

Current Projects in My Edible Landscape

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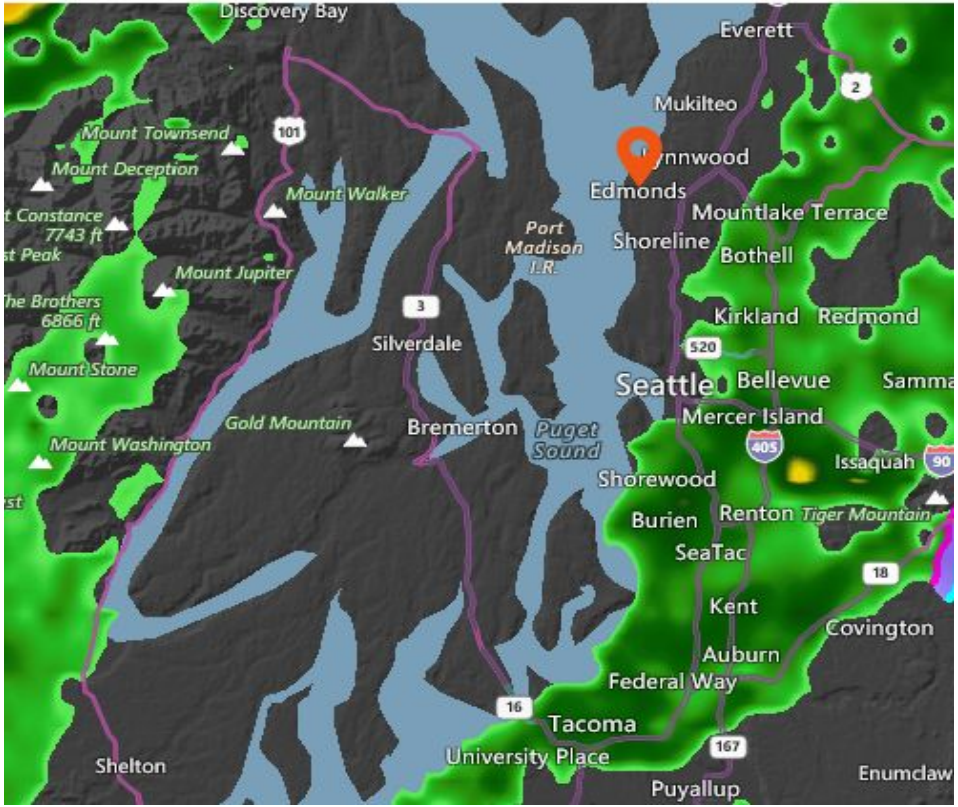
Garden Overview

Location,
Growing Conditions,
Collections



My edible landscape is located in Edmonds.

Elevation 300ft

Growing conditions influenced by weather drifting in from Puget Sound.

History of the Garden

I grew up where I currently live.

My parents bought the “new House” and 1956.

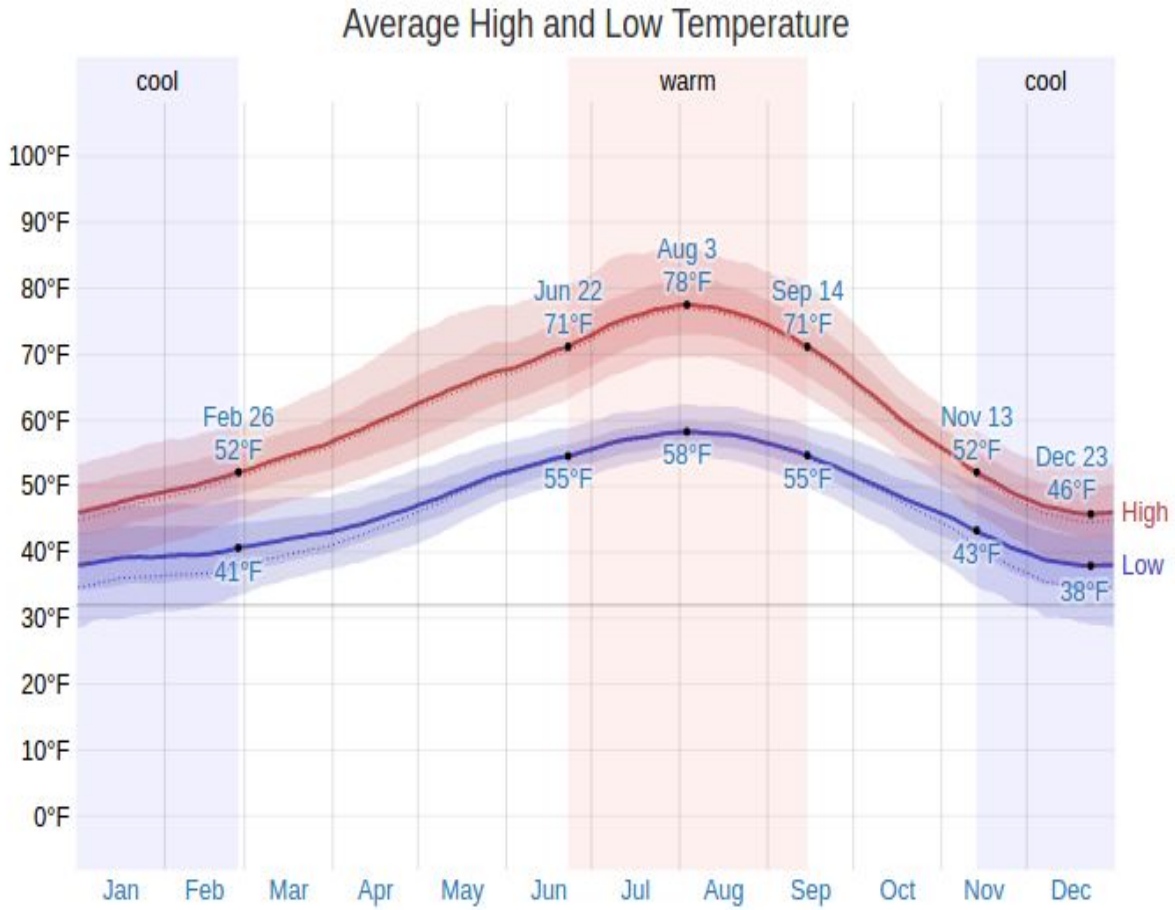
Bare dirt at the site of a former nursery.

