Asexual Propagation

Cuttings
Asexual Propagation involves making plants from taking pieces of the shoot of an existing plant.

Sometimes we take part of the roots as well.
Vocabulary

Totipotency

- Totipotency is that the plant can make the roots and the shoots from one cell.
- So if you cut the shoot. The shoot can grow roots.
Cuttings are parts of the mother plant that we take from mostly the shoot.
Vocabulary

Node

- Node - is part of plant on stem where leaves attach (put on) stem
Vocabulary

Rooting

Rooting means shoot cutting from Mother Plant makes roots

- Cutting from shoot Of mother plant
- Cutting makes roots
- Roots

5. Remove any leaves from
Vocabulary
Cloning

- Cloning is making many plants from one Mother plant.
- The many plants will be the same as mother plant.
Vocabulary
Crown

The Crown of plant is where the roots and shoots meet
Vocabulary
Wounding

- Make cut in the side of cutting like we did when we did chip budding
- Not so hard to do- we will not cut too much into stem
Reasons Why We Use Asexual Propagation

1) To keep special beauty of plant

Example some plants have leaves that are not green. If get plants from seed maybe some seedlings have green leaves. So by cloning we make sure all leaves are not green.
Reasons Why We Use Asexual Propagation

2) To make shorter the time it takes for plant to produce fruit or flower

Example: When we did Chip Budding the bud that we put on rootstock will cause apple tree to produce fruit earlier. If we not do chip budding the root stock would take much longer to make fruit.
Reasons Why We Use Asexual Propagation

3) To keep different forms.

The two trees are Redwoods.

If we propagated from seed we would not get the form of Redwood on the bottom left.
Things that help the cuttings making roots

1) Some Mother plants have cuttings that make many roots

Other Mother plants having cuttings that not make roots

Even when Mother plants are the same type of plant sometimes one mother plant better at making roots than other mother plant
Things that help the cuttings making roots

Where cutting found on Mother plant can help cutting to make roots
Where Cutting Found on Mother Plant

- Cuttings taken from area of rooting make roots better than other areas.
- Some plants when take cutting close to crown the cutting roots better.
Things that help the cuttings making roots

- How old Mother Plant is
- Cuttings taken from old tree have hard time making roots

Old Bristle Cone Pine Tree
Things that help the cuttings making roots

Cuttings from Young Mother Plant makes roots easier

Young Bristle Cone Pine Tree
Different types of Cuttings

Cuttings have name that tells you how hard the wood from mother plant is

Example: When you did chip budding on apple tree the wood is called hard wood

Did you find that cutting into stem of apple rootstock and scion hard?

How hard wood is to cut changes with Seasons
In Fall season leaves change Color from green to brown and reds

- Cuttings taken in late summer or early fall are called Semi-hardwood. Semi-hardwood means that the cutting wood is not as hard as hardwood but not as easy to cut as soft wood.

- Cuttings taken in the Middle of August to about the Middle of September are Semi-hardwood.

Fall weather in Nanaimo is Often rain and some sun.
Winter Season

- Some trees have no leaves in winter.

- Hardwood cuttings—when the wood is very hard to cut. Like apple rootstock.

- Hardwood cuttings in Nanaimo area starts around end of September till about early March.

- The weather in Nanaimo in winter can be very rain or sometimes snow.
Many trees have flowers in spring.

- Soft wood cuttings means the wood is easy to cut with knife.
- Soft wood cuttings in the Nanaimo area can be taken around end of June to middle of August.

Nanaimo has sun and cloud. During spring weather.
Things that help the cuttings making roots

- The month that you take cutting from Mother Plant can help or hurt rooting
- In picture to left Acer Griseum- cuttings, a type of Maple tree make roots best if cuttings taken in middle of May to June
- The cutting is soft wood cutting
- Some plants like Photina X fraseri cuttings can make roots most time of the year

Letters mean month of Year
Example first J means January

This picture is cutting calendar. The Calendar shows when cutting make Roots best.

