FACT-SHEET FOR PLANTING
RED ALDER

Red alder (*Alnus rubra* Bong.) is one of the few hardwood tree species that can be grown to produce quality lumber and veneer in a relatively short rotation (25 to 35 years). Comparison of red alder to other important North American hardwoods (yellow birch, black cherry, sugar maple) shows the following: workability index is one of the best; is in the top three for finishing, machining, sanding, polishing; highest in color uniformity and gluing; and the lowest specific gravity/strength. High-grade lumber is used for fine furniture, cabinets, and turnings. Lower-grade lumber makes furniture frames/interior parts and pallets. The veneer is used for cabinet facings and as core veneer for high-quality paneling. Red alder is also a highly desirable pulpwood species.

There has been increasing interest pertaining to the growing of red alder to meet land management objectives for wood production and bio-diversity. The introduction of new environmental constraints on harvesting riparian areas and the perceived increase in value of alder versus Douglas-fir or hybrid-poplar has been strong drivers of this interest.

AUTOECOLGY OF RED ALDER

Red alder is a medium-size deciduous tree—mature trees are 80 to 130 feet tall. It is the most abundant hardwood along the Pacific Northwest Coast—ranging from the Alaskan panhandle to Santa Barbara, California. The species occurs at elevations of up to 3,000 feet—typically below 1,500 feet. Low rainfall and low winter temperatures primarily restrict its range.

Red alder is an intolerant "pioneer" hardwood that requires full sunlight and moisture for regeneration and good growth. It is a prolific seeding species—production of viable seed starts at age 3 to 4 years—young stands can produce up to 5 million seeds per acre. Plant establishment from natural seeding is favored by disturbance. Red alder shows rapid juvenile growth, but is relatively short-lived—usually decadent at 40 years and rarely older than 60 years. Red alder has the capability to fix atmospheric nitrogen, thereby enriching the soils for more climax tree species. Red alder is immune to *Phellinus weirii*, a root disease that kills Douglas-fir and other conifers.

Red alder is found on a wide variety of soils from very well-drained gravels to poorly drained clays. Best growth on well-drained loams/silt loams. The species tolerates a wide range of soil moisture conditions. It tolerates poorly drained soils, however it is not a "wet-site" species. It is also is uncommon on droughty soils, steep south to southwest slopes. Red alder will occur naturally on a wide range of site conditions, but grows best on well drained upland sites.

STAND ESTABLISHMENT

Successful natural regeneration of red alder from seed is dependent upon having a bare mineral soil seedbed, a well-distributed seed source, and adequate spring rainfall. These conditions can vary considerably within and between logged areas, as well as over time, making it difficult to achieve uniform regeneration with certainty.

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In addition, past management practices may have excluded red alder seed sources on many areas otherwise suitable for alder production. As a result of these limitations, natural seeding generally is not reliable for producing well-stocked and evenly distributed stands of red alder. On a commercial scale, artificial regeneration through the planting of seedlings enables a land manager to achieve stands with desirable uniformity on sites best suited for red alder production.

KEY FACTORS FOR SUCCESSFUL RED ALDER PLANTATIONS

Proper site selection, quality seedlings, thorough weed control, and planting timing are key to a successful red alder plantation.

SITE SELECTION

The risk of plantation failure can be very high on poorly drained, frost prone, exposed or droughty sites. In addition to evaluating the overall site characteristics, foresters need to be able to recognize within planting unit variation in environmental conditions and plant "high risk" micro-sites with tree species other than red alder. Within unit micro-sites of concern for alder include "frost-pockets", ridge tops, and steep south slopes.

SEEDLINGS

The preferred attributes for planting stock include: height range 18 – 36 inches (average 28 – 30 inches); basal caliper (measured 1 inch above root collar) a minimum of 0.20 inches (5 mm); healthy buds along the entire length of the stem; full and fibrous root system; and disease and damage free.

WEED CONTROL

Heavy first- and second-year herbaceous weed competition has been shown to be detrimental to red alder survival and growth. Effective control of weed competition can often be the difference between plantation success and failure. Weed control prescriptions need to consider weed communities that existed in the understory of the harvested stand as well as weed invasion by forbs, grasses, and woody shrubs into newly harvested areas. There are currently a very limited number of herbicides for both site preparation and the release of planted red alder from weed competition. For practical purposes, all broadcast herbicide control measures must be taken prior to planting. Check herbicide labels and follow instructions very carefully. Cumulative vegetation ground cover in the first growing of less than 30% is desirable for rapid stand establishment and growth.

OUT-PLANT TIMING

A planting date should be selected to balance the risks of freeze damage and drought stress. The spring planting period begins when the probability of a killing frost is low and ends before there is an appreciable seasonal drying of the soil. The recommended planting window for elevations less than 1000 feet, is mid-March to mid-April. Planting in November through February can result in serious freeze damage (top-kill and diminished root growth potential). Planting in late April to mid-May may not allow enough time for an adequate root system to develop before the onset of summer drought stress. It is advisable to begin planting in early March (at sites with minimal risk of spring frost) rather than planting into late April or early May.

OTHER CONSIDERATIONS AT TIME OF PLANTING

Red alder seedlings are brittle and prone to breakage. Planting crews accustomed to handling conifers need to be cognizant that alder seedlings require more care. Careless loading of seedlings into planting bags can result in considerable breakage to roots and stems. Care needs to be taken when closing the planting hole to assure that the stem is not wounded by the planter's boot.

Because red alder can deharden very rapidly when removed from cold storage, seedlings stored in the field on the day of planting need to be protected from heat to prevent premature dehardening. On-site daily storage in an insulated truck canopy or in the shade of standing timber covered with a heat shield (mylar) seedling protection tarp is recommended.

To partially offset the effects of heat and drought on newly planted seedlings, deep planting (ground level approximately 1 – 2 inches above the root collar) is recommended. Minimizing the scalping of surface debris during the planting process can reduce heat girdling; exposed mineral soil at the base of the stem acts as a heat-sink, and the thin bark of alder is readily damaged.

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