Planted my first trees in 1978.

Joined STFS 1987, and learned to graft.

Purchased the place from my parents in 2002.

Edible Landscaping theme begins in 2003.



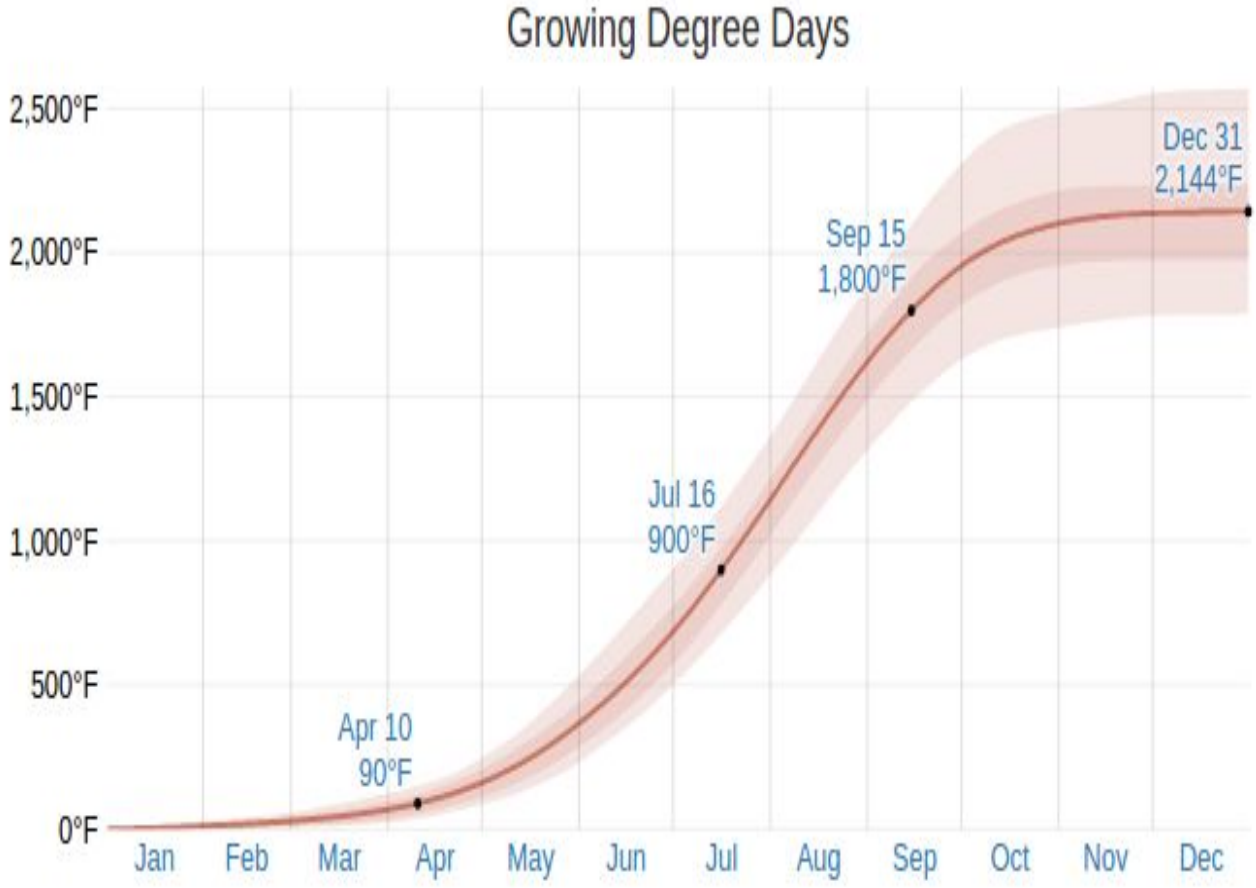
Temperature

Source: weatherspark.com

USDA Zone 8a
(Only part of the story.)

