The reason the title of this article appears to be written in a foreign language is because it is. Myco is Latin for fungus, while rhiza translates into roots. The name mycorrhizae literally means fungus roots. Having solved that mystery, one might wonder; ‘So What?’. Mycorrhizae is one of those things that play an important role in life on earth without being understood or acknowledged by most.

Mycorrhizae is an important symbiotic relationship between plants and certain fungi. The symbiosis occurs underground, where these fungi adhere to the roots of host plants. The fungi benefit by being able to take sugars produced by the plant. The plant benefits from a significantly increased absorptive area. The fungi is composed of a mass of filaments that spread throughout the soil surrounding the host plant. Mycorrhizal fungi increase the surface absorbing areas of the roots 10 to 100 times.

The benefits of having an increased absorptive area are many. The most obvious is that the host plant is better able to take up important nutrients such as nitrogen and phosphorous. Furthermore, some of these fungi can convert nutrients into more plant available forms. The host plant also benefits from increased availability to soil moisture. Some Mycorrhizal fungi have also been shown to help protect plants from soil born diseases. This can happen either by a protective mantle that the fungus forms around the roots, by producing antibiotics, or by increasing seedling vigor.

Countless studies have been conducted comparing Mycorrhizal plants with non-Mycorrhizal plants, most of which come to the same conclusion. Mycorrhizal plants show increased vigor and survivability compared to their non-inoculated counterparts. Nowhere is this more important than in the field of ecological restoration.

It is for this reason that the PMC produces and sells plant materials which have been inoculated with mycorrhizae. This is accomplished by mixing seeds and spores together at seed sowing time (see photo).

The PMC goes through hundreds of pounds of cultured inoculants that include numerous species of Mycorrhizal fungi, as well as two species of beneficial bacteria, along with a bio-stimulant to help initiate the process. This diversity of Mycorrhizal species helps to ensure that suitable inoculants are available for a diverse array of native tree and shrub species.

While the nursery setting is an excellent time and place to inoculate plants, it is not the only one. Companies that produce Mycorrhizal inoculants for nurseries also produce similar products for restorationists and foresters to be applied at time of planting. It may seem redundant to do if the seedlings were inoculated in the nursery, and it might be. But there is the possibility that the fungi may not survive the harvesting and shipping procedures. Reinoculating at planting time insures that the proper biota are available to the plant.

This article has only touched upon the surface of the world of mycorrhizae. Contact us at the PMC to be directed to more information than one could ever hope for, or to learn more about how we handle this process during production.
**Red Flowering Currant**

Red Flowering Current (*Ribes sanguineum*) is an attractive deciduous plant that can grow to 6 feet tall and 4 feet wide. This vigorous plant grows best on well drained rocky or sloped sites and is a perfect addition to any yard or restoration project. It is popular with residents that would like to establish an easy-care yard while keeping their view.

The flowers draw attention with their pale pink to more commonly deep red color. The species name *sanguineum* means blood red, mimicking the rich color of the clusters of flowers. The bluish-black fruits are produced in late July to early August. These small berries are edible and, although they have a bland unpleasant taste, the birds don’t seem to mind.

The PMC has a wonderful crop of red flowering current available. Please contact us for additional information.

**Meet Our New Sales Manager**

The PMC welcomes Jacquie Gauthier to our staff as the new Sales Manager. She will be helping the PMC with plant orders, harvest, customer service, website up-date, inventory control, seed collection, educational outreach, and much more.

Jacquie has lived in Skagit County her entire life. She enjoys skiing, snowboarding, hiking, camping, gardening, soccer and softball and would like to take up biking and swimming. She is a graduate of Huxley College of the Environment from Western Washington University in 2004. The past three years she has gained experience working at a native plant nursery, habitat restoration and invasive specie research, control, and eradication.

Jacquie has already met and helped many clients in placing their orders. Those who have not contacted us recently are encouraged to do so to meet Jacquie and find out how the PMC can help with your plant material needs.
Pacific Northwest Conifers That Merit Attention

The State motto for Washington is ‘The Evergreen State.’ It is clear the motto is due to the abundance of conifers in this state and throughout the region. While some may argue that this motto does not fully reflect the diversity found here, it does none-the-less pay tribute to a truly valuable State Treasure. The forests that make Washington ‘The Evergreen State’ are vast in scale and rich in diversity. They occur on both sides of the Cascades, but differ in composition. The nature of forest composition in the Pacific Northwest is a very important part of this treasure. Who ever said “You cannot see the Forest for the Trees...” did not know much about forests. The trees are a big part of the forest. They not only make up the most obvious part of the forest, but they also tell its story. They tell of the climate, the geological history, its soils, the wildlife that call it home and how the forest is used by man. The trees are an economic resource, they prevent erosion, protect water quality, cool the surrounding environment, make oxygen and store carbon. They are sustainable, renewable and are solar powered. Below are a few native conifers the PMC grows that make up our forests.

