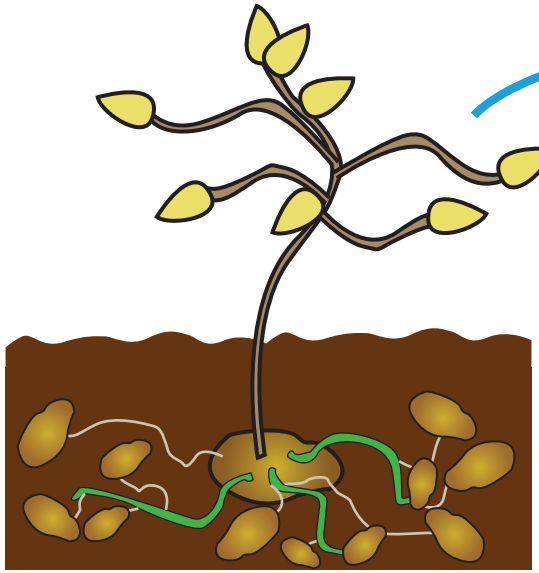


5. In bloom. All nourishment now comes from roots as bulb's energy is exhausted. (Apr - May)

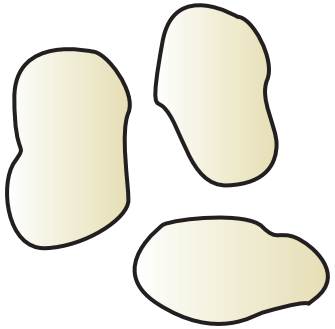
6. Blooms are cut and leaves left, Daughter bulbs will use the food of the leaves to grow. (May - June)

7. Up to five small bulbs can grow out of the mother bulb. Roots, blooms, and leaves develop within each. (July - Sept)

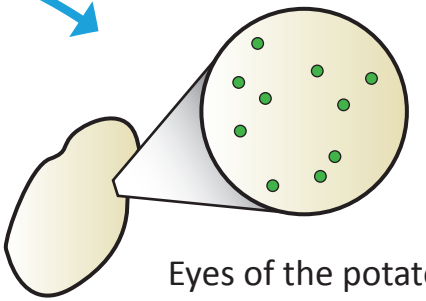
Potato Life Cycle (tuber)



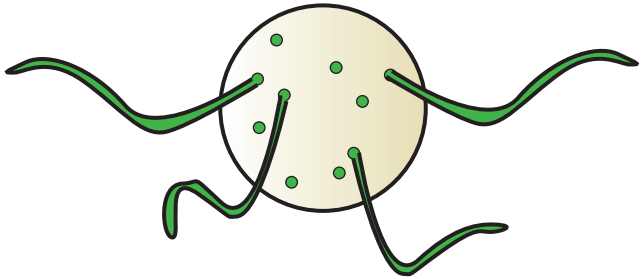
Potatoes on roots grow larger. Plant's leaves begin to turn yellow.



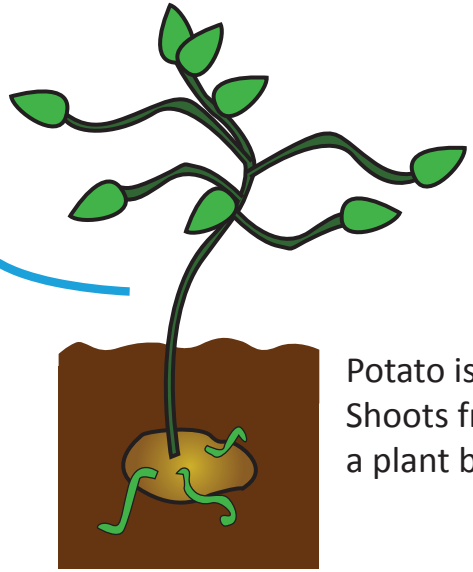
Potatoes are dug out of the soil.



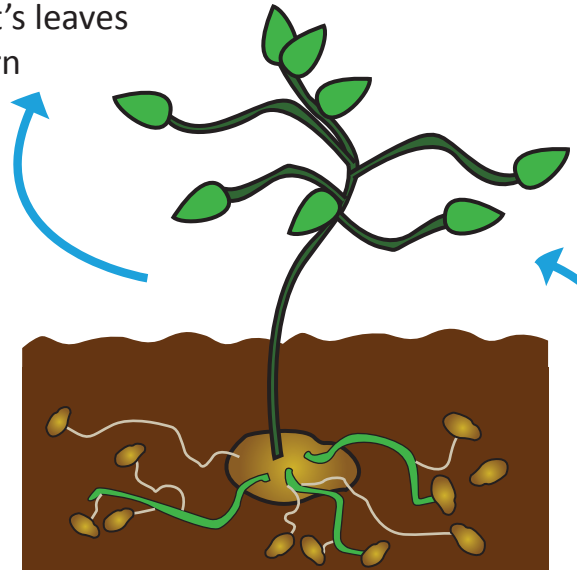
Eyes of the potato begin to form buds.



