Charlie Anway Berry Trails Project

Establishing the Potential for a Southeast Alaska Berry Industry 2021-2024

In the spring of 2021, the Chilkat Valley Historical Society received a grant from the U.S. Department of Agriculture to begin berry trials with the goal of finding the best, winter resilient Blueberry and Strawberry cultivars for Haines' unique environment, both in town (Zone 5) and up the Haines Highway (Zone 4).

Site Descriptions:
Zone 4: About Mile 26 Haines Highway - a flat field, full sun, moderately wet in fall.
Beds: Both blueberry and strawberry beds were modified with Epsom Organic Berry-tone fertilizer (NPK: 4-3-4) in spring and late summer. In addition, blueberry beds were also modified with pine needles. (Note that pine needles are not adequate acidifiers and their breakdown may have contributed to nitrogen deficiency later on.)

Zone 5: In the Haines townsite located on a south-southwest sloping field once farmed by Charlie Anway. Full sun. Can be dry in summer. Moderately wet in the fall, but the slope helps with drainage. Beds: Strawberry beds were fertilized with organic fertilizer (NPK 4-4-4) each spring. Blueberry beds were modified by incorporating soil from a "peat bog." (Note "peat bog" soil did help to acidify the soil but was not acidic enough).

Major Takeaways:

- **Blueberries** - We entered this trial with certain assumptions, especially about domestic blueberries growing in Southeast Alaska. Because the wild ones do so well, we (and it would seem many others, including northern berry cultivation specialists) assumed that domestic blueberries would be a *mission accomplie,* requiring little effort on our part. Dispelling this assumption and therefore being able to lead growers in the right direction for the future is possibly our biggest accomplishment in regards to the blueberry trials. They can grow here, and well, but they require more cultivation than was anticipated. **Best performing cultivars were: Reka, Duke, Blueray and Patriot.***

  ***** *Note: because we started with some poor quality plants, we were unable to come to a conclusive decision on some of the cultivars we tried. However, along with those plants that did well for us, we also asked local gardeners that have been growing blueberries in the area about which of the trial varieties did well for them and came to the above conclusion.*

- **Strawberries** - Charlie Anway grew strawberries for a reason; they do great here! They are also a labor intensive crop and you have to keep on top of the weeds. Honeyoye, one of the most often recommended varieties for this area, taste wonderful (and indeed won our taste tests), but it has poor winter survivability. **Best performing cultivars were: Sonata and Cavendish with Brunswick a close third.**

What follows is intended to inform and help local home gardeners, small time farmers and possible future commercial growers to be successful on their journey to grow great fruit.

Blueberries

Trial Cultivars: 7*

Northcountry

Description:"First Choice in cold winter areas" according to the nursery. Developed in 1983 at University of Minnesota. Wild blueberry flavor.			
Age of Plants:	6 months	**Year Planted:**	2021
Berry Size:	small to medium	**Full Size:**	3t x 3w feet
Production:	2-7 lb	**Hardiness Zone:**	3-7 (-35F)
Ripening time:	early to mid season	**Chill Hours:**	800-1000

Trial Results: Overall this variety did okay but not well, with only mediocre growth in about half the plants and several deaths. It did not bare fruit in our trials.

Blue Ribbon

Description:"Ideal for high chill with mild winters" according to the nursery. Developed in Oregon in 2005.			
Age of Plants:	1.5 yrs old	**Year Planted:**	2022
Berry Size:	large, firm	**Full Size:**	4-6 ft
Production:	high density	**Hardiness Zone:**	4-7
Ripening time:	Midseason	**Chill Hours:**	800-1000

Trial Results: This variety did poorly with most having mediocre growth and some dying, especially in Zone 4. Though it did fruit in Zone 5, we would not recommend this for our area, especially up the Highway.

Blueray

Description:"Largest berry on the market" according to the nursery. Developed in the late 1970s at Michigan State University.

Age of Plants:	4 year old	**Year Planted:**	2021
Berry Size:	very large fruit	**Full Size:**	4-6t x 3-4w
Production:	15-20 lbs	**Hardiness Zone:**	5-8 (-15F)
Ripening time:	Midseason	**Chill Hours:**	800-1000+

Trial Results: The original plants were in very poor condition and only 2 survived, but those 2 did well. Although this is not enough plants for significant results in our trial, local gardeners in the Haines townsite have had great success with this variety and the berries are indeed, very large and sweet.