**Douglas Fir** (*Pseudotsuga menziesii*) - Douglas Fir is the most predominant conifer west of the Cascades. It is also one of the most valuable timber species in North America. It is a fast-growing conifer that grows 24 to 30 inches per year on average sites. It is not uncommon to find trees over 100 feet tall. The tallest tree was found near Little Rock, WA and stood 330 feet tall. This tree may live to be over 500 years old and some live to be over 1,000 years old. Adaptability is one reason that Doug Fir is so prevalent in the Pacific Northwest. It can be found growing in dry, low elevations to moist, mountain sites. Douglas Fir is also commonly used Christmas tree production. Most producers grow trees anywhere from 4 to 7 years old, often lightly shearing the side branches to produce a fuller, more conical tree.

**Ponderosa Pine** (*Pinus ponderosa*) - Ponderosa Pine, also known as Western Yellow Pine, is the most common pine in the Northwest. It is also the most widely distributed conifer of Western North America. It is a valuable timber species with a large, straight trunk (bole) and high quality wood. It is common to find trees with 30 to 50 inch trunk diameters that are 90 to 130 feet tall. Some have been found to be over 100 inches in diameter and over 200 feet tall. Trees have been found to be 300 to 600 years old. Ponderosa Pine is an important wildlife species and is home to Abert’s and Kaibab squirrels. Snags are used for nesting and roosting sites by several species of birds. Big game, such as deer and elk, use pine forests for food and shelter. Many people enjoy Ponderosa Pine forests for recreation because the forests are aesthetically pleasing.

**Sitka Spruce** (*Picea sitchensis*) - Sitka Spruce is the largest Spruce species in the world, with trees growing over 200 feet tall and trunks that are over 10 feet in diameter. One tree found near Seaside, Oregon had a trunk diameter of 16.7 feet. While Sitka Spruce is large in stature, it is limited in range. It only grows in a narrow strip along the Pacific coast extending from southern Oregon to south-central Alaska, a region known for its mild and damp climate. It has a high quality wood with a high weight-to-strength ratio which was used in airplane construction in the early 20th century. Sitka Spruce is popular for use in piano sounding boards and other stringed instruments.

**Western Hemlock** (*Tsuga heterophylla*) - Western Hemlock is the state tree for Washington because of its predominance, stature, economic value and aesthetic qualities. Hemlock grows in a wide variety of sites that range from open sun to deep shade and is widespread west of the Cascades from south-east Alaska to Northern California. It is considered one of the most shade-tolerant conifers of our region. It can also be adapted to grow on a variety of soils that vary from dry to moist. Hemlock can be found growing up to 200 feet tall with trunks over 100 inches in diameter. The tallest Western Hemlock found was 259 feet tall. While vertical growth virtually stops at 300 years old, the oldest specimen found was over 700 years old. Lumber milled from Western Hemlock has long been a mainstay in the building trades. Its lumber is long, strong and straight.

**Western Red Cedar** (*Thuja plicata*) - Western Red Cedar has (arguably) been the most versatile conifer - it was used for everything from making cradles for the young to mortuary poles for the deceased, with countless other uses along the way. Its resistance to rot has made it a favorite material for roofing, fencing, decking, siding and other outdoor uses. Western Red Cedar can be found growing throughout the Northwest, primarily on moist sites. Trees can grow large and are long-lived. One specimen was found with a trunk over 230 inches in diameter and 178 feet tall. Many trees have been found that are 800 to 1,000 years old. These ornamental trees are popular when used singularly as a specimen plant, or in groupings as informal screens or pruned formal hedges.

**Western White Pine** (*Pinus monticola*) - Western White Pine is the state tree of Idaho, where it has been a very important timber species. Its status as “king of timber” has diminished over the past 100 years due to its decimation by White Pine Blister Rust. Its day as a predominant timber species is returning, however, due to the breeding and development of Blister Rust resistant trees. Most trees now being produced in nurseries, including the PMC, and are being propagated by seed produced in orchards of Blister Rust resistant trees. The trees have large straight trunks with particularly light-colored wood (hence its common name ‘White Pine’). The largest specimen found had a trunk that was 78 inches in diameter and was 239 feet tall. The native range includes western Washington, southwest British Columbia, central-western Oregon, and the Idaho panhandle.
Like any business, the PMC is the sum of its parts. There is the soil, facilities, staff, equipment, customers, vendors, etc., etc. Many find the most intriguing part are the seeds used in production. Every aspect of seed propagation carries with it something truly interesting. It could be the diversity, the volume, seed collection and processing, or the very nature of the individual seed. Each seed has an extensive array of genetic codes. These codes enable it to germinate under favorable conditions and grow to maturity using existing materials found in the soil and atmosphere. Seeds acquire energy from the sun, and the plant produces additional seed to ensure survivability.

The seeds used at the Plant Material Center come in a wide range of sizes and shapes. They vary from 80 seeds per pound in the case of the Oregon White Oak, to 4 million seeds per pound with Quaking Aspen. The Plant Materials Center propagates over 70 species from seed. The seed is collected either by staff or contract collectors. All seed collected is source identified. That means the Plant Material Center notes and tracks where each seed lot is from geographically and from what elevation. This enables our staff to ensure its customers are receiving genetically suitable stock to plant in their region. These determinations are driven by tree seed zone and ecoregion maps.

Please contact the PMC to learn more about these maps, collecting and processing seed and other aspects of propagation.