

Trees and Shrubs That Should Not be Planted in the Pocatello-Chubbuck Area

Every year there are quite a few trees and shrubs sold at local nurseries and garden centers which are not adapted to our local climate or our local soils or both.

This list focuses only on two aspects: plant cold hardiness and adaptability to our alkaline soils. There may be other aspects of a plant's performance that would make it undesirable to plant but these two are the most critical.

In the descriptions below mention is often made of leaf yellowing or chlorosis. This condition in plants happens because certain nutrients in the soil are unavailable to the plant when the soil is alkaline. Chlorosis always stunts the growth of the plant and in many cases it can cause the plant to die a very early death. The main problem with our alkaline soils is that plants suffer because certain nutrients are not available. In addition to our alkaline soils, the water in both Pocatello and Chubbuck is also very alkaline which adds to the problem.

Abies Fir species There are many fir species which have been sold here occasionally over the years. Some Fir species grow poorly in alkaline soils including Balsam Fir and Fraser Fir.

Abies concolor White Fir Although this native species is often recommended it is not always easy in our soils. About half the White Fir trees I have watched over the years in the Pocatello have become chlorotic, lost needles and died. The literature indicates that White Fir does not tolerate heavier soils nor over watering. That has been my experience as well that they do best in a loose soil that is only slightly alkaline and with only moderate irrigation. Your chances of have a nice, long lived tree with this species in Pocatello – Chubbuck is only about 50-50.

Acer ginnala Amur Maple (also sold as 'Flame' Maple) This small tree has very attractive fall color and is very cold hardy but is not adapted to our alkaline soils. It may live for a few years but almost always turns yellow and slowly dies. The exceptions would be those areas in the mountains around Pocatello with better soil where this maple thrives. There are a few Amur Maples which have lived in Pocatello for many years but the vast majority never do well in our soil and die within 10 years or so of planting.

Acer palmatum Japanese Maple This small maple can be grown in Pocatello successfully and has been for years. However, most of the Japanese Maples planted here die because they do not survive hot, dry winds. This is a tree for sheltered places out of the wind and out of the hottest sun. 'Bloodgood' is the most cold hardy and the best here.

Acer rubrum Red Maple (note: do not confuse this maple with the red leaved forms of Norway Maple like 'Crimson King' which can be grown here) The varieties of Red Maple have green leaves which turn brilliant red in fall. Unfortunately none of them can survive very long in our alkaline soil. They may live for a few years but slowly turn yellow and die. Varieties to watch out for and avoid include: 'Autumn Flame', 'Northwood', 'October Glory', 'Scarlet Sentinel' and many others. All these varieties are cold hardy but **none** will survive long in our alkaline soil.

Acer saccharinum Silver Maple A very fast growing tree that is very cold hardy but like it's close relative Red Maple it does not survive long term in alkaline soils. May grow to 30 feet high in 10 to 12 years before it starts to turn yellow and eventually die. There are a few locations such as right on the banks of the Portneuf River and at high elevations where the soil is less alkaline that Silver Maple will grow long term but for most areas it should be avoided.

Acer x freemannii This is a hybrid between Red Maple and Silver Maple and like it's parents it does not survive long term in our alkaline soil. 'Autumn Blaze' is the most commonly sold variety and there are many in Pocatello and Idaho Falls that are 10 to 15 years old and dying. Like it's parents it can grow rapidly and look fine for a few years but eventually they will start to turn yellow and die. There are very few maples which turn red in the fall that will survive in our soils. If it's a maple and it turns red in fall it probably won't grow here.

Amelanchier Tree Serviceberries These are very nice small trees and they can grow well here as evidenced by a number which have survived 15 years or more. But many that are planted here eventually turn yellow and die back from growing in soil that is too alkaline. The varieties commonly sold here include 'Autumn Brilliance' and 'Princess

Diana'. Do not confuse these tree serviceberries with our two native species which are more shrubby. The native serviceberries are, of course, well adapted. Virtually all our local soils are alkaline but some are worse than others. This tree will grow well in slightly alkaline and even moderately alkaline soils but in the worst soils it will die. The worst sites in the Pocatello-Chubbuck area are new construction sites if the soil is compacted and also most sites on the benches are more alkaline than sites in the valley. This tree usually does poorly in heavily watered lawns as the increased moisture makes the problems of alkaline soil worse. The best Tree Serviceberries in this area are all in planter beds or on berms where they are not over-watered and perhaps where the soil is looser or has been amended. Again, these varieties of Tree Serviceberries can be grown here, just avoid the worst soils and don't overwater them.