Duke

Description: This variety blooms late but ripens early and is an early season variety. Developed in 1987.

Age of Plants:	1.5 yrs old	**Year Planted:**	2022
Berry Size:	large	**Full Size:**	4-6t x 4-6w
Production:	15-20 lb	**Hardiness Zone:**	4-7 (-30F)
Ripening time:	Early	**Chill Hours:**	800

Trial Results: Though there was a high mortality rate in Zone 4 (up the highway) these did very well in Zone 5 with no mortality and strong growth. They also produced some fruit in Zone 5. Local townsite gardeners also like this variety for its large fruit size and flavor.

Reka

Description:"Vigorous and fast-growing" according to the nursery. Developed in New Zealand

Age of Plants:	2-1.5 yrs old	**Year Planted:**	2021 / 2022
Berry Size:	Medium	**Full Size:**	4-6t x 4-6w
Production:	high density	**Hardiness Zone:**	4-7
Ripening time:	Early	**Chill Hours:**	800-1000+

Trial Results: One of our top recommended blueberries. This plant did very well in both Zone 4 and 5, with most putting on good growth. Several in Zone 5 fruited and although the berries were a little smaller, they bore heavily. The nursery's claim as to vigor and fast-growth seems to be supported.

Patriot

Description: “Vigorous and performs well in heavier soils than other varieties” according to the nursery description. Developed at the University of Maine in 1976.

Age of Plants:	2-1.5 yrs old	**Year Planted:**	2021 / 2022
Berry Size:	large, soft	**Full Size:**	3-5t x 3-4w
Production:	10-20 lb	**Hardiness Zone:**	4-7
Ripening time:	Early to Mid	**Chill Hours:**	1000

Trial Results: Another of our top recommend blueberries. It did well in both Zone 4 and 5 with good growth. It produced berries that were larger than Reka and a touch sweeter. It seems to do well in heavy soils and has a more compact growth pattern.

*Jersey, Northland and Toro

These 3 varieties came as very poor quality starts and did not survive. Therefore we were not able to adequately test these cultivars. **Jersey** is an old variety that is grown widely in the Lower 48, but will not ripen in time in our location according to local gardeners. It is listed is as a “late season” ripening which we do not recommend. None of our local gardeners have tested Northland or Toro (that we know of).

Gardener Recommended: Draper & Bluecrop

Although these two were not part of our trials, local townsite gardeners (Zone 5) have had success with both varieties. They have lower profiles and produce very large, sweet berries.

Growing Blueberries:

PH range: 3.8-5.5 (optimum 4.5)
Distance between: 3-4 feet

Types/Ripening Time: Northern Highbush and/or Half High were chosen for our trials. Northern Highbush is productive and cold hardy. Half-High is a hybrid between Northern High and Lowbush and produces a more compact bush with generally good cold hardiness. Other varieties not featured in our trials are Lowbush and Rabbiteye, both of which are generally less productive and are not self-fertile. Rabbiteye and Southern Highbush blueberries are bred for production in warmer climates and will not survive here. **Choose only early to midseason ripening varieties (late season varieties will not ripen).**

Pollination: All blueberries that we selected (and others that are listed) are self-fertile, but will produce larger crops and **larger fruit with cross-pollination** from another variety. It is best to plant two different cultivars that overlap bloom times.

Years to Fruit: This depends on the size and health of the plant at purchase. Nurseries will say 2-3 years, but it normally takes at least 3-4 for a moderate crop here. Berry production is directly related to cane (new branch) development. Proper fertilizing and watering means strong growth and eventually lots of berries.

A freshly planted Reka blueberry.

Non-biodegradable landscaping fabric helps to keep weeds at bay.

Planting Your Blueberries:

When: Spring (avoid hot and/or dry times)

Location: Blueberries do best in deep, loamy, acid soil in full sun (8+ hours). **Native soils are NOT acidic enough** even when using soil from a bog or adding pine needles or sawdust. Note that both pine needles and sawdust need to break down first or they deprive the plants of nitrogen. Mulching with either or both of these items works well, but do not count on them to lower your PH anytime soon. Instead use an acidifier such as aluminum sulfate or another type of rapid acidifier. Peat moss is also good for loosening and lightening heavy clay and acidifying the soil. Well decomposed sawdust or pine needles (so that you can no longer easily identify them) are ideal.