Extremes for
a few hours in my
location
(in my lifetime):

High = 102F
Low = 5F



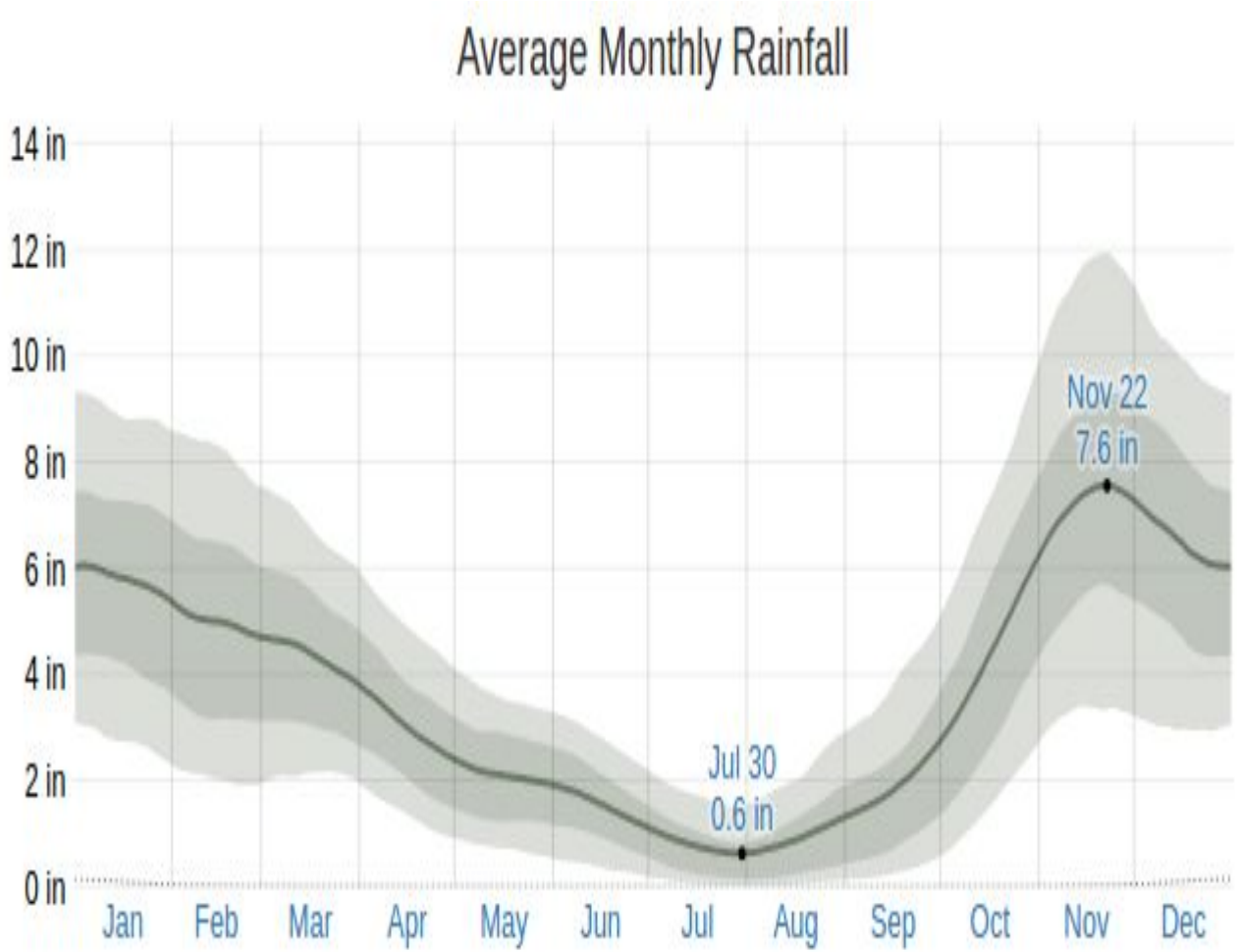
Growing Degree Days (base 50F)

Source: weatherspark.com

What can grow is not so much about what hardiness zone I'm in (will it die from cold).

What is more important is will I get enough GDD to ripen a crop during the growing year.

Plants can survive but never produce a crop.



