

# Tree Planting, Care, Maintenance

Toso Bozic P.Ag

Tree Expert/ISA Arborist

ATTS Group Inc/ Yard Whispers

[www.yardwhispers.ca](http://www.yardwhispers.ca)



## About Us

Trees are our  
Passion

**Yard Whispers** is a leading tree, forestry and agroforestry **consulting company that provides services** for sustainable management of trees/forest on public and private lands

### We offer services to:

- ❑ Residential and commercial business
- ❑ Golf course industry
- ❑ Municipal governments
- ❑ Parks and campgrounds
- ❑ Urban developers
- ❑ Legal and regulatory bodies
- ❑ Educational institutions
- ❑ NGO - provincial, national and international

Yard Whispers is wholly owned subsidiary of [ATTS Group Inc](#)



# Our Services

## Arborist Services

- **Forensic Tree Expert for insurance and legal services**
- Integrated Pest Management ( IPM)- Tree pests ID, assessment and recommendation
- **Tree Risk and Hazard Assessments** (TRAQ Certified)
- **Tree appraisal and value assessment**
- Tree preservation and protection plan
- Tree planning and designs for acreage owners

## Urban/Town Tree services

- Tree inventory for rural and urban areas
- Urban forest management plan
- Development of tree bylaws, policy and regulations

## Natural forest management

- Woodlot management plans- harvesting and reforestation
- Tree/forest design, planting and species selection for reforestation and reclamation projects

## Agroforestry Services

- Shelterbelts and windbreaks design
- Riparian and natural revegetation
- Biodiversity, wildlife and pollinators planting

# Key Messages

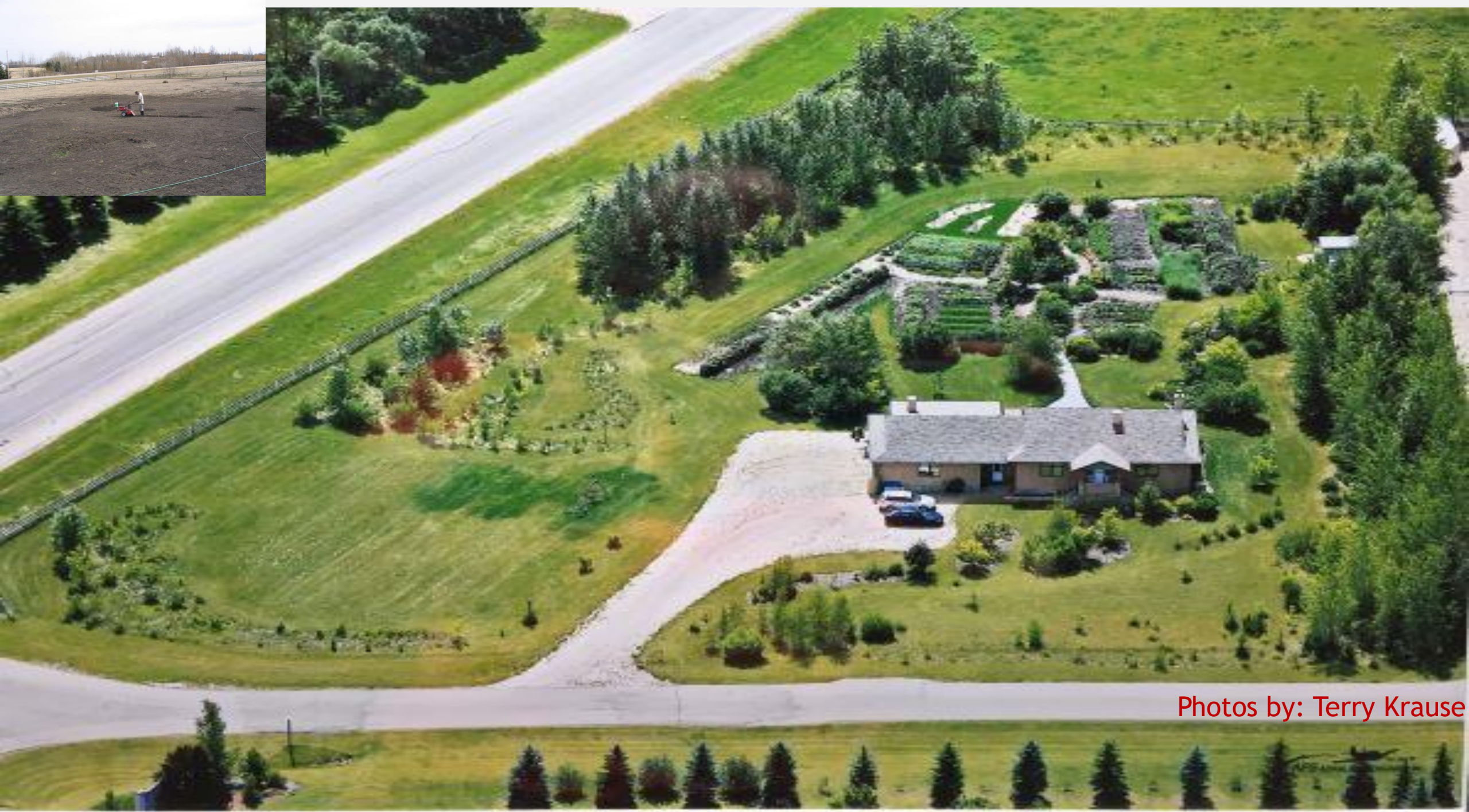
- ▶ *Develop plan during the wintertime* - draw maps, collect information on sites, order trees, budget and time
- ▶ *Understand your soil*
- ▶ *Choose site preparation method*- mechanical, chemical and no site prep
- ▶ *Choose planting stock appropriately* - There are variety of planting materials that you can choose from
- ▶ *Choose planting technique* - manual or mechanical
- ▶ *Plant trees properly* - this the MOST IMPORTANT thing to do
- ▶ *Perform some weed control methods*-mechanical, chemical, plastic mulch or other type of mulch
- ▶ *Water properly* - each tree requires a different amount of water
- ▶ *Fertilizing* - only if it is necessary
- ▶ *Protect trees from wildlife*



# Values of trees to your property

- ▶ reducing summer heat (cooling effects)
- ▶ protecting from cold winter winds (heating effects)
- ▶ increasing crop yields and protects livestock
- ▶ increasing property values up to 20 %
- ▶ improving well-being through stress reduction and increased comfort
- ▶ aiding with storm water management-reduce water erosion
- ▶ providing a place to play and relax
- ▶ reducing noise and dust effects
- ▶ providing a home to many wildlife species
- ▶ sequester carbon
- ▶ Recharge dugouts and underground water





Photos by: Terry Krause



# Diversity at Terry Krause place 64 species

<b>Prairie Fire Crab</b>	<b>Snow Sweet Apple</b>	<b>Rescue Crab</b>	Mock Orange
<b>Brooks Poplar</b>	<b>Okanese Poplar</b>	<b>Northwest Poplar</b>	<b>Green Giant Poplar</b>
<b>Pembina Plum</b>	<b>Brookred Plum</b>	<b>Double Flowering Plum</b>	<b>Elderberry</b>
<b>Lodgepole Pine</b>	<b>Mugo Pine</b>	Common Lilac	Vilosa Lilac
Red Osier Dogwood	Yellow Dogwood	Variegated Dogwood	Red Elder
Nanking Cherry	<b>Evans Cherry</b>	<b>Carminc Jewel Cherry</b>	<b>Cupid Cherry</b>
<b>Crimson Passion Cherry</b>	<b>Romeo Cherry</b>	<b>Juliette Cherry (all Romance Series but Carminc Jewel)</b>	
Western Chokecherry	Western Sandcherry	<b>Mayday</b>	<b>Red Maple</b>
Highbush Cranberry	Snowball (viburnum)	Rowen Berry	Mountain Ash
<b>White Spruce</b>	<b>Alberta Spruce</b>	<b>Balsam Fir</b>	<b>Bird's Nest Spruce</b>
<b>4 Juniper Species</b>	Native Gooseberry	Hedge Rose	<b>American Elm</b>
<b>Laurel Leaf Willow</b>	<b>Sharp Leaf Willow</b>	<b>Siberian Larch</b>	<b>Green Ash</b>
<b>Manitoba Maple</b>	<b>Red Maple</b>	Saskatoon (smoky)	<b>Siberian Elm</b>
Black Currant (Ben Nevis)	Red Currant	5 Honeyberry Species (tundra, aurora, borealis +	
Raspberry - Boyne	Raspberry – Red Mammoth	<b>Paper Birch</b>	<b>Pussy Willow</b>
<b>Bur Oak</b>	Hazelnut	Cotoneaster	Forsythia





# Tree and water

- ▶ Approximately **25 to 50 % of a living tree** is made up of water, depending on the species and time of year.
- ▶ Can absorb up to **18 inches of rain** prior to release to surface ( depending on soil)
- ▶ Study found that deciduous trees( aspen, balsam poplar) took up a surprisingly large amount of water in the period between snowmelt and leaf-out. These trees **absorbed 21 to 25 % of** the available snowmelt water -- to the point of being completely saturated
- ▶ A healthy **100-foot-tall tree can take 11,000 gallons of** water from the soil and release it into the air again, as oxygen and water vapor, in a single growing season
- ▶ Balsam poplar can take **60-300 litres of water per day**





# Steps to establish trees

1. Site selection - slope, exposure, drainage, soil, wind, roads. et
2. Design - linear or in cluster
3. Species selection - variety of species the better
4. Site preparation - you may need do some site preparation
5. Tree/shrub planting - manual or mechanical
6. Watering
7. Weed control
8. Wildlife control
9. Insect and diseases issues
10. Environmental issues
11. Long Term Maintenance



# Site Selection and Assessment



- ▶ **Soil types**- clay, peat, sand, loam and salinity, dry or wet
- ▶ **Sun light and** exposure- low, shade, full sunlight
- ▶ **Prevailing wind** direction
- ▶ **Topographic features** - hills, creeks, lakes, sloughs, depressions, ridge, etc
- ▶ **Drainage and ponding** - how long area stay wet after spring melt or heavy rain
- ▶ **Water quality and quantity**
- ▶ **AND very important - Visit already established shelterbelts and properties**

## Draw a map of:

- ▶ Roads, buildings, corals, fences, power lines, pipelines, existing shelterbelts,
- ▶ Locate building in relationship with trees
- ▶ Keep 100 feet from buildings and 75-100 feet from road
- ▶ Future buildings, storage, parking, bins, field access

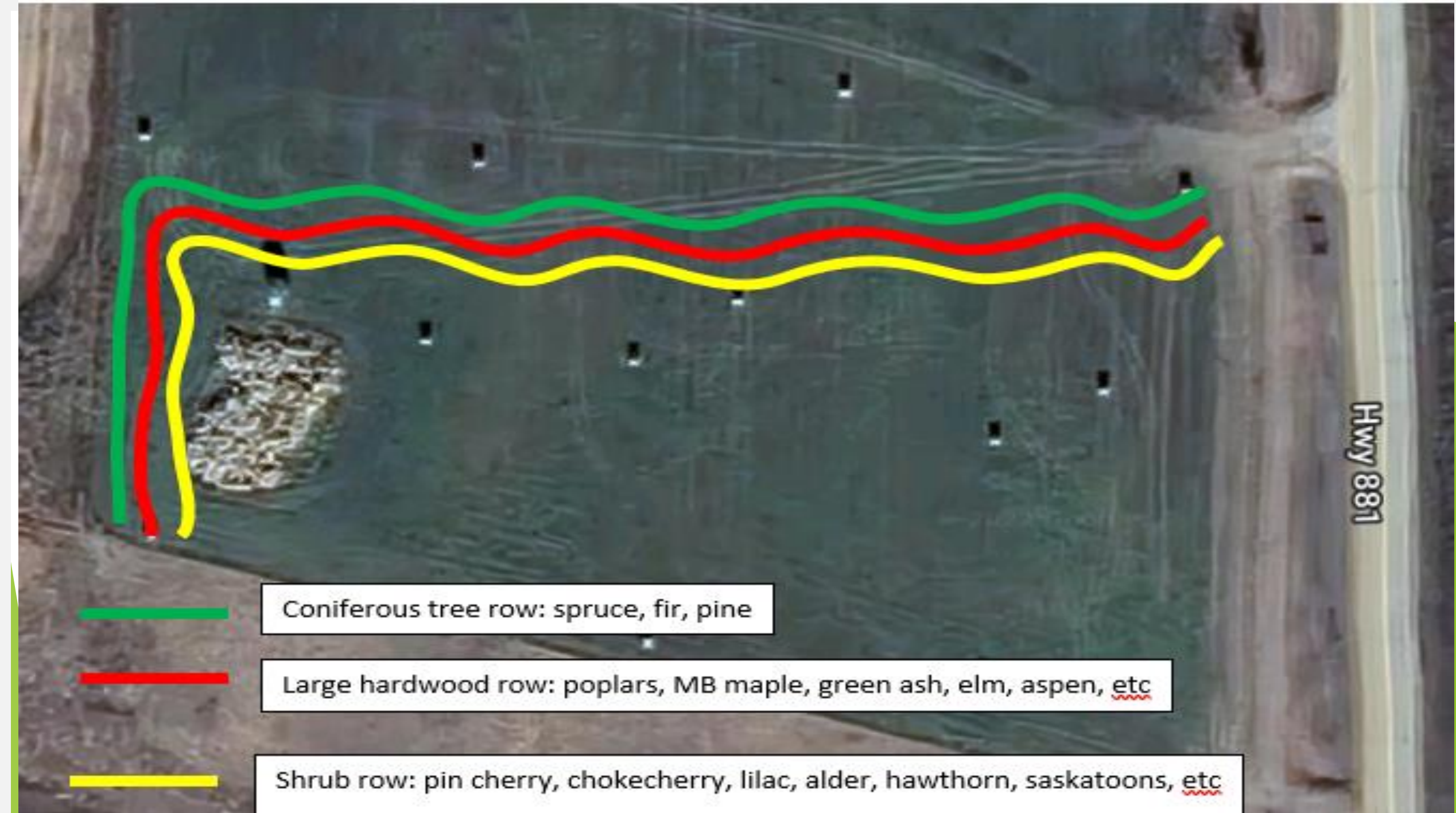




# Use technology- airphotos and drones









## Appendix B - Detail Row Design

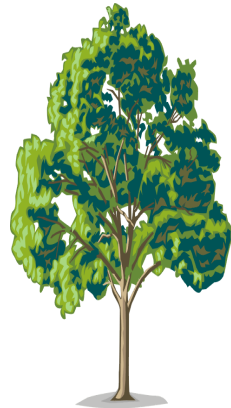
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# Physical structures checklist - MUST

- ▶ Power lines ABOVE and BELOW ground
- ▶ Cable Lines ABOVE and BELOW ground
- ▶ Water and sewer lines and outflow area
- ▶ Telephone lines
- ▶ Gas and propane lines
- ▶ Sidewalks, pathways
- ▶ Pipelines, and valves including right of ways and easements



roads



buildings  
driveways  
dugouts



150 ft.

100 ft.

# Canada Plant Hardiness Zone

*“A hardiness zone is a geographical area defined to encompass a certain range of climatic conditions relevant to plant growth and survival” -Wikipedia*

- Choose right tree and shrub that are hardy to survive cold and harsh climate
- Visit places such as arboretums, parks, town and city boulevard or private property where introduced trees and shrubs are surviving and thriving
- **Choosing the right plant for the right place**
- Understand your soil, sunlight, and moisture
- Providing long term care and maintenance will help trees and shrubs to survive
- Understand local weather conditions and events such as rain, hail, drought, earl/late snowfalls, extreme freezes and chinook winds

Northern Alberta is 2a to 3b plant hardiness zone



# Wind direction- Rycroft

## Alberta Climate Information Service (ACIS)

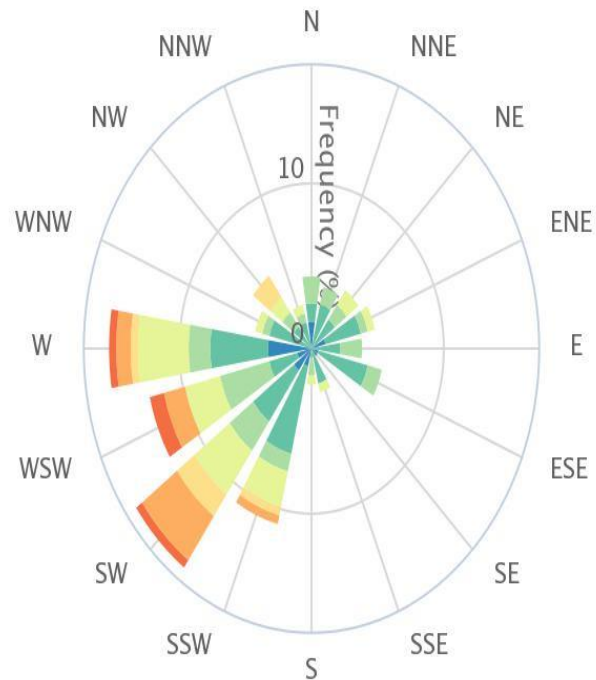
### Data Products & Tools



**Winter Season** October 1 -April 1 wind direction

Rycroft AGCM Average Wind Direction at 10 meter height (°)

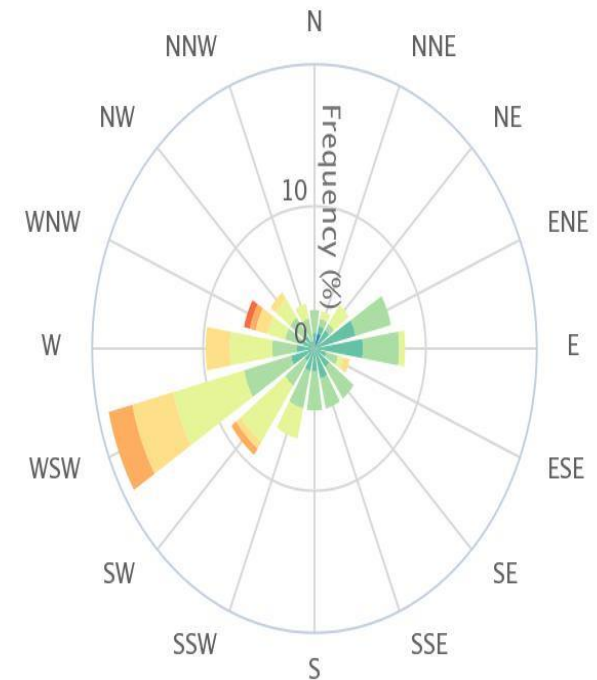
For Sat Oct 01 2022 01:00:00 to Sat Apr 01 2023 01:00:00



**Growing season** -April 1 - October 1 wind direction

Rycroft AGCM Average Wind Direction at 10 meter height (°)

For Fri Apr 01 2022 01:00:00 to Sat Oct 01 2022 01:00:00





# Wind direction - Valleyview

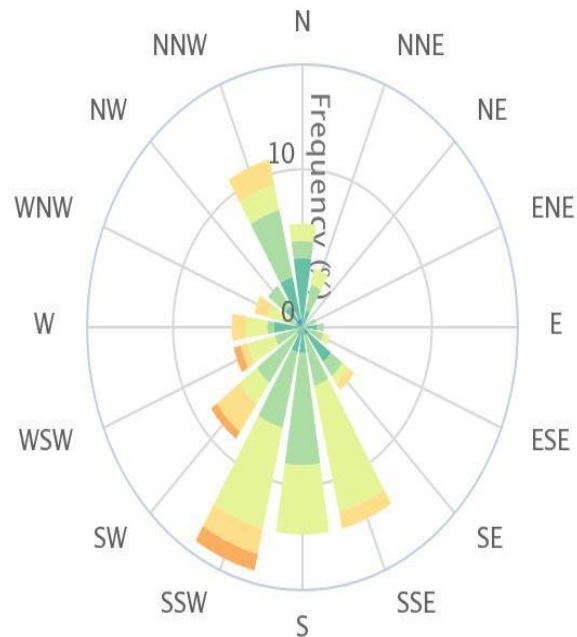
Alberta Climate Information Service (ACIS)  
Data Products & Tools



**Winter Season** October 1 -April 1 wind direction

Valleyview AGDM Average Wind Direction at 10 meter height  
(°)

For Sat Oct 01 2022 01:00:00 to Sat Apr 01 2023 01:00:00

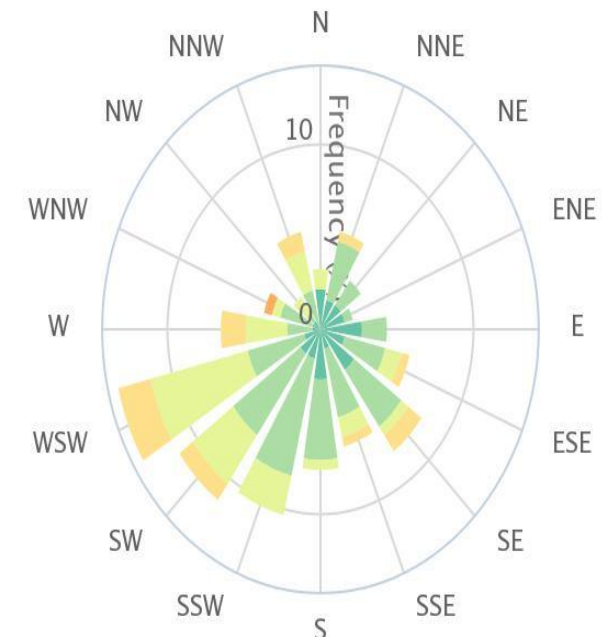


$\geq 35.0$ km/h	$<35.0$ km/h	$<30.0$ km/h	$<25.0$ km/h
$<20.0$ km/h	$<15.0$ km/h	$<10.0$ km/h	$<5.0$ km/h

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# Soil

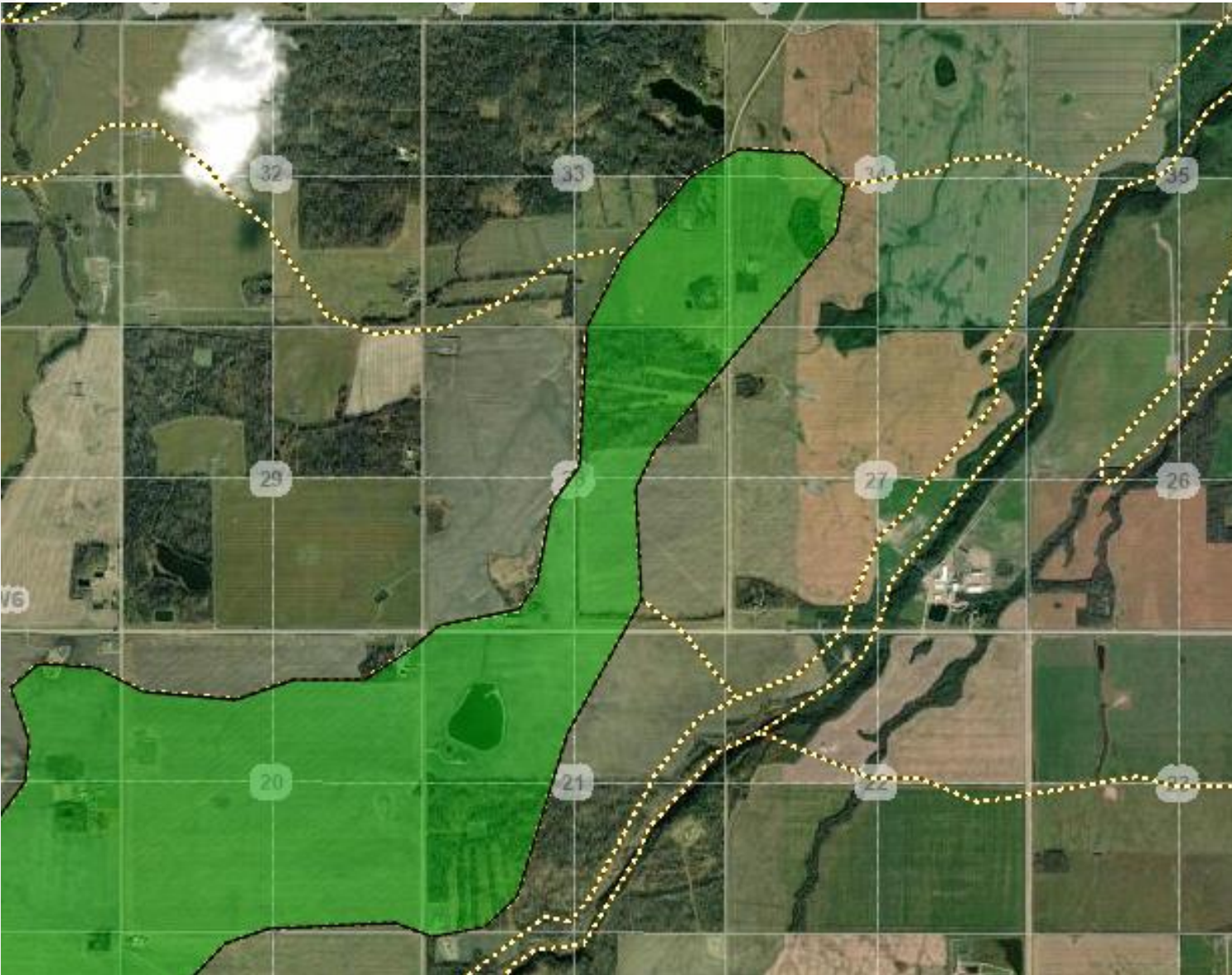
- ▶ **Know your soil** prior you design, site perpetration, tree choice, planting, care and maintenance
- ▶ Roots of **trees live on 6-12 inch of top soil**
- ▶ Conduct soil testing
- ▶ **Healthy soil, healthy roots and healthy trees**
- ▶ **Do not put \$ 3-500 beautiful trees in 0.10 cents soil**





# Alberta Soil Information Viewer

<https://soil.agric.gov.ab.ca/agrasidviewer/>



Variable	Value
POLY_ID	23761
Map Unit Name	DXHZ1/U1h
Landform	U1h - undulating - high relief
LSRS Rating (Spring Grains)	3(10)

## Landscape Model Descriptions:

Orthic Gray Luvisol on fine textured (C, SiC) till (DXV).  
Gleyed Gray Luvisol on fine textured (C, SiC) till (HZM).  
The polygon may include soils that are not strongly contrasting from the dominant or co-dominant soils (1).  
Undulating, high relief landform with a limiting slope of 4% (U1h).

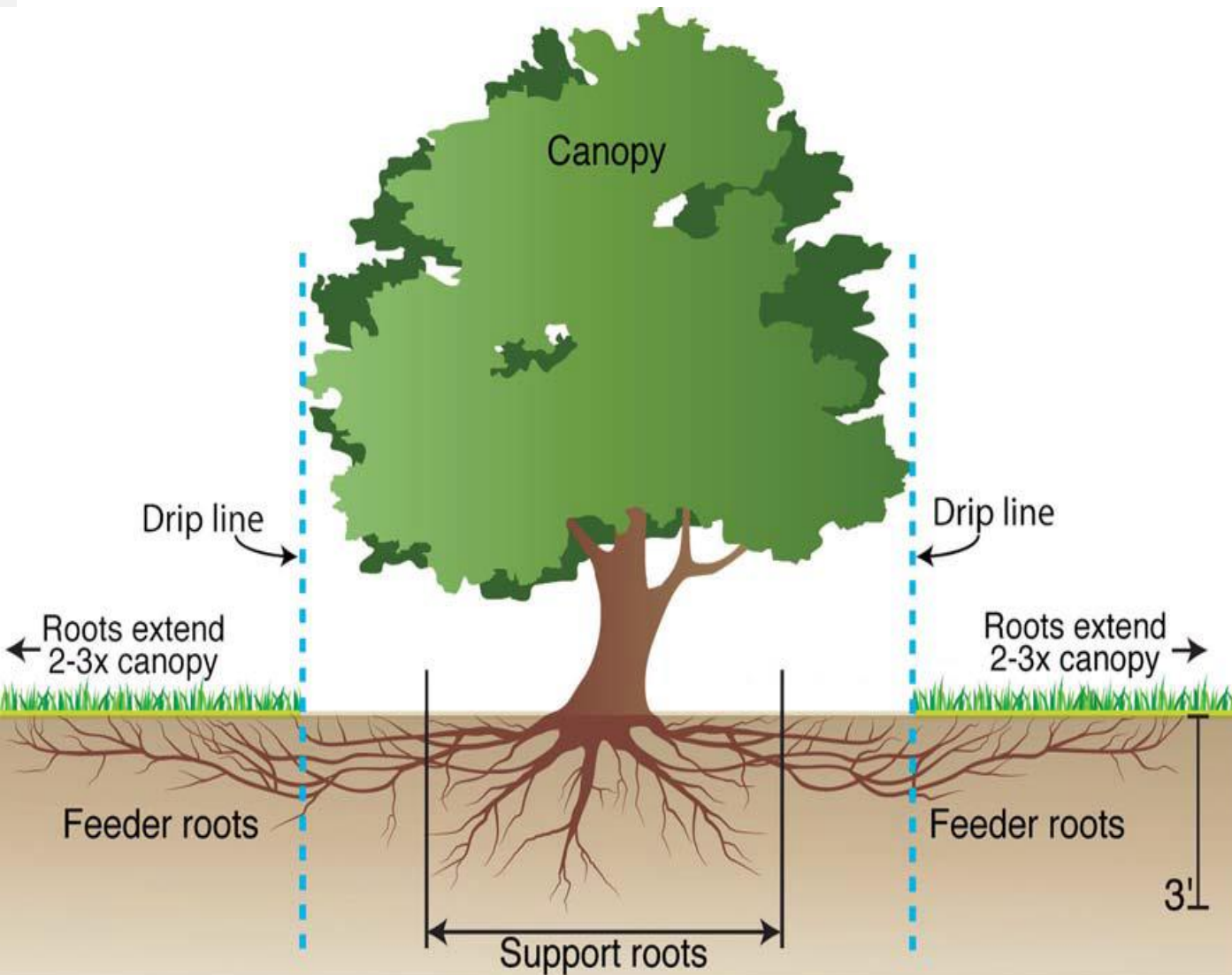
Image

Landform Model

Landform Profile

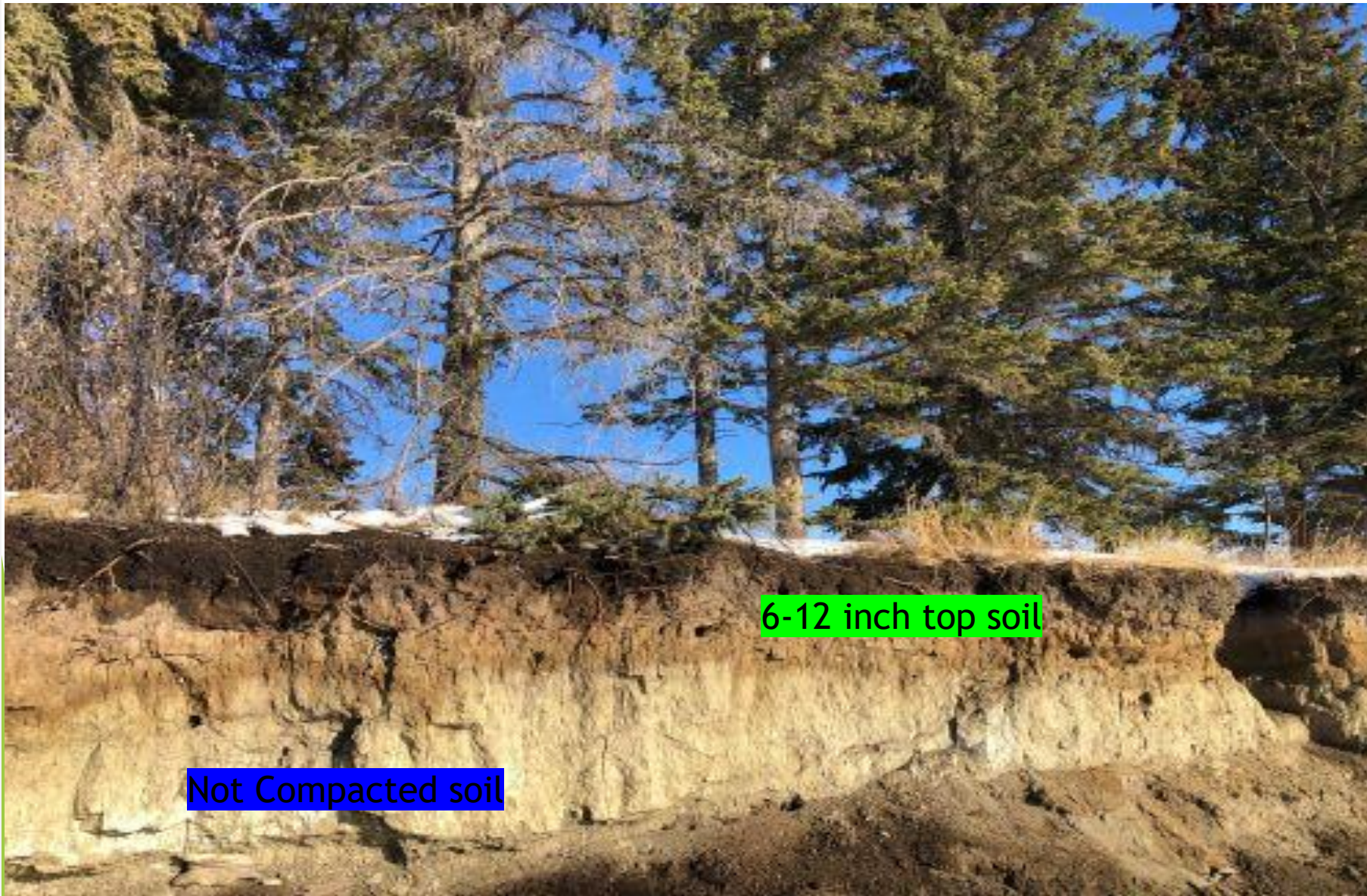
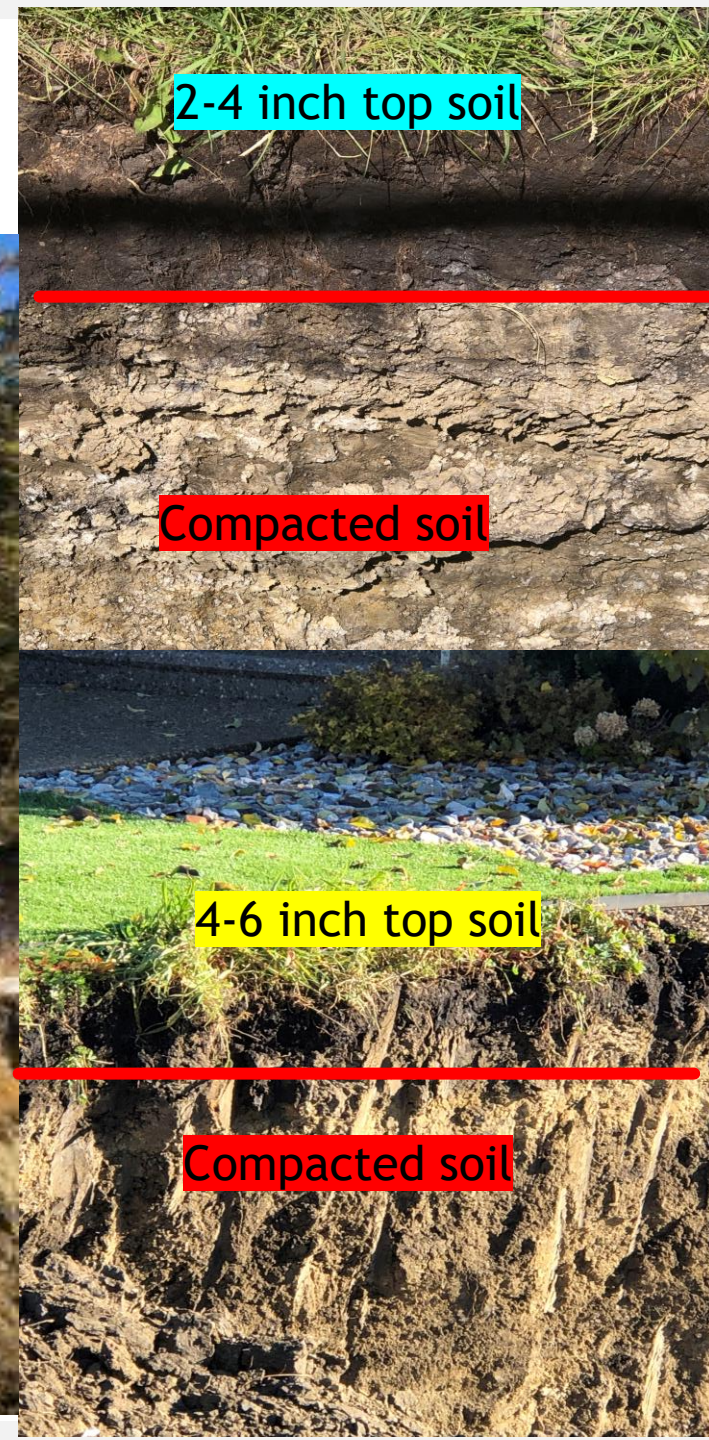


# Tree roots shape and depth





# Soil Profile

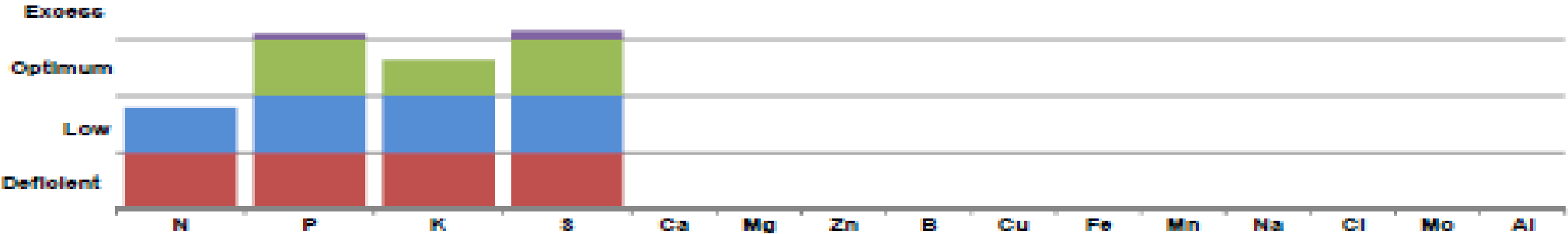




# Soil lab test



		Soil Nutrients														
Lab ID	Depth	Macros			Secondary			Micros								
		NO3-N lbs/ac	P lbs/ac	K lbs/ac	SO4-S lbs/ac	Ca ppm	Mg ppm	Zn ppm	B ppm	Cu ppm	Fe ppm	Mn ppm	Na ppm	Cl ppm	Mo ppm	Al ppm
	0-12	54	97	489	72											
Available Total		54	97	489	72											

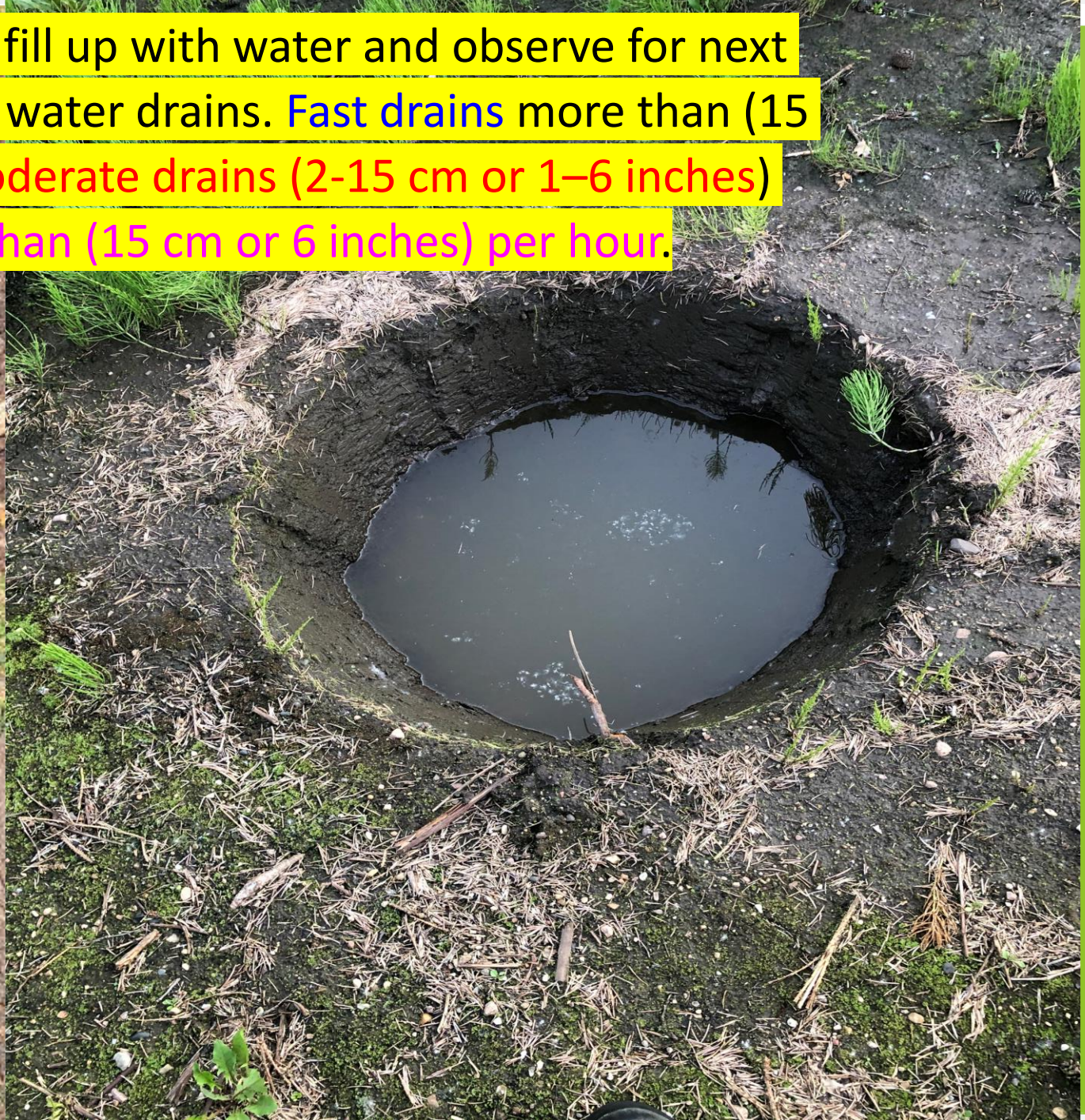


Soil Characteristics													
Lab ID	Depth	OM	Estimated N	pH	Sol Salts	Lime Req.	% Base Saturation					ECEC	K/Mg Ratio
		%	lbs/ac	1:1	1:1	tonnes/ha	Ca	K	Mg	Na	H	Total	-
	0-12	5.7	40	7.9	0.5								

Soil Texture Characteristics					
Customer	Texture	Sand	Silt	Clay	CEC
Sample ID	Class	%	%	%	meq/100g
	Sandy Clay Loam	46.3	27.9	25.8	

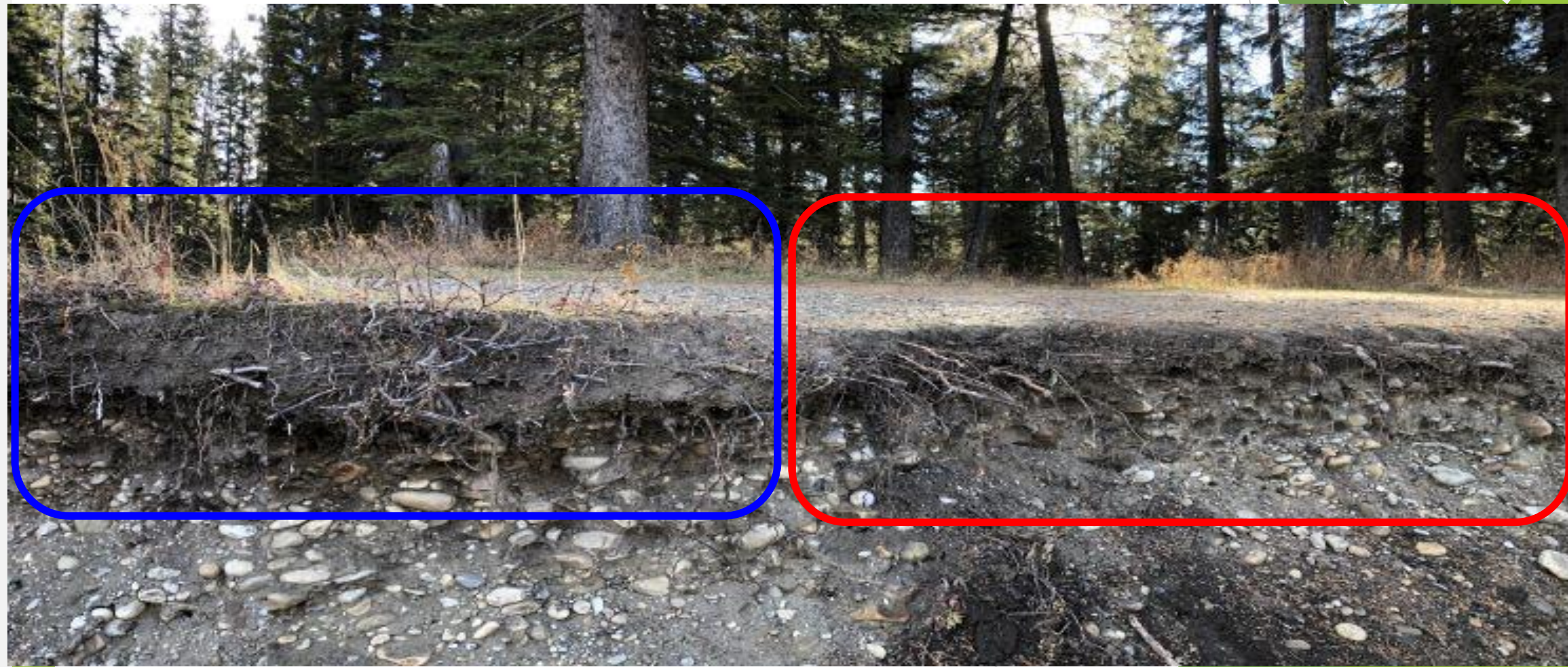


Dig hole 12 in (foot deep) and fill up with water and observe for next 12 hours to see how rapid the water drains. **Fast drains** more than (15 cm or 6 inches) in an hour; **moderate drains** (2-15 cm or 1-6 inches) per hour, and **slow drain** less than (15 cm or 6 inches) per hour.





# Compaction - Killer of tree roots





# Soil compaction

- ▶ Due to soil compaction roots can't grow and kills the trees
- ▶ Very common problem in new house development and road developments
- ▶ Trees grows very well in first decade but once roots hit compacted soil they can't penetrate the soil and trees slowly start dying - very common with spruce
- ▶ Also in saline soils- roots hit hard layer with high concentration of salt and start dying





# Site preparation - Chemical and tilling



Photo- Terry Krause



# Salt tolerant species

- ▶ Caragana -very invasive
- ▶ Sea Buckthorn
- ▶ Silver Buffaloberry
- ▶ Russian Olive -very invasive
- ▶ Common Lilac
- ▶ Green Ash
- ▶ Ponderosa pine
- ▶ Chokecherry
- ▶ Hawthorn
- ▶ Siberian elm
- ▶ Laureleaf Willow
- ▶ Rocky Mountain Juniper

## What you can do about salt and saline soils

- ▶ Plant trees and shrubs tolerant to salinity
- ▶ Plant further way from road -keep trees at least 60 feet from roads
- ▶ Trees are more sensitive at establishment and young
- ▶ Plants are less tolerant in dry and hot climate
- ▶ Salt reduce growth and survival
- ▶ Mulching can help in area where there is salt spraying not in salty soils
- ▶ Wash salt off trees in early spring to reduce the extent of injury to sprayed branches.





# Trees and Shrubs for clay soils

- ▶ Hybrid poplars (most of them)
- ▶ Balsam poplar, Aspen and Plains Cottonwood
- ▶ American and Brandon Elm
- ▶ Willows
- ▶ Green and Black Ash
- ▶ Bur oak
- ▶ Manitoba maple
- ▶ Linden /Basswood
- ▶ River Birch
- ▶ Crabapple
- ▶ Larch
- ▶ Dogwood ( many varieties)
- ▶ River alder
- ▶ Pincherry
- ▶ Common lilac
- ▶ Nannyberry





# Trees and Shrubs for sandy soils

- ▶ Pines (most of them)
- ▶ Colorado and Fat Albert spruce
- ▶ Blue spruce and Douglas fir
- ▶ Rocky Mountain juniper
- ▶ Aspen and Serengeti Poplar
- ▶ Siberian Elm
- ▶ Patmore and Foothills Green Ash
- ▶ Honeylocust
- ▶ Siberian Larch
- ▶ Hawthorn
- ▶ Caragana, silver buffalo berry and fragrant sumac (Skunk brush)
- ▶ Barberry
- ▶ Potentilla or shrubby Cinquefoil, lilacs, golden currants, Saskatoon's, American plum







Park spot tilling



Tilling



Riparian  
planting - No  
soil  
disturbances



Chemical spray



Strip tilling



Tilling and plastic mulch

# Site preparation



# Small planting stock



Coniferous Plugs



Poplar whips



Bare root



Hardwood Plugs



Poplar cuttings



# Caliper planting stock

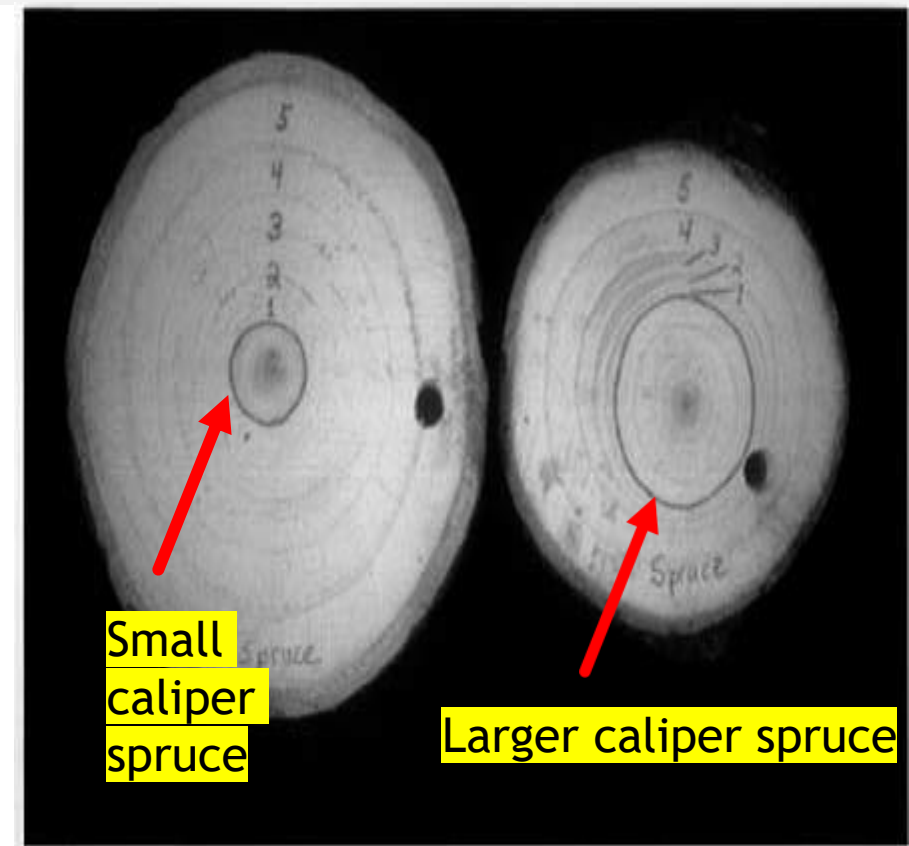
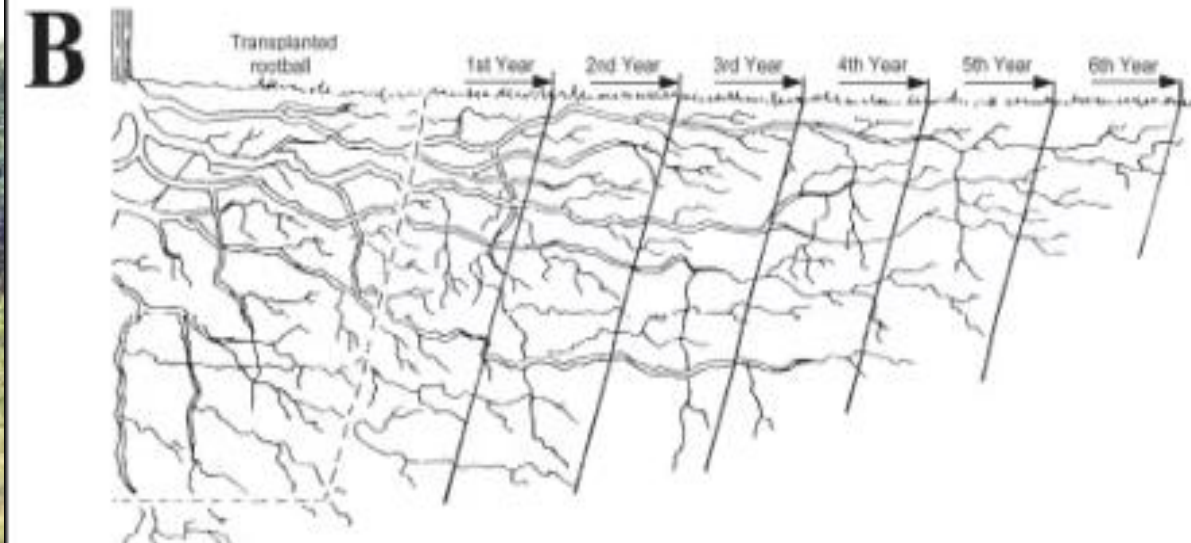
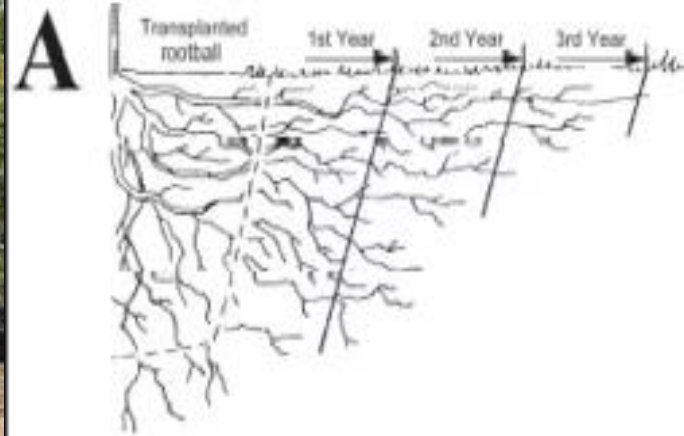


Potted Stock






# Big tree become little- little tree become big



Source: Influence of Tree Size on Transplant Establishment and Growth

W. T. Watson  
Published 2005  
Biology  
Horttechnology





Burlap and basket roots

Bare roots

"Nina Bassuk, Urban Horticulture Institute, Cornell University"



# Small Seedlings Planting Techniques

- ▶ 2 ways to plant
  - ▶ By hand
  - ▶ By machine
- ▶ Plant at same depth as trees were grown
- ▶ Insert spade, open a wedge-shaped hole
- ▶ Spread roots and place tree
- ▶ Pack soil firmly
- ▶ Plant only as many trees as you can care for
- ▶ The fastest growing tree is one that is well maintained





# Handling trees prior planting

Don't leave	trees for any long period of time in your vehicle during transportation
Put	trees in cold place until planting (e.g. if necessary, put snow to cover them)
Don't expose	trees seedlings to any direct wind and sun
Make	sure, you water poplar and willow cuttings 48 hours prior planting with lukewarm water
Separate	trees if they are bundled and try not to damage roots
Keep	the cover in dark environment
Spray	them with mist moisture if necessary
Soak	roots 4 hours prior planting if necessary

# Care of Seedlings DURING Planting



## Plant

Plant seedlings ASAP within 3-4 days

## Protect

Protect roots from wind, sun and keep them in shade area and wet

## Plant on

Plant on cool, cloudy days (morning and evenings will give the best results)

## Ensure

Ensure the site is well-worked and free of weeds, rocks, and weeds



# Caliper Tree planting



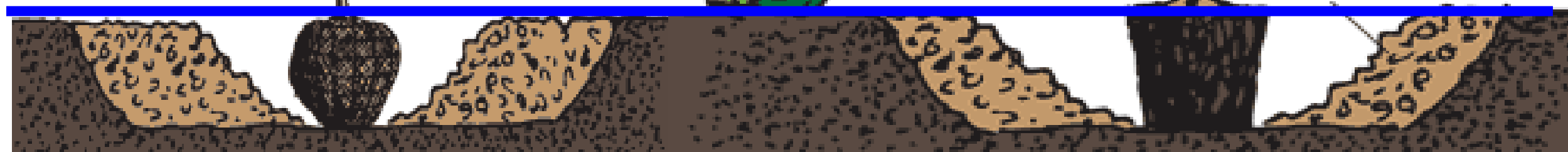
Cut an "X" across the bottom of the root ball and 4 vertical slices, if root-bound.

Dig hole 2 to 3 times wider than root ball.

Rototill 5 times wider than root ball.

3 to 4 times wider than container

sloping sides



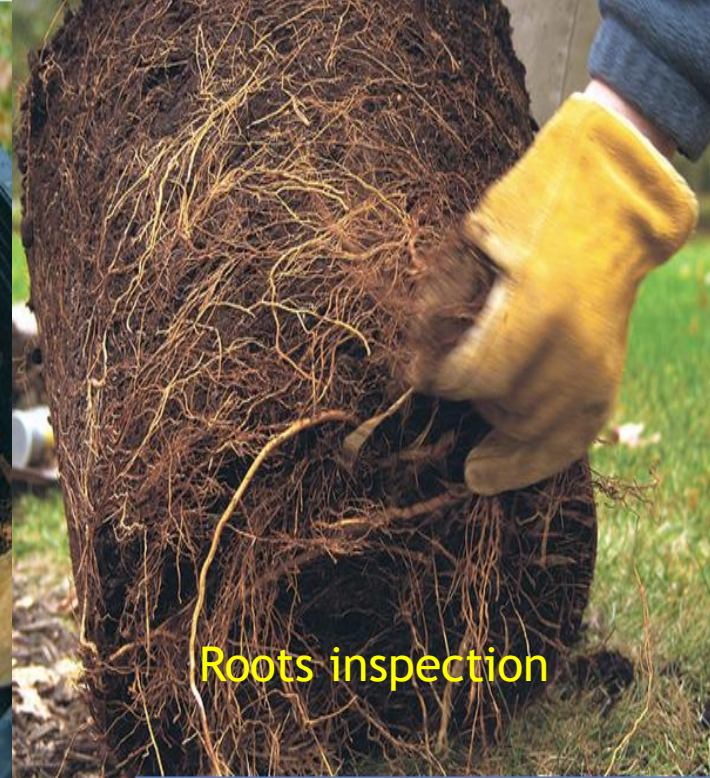




Planting Hole 2x size



Root collar



Roots inspection



Planting hole and soil removal



Back filing

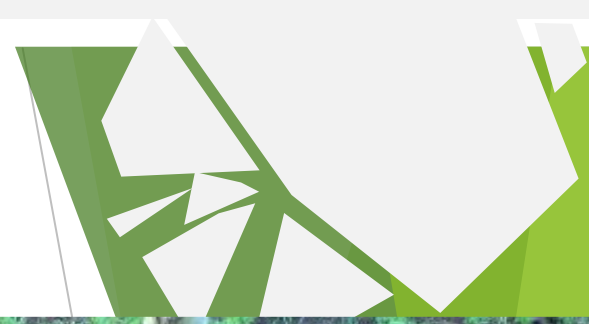


Mulching





# Improper Planting -Deep planting





# Root bound





# Weed control

- ▶ Crucial for survival after tree planting
  - ▶ -Must be between 3-5 years
- ▶ Good weed control ensure good survival and growth
- ▶ Once tree are well established no need for any further weed control
- ▶ Options
  - ▶ Mulches ( organic and non-organic)
  - ▶ Cultivation
  - ▶ chemical







# Mechanical Weed Control (shallow)





Photos by: Agriculture and Agri-Food Canada - PFRA

# Chemical Weed Control





Bush Mats and



Sheep Fescue Grass



# Vegreville mulch trial Siberian larch data 2005

## Treatments

1 - Mowed/Plastic
2 - Plastic
3 - No Weed Control
4 - Weeded

Means per plot				Means per treatment		
Trt	Rep	Ht (cm)	RCD (mm)	Trt	Ht (cm)	RCD (mm)
1	1	153.00	31.68	1	143.56	29.92
1	2	116.20	23.32			
1	3	147.44	30.94			
1	4	157.60	33.72			
2	1	137.50	30.32	2	149.57	32.43
2	2	152.17	32.19			
2	3	156.80	36.30			
2	4	151.80	30.92			
3	1	38.25	4.95	3	68.14	11.75
3	2	48.50	8.90			
3	3	75.00	14.03			
3	4	110.80	19.13			
4	1	131.00	27.63	4	131.08	32.02
4	2	123.60	29.01			
4	3	140.80	36.18			
4	4	128.90	35.27			



# Importance of Weed control



**Siberian Larch 2008**

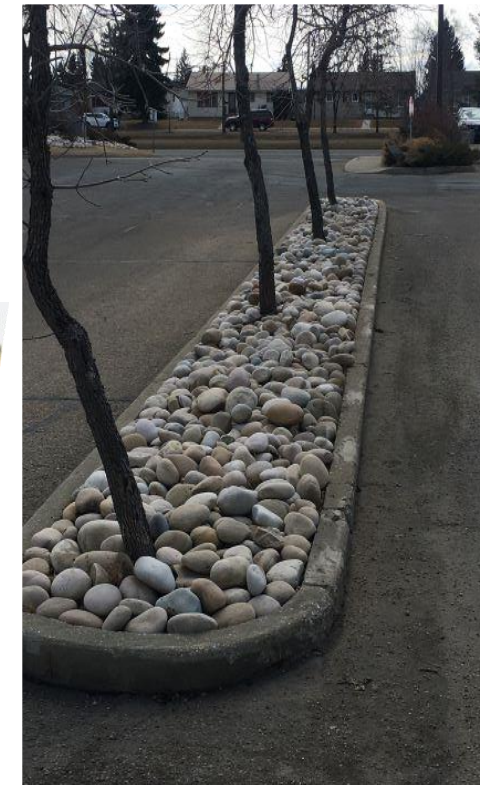


**Choke Cherry 2008**





# Mulch





# Wood Chips





# Arborist wood chips





# Benefits of wood chips in fall and winter

- ▶ Soil benefits
  - ▶ improve structure and enhance gas transfer
  - ▶ **enhance water infiltration and retention especially during dry fall**
  - ▶ prevent erosion and compaction
  - ▶ **moderate temperature and reduce root stress**
- ▶ Tree benefits
  - ▶ **provide nutrients** (rocks, and plastic do not provide any nutrients to soil or plants)
  - ▶ **Protect roots from cold air and winter freezing**
- ▶ Environmental benefits
  - ▶ suppress pathogens and pests
  - ▶ enhance beneficial organisms
  - ▶ increase biodiversity
  - ▶ neutralize pollutant
  - ▶ Excellent weed control



# Watering systems





# Watering



- ▶ **Test your water for sodium levels**
- ▶ Prioritize watering - young and newly planted requires the most watering
- ▶ Frequency of watering is the most important to remember
- ▶ Water will depend on the size of your tree, soil conditions, and weather conditions
- ▶ Water immediately after planting
- ▶ Water in early morning or evening
- ▶ Soak them but don't flood them
- ▶ **How to check moisture in soil:** use a garden trowel/knife to a depth of 4-6 inches.
- ▶ For large trees rule of thumb is 10 gallons per inch diameter
- ▶ Slow and deep water is best
- ▶ Water large mature trees in fall before freezing
- ▶ **Mulch is your best friend to keep moisture**



# Drip Line - Where to water

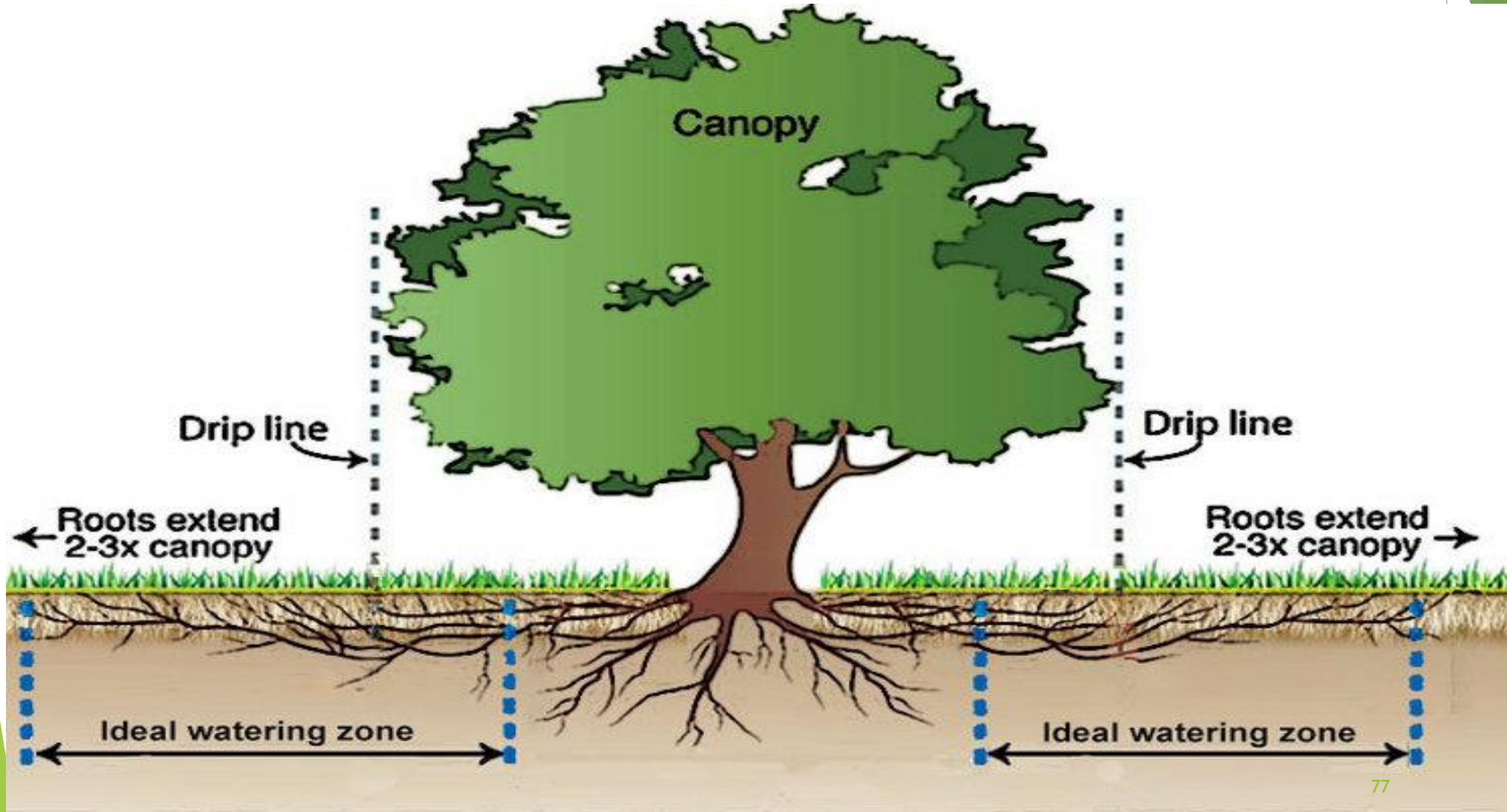
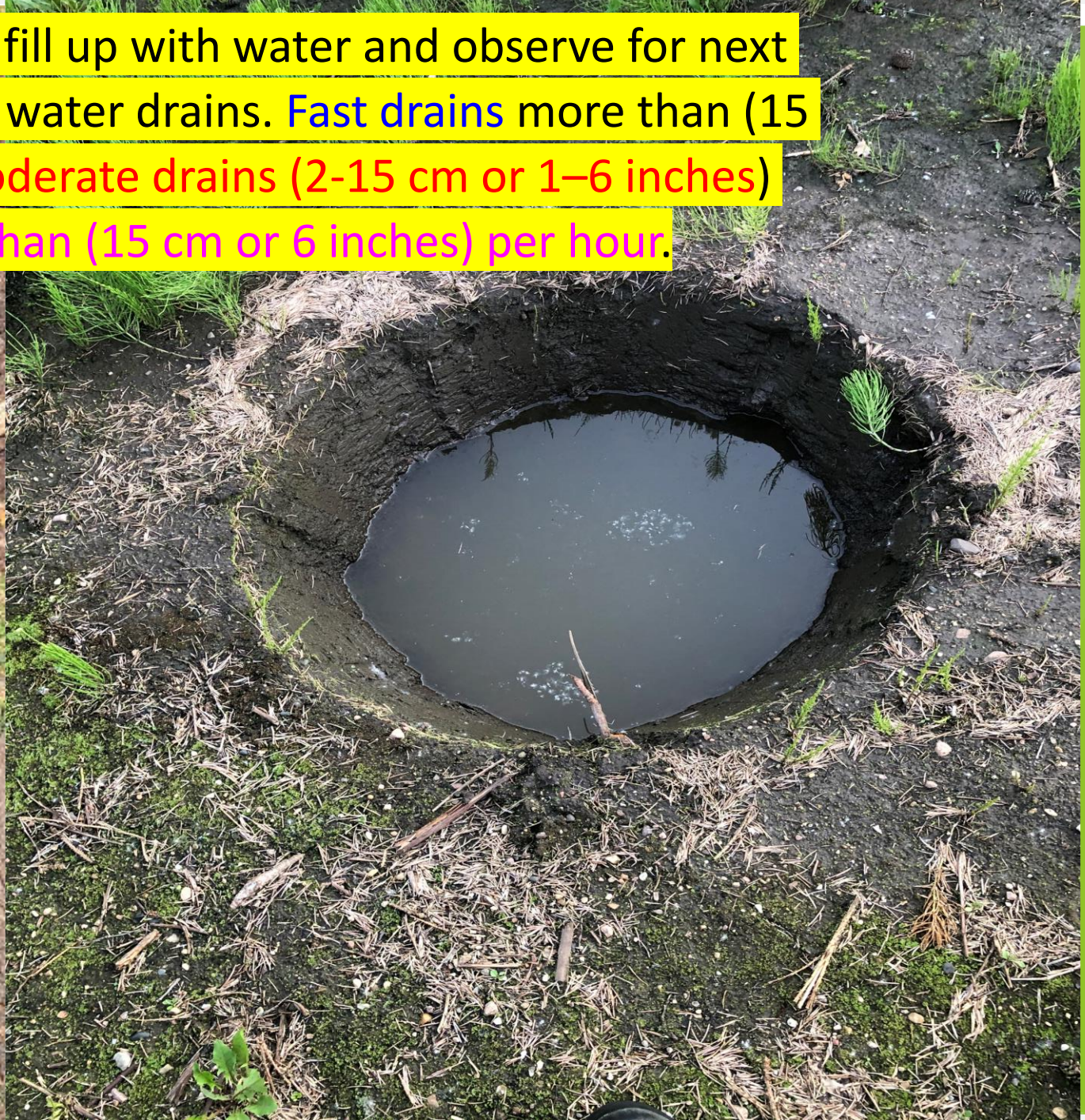


Photo source: Trees for Missoula - <https://www.treesformissoula.org/watering-trees>



Dig hole 12 in (foot deep) and fill up with water and observe for next 12 hours to see how rapid the water drains. **Fast drains** more than (15 cm or 6 inches) in an hour; **moderate drains** (2-15 cm or 1-6 inches) per hour, and **slow drain** less than (15 cm or 6 inches) per hour.





# How much to water newly planted trees based on size of trunk

Caliper of tree trunk	Root establishment time	Gallons of water at each irrigation
1 inch	1.5 years	1-1.5 gallons
2 inches	3 years	2-3 gallons
3 inches	4.5 years	3-4.5 gallons
4 inches	6 years	4-6 gallons
5 inches	7.5 years	5-7.5 gallons
6 inches	9 years	6-9 gallons

- 1-2 weeks after planting, water daily.
- 3-12 weeks after planting, water every 2 to 3 days.
- After 12 weeks, water weekly until roots are established.

Source: University of Minnesota Extension

<https://extension.umn.edu/planting-and-growing-guides/watering-newly-planted-trees-and-shrubs>



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- ▶ Hybrid poplars (most of them)
- ▶ Balsam poplar, Aspen and Plains Cottonwood
- ▶ American and Brandon Elm
- ▶ Willows
- ▶ Green and Black Ash
- ▶ Bur oak
- ▶ Manitoba maple
- ▶ Linden /Basswood
- ▶ River Birch
- ▶ Crabapple
- ▶ Larch
- ▶ Dogwood ( many varieties)
- ▶ River alder
- ▶ Pincherry
- ▶ Common lilac
- ▶ Nannyberry





# Trees and Shrubs for sandy soils

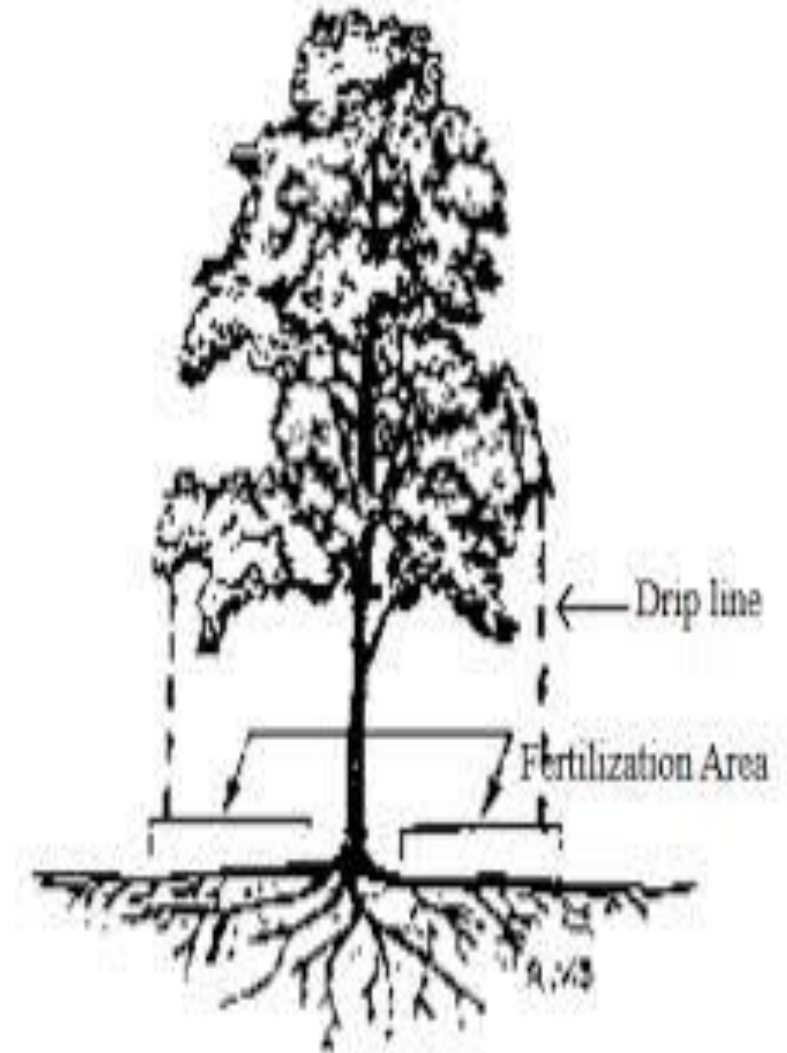
- ▶ Pines (most of them)
- ▶ Colorado and Fat Albert spruce
- ▶ Colorado spruce and Douglas fir
- ▶ Rocky Mountain juniper
- ▶ Aspen and Serengeti Poplar
- ▶ Siberian Elm
- ▶ Patmore and Foothills Green Ash
- ▶ Honeylocust
- ▶ Siberian Larch
- ▶ Hawthorn
- ▶ Caragana, silver buffalo berry and fragrant sumac (Skunk brush)
- ▶ Barberry
- ▶ Potentilla or shrubby Cinquefoil, lilacs, golden currants, Saskatoon's, American plum





# Fertilizing Your Trees

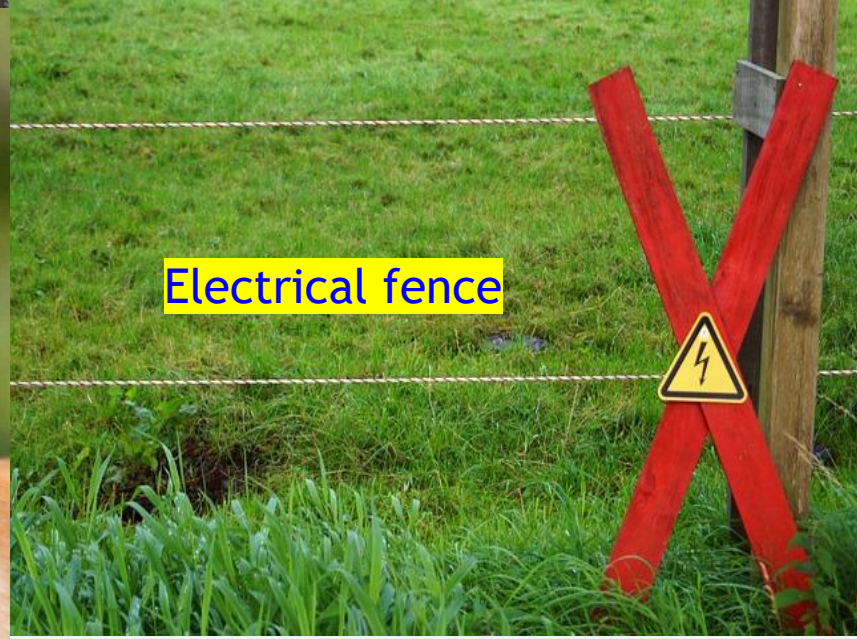
- ▶ Do soil testing prior to fertilizing to see if you have any nutrient deficiency
- ▶ Not necessary and not recommended for newly planted shelterbelts
- ▶ Use caution when applying fertilizers with weed-killing additives
- ▶ You can use fertilizer spikes, liquid, granular, surface or deep drill application







# Protection for trees



Electrical fence



# Key Messages

- ▶ *Develop plan during the wintertime* - draw maps, collect information on sites, order trees, budget and time
- ▶ *Understand your soil*
- ▶ *Choose site preparation method*- mechanical, chemical and no site prep
- ▶ *Choose planting stock appropriately* - There are variety of planting materials that you can choose from
- ▶ *Choose planting technique* - manual or mechanical
- ▶ *Plant trees properly* - this the MOST IMPORTANT thing to do
- ▶ *Perform some weed control methods*-mechanical, chemical, plastic mulch or other type of mulch
- ▶ *Water properly* - each tree requires a different amount of water
- ▶ *Fertilizing* - only if it is necessary
- ▶ *Protect trees from wildlife*





# Thank You

Blog:  
<https://yardwhispers.ca/blog/>

Toso Bozic  
Tree Expert/ISA Arborist

Phone (780) 712-3699

[bozict@telus.net](mailto:bozict@telus.net)

[www.yardwhispers.ca](http://www.yardwhispers.ca)

[www.attsgroup.ca](http://www.attsgroup.ca)