Blueberries are especially vulnerable to **wet feet**. In our trials they suffered a great deal in the fall due to standing water. Try planting in raised beds, on a mound or on a gentle slope to help the water drain away.

Fertilizer: Fertilize each spring and again mid summer (late July) with an acid-lover or blueberry fertilizer. Note that PH can rebound (raise to its original level) over time, so applying mild acidic fertilizers can help to counteract this.

Water: It is important to have adequate irrigation to your blueberries, especially during berry development as the lack of water can negatively effect berry size or even cause the fruit to drop.

Weeding/Weedblock: Weeds are a problematic with blueberries, especially when the plants are just establishing themselves. It's important to keep weeds away from the plants or it can significantly stunt their growth, cause disease and/or interfere with berry production. This can

be accomplished with deep mulching and/or a heavy duty weedblock or water-permeable landscaping fabric. Cover your beds and cut holes every 3-4 feet to plant the bushes in. Hand weed as needed.

Weather: Our winter freeze-thaw cycles can be hard on blueberry plants. The effects of fall rain weren't especially noticeable until the spring of the final year of our trial. Plants that had been doing well the fall before seemed to have suffered greatly over winter. Heavy rainfall and lack of snow cover was noted at this time. Interestingly, the plants in Zone 5 had even less snow cover than Zone 4, but performed better. We believe this is due to the sloped field where they were planted which meant the soil drained better, hence wet feet is more detrimental than lack of snow cover. We recommend raised beds to help soil drain. Conversely, too much snow cover can crush and break off branches leading to stunted growth.

Summer rain and cool weather does not seem to effect blueberries growth or fruit flavor much at all, especially compared to strawberries, but it can impact berry set due to lack of pollinators. It can also delay ripening, especially in mid to late season varieties. This is why late season varieties are not recommended for our area.

Long Term Maintenance: Blueberries should be tidied every spring, pruning off any dead, diseased, damaged or rubbing wood and spindly branches. Spindly branches promote a tangled growth pattern, which restricts light penetration and air movement, leading to increased potential for disease development. When the bush is well established you'll also want to remove old branches that are not producing adequate fruit, to renew growth and maintain the bushes long term health.

Strawberries

Trial Cultivars: 6

Honeyoye

Description: Classic variety often recommended for our area and hardiness zone. Developed in 1979 at Cornell Research Station in Geneva, NY. Excellent freezing quality.

Berry Size:	large and firm	**Year Planted:**	2021
Produces for:	3-4 weeks	**Hardiness Zone:**	3-8
Ripening time:	Early to Mid	**Years productive:**	4-5 years

Trial Results: This variety suffered significant winter-kill and lacked vigor. Plants were smaller and produced less than other varieties. Honeyoye won the taste test with its sweet flavor just a little over Sonata. Between it's lack of winter survivability and vigor, we would not recommend it for our location. **Disease Resistance:** N/A

Earliglow

Description: An early variety often used in commercial “you-pick” farms in the Lower 48. Excellent freezing quality.

Berry Size:	small, medium firmness	**Year Planted:**	2022
Produces for:	3 weeks	**Hardiness Zone:**	3-8
Ripening time:	early-midseason	**Years productive:**	N/A

Trial Results: Plants did well, but were not as vigorous or productive as other varieties. Berries were small and somewhat tart/sour compared to others. It tied for last place with AC Wendy in our taste test—it was still very yummy! Earliglow did not appear to ripened significantly earlier than other varieties. **Disease Resistance:** Verticillium, Red Stele

Cavendish

Description: Produces high yields that ripen over a long growing season. Developed in Nova Scotia. Excellent freezing quality.

Berry Size:	large, firm	**Year Planted:**	2021
Produces for:	2-3 weeks	**Hardiness Zone:**	3-7
Ripening time:	midseason	**Years productive:**	10 years

Trial Results: This and Sonata are our favorite varieties. Plants were big and healthy and produced lots and lots of large, firm, sweet berries and lots of runners. Great winter survival. Cavendish came very close after Honeyoye and Sonata for third place in our taste tests with its sweet-tart flavor. Both it and Sonata are our top picks for this area and we highly recommend this variety. **Disease Resistance:** Verticillium, Red Stele

Sonata

Description: Cross between Elsanta and Polka, two high performing Dutch varieties. One of the most commonly grown commercial varieties. Excellent freezing quality. **Note: this variety is patented.**

Berry Size:	Large, Firm	**Year Planted:**	2021
Produces for:	N/A	**Hardiness Zone:**	4-7
Ripening time:	midseason	**Years productive:**	3 years

Trial Results: Excellent plant vigor with big healthy plants that produce lots of runners and lots of large, delicious berries. Great winter survival. This variety just barely lost to Honeyoye (the winner) in our taste test. We highly recommend it. **Disease Resistance:** Leaf diseases (angular leaf spot).