Monthly Rainfall

Source: weatherspark.com

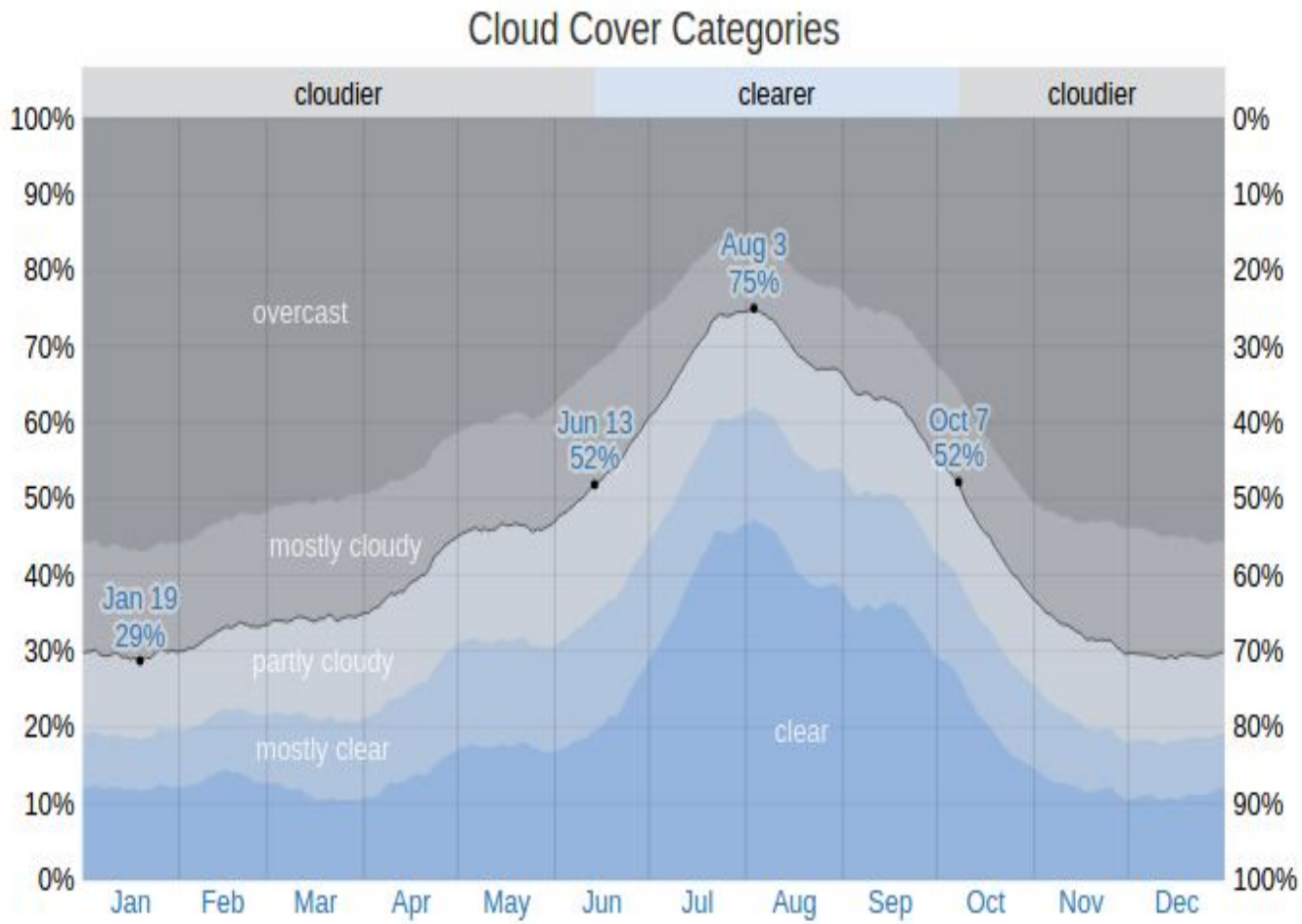
Virtually no rain for July, August, and September.

Desert-like conditions during this time.

Mediterranean weather pattern.

The ground is saturated in the rainy season.

Cloud Cover



Source: weatherspark.com

Even on the brightest days in summer, fog rolling up from the Sound can block the sun until late morning.