Shoots begin to grow from eyes.

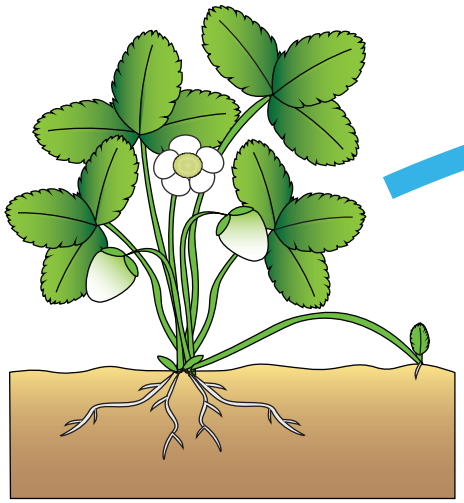


Potato is planted in the ground. Shoots from eyes form roots, and a plant begins to form.

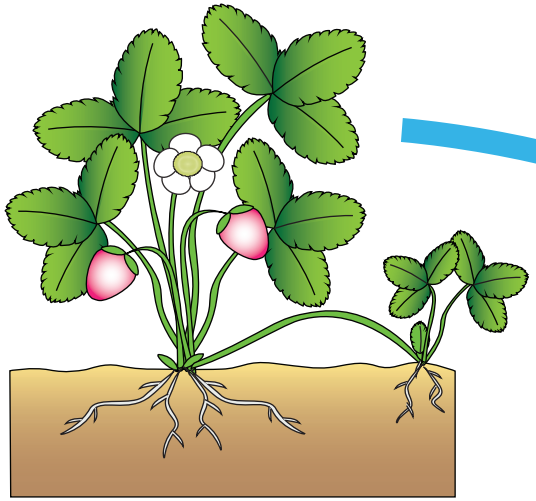


Roots begin to spread and small potatoes begin to form.

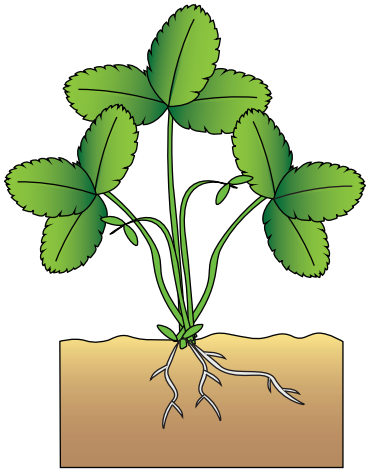
Strawberry plants (runner)



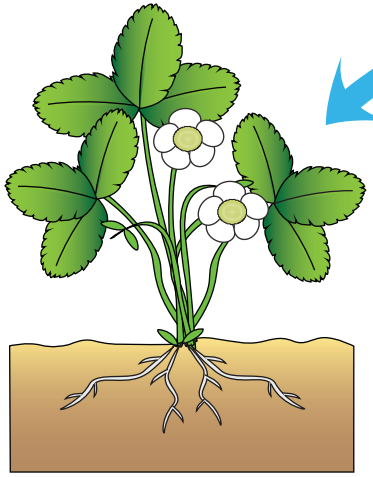
1 The seed sends roots down into the soil or a mature plant may send a runner (a stolon) some distance away which then puts down roots.



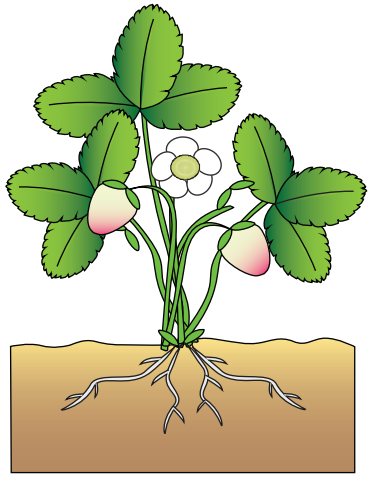
2 Root growth continues. Runner plants start out larger and have more of a support system.