Brunswick

Description: Cavendish crossed with Honeyoye, this variety was developed at the Kentville Research Center in Novia Scotia. **Note: this variety is patented.**

Berry Size:	Large, firm	**Year Planted:**	2021
Produces for:	N/A	**Hardiness Zone:**	3-8
Ripening time:	early-midseason	**Years productive:**	N/A

Trial Results: This variety fell overall into third place in trials. Plants were healthy, vigorous and produced large berries, but they didn't get as much interest in our taste test. Still, a very good strawberry. We would recommend them for planting. **Disease Resistance:** N/A

AC Wendy

Description: The strawberry is wedge-shaped to conic, with firm, bright red colored flesh. Developed by the Kentville Research Station in Nova Scotia. **Note: this variety is patented.**

Berry Size:	Large, Firm	**Year Planted:**	2022
Produces for:	N/A	**Hardiness Zone:**	3-8
Ripening time:	Early-midseason	**Years productive:**	N/A

Trial Results: Plants were not as vigorous or heavy producing as other varieties but still had good winter surival. AC Wendy tied for last place with Earliglow in our taste test—it was still very yummy! **Disease Resistance:** Verticillium, Red Stele

Growing Strawberries

PH Range: 5.3-6.8 (optimum 5.8-6.2)
Planting Distance: 12-18 inches apart

Type/Ripening: June-bearing varieties were chosen for this trial (though they actually ripen in early to mid July in Haines). Many Ever-bearing varieties can grow, survive and even thrive here, but they generally don't have time to ripen a second crop, even in a hoop or greenhouse. Contrary to their name, "ever-bearing" does not mean such varieties produces berries continually. Instead, ever-bearing strawberries produce two crops— one at the same time as June-bearing varieties and a later crop in September when there is not enough heat to make them sweet. Producing a crop that does not ripen and retards runner production can prove detrimental and effect winter survival. Alpine and Musk strawberries can produce and survive here also but the fruit is significantly smaller and has a different flavor than traditional strawberries. They are often grown more for novelty than production.

Pollination: All selected varietes are self-fertile (they do not need cross-pollination to set fruit)

Years to Fruit: 1-2 years (though it is often recommended to remove flowers the year of planting)

Berries protected under bird netting.

Strawberries planted in non-biodegradable weedblock.

Planting Your Strawberries:

When: Spring or early summer (avoid hot and/or dry times) (late August is acceptable as long as it's cool and moist)

Location: Strawberries grow best in a deep, somewhat sandy, loam soil rich in organic matter. Choose a location in full sun (6-10 hours) that is well drained. Strawberries do not thrive in heavy clay soils. Amend with compost and other organic matter, or even coarse sand if the soil is too heavy. It is important that strawberries not have wet feet. Avoid areas that remain wet in late spring or fall and winter. This can be accomplished by planting in a raised bed or mounded rows where seasonal rains will cause less standing water. It can also help to plant them on a gradual slope — this can help both with wet feet and frost damage, allowing water and cold air to drain away.

Special: When planting your strawberries, making certain the crown is not covered with soil which can cause the young plants to rot.

Fertilizer: Further amend the soil with balanced fertilizers (NPK 10-10-10 or 20-20-20) or those especially formulated for strawberries. There are many premade organic fertilizers or other options such as blood meal, plant or seed meals and rock phosphate.

For established plants, fertilize lightly in the spring and again after the plants finish fruiting, around early to late August.

Water: It is important to have good irrigation to your strawberries, especially during berry development as the lack of adequate water can negatively effect berry size. Rain and cold weather can also impact berry set (due to lack of pollinators) and can cause deformed berries.

Weeding / Weedblock: Weeding a strawberry bed can be very time consuming and frustrating. In this trial, we used 2 approaches:

- Zone 5 used **biodegradable weedblock**, cutting holes every 10-12 inches. This worked well to cut down on weed growth for several years but by the third summer, the woodblock had started to decay and the weeds invaded.
- Zone 4 used **NON-biodegradable landscaping fabric**, cutting holes in the same fashion as above. Hand-weeding was reduced to manageable levels through the entire trial time.