⇧ N

Garden footprint

210 ft x 70 ft

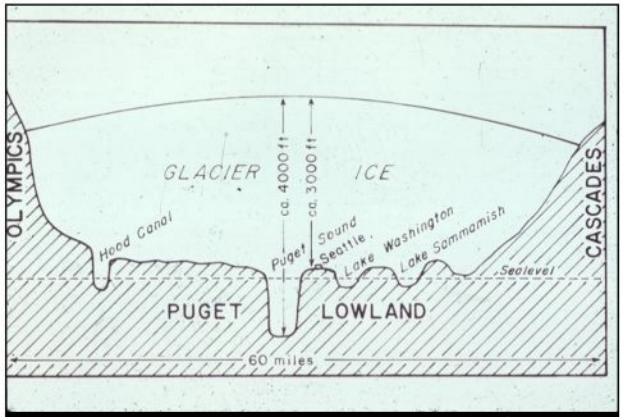
(⅓ acre)

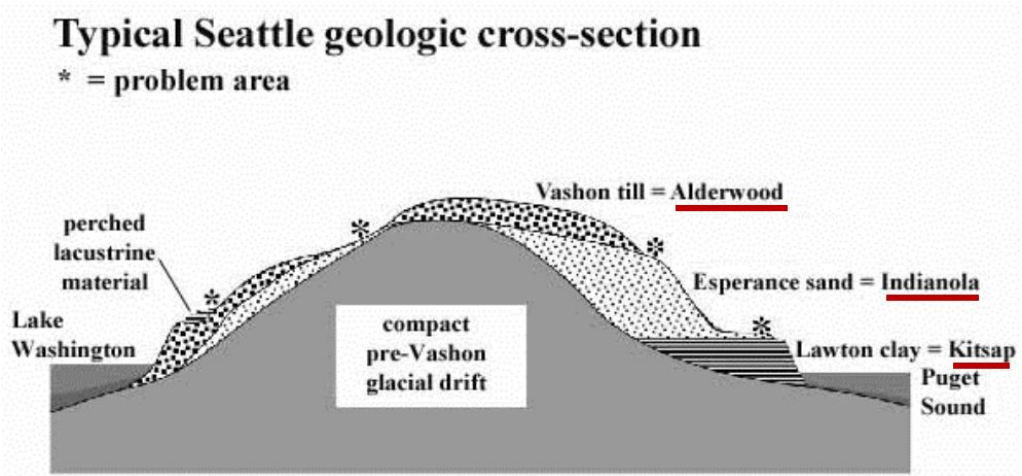
Olympic Mts to West

Mt Rainier to the SE

Soil in my Edmonds Garden

Soil type is called “Alderwood”. Formed by the Vashon Glacier 16,000 years ago.





Hardpan about 3 feet down. Naturally occuring cement formed by silica and iron plus assorted glacial debris.

Source: http://depts.washington.edu/esrm311/2016%20Au/Lectures%202016%20Au/03_ESRM%20311_Arboretum%20Field%20trip_2016%20Au%20combined.pdf

Collections

70+ Apples

40+ Pears

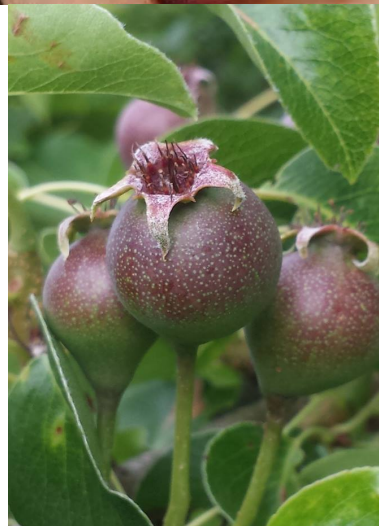
15 Asian Pears

10 Plums

10 Grapes

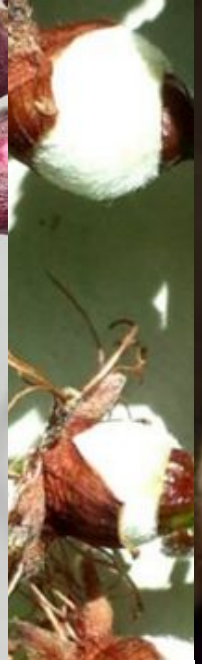
Berries, Cherries, Rosehips, Figs, Hops

A few edible nuts, roots and twigs.



Interesting seedlings I have created

There aren’t already enough named varieties?



Viking Blood Peach

Fragrant red-fleshed peaches with brown skin. Small. Disease free. Seedling of Indian Blood Peach. 5 years to first fruits. (pit from HOS Arboretum)

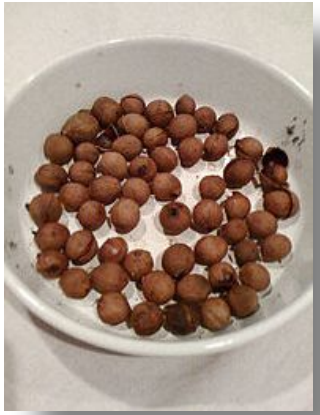
Seedling Olive

Olive pit acquired from National Repository at Davis. 1 year to germinate. Arbequina seedling. Slow Growing. Hardy outside in Seattle. Has not bloomed yet.