Andromeda Bog Rosemary A very attractive and very cold hardy dwarf shrub but it absolutely will not grow in alkaline soils nor would it be likely to live long in a container if watered with alkaline water.

Apples (late ripening varieties) All apple varieties will survive in this area however a number of the popular grocery store varieties ripen so late that hard frosts would ruin the fruit before it has a chance to ripen. These late ripening varieties include: 'Granny Smith', 'Braeburn', 'Fugi', 'Pink Lady', 'Pacific Rose' all are very late ripening. One person who has a Braeburn apple tree in Pocatello says he is only able to get ripe fruit about 2 out of every 5 years and even then he has to pick the fruit before it is perfectly ripe. Some other varieties which are moderately late ripening here might work including 'Cameo', 'Rome Beauty' and 'Winesap'. The last two have been grown successfully in the warmer parts of Pocatello and ripen their apples most years. Select apple varieties which ripen early, midseason or only moderately late. Sometimes a variety will have a time listed when it will be ripe. It is usually best if the apples here are ripe by mid-october.

Arctostaphylos uva-ursi Bearberry, Kinikinick Although this is a native dwarf spreading shrub it only grows natively on acidic soils that are very well drained. It simply will not survive long if planted in a typical Pocatello – Chubbuck soil. It is native on very gravelly or sandy soils and needs those types of soils to survive.

Aronia Chokeberries Because of the similarity in names Chokeberry is often confused with Chokecherry. They are only distantly related and not similar. The most important thing is that the Chokeberries (*Aronia* species) will not survive long term in our alkaline soils. This is a shame since they are otherwise nice shrubs with wonderful fall color but both Red Chokeberry and Black Chokeberry will eventually turn yellow and die in our local soils. They could be grown permanently in a large container with some acidic soil like potting soils as they are very tough plants in the right soil. Also the highest elevations with less alkaline soils would be to their liking but for almost all areas in Pocatello-Chubbuck they should be avoided.

Azaleas (see Rhododendrons, or if you can't wait just know that they won't grow in our soils)

Betula nigra River Birch (This species is from the eastern and Midwestern states and should not be confused with our local native birch *Betula occidentalis* which should be called Water Birch but is sometimes mistakenly called River Birch) The true River Birch from the eastern states is often sold because it is resistant to the Bronze Birch Borer insect which is such a problem in certain white barked birches. However, the River Birch will not grow long term in our alkaline soils and there are quite a few River Birches in the Pocatello and Idaho Falls areas which are yellowing and slowly dying. 'Heritage' is the most often sold variety but it and the species should be avoided. There are actually several borer resistant white birch varieties available so there is no need to plant this species which is so poorly adapted to our soil.

Blackberries (non-hardy varieties) It must be said up front that there are some blackberry varieties that are very cold hardy and wonderfully well adapted to the Pocatello – Chubbuck area. I know of plantings that are 35 years old at least and still going strong. But there is a huge difference in cold hardiness between the least hardy and most hardy varieties. For example, the least cold hardy of all blackberry varieties is 'Marion' which is damaged by temperatures in the single digits even in Oregon where it is grown commercially. 'Marion' is rated as cold hardy only to 5° while the most cold hardy blackberry 'Darrow' is fully hardy in the -25° to -30° range. In many cases even the tender blackberry varieties may survive here by sprouting back from the roots but if most or all of the wood is killed by cold there will be no fruit. So it's not so much a question of survival but rather how much fruit will you actually get following winter damage. I will give the less hardy varieties commonly sold in this area and the temperatures they are normally damaged at.