Overall, this method would work well for the home gardener or limited small scale farming. For larger commercial operations, it would probably be best to use a longer lasting biodegradable weedblock and plow the strawberry beds under every third or fourth year and replant.

Weed coverage has a significant effect on fruit. Although it does reduce the spread of runners (and therefore vigor) established plants themselves seemed relatively indifferent. However, fruit that matured under these conditions lacked sweetness and was fairly bland. It also had more of a tendency to spoil. Varieties that were more robust (Cavendish, Sonata and Brunswick) performed better in these conditions.

Weather: Our winters often consist of many freeze-thaw cycles with lots of snow or hardly any at all, followed by deep freezes, especially in Zone 5. While this appears to have less effect on strawberries than blueberries it can still cause significant damage. One year with little snow cover frost was observed “pushing” young strawberry plants out of the ground so that their roots froze. We recommended that gardeners and farmers plant only in areas that are not prone to standing water in fall and winter (which can cause more frost heave action). Raised beds and thick mulch may be useful, especially for home gardeners.

Our summers can be equally fitful. Cold, cloud and especially rain during ripening can have a very negative effect on strawberry quality. They are often not as sweet, may rot, or take on a watered-down, moldy flavor. It is important to keep weeds at bay and as much air circulation around the plants and berries to help counteract this.

Long Term Maintenance: thin your established strawberry beds every year or so. It’s not a bad idea to turn under and replant your beds from new runners every 4 or so years or thin them very aggressively, leaving a young runner from last year every 10-12 inches.

Strawberry taste test

Ripe Cavendish strawberries!

Strawberry Taste Test

We had taste tests at several community events. The taste tests were informal, without definitive criteria, but the results we interesting. At one event, there was a sharp devision between children and adults, with the children generally favoring the sweet, less acid varieties and the adults favoring the sweet-tart varieties. The community also paid particular attention to berry size....not sure that bigger was better with the final conclusion being that it depended more on the individual berry's degree of ripeness. Everyone agreed, however, that all were delicious and nothing like the "cardboard" strawberries one gets from the grocery store! In all, it seemed that berry taste is highly subjective. **This led us to conclude that the varieties in the trial that were healthiest and produced the most were the best to plant (Cavendish and Sonata) even though Honeyoye and Sonata pretty much tied in first place for taste.**

Pests

You love your berries and so does everything else. Our trials didn't encounter many of these issues (except slugs), but we believe we were either lucky, or they hadn't found us yet.

Voles: Voles are especially destructive to the new tender shoots of blueberries and will have a heyday over winter. If your garden is plagued by voles, it's a good idea to take precautions. One local gardener noticed that the voles did not touch beds she had mulched with seaweed. Once blueberry bushes are established, the voles don't seem to be as much of a pest. Do NOT mulch with straw — voles find this an excellent nesting material and will set up house. They also like to nibble on ripe strawberries (just one bite from every berry, of course) and sometimes the plants over winter. Bucket traps (pictured left) can help to reduce their population. Run a wire through a soda can suspended over a 5 gallon bucket and bait it with peanut butter. Rodents will fall into the bucket when they try to eat.

Birds: Robins are especially fond of berries and will pick every last strawberry or blueberry if given half a chance. Crows and ravens might also. Cover your berries with bird netting as

soon as they look like they are close to changing color. Some gardeners also have success with painting small rocks red and scattering them about their strawberry patch so that the birds don't pay attention to berries when they ripen.

Slugs: Mostly a problem with strawberries, regular application of Sluggo or a similar product can reduce the population. Keeping your strawberry and bluebrry beds well weeded is also very helpful. Keep blueberry branches off the ground by pruning branches that hang too low and tying up those ladened with fruit.

Porcupine: They often enjoy a sweet treat, and will sometimes nipple ripe strawberries and blueberries. They may also not be above snacking on the plants themselves. Electric net fencing (marketed for keeping chickens contained) works best to deter these prickly neighbors.

Bears: Our furry friends are opportunistic feeders. If they stumble across your strawberry patch when it's ripe, they'll help themselves. Same with the blueberries. And they're not subtle. The damage with likely be heavy, especially to blueberry bushes. Install an electric fence, at least temporarily, when the fruit is close to ripening.