This show when cutting make roots
Acer Griseum or Paperbark Maple

- Acer Griseum cuttings make roots only in the middle of May to a few days in June.
Photinia X fraseri or Red Tip
Photinia

- Photinia X fraseri cuttings will make roots most months.
- Only time Photinia not make roots is from April to the middle of May.
Things that help the cuttings making roots

- Cuttings from shoots without flowers or bud of flower usually make roots easier.
- Some plants like Rhododendrons we can use shoots with flower bud.
- Cutting from shoots with flowers usually have harder time making roots.
Types of Cuttings we will do in Future lab

Evergreen cuttings

Hardwood cuttings - we will look at this type of cutting in future lecture
Evergreen Plants

Evergreen plants means the plants keep leaves all year. Leaves stay green all year.

There are two types of Evergreens:

- Broad leaf - Evergreens like Rhododendron
- Narrow leaf evergreen like red cedar
Evergreen Plants

Evergreen plants means the plants keep leaves all year. Leaves stay green all year.

There are two types of Evergreens:

Broad leaf - Evergreens like Rhododendron
Types of Evergreens

- Narrow leaf evergreens have leaves like Douglas Fir or leaves like Red Cedar.
- Leaves are thin.
- Leaves are narrow.
Steps in Taking an Evergreen Cutting

1) Mixing media for cuttings
   1)a Type of Media to use
   1)b Mixing Media for cuttings
   1)c Filling flats with media for cuttings
2) Making Flat Ready for Cuttings
3) Taking Evergreen cutting
4) Making cutting ready to put in flat
5) Treatment of Evergreen cutting to help Evergreen cutting make roots
6) Putting an Evergreen cutting in Media
7) Care of cuttings
8) How to know when cuttings have roots
9) Getting cutting ready for Transplanting
1) a Type of Media for Cuttings

- A good mix is one part peat to one part perlite by volume
- Example 3m³ of peat is mixed with 3m³ of perlite
- If you need more water in media than use 2 parts peat moss to one part perlite
1) B Movie of Mixing Media for Cuttings

If movie does not play double click on picture
1)b Step One in Mixing Media

Put mask over mouth
1)b Step Two in Mixing Media

- Put Peat Moss on floor or Tarp
- Make large piece of peat moss into smaller pieces of peat moss
1) Step Three in Mixing Media

- Use Same amount of Perlite as Peat Moss
- Put Perlite on top of Peat Moss
- Media will be one part peat moss and one part perlite
1)b Step Four in Mixing Media

- Add a little water when mixing Perlite and Peat together
- Peat Moss takes a long time to hold water
- So add water slowly
Step Five in Mixing Media

Put media to side indicated by blue arrow.
1)b Step Six in Mixing Media

- Put media to other side – see blue arrow
- Move media 3 times
1)b Step Six in Mixing Media

- Put media to side indicated by blue arrow.
- Put media to other side
- Do one side to other side 3 times or more until
1)b Step Seven in Mixing Media

Peat Moss and Perlite should be mix so you do not see much of perlite in one place.
1)c Movie Filling Flat with Media

- If Movie does not play double click on picture
1)c Filling flats with media for cuttings Step one

You will sometimes need a shovel and a flat
1) Filling flats with media for cuttings Step Two

- Put Media into Flat using shovel
1)c Filling flats with media for cuttings Step Three

Put much media into flat
1) Filling flats with media for cuttings Step Four

Use your hand to make sure media below top of flat
1)c Filling flats with media for cuttings Step Five

Media is at top of flat
2) Step One in Making Flat Ready for Cuttings

- Place filled flats in place where you can put much water on flat
2) Step Two in Making Flat Ready for Cuttings

- Use water that has breaker on end
- Breaker puts water very softly on media
2) Step Three in Making Flat Ready for Cuttings

- Put much water on media in flat
- Media should have much water
2) Step four in Making Flat Ready for Cuttings