Least hardy 'Marion' +5° , 'Boysenberry' -5° to -8° , 'Loganberry' -5° , 'Nightfall' -5° **Moderately hardy** 'Apache' -15° , 'Arapáho' -15° , 'Black Satin' -15° , **Hardest varieties** 'Chester Thornless' -20° to -25° , 'Triple Crown Thornless' -20° to -25° , 'Ebony King' , -25° , 'Darrow' -25° to -30°

Blueberries (see *Vaccinium* or if you can't wait to read that far just know that they don't grow in our soils)

Castanea species True Chestnuts I have never seen these for sale at local garden centers but every year several persons ask where they can get some. All of the true chestnut species are poorly adapted to alkaline soils and need neutral to acidic soils to grow. The one exception is the Spanish Chestnut which will tolerate some alkalinity but would be only marginally cold hardy at best here. Only certain seed sources of Spanish Chestnut would have much of a chance in our soils or winter temperatures. The typical Spanish Chestnut seed source is likely neither hardy nor soil adapted. All other chestnut species such as Chinese, American, Japanese etc. are not likely to survive in our soils. Do not confuse true chestnuts with the flowering Horse Chestnuts (*Aesculus*) which do grow well in our soils.

Cedrus atlantica Blue Atlas Cedar This is a beautiful conifer that would like our soils and have no problems with other weather conditions except that is only cold hardy to about -15° which means that in the coldest winters Blue Atlas Cedar would be severely damaged or killed here. A number of them have been planted here over the years and again they do well until a cold winter hits. Some have lived for 10 years or more so for an interesting novelty plant that you may lose some day it may be worth considering. The Weeping Blue Atlas Cedar is even less cold hardy and will be damaged by -10°.

Chamaecyparis species False Cypress, Hinoki Cypress, Sawara Cypress These species are normally only seen in nurseries and garden centers as dwarf varieties, sometimes with colored foliage. They are plenty cold hardy for this area but are not very well adapted to our soils nor do they grow well in conditions of low humidity and hot, dry winds. I have seen a few in Pocatello succeeding in sheltered positions where they are not exposed to wind or hot afternoon sun and likely where the soil is better than average or has been improved. But most planted here die a slow death.

There is one *Chamaecyparis* species that does grow well here and that is the Alaska Cypress (*Chamaecyparis nootkatensis*) and it's beautiful weeping form

Cornus florida Flowering Dogwood This and the closely related Japanese Dogwood *Cornus kousa* are the famous flowering dogwoods so well known in the eastern states and parts of the Midwest and South. They would be cold hardy enough to grow in Pocatello, at least in the warmer parts, but neither grows well nor survives long in alkaline soil. There are many other types of dogwoods which grow well here and they are related, but the true flowering dogwoods should be avoided due to poor soil adaptation.

Cupressocyparis leylandii Leyland Cypress This fast growing conifer would be well adapted to this area except that it is not quite cold hardy enough. Leyland Cypress will survive only down to about -15° and so it would likely be heavily damaged or killed by our coldest winters. They have been sold here and some are growing well and they will likely do well until the next cold winter.

Euonymus japonica Japanese Euonymus I questioned whether to put this on the list of plants to avoid. It is not fully cold hardy in Pocatello yet there are quite a few which have survived here for 15 to 30 years or more. If they escape cold winters the first 2 – 3 years and become established they will often recover from extreme cold by sprouting back from stems or roots. The leaves and stems are cold hardy to around -6° to -10° which is about the coldest lows for an average winter in Pocatello. So in mild to average winters these varieties do fairly well but in cold winters they can be severely damaged though they do often recover. Varieties that are commonly sold include 'Silver King' , 'Silver Queen' , 'Aureovariegata' and others. The Boxleaf Euonymus (variety *microphyllus*) is probably the least cold hardy.

It is easy to confuse this species with the other evergreen *Euonymus* species. There are many varieties of *Euonymus fortunei* which are much more cold hardy and are more reliable for this area.

Hamamelis Witch Hazels Only rarely sold at area garden centers but sometimes asked for. Most Witch Hazel species are poorly adapted to alkaline soils. The exception is the Ozark Witch Hazel (*Hamamelis vernis*) but that species is rarely

sold. The other commonly sold species might survive in the best of our soils with extra care but they should not be considered easy plants.

