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## High-Value Hardwoods

Many farms have underutilized areas, such as fence lines and field corners, which can be used to grow trees. In the Fraser Valley, Thompson - Okanagan and southern Vancouver Island regions of British Columbia (BC), land owners can plant high-value hardwood species in these areas to add aesthetics, habitat and generate additional income. Hardwoods including red oak (*Quercus rubra*), white oak (*Q. alba*), English walnut (*Juglans regia*), black walnut (*J. nigra*), chestnut (*Castanea* spp.) and black cherry (*Prunus serotina*), which are available as fast-growing hybrids, may reach maturity in these areas within 30 to 35 years. Adding high-value trees on BC farm lands offers a sustainable option for diversifying agriculture. Hardwood trees can also be incorporated into the full range of agroforestry scenarios including alley cropping, shelterbelts, silvopasture and integrated riparian management.

### Selecting Tree Species

Successful tree production starts with selecting a tree species best adapted to the specific soils



*Photo courtesy of Lisa Zabek*

and growing conditions on your farm. Other factors including the appearance, functionality and ability to provide shelter and habitat may factor into the choice. Some suitable high-value hardwoods for production in southern BC include:

**Red Oak.** Medium to large trees with rounded, spreading canopies growing to 18 to 23 m tall. Prefers full sun or partial shade and is best suited to groves on moist, slightly acidic soils. The roots of red oak are

relatively shallow therefore care should be taken when operating machinery (e.g. cultivation) around the tree.

**White Oak.** Medium to large trees with rounded, spreading canopies extending 15 to 30 m. Prefers full sun or partial shade and is best suited to production in groves on fertile, moist and well-drained soils. White oak leaves turn a maroon-red in the autumn. The bark peels from the main stem and large branches on mature trees.

**English Walnut.** Medium trees with rounded crowns that grow to 18 m tall. Prefers full sun or partial shade and is best suited to groves on fertile, moist and well-drained soils. English walnut has ash-gray bark, with flattened ridges, developing a distinctive diamond-shaped pattern with maturity.

**Black Walnut.** Large, high-branched trees with rounded crowns, growing to 30 m or more in height. Although capable of growing on a variety of sites, black walnut does best on deep (>1 m), moist, fertile, well-drained alluvial soils with neutral pH. Optimal growth with average annual temperatures of 13°C, at least a 170 day frost-free period and a minimum of 890 mm of annual precipitation.

**Chestnut.** Medium to large, deep-rooted trees that grow to 20 m or taller. Chestnuts are self-infertile and must be paired with another tree to produce nuts. Hybrids available in BC



*Photo courtesy of Lisa Zabek*



*Photo courtesy of Detmar Schwichtenberg*

tolerate a fairly wide range of site and soil conditions with best growth on light (sandy), well-drained soils, with good fertility and a slightly acidic pH (5.0 to 6.9). Chestnuts do not tolerate prolonged saturation.

**Black Cherry.** A medium height tree growing to 21 to 24 m tall, with shallow, spreading roots. Grows well on a wide variety of soils if growing season conditions are cool (July temperatures < 27°C) and moist (annual precipitation of 950 to 1100 mm). Best growth occurs at elevations of 300 to 790 m except for those areas prone to flooding or drought. Moderately tolerant of acidic soils. Prefers middle and lower slopes on north and east exposures.

### **Planting and Maintenance**

*Preparing for planting.* Apply a herbicide or till a 1-m wide strip for each tree row. If the soil is compacted, rip or subsoil

to below the planting zone.

This will facilitate planting and improve rooting conditions.

*Weed Control.* Recommended for the first four to five years after planting. Inorganic mulch (e.g. plastic) is easier to install at planting. Organic mulches (e.g. hay or straw) also functions to moderate soil conditions and increases soil organic matter as they decompose.

*Protect from damage.*

Seedlings are susceptible to inadvertent injury from vehicle traffic or livestock trampling. Trees may also be targeted for feeding by livestock (goats in particular) or wildlife (deer, voles and beavers are most problematic). This may necessitate physical protection while the trees are developing. Mulches used for weed control can provide safe cover for voles and other rodents.

## PLAN

- How and where you will market the wood?
- Do you have a suitable area to grow the trees? Identify the key site conditions important to successful tree growth.
- Can you commit the necessary time for planting and maintenance?
- Can you minimize damage and control weeds?

## SELECT

### Consider:

- Hardiness
- Aesthetics
- Habitat
- Functionality
- Wood Value
- Maintenance

## PLANT

- Prepare planting location.
- Transport trees properly from nursery and plant as soon as possible.
- Plant trees based on stock type and size.
- Dig planting holes to accommodate the entire root system.
- Plant seedlings with root collar at the soil line or no more than 2-cm deeper.

## MANAGE AND PROTