WASHINGTON STATE UNIVERSITY
CHELAN COUNTY EXTENSION

How Roots Work, Chelan County PUD Sponsored, Full Day Seminar

Date: April 19, 2018
Time: 9:00 a.m. – 3:00 p.m.
Location: Rocky Reach Dam Park Arboretum & Visitor Center, Hwy 97A, Wenatchee, WA

Title
How Roots Work

Presenters

Paula Dinius, Urban Horticulturist, WSU Chelan County Extension; Certified Arborist #PN-6123A
Ben Thompson, Urban Forestry Specialist, WA DNR. Certified Arborist #NE-0860A

Summary

Woody plants provide many benefits to the environment, people, and the economy. For plants to provide these benefits all the organs must be functioning well – roots, stems, and leaves. It's important to understand the development and function of the root system and how the organ systems depend on each other. From first establishment, roots play a crucial role in sustaining the life of a plant from absorbing dissolved substances in soil water uptake to conduction of solutes throughout the plant via the vascular system. Roots need food from the leaves for energy for cell division and the production of life sustaining molecules.

Protecting roots at planting time and at sites under development or redevelopment is crucial to plant health. Any activity that damages roots, either from direct injury, soil compaction, or displaced soils can impair growth and longevity. Proper tree installation and after care will create an opportunity for roots to grow into the surrounding soil, thus facilitate plant establishment. Protecting mature trees from construction activities can prevent damage that can rob a tree of energy, dehydrate it, limit the uptake of vital nutrients, and may even cause instability.

Tree health problems resulting from root damage can induce stress that lowers production of life sustaining compounds, including defense compounds. Secondary issues of plant stress are insects or diseases that attack the compromised plant. This can lead to the increased use of pesticides in an attempt to managing the problem. Simple awareness of roots: where they are found, how they work, and how to avoid damage can prevent potential problems, thus increasing the health, vigor, and longevity of the plant.

Agenda

9:00 – 10:05 Biology of Roots (65 min.), Paula Dinius

Roots are organs specialized for anchorage, absorption, storage and conduction. When a seed germinates the first structure to emerge is the root. From emergence on, roots must be healthy and abundant enough to support an actively growing plant. We will learn how roots develop, absorb water and dissolved substance from the soil, such as minerals and pesticides; and then discover how those substances are moved throughout the plant. As we follow the journey of water and solutes from the soil to the roots and on to other regions of a plant we will explore the Root: Shoot Ratio (balance maintained between the root and leaf systems), and the Cohesion-Tension Theory (properties of water that permit it to withstand tension) to illuminate the importance of the root system.

10:05 – 10:15 Break (10 min.)

10:15 – 11:20 Principles and Practices of Tree Protection on Development Sites (65 min.), Ben Thompson

Protecting trees on sites under development or redevelopment is a complex process and requires skill, knowledge, and enforceable standards to be successful. Effective tree protection is a matter of protecting land from construction activities that can damage, compact, or displace soils. The majority of roots for any tree species are found within the top 1 to 3 feet of soil; therefore, any activity that damages or disturbs soil may also damage and disturb tree roots. Root damage can rob a tree of energy, dehydrate it, limit the uptake of vital nutrients, and may even destabilize the tree. Tree health problems resulting from root damage may be compounded if insects or diseases attack the tree in an already weakened state, which can cases increase the use of pesticides.

11:20 – 11:30 Break (10 min.)

11:30 – 12:00 Proper Tree Planting (30 min.), Paula Dinius

Trees are a long term investment. Proper tree planting is an important step in growing healthy long-lived trees. The importance is often overlooked, but with the cost of nursery stock and delivery, time involved for planting, and the potential negative consequences of an unhealthy or dead tree it should be a well thought out and well executed process. We will learn how to properly plant a tree using the nine-step approach to successful planting and establishment, an International Society of Arboriculture best practices method.

12:00 – 1:00 Lunch – On Your Own * Rocky Reach Café is on site, or bring a sack lunch.

1:00 – 3:00 Tree Planting Activity, Paula Dinius & Ben Thompson

Successful tree installation is a very important part of increasing our tree canopy. Many organizations have set goals to plant trees throughout communities, but medium term outcomes are showing many of the trees planted die without ever becoming established. This is mainly due to improper planting and follow-up care. We will demonstrate how to properly plant a tree. This will start with the nursery stock selected, examining the root system, correcting any issues with the root system, digging the planting hole, placement of the tree in the planting hole, backfilling, watering, mulching, and staking. *Be prepared to participate – this is an experiential learning activity.*