Huckleberries (see *Vaccinium*)

Hydrangea macrophylla Mop Headed Hydrangea It is hard to give a common name to this species but this is what people usually think about when they think of Hydrangea. These have blue, pink or white flowers in large round clusters. The old saying goes that in acidic soils the flowers will be blue, in neutral soils the flowers pink and in alkaline soils the flowers white. While this is somewhat true, it is not all that simple. First of all, only certain varieties will be blue regardless of the soils they are growing in. Secondly, these hydrangeas only tolerate slightly alkaline soil regardless of flower color. In our soils, which are more alkaline, they often do not grow well nor live long. Thirdly, on most varieties the flower buds are killed or damaged at 0° to -5°. So only following mild winters would the buds survive to produce flowers that season. These types of hydrangeas are also plants which like higher humidity, less wind and less intense sunshine that we have. A few newer types such as 'Endless Summer' flower on new growth so it doesn't matter with those varieties if the buds are frozen in winter because new buds will form on new growth. But these newer varieties still have problems growing at all in our soil, in our wind, low humidity and other stressful conditions. In other words, they are very wimpy plants. I have talked to a few people who have grown them successfully for a number of years with lots of work and maintenance. But when I worked at a nursery at least half of the 'Endless Summer' Hydrangeas were returned dead within a year and most of the other half were returned within the two year guarantee period.

There are many other species and varieties of hydrangeas. Two species grow really well here; *Hydrangea paniculata* and all it's varieties and also *Hydrangea arborescens*. These are somewhat different than typical hydrangeas but they actually grow well here. Their flowers are always white (or slightly pink) regardless of the soil

Ilex species Holly There are two basic kinds of holly, evergreen and deciduous, but neither normally grows well in alkaline soils. While the deciduous holly species are cold hardy, most of the evergreen species are not. The Blue Hollies such as 'Blue Boy', 'Blue Girl', 'Blue Prince' etc. are sold at almost every nursery and garden center in Pocatello because they are more cold hardy than typical evergreen hollies. They are certainly cold hardy enough for this area and would require no protection. But they are not adapted to our alkaline soils. They grow well in acidic, neutral or even very slightly alkaline soils but in moderately to highly alkaline soils like we have they basically sit without growing for a few years, then get increasingly yellowish, then slowly die. Hundreds are sold each year yet very few seem to ever grow or look good. The only Blue Holly I have seen in Pocatello that has done well for many years is the one in my yard and it is doing well only because it is growing in acidic mountain top soil that I brought in and filled a 4' x 12' x 2' deep trench. I haven't seen true mountain top soil of good quality sold locally for years so it might be hard to duplicate what I have done. Certainly hollies are not something you can just stick in the ground and expect them to grow well without a lot of work. Japanese Holly is sometimes sold locally. It has small rounded leaves and looks very much like boxwood. Japanese Holly doesn't grow well in our soils either and there is no reason to plant it because real Boxwood does so well here.

Liquidambar styraciflua Sweet Gum A beautiful tree with maple like leaves and wonderful fall color unfortunately it does not last long in our alkaline soils. The Sweet Gums planted in Pocatello have only lasted about 10 years before dying from chlorosis and they only looked good for about 5 of those years.

Liriodendron tulipifera Tulip Tree This is a wonderful tree which has plenty of cold hardiness and other tolerances to grow here except that it does not survive well in highly alkaline soils. A number have been planted over the years in Pocatello and they survive and grow somewhat for 8-10 years before starting to decline. I only know of one that has done well for 15 years or more and that specimen may be in much better than average soil. There have been enough Tulip Trees planted in Pocatello & Chubbuck over the last 30 years that it is quite clear they are not trees to be counted on for the long term because of their poor soil adaptation.

Liriope & Ophiopogon Lily Turf and Mondo Grass These are very common groundcovers in some parts of the U.S. but are rarely planted here. Both have been sold locally but I have never seen them last very long. They need less alkaline soil than we have. In addition, some are not very cold hardy and would be marginal here for that reason as well.

Magnolia species & varieties Magnolias To many persons the word Magnolia is associated with the South and they can't imagine a Magnolia surviving anywhere cold. However, there are many species and varieties of Magnolia which tolerate temperatures well below 0° and they are commonly planted all over the Northeast and Midwestern states. I saw some Star Magnolias in Preston, Idaho after a -30° winter and they were in full flower and hadn't missed a beat from the cold winter. The catch is that none of the cold hardy magnolias grow very well in alkaline soils. A few will tolerate slightly alkaline soils but most of our soils in the Pocatello-Chubbuck area are too alkaline for long term survival. Like many trees and shrubs that are marginal in our soils, they will grow well for a few years, then start to turn yellow and eventually die. Based on some magnolias planted on the ISU campus in the 1980s you can expect them to look nice and flower well for about 2 to 4 years, then they will look sick and stop growing and by about the 8th year they will be dead. There are many varieties of Star Magnolias and Saucer Magnolias that are cold hardy but to get them to grow well in our soils would require lots of work and maintenance.