- Use Hands to push down on media
- Push hard
3) Taking Broad Leaf Evergreen Cuttings

Most cutting taken from Evergreen plants are stem cuttings.
3) Movie of taking a Rhododendron Cutting

If Movie does not play double click on picture
3) Step One in Taking a Cutting

- Spay Pruners with Chemical so you don’t spread sickness from one plant to next plant
Keeping Cuttings Health

- Before taking cutting put liquid on pruners
- Liquid make sure if plant not healthy that
- We not make other plants sick by pruners
giving sickness to other plants
How to make liquid that you put on Pruners

- Put 1 part bleach with nine parts of water
- Example 900ml of water you would add 100ml of bleach. This make one liter of liquid
Put liquid on Pruners when go to new Mother plant

- When finished taking cuttings from one Mother plant put liquid on pruners before taking cuttings from next mother plant
- Example after finish cuttings on Mother Plant one- put liquid on before take cuttings on Mother plant two
- When Mother Plants the same species still put liquid on before going to next mother plant
3) Step Two in Taking a Cutting

- Take right size of cutting
- Make sure shoot you going to take cutting from is healthy
Step Two Continued In Taking Cuttings

- Look for Bud Scar that is closest to top of plant
- The stem above this Bud scar is this year’s growth
- We want cuttings from this year’s growth
Step Two continued Taking Cuttings

- Make cut just below a node
- Node should be above bud scar
- Cutting must be this years growth

Cut below node where white Line is
3) Step Three in Taking a Cutting

- Look for Bud Scar and take cutting above bud scar
- This part of plant is newest growth on plant
Step four In Taking Cuttings

- Make sure cutting is below node
- Node has much ability to make roots
- Cutting should be Between 7.5cm and 15cm in length
- Smallest length should have 3 nodes

Cut made below node
3) Step Five in Taking a Cutting
Place cutting in Bag

- Place cutting in plastic bag
- Plastic bag should have little water
4) Making cutting ready to put in flat

- If the Movie does not play double click twice on the picture
4) Making cutting ready to put in flat

Step One

Make cutting about 7.5cm to 15cm in length

7.5cm-15cm
4) Making cutting ready to put in flat Step two

- Cut below node
4) Making cutting ready to put in flat

Step Three

- Take leaves from bottom of cutting.
- Want about 4 or 5 leaves
4) Making cutting ready to put in flat

**Step Four**

- If there is flower bud on Rhododendron, remove the flower bud.
4) Making cutting ready to put in flat
Step Four Continued

- Removed flower bud

![Flower bud image]
4) Making cutting ready to put in flat

Step five

- Put leaves together
4) Making cutting ready to put in flat

Step 5 Continued

- Make leaves smaller by cutting
- Smaller leaves loose less water than big leaves
- Cut leaves so about one half is left
4) Making cutting ready to put in flat

Step five Continues

- Cutting with smaller leaves
5) Treatment of Evergreen cutting to help Evergreen cutting make roots

- If the movie does not play double click on the picture
Treatments of Cuttings to help Rooting

- Sometimes cuttings from Mother plant have hard time making roots
- We can do some treatments that will help cutting make roots
- Two treatments we will look at today are
  - Wounding
  - Rooting Hormone
Treatments of Cuttings to help Rooting
Wounding Treatment

Figure 7-10. A (left). Making a heavy single slice wound at the base of a broad-leaved evergreen cutting. B (right). Making a shallow single slice wound at the base of a Garrya elliptica (Coast Silk-tassel) cutting.
Treatment of cuttings to help rooting Wounding

When wound cutting – cut on cutting almost the same as cut you used in Chip budding
5) Treatment of Evergreen cutting to help Evergreen cutting make roots

Step one

- Start cut about 2.5 cm above bottom of cutting
5) Treatment of Evergreen cutting to help Evergreen cutting make roots
Step one
5) Treatment of Evergreen cutting to help Evergreen cutting make roots

Step Two

Move Knife almost to very bottom of cutting
5) Treatment of Evergreen cutting to help Evergreen cutting make roots

Step Two

- Do not cut to bottom of cutting
- Leave about 0.3cm at bottom without wound
5) Treatment of Evergreen cutting to help Evergreen cutting make roots

- Wound of one side
What wound looks like when done

- What cutting looks like after wounding
- On Rhododendrons both sides should have wounds

Wound not go to Bottom of cutting
5) Treatment of Evergreen cutting to help Evergreen cutting make roots

Step Three

On Rhododendrons we put two wounds

Many other kinds of cuttings we only put one wound

Repeat steps one and two so that we have two wounds
Why use Wounding

- Makes it easier for roots to come out of plant stem
- Makes it easier for plant to get water for life
- Makes it easier for rooting powder to go where it will help plant make roots
Rooting hormone

- Rooting hormone you can buy as a liquid
- Rooting hormone you can also buy as a powder
- When we do Rhododendron cuttings we will use powder form of rooting hormone
5) Treatment of Evergreen cutting to help Evergreen cutting make roots

Step One

- Getting Rooting Powder
- Rooting hormone comes in different strengths
5) Treatment of Evergreen cutting to help Evergreen cutting make roots

Step One

- Put rooting powder in bowl
- Put small amount. Only amount you use for one day
- Powder not used in green container is not used again
5) Treatment of Evergreen cutting to help Evergreen cutting make roots

Step One

- Put cutting into Rooting Powder
- Tap cutting on side of container to loose some powder
- Too much rooting powder is bad
Why Use Rooting Hormone

- More cuttings will make roots
- Making of roots is quicker
- More roots on cuttings
Good things about using Rooting Hormone in Powder form

Simple to use
Bad things about using rooting hormone as a powder

- Not always get the same amount of powder on each cutting
- Too much powder on cutting can stop cutting from making roots
- Powder sometimes go away when put cutting into media
Things to remember when buying Rooting hormone as a powder

- Buy enough that you use in 1 and half to two years
- After 2 years powder loose much strength
- The day you buy powder write the date you buy powder on the bottle that has powder inside.
- Keep powder bottle in cool place when not using
6) Putting an Evergreen cutting in Media

- If movie does not play double click on the picture
6) Putting an Evergreen cutting in Media Step One

- Put cutting into media
6) Putting an Evergreen cutting in Media Step Two

- Use both hands and put media around cutting. Make sure the cutting does not fall over.
6) Using Breaker put water on cuttings Step 3

- Before put cuttings in propagation bench we put more water on cuttings
- If cuttings fall over then media not push hard enough into flat
6) Place cuttings in propagation tent

Place evergreen cuttings on propagation bench with heating cables, misting sprinkler and polyethylene cover.
7) Care of Cuttings

- When hot temperatures like summer check cuttings twice a day
- Look to see that no dry areas on media
- Remove dead cuttings
- In fall or winter look at evergreen cuttings once a day
- Heating cables should have temperature of 18C-20C
- Water in Air should be high
8) How to know when cuttings have roots: Signs of rooting

- Callus comes on bottom of cutting usually before root.
- Very softly pull on cutting if it has roots; you will feel.

Callus on bottom of cutting
Usually means rooting.

Too much hormone powder results in huge calluses and either weak roots or no roots.
9) Getting cutting ready for Transplanting

- When most cuttings have roots stop mist from sprinkler
- Turn off heating cables
- Slowly make less water in air by moving polyethylene plastic up
9) Getting cutting ready for Transplanting
Making less water in Air

- Plastic keep water in air
- Moving plastic can make less or more water in air
- Plastic at this level two days
- Plastic this level 5 days
Transplant when ready

May be one week move to greenhouse area and when roots many on cutting transplant into pot.
Next Wednesday Oct 29

On October 29th we will be going to Milner gardens to take Rhododendron cuttings. Please bring pruners and if necessary raingear.