Devon Whitebeam (Sorbus devoniensis) Endangered in the wild in England. Brown speckled fruit has been used to make a cider after bletting. Somewhat tropical flavor. 14 years to first fruits. (seed from Arboretum in Seattle)

Oregon Myrtle/ California Bay

(Umbellularia californica) Evergreen. Seed from arboretum in Seattle. Has not yet fruited. Leaves can be used like true bay leaves. Fatty fruit like avacado when carefully ripened. The nuts have 40 to 60% of waxy fats that resemble cocoa butter. When properly roasted and ground, the myrtle nut powder can be mixed with water to make a drink that resembles hot chocolate.



Date Plum

(Diospyros lotus) Seed from JL Hudson catalog. Normally requires both male and female trees for fruit, but mine is self-fertile. The seeds are viable, also. Disease and pest free. Marble-sized fruit turns from orange to brown in late fall. Starchy texture. The best use I have found so far is persimmon beer.

Banjo Lane Loquat

Seed sent by a friend in South Carolina who lives on Banjo Lane. Has not fruited yet. Huge, glossy evergreen leaves.

Wild Trailing Blackberry

(Rubus ursinus)

Requires both male and female plants. Seed selected from productive local wild plants. My seedlings produced in the second year.

Capulin Cherry

(Prunus salicifolia)

Native to Mexico. Seed from a friend in San Fransisco. 8 years to first fruit. Dark fruit is bittersweet. Good in jam.

Japanese Quince

Seed selected from better tasting specimens. Colorful blooms. Ugly fruit. Great source of pectin. Fragrant. (seed from Lon Rombough)

Golden Chinquapin

(Chrysolepis chrysophylla)

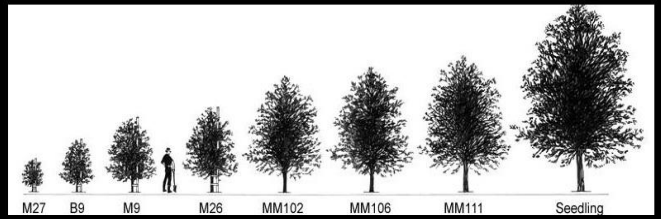
One nut shared by STFS member Larry Davis has become a shrub. No nuts yet, but it now blooms each year. Native to the west coast of the US. A member of the beech/chestnut family. It is evergreen and thrives in the shade. Tastes like hazelnuts

Seedling Quince

Seed from Eastern European selections that taste better fresh than average quince. My largest fruit of any kind. Prone to crack with uneven watering. Fragrant. (seed from Lon Rombough)

Growing apples without irrigation using non-dwarf rootstock

Living Simply
Better for the Planet
I’m cheap and lazy.



Dwarf rootstock produce trees with shallow root systems.

The soil-type in my garden and the desert-like conditions in summer mean I need to water frequently to get a good crop of apples.

Graft union of 20 year-old dwarf tree

The rootstock controls the size of the tree, among other characteristics.

The scion above the graft determines what kind of apples are produced.

If the tree is planted with the graft union undergound, the scion will make its own roots, and the tree will lose its dwarf size.

I dug up all my dwarf trees, and replanted them with the graft union about a foot below the surface. Each tree got some manure.

No watering in the summer.

The harvest was light again from the fruit spurs that developed the previous summer.

Lots of growth resulted, including new fruit spurs. I will control the size of the tree through pruning.

Plant breeding experiments

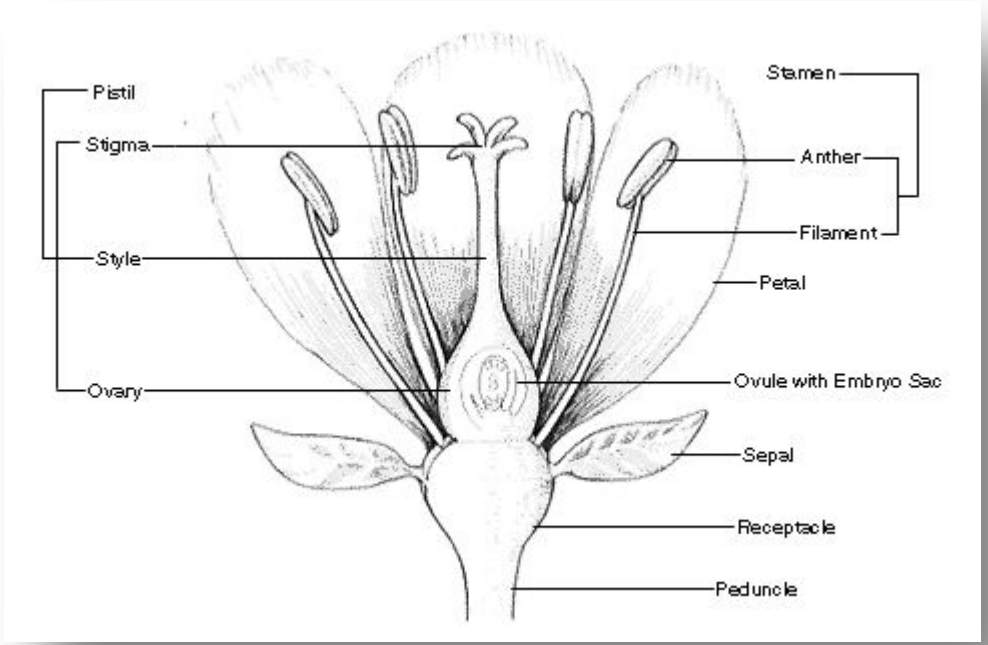
How patient are you?
Take up a hobby that stretches out over decades.