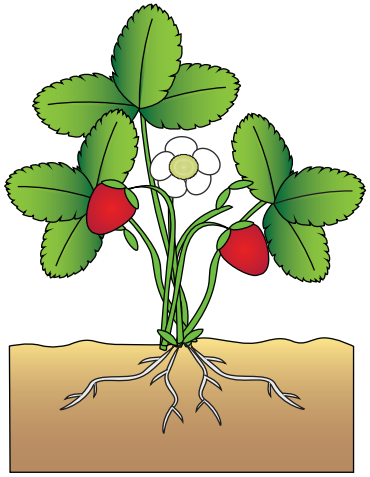
3 The plant continues to mature and grow.



4 The mature plant is ready to expand. It may produce flowers which are pollinated by insects and other pollinators.



5 The results of pollination is a large mass of (usually red) tissue stuffed with individual seed-containing fruits.



6 Once mature, these fruits are attractive to birds and other creatures and are eaten. The remains, including viable seeds, are deposited in different locations to sprout.

Some plants produce runners as well as seeds

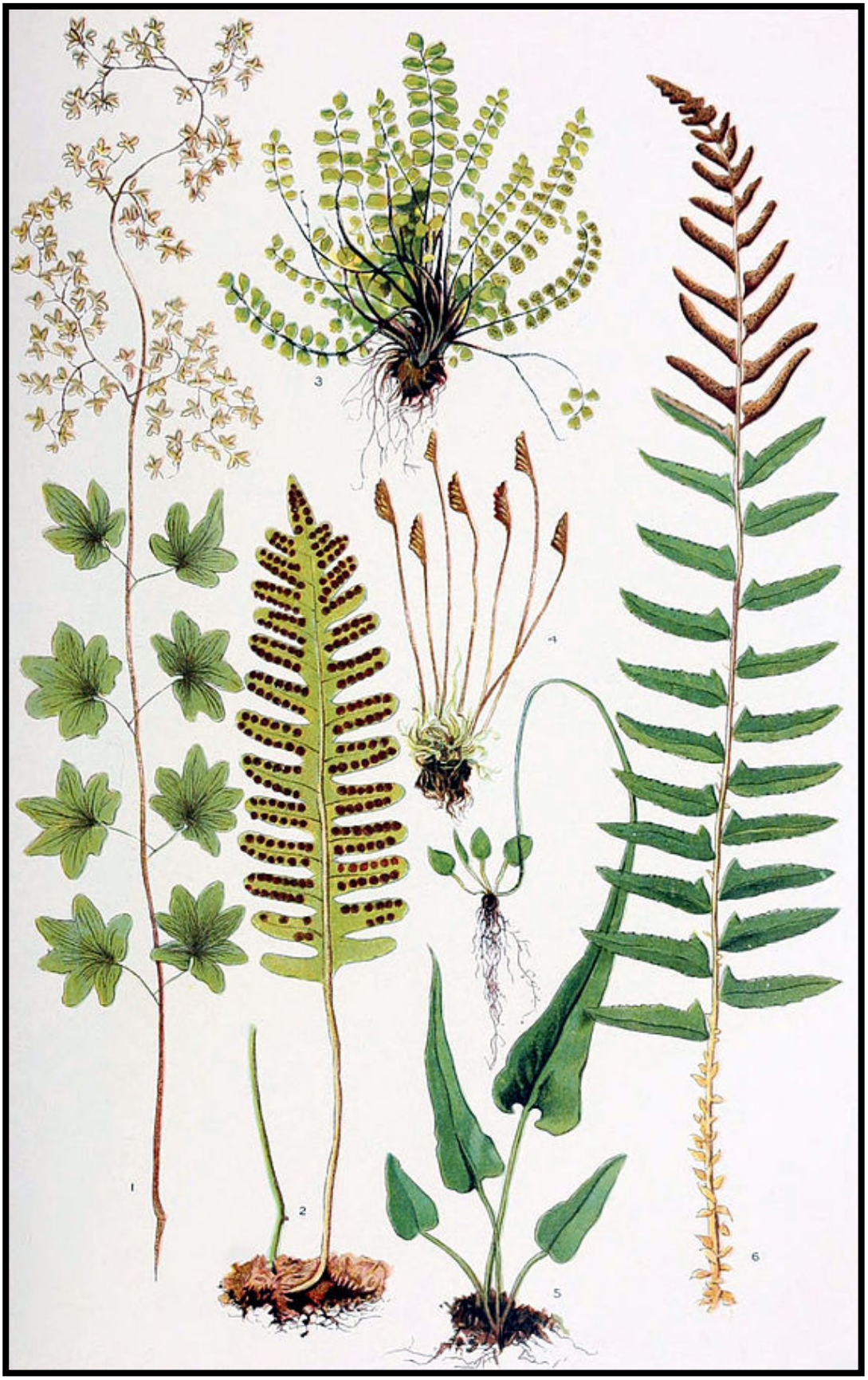
Botanical images

http://vintageephemera.blogspot.co.uk/2010_06_11_archive.html

https://en.wikipedia.org/wiki/Pinus_mugo

http://fineartamerica.com/featured/botany-potato-plant-granger.html

https://s-media-cache-ak0.pinimg.com/originals/0a/3c/c8/0a3cc81d26d3c5684c86c3bb0cd8e9a2.jpg