Photinia Red Tip Occasionally sold here but not at all cold hardy. These are considered marginal even in Boise and Salt Lake. They have survived a winter or two in very protected locations but even an average winter here will kill them.

Pieris Pieris Although a number of these varieties would be cold hardy in Pocatello none of them grow at all in alkaline soils. Like their relatives rhododendron, azaleas and blueberries they absolutely must have acidic soil to survive.

Pinus monticola Western White Pine This is our state tree but do you think it will grow in our soil, absolutely not. In Idaho it is actually only native to the northern counties which is like another planet from this end of the state as far as soils are concerned. I have never seen this tree in local nurseries but from time to time people try to plant it just because it is our state tree. Fortunately our state flower *Syringa* (or Mockorange) does grow really well here.

Pinus densiflora Japanese Red Pine This is most often sold as the flat-topped variety 'Tanyosho'. These are marginal in this area because they do not grow very well in alkaline soil. There are a few older specimens in town but these exhibit moderate to severe chlorosis (leaf yellowing) and often stunted growth from the alkaline soils we have. They may be acceptable if planted in our better soils but certainly they would not last very long on the worst soils such as the bench areas and new construction sites with compacted soil.

Pinus strobus Eastern White Pine A beautiful soft needle pine with many varieties but unfortunately it does not grow well in alkaline soil.

Prunus glandulosa Dwarf Flowering Almond This medium sized shrub is often sold here and looks beautiful in flower but is often very short lived and most often within a few years of planting it is yellow (chlorotic) and dying back from nutrient deficiencies caused by our alkaline soil. Over watering this plant makes the problems even worse. Do not confuse this plant with another flowering almond (*Prunus trilobata*) which is much larger growing and has larger, darker pink flowers earlier in the spring. The larger flowering almond is very well adapted and thrives in our soil. It is also known as Rose Tree of China or Double Flowered Plum

Quercus species Oak Trees There are many oak trees which are cold hardy but many of them do not grow well in alkaline soils. The oaks that do really well in Pocatello – Chubbuck include Gambel's Oak, Bur Oak, Chinkapin Oak and English Oak. There are others that would do well but these are the only species you would likely see at area nurseries that will grow well here.

Quercus alba White Oak Normally this eastern species does not grow well in alkaline soil. There may be a few individual trees that seem to be this species growing well in alkaline soil but it is most likely that they are either misidentified or they may be hybrids with another oak species that does tolerate alkalinity.

Quercus bicolor Swamp White Oak Somehow this tree species has achieved a reputation for being able to grow in alkaline soil which it does not deserve. Ample evidence and literature indicate that this species normally will not grow well in alkaline soils. One planted on the ISU campus in the early 1990s didn't even live 5 years before it was dead from chlorosis. There are some oaks in Pocatello on Oak Street that have some characteristics of Swamp White Oak that have

done well for 12 to 15 years but those trees also have some characteristics of Bur Oak and when they were planted they carried tags that said they were Bur Oak. My guess is that they are Bur Oak – Swamp White Oak hybrids and that is why they are doing so well. Bur Oaks do very well in alkaline soil. But avoid planting Swamp White Oak as the chances of having a tree that will survive long are very low.

Quercus coccinea Scarlet Oak This beautiful species will tolerate and grow in slightly alkaline soils but in moderate to highly alkaline soils it will die a slow and painful death. To my knowledge it has a 100% failure rate in the Pocatello area and a 0% success rate.

Quercus palustris Pin Oak This is perhaps the worst tree species to plant in alkaline soil. It has absolutely no hope of living in our soils no matter what is done to it or to the soil.

Quercus rubra Red Oak Some persons are of the opinion that Red Oak is tolerant of alkaline soil. While it is not as bad as Pin Oak it is still not well enough adapted to the level of alkalinity in this areas soils to be depended upon here. There are two Red Oaks on the ISU campus which are probably 40 years old but it is likely they were planted in some soil which is not typical as they are in between two buildings. In addition they are very small for their age and from time to time they show significant chlorosis. This tree is simply not dependable in a typical Pocatello – Chubbuck soil.

Raspberries – non-hardy varieties Most raspberry varieties do quite well in the Pocatello – Chubbuck area and are quite productive. But every year several of the local nurseries and garden centers bring in tender raspberry varieties that are the varieties grown in Washington and Oregon. While those varieties will survive here the fruit production will usually be very low because so much of the cane wood will be killed back from winter cold. Tender raspberry varieties to avoid in this area are ‘Meeker’, ‘Willamette’, ‘Tulameen’, ‘Cascade Delight’ and ‘Cascade Dawn’. These may show some stem damage at 0°, significant dieback at -5°, and very heavy damage with little or no fruit at -10°. Most other raspberry varieties sold and planted locally are 10 to 20 degrees hardier and are very productive here. Just avoid planting the tender varieties.

Rhododendrons and Azaleas These are closely related and so azaleas are treated here with rhododendrons. Rhodies and Azaleas are often thought of as exotic plants and some people assume that you don’t see them in Pocatello yards because they are tender to cold. Well they certainly are exotics but not because all of them are tender to cold, for there are many cold hardy varieties of both Rhododendrons and Azaleas. They are exotics because they will not grow in our soil at all. They demand the exact opposite of our soil. They must have highly acidic soil that is well drained and full of organic matter. It is virtually impossible to make our soil into something they could grow in. Even if that were possible you would still be watering them with our very alkaline water and so all your soil improvement work would be undone. A few people have managed to keep them alive for a few years by totally replacing the soil with something acidic like certain potting soils or almost straight peat moss. But even those efforts are eventually doomed. The record that I know of for the rhododendron kept alive the longest in Pocatello – Chubbuck is 7 years and it only flowered well for about 3 of those years.

Robinia ‘Purple Robe’ Purple Robe Locust It is very hard to put this tree on the list of plants to avoid because it is so well adapted in every way to this area. And it has such beautiful flowers. But there are two very serious problems which almost guarantee that Purple Robe Locust will not grow to maturity. First problem is the Black Locust Borer which is an insect whose larva can riddle the tree with holes. The tree can withstand much damage from the borers without dying but it becomes very weak. The second problem is that this particular locust variety has very brittle wood and very weakly attached branches. It is very subject to wind damage. These trees grow so fast with such long, poorly attached branches and they can literally blow apart in a wind storm. I have a theory as to why they are so weak wooded in landscapes. The Black Locust is native to poor, non-fertile soils and to compensate it fixes nitrogen (fertilizer) through nodules on it’s roots, in other words it makes it’s own fertilizer. Take a tree that is adapted to sterile soils and place it in a lawn on fertile soil and water it heavily and fertilize it even more with the lawn and it will grow like crazy. All that rampant growth is weak and subject to wind damage. So if you want a Purple Robe Locust don’t plant it in a lawn, don’t water it very much and certainly don’t fertilize it.

Sequoiadendron giganteum Sequoia or Giant Redwood This stately tree from the Sierras is well adapted to growing here in every way except it doesn't possess quite enough cold hardiness to survive the worst winters here. It is hardy to around -15° which means that it will be fine in mild to average winters here but would be damaged or possibly killed by cold winters. It could be a fun novelty tree for a few years if planted with the knowledge that it may die from cold in the worst winters.

Tsuga canadensis Eastern Hemlock This is a beautiful tree with many dwarf forms but alas, none of them tolerate alkaline soil at least not in the long term.

Vaccinium species Blueberries, Huckleberries etc. These belong to the same plant family as rhododendrons and azaleas and have the same soil demands which is an acidic, well drained soil full of organic matter. In other words, they need a soil which is exactly the opposite of what we have in this area. Cold hardiness is not the issue, it's all soil problems. A few people have succeeded in keeping blueberries alive for a few years (5 or 6 years is the most I have heard of) by totally changing the soil. If you are going to bother trying this use either potting soil out of a bag or perhaps straight peat moss. Blueberries and Huckleberries need a soil pH of about 5.5 or lower. Our soils are between 7.5 and 8.5 and since the pH scale is logarithmic that means our soils are 100 to 1000 times too alkaline for blueberries. The pH of our water is around 8.0 or higher too. You must totally dig out all the soil in an area about 4 feet by 4 feet by 2 feet deep for each blueberry plant and totally replace the native soil, it doesn't do much good to just mix something in to our native soil you need to totally get rid of it. Even then you are left with irrigating with our alkaline water unless you do something like save rain water. All that work so the plants might live 5 years and you might get a few fruits for 2 or 3 of those years. Much, much easier to grow with similar fruit are the native serviceberries or saskatoons.