Me - A plant breeder? - Yes!
Inspired by this video series on YouTube.

https://www.youtube.com/watch?v=SB5-4Nxej2I&list=PL60FnyEY-eJAMOPvU-yyF4JfuW5ocJvC4

Step 1. Collect Pollen.

- Dry pollen stays viable for at least 3 years.
- Pollen quickly germinates when rehydrated, just like seeds.
- Harvest the anthers before pollen is released. Dry.
- I store in Altoid tins.



Step 2. Emasculate

- Find blossoms that will open in a few days.
- Open the petals, and remove the anthers that contain the immature pollen.
- Save the anthers if you want to use pollen of this variety.

http://skillcult.com/blog/2013/04/05/apple-breeding-part-2-doin-it-2

Step 3. Pollinate by hand

- My tools are tweezers and a jewelers loupe.
- No need to bag. Bees not likely to visit flower without petals.
- Mark the blossom that has been pollinated. I use painters tape and a sharpie.
- Mother x Father

Step 4. If the cross develops...

- Last year I had 5 successful crosses.
- The fruit grew large.
- I did not protect the fruit, and I lost 3 of the 5 to critters.
- Of the 2 that matured, only 1 had viable seed.

One batch of seedlings growing from my first season dabbling with plant breeding.

Chestnut Crab x Adams Pearmain

Strawberries from seed

Why bother?

Why Strawberries from seed?

Pink Flowers - Dutch company named ABZ Seeds has a series of pink-flowered “strawberries”. Fragaria x Potentilla. Add some color to the edible landscape.

Diseases - After a few years in my garden, my strawberry plants become unproductive. Viruses?

Diversity - Seeds are cheap. More varieties. Improve odds of something having a good year.

Pikan - Day Neutral. Productive so far for 3 years. Bears until frost. Sweet and flavorful. No runners. Seedlings sterile.

Toscana. Day Neutral. Productive so far for 2 years. Bears until frost. Sweet and flavorful. No runners. Different shapes.

Making jam without added pectin

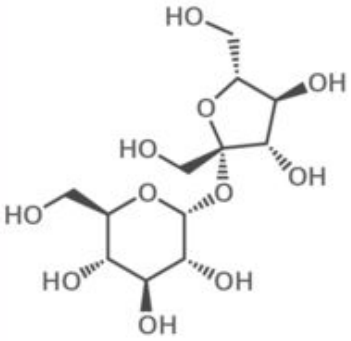
Even my failures are worth celebrating.

Pectin is a fiber.

Characteristic	Fiber Component	Description	Food Sources
Water insoluble/ less fermentable	Cellulose	• Main structural component of plant cell wall • Insoluble in conc. Alkali • Soluble in conc. acid	Plants (vegetables, sugar beet, various brans)
	Hemicellulose	• Cell wall polysaccharide • Contain backbone of β-1,4 glycosidic linkages • Soluble in dilute alkali	Cereal grains
	Lignin	• Non carb cell wall component • Complex cross-linked phenyl propane polymer • Resists bacterial degradation	Woody plants
Water soluble/ more fermentable	Pectin	• Component of primary cell wall with D- Galacturonic acid as principal component • Water soluble • Gel forming	Fruits, vegetables, legumes, sugar beet, potato
	Gums	• Secreted at site of plant injury by secretary glands • Food & pharmaceutical use	Leguminous seed plants (guar, locust bean), seaweed extracts (carageenan, alginates), microbial gums (xanthan, gellan)
	Mucilages	• Synthesized by plant, prevent desiccation of seed endosperm • Food industry use, hydrophilic, stabilizer	Plant extracts (gum acacia, gum karaya, gum tragacanth)

The Chemistry of Jam Making

SUGAR



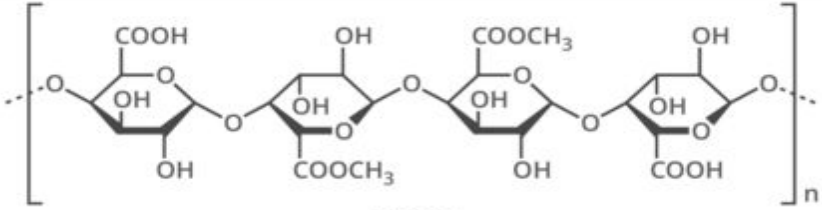
SUCROSE
(table sugar)

The majority of jam-making recipes call for an equal weight of fruit and sugar. Sugar boosts the gel-forming capability of the jam by drawing water away from pectins. It binds the water, meaning that with high levels of sugar, there is no longer enough water available in the jam to support microbial growth, therefore imparting a natural preservative effect.