https://commons.wikimedia.org/wiki/File:NIE_1905_Fern.jpg

Advantages and disadvantages of sexual and asexual reproduction

	Asexual	Sexual
Advantages	• Faster initial growth • A population can grow rapidly • Reduced competition	• Variety • Adaptation possible • Seeds dispersed further from parent plant so competition for space can be reduced • More likely to survive disease due to variation
Disadvantages	• Overcrowding can occur • No variation which can mean weaknesses or diseases passed on • Adaptation to a changing environment is not possible	• Gametes are required • There is a limited amount of food stored in seeds • An isolated plant may struggle to reproduce

Vegetative propagation investigation

Sticky-note investigations (after Goldsworthy and Feasy, 1997)

Stick filled in sticky-notes on the blank boxes to help organise thoughts - the sticky-notes can be moved as the investigation plan progresses

Enquiry question:

VARIABLES

Things I could change/vary

Thing I could observe or measure

Ensuring my test is fair	
I will change	
I will observe	

Predicting	
What I think will happen to the cuttings	

Results and patterns	
Plant and cutting type	**What I observed**

Results and patterns	
Plant and cutting type	**What I observed**

Stem cuttings

You will need:

- pot
- compost
- scissors
- geranium plant
- pencil
- water
- label
- plastic bag and elastic band
- rooting powder (optional)

Method:

1. Place compost in the pot, leaving enough room for watering
2. Using a sharp pair of scissors, cut off a shoot tip from the geranium plant that is about 5cm long. Cut just below a leaf node (the point where the leaf joins the stem) as this is where the new roots will grow from
3. Carefully remove all the lower leaves, leaving one or two at the top of the cutting
4. Use a pencil to make a hole in the compost and put the cutting in. Lightly press the soil back against the stem. (To ensure good growth you can dip the stem into a rooting powder before potting or use a product like Groovy Roots (http://www.nugel.co.uk/groovy-roots#g_1_0)
5. Label the cutting with the date and your name
6. Water the cutting
7. Place the pot in a plastic bag and secure with an elastic band to keep the air around the cutting moist
8. Place the pot on a windowsill in the light

Leaf cuttings

You will need:

- African violet plant
- pot
- compost
- vermiculite
- water
- plastic bag and elastic band
- scissors (optional)

Method:

1. Mix some compost and vermiculite in a ratio of 1:2
2. Place the compost mix in the pot, leaving enough room for watering
3. Take a mature leaf (i.e. not old and tough) from near the centre of the African violet plant including the petiole (leaf stem)
4. Cut the petiole at an angle of 45 degrees (optional, but this does encourage rooting)
5. Place the cut end into the compost up to the leaf blade itself (alternatively you can cut the leaf transversely into several sections and put the lower cut face of each into the compost)
6. Water the cutting lightly (take care not to over water or the leaf will rot)
7. Label the pot and place in a plastic bag secured by an elastic band to keep the air around the cutting moist
8. Place in a bright position out of direct sunlight
9. After about one month the cutting should be rooted and then a new plant will grow from the base of the leaf

Root cuttings

N.B. root cuttings for propagation of garden plants are usually taken in mid- to late-autumn or early winter when plants are dormant, so may not be suitable to use with chn if the block is taught in the summer term, although some commonly occurring weeds will grow from small pieces of roots left in the soil & can be used:

You will need:

- pot
- compost
- scissors
- dandelion, bindweed or couch-grass root
- pencil
- water
- label

Method:

1. Place compost in the pot, leaving enough room for watering
2. Using a sharp pair of scissors, cut off a piece of root
3. Use a pencil to make a hole in the compost and put the cutting in. Lightly press the soil back over the root
4. Label the cutting with the date and your name
5. Water the cutting
6. Place the pot on a windowsill in the light and water regularly

Glossary

- Incl – including
- Equip - equipment
- Chn – children
- Gp/s – group/s