

# LANDSCAPE BELOW GROUND V

International Conference on Tree Root Development in  
Urban Soils

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## Fabric Grow Bags for Improved Root Development

PRESENTED BY

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# Circling Roots:

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CAUSED BY HISTORICAL PLANT PRODUCTION METHODS



Landscape Below Ground 10-12-23  
1/23/2024

Resulting in Poor Rooting and Establishment, Instability or Death



# Remedies Include:

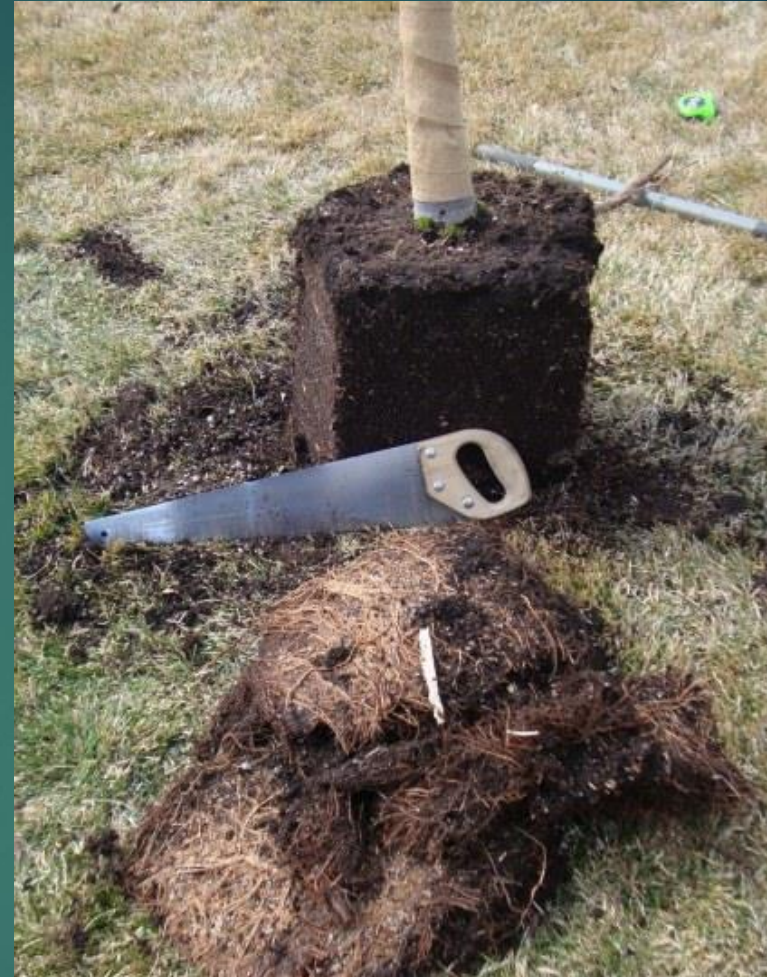
- ▶ Teasing Fine Roots
- ▶ Butterflyling root-balls.
- ▶ Slicing the edge of root-balls
- ▶ Removing entire root-ball edge



This only treats the  
problem-  
Not the solution

# Resulting in:

- ▶ Additional Labor
- ▶ Higher costs
- ▶ Plant stress
- ▶ Questioning if it was done correctly or at all?



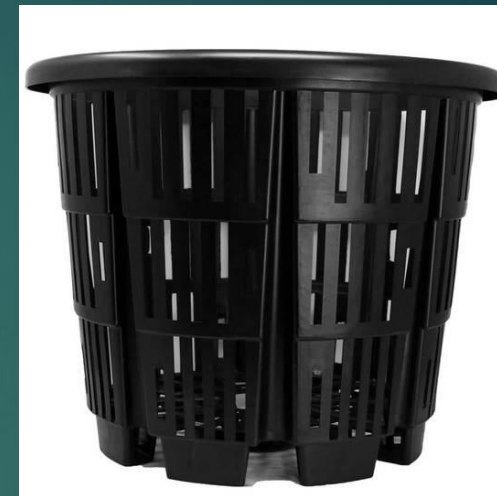
## We can and should do better



# What the industry has offered!

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# THIS PRESENTATION IS ABOUT INGROUND FABRIC GROW BAGS

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# WHY?

- ▶ Growing 25 years in Fabric grow bags



- ▶ 35 years of consulting



# URBAN FOREST NURSERY, INC., MOUNT VERNON, WASHINGTON

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Owner / Presenter  
Jim Barborinas

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ISA Certified Arborist # PN-0135A  
ISA Tree Risk Assessment Qualified

Urban Forestry Services | Bartlett  
Consulting with Bartlett Tree Experts





# Nursery History

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- ▶ Started in 1994
- ▶ Located in Skagit Valley near Mount Vernon, Washington
- ▶ Thirty (30) acres of growing fields
- ▶ Producing primarily 1.5 to 2.5 inch caliper street and landscape trees
- ▶ Approximately 200 tree varieties





# Nursery Details

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- ▶ Grown in High Caliper fabric grow bags
- ▶ All trees have RFID tags on them
- ▶ Sandy loam soils
- ▶ 25,000 trees +/-
- ▶ All drip irrigated
- ▶ moderate temperatures
- ▶ 36 inches annual rainfall
- ▶ Climate Zone 8b





# THERE ARE MANY ABOVE AND BELOW GROUND FABRIC BAGS

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# FABRICS HAVE DIFFERENT CHARACTERISTICS

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- ▶ Some are just like plastic containers
- ▶ Some trap or air-prune the root to stop elongation
- ▶ Some allow very limited root penetration (Species?)
- ▶ Some allow a more even root penetration (Species?)



# Growbags Can Reduce or Eliminate Circling Roots – But Not All !

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- ▶ We use High Caliper root control bags
- ▶ Roots are restricted-but not stopped.





# Planting is Deliberate.

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# WHY IS ROOT PENETRATION IMPORTANT ?

- Stops or Eliminates circling roots.
- Fabric restriction increases root size and density inside the bag.
- Allows absorption outside the bag.





# Root Systems are Unique.

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# These In-Ground Grow Bags are Unique

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- ▶ Root forms an enlarged nodule both inside and outside the bag.





# A smaller diameter size root grows through the fabric.

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# Fabric removal provides root pruning critical for new root growth beyond the root-ball.

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# MANY NEW FIBROUS ROOTS GROW AFTER FABRIC IS REMOVED.

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# Contractors Report that Establishment is Successful and Fast.

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# Other Advantages of Growbags

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- ▶ Trees Grown in the Ground.
- ▶ Rapid digging and root-ball preparation
- ▶ Transplant nearly all varieties year round
- ▶ Improves transplanting success for sensitive species





# More advantages of Growbags

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- ▶ Handling can be efficient and mechanized.
- ▶ Root-ball is smaller and lighter
- ▶ Less field soil lost per root-ball
- ▶ Trees moved on planting site more easily
- ▶ Root-balls stay intact and solid longer





# Root balls are easy to move

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# SMALLER ROOT BALLS HAVE ADVANTAGES.

- ▶ Trees moved on planting site more easily.
- ▶ More trees shipped per load
- ▶ Improves in-nursery tree management-  
Root pruning





# Root pruning / Transplanting is Fast

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# Grow bag is a Better Alternative

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- ▶ Industry needs finished stock that is “**Root Ready**” for planting.



Growbag  
grown



Container  
grown



# SOME RESEARCH HAS RECOGNIZED VALUE OF IN-GROUND FABRIC (IGF) CONTAINERS

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- ▶ “Nursery Production Systems and Their Impact on Urban Tree Growth and Development.” by Allen, Harper, Bayer, and Brazee in 2017
  - ▶ Significant reduction in circling roots and faster establishment.
  - ▶ Same density of roots in half the volume.
  - ▶ Cost savings in harvest, transport, and planting.
  - ▶ Interaction at the species-specific level indication one fabric's advantages over another, stressing the difficulty in comparing effects of production systems across several species.



# But More Research is Needed.

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- ▶ If you are interested in conducting research or contributing, consider the TREE Fund.
- ▶ In fact, there is a Designated Fund that provides research dollars for the study of finding improved methods of developing better root systems.
- ▶ Google: Barborinas Family Grant.





# Thank you!

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# Thank you Again!

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