65-69%

REQUIRED FINAL SUGAR CONTENT OF JAM

SETTING & PECTINS



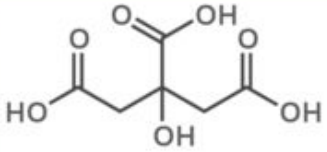
PECTIN
(typical chemical structure)

Pectin is made up of a large number of sugar molecules bonded together in a long chain. The pectin content varies from fruit to fruit; fruits lower in pectin require more pectin to be added, either in the form of commercial pectin or by addition of fruit whose pectin content is higher. The 'setting point' when boiling jam is ~104°C; the pectin chain binds to itself, forming a gel network that traps liquid as the jam cools and helps it set.

LOW IN PECTIN
Pears, peaches, cherries, strawberries, raspberries, blackberries, sweet plums, blueberries, elderberries.

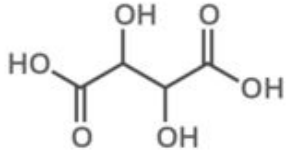
HIGH IN PECTIN
Apples, gooseberries, blackcurrants, sour plums, grapes, citrus rind.

FRUIT ACIDS



CITRIC ACID
(occurs naturally in citrus fruits)

A frequent cause of jam not setting is a lack of acidity. Fruits themselves provide some acids naturally, but often extra acid will need to be added - this is commonly in the form of citric acid, but tartaric acid can also be used. A pH of between 2.8-3.3 is needed to help the pectin form a gel and allow the jam to set properly.



TARTARIC ACID
(found in grapes)

2.8-3.3

OPTIMAL pH FOR SETTING

Fruits I grow that are high in pectin

- Currants
- Jostaberries
- Rosehips
- Quince
- Aronia
- Green Apples

I love jam!

I like the challenge of making jam with only the pectin naturally found in the fruit...

… if the jam doesn’t set, the resulting syrup is great over ice cream.

Japanese Quince Jelly

Chop the fruit including skin and seeds.
Cover with water.
Boil for 30 minutes.
Cool.
Mash.
Place into jelly bag, and let juice drip out overnight.
The resulting liquid looks like liquid pectin, but tastes fragrant and very sour.
Boil with sugar until it becomes thick.

tibetan barberry + red plum

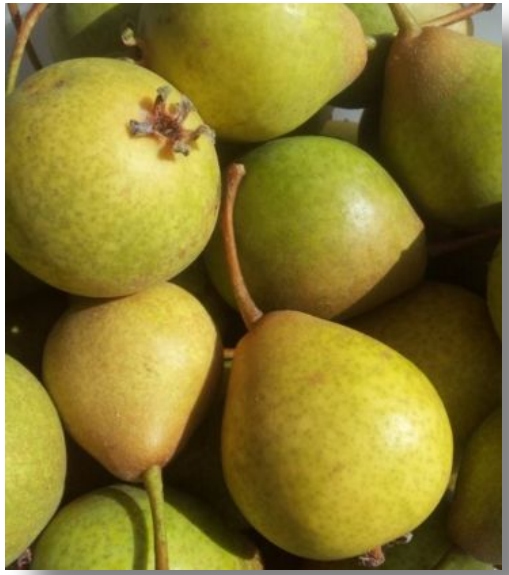
jostaberry
+
blackcap
+
yellow gooseberry
+
methley plum
juice

Drinking the harvest

Cider from my garden.

Apple Cider

Variety- Chehalis
A box of windfalls donated by a neighbor.
Wild yeast. Flavor is fruity and spicy. Similar to a white wine, but with half the alcohol.



Perry (Pear Cider)

Variety- Muskatelka
Harvest late July. Taste in March.
Pasteur Red wine yeast.
My favorite batch so far.

Strawberry Tree Cider

Arbutus unedo + a few Chestnut Crab. Harvest mid-October. Strawberry Tree juice was 22 brix (very sweet). Somewhat tropical flavor, like papayas.

Mixed Fruit Cider

Varieties - Honeycrisp Apple, Chojuro Asian Pear, Golden Hornet Crab, Devon Whitebeam (bletted). Pressed early December. Age for a year. Wild yeast.

I hope you enjoyed the presentation.
If you aren't a member of Seattle Tree Fruit Society, please join today!

If you are reading this online, and you don't live in Seattle, you can still join our club.
Search for "STFS fruit" to find our Facebook page to find out how to join. Membership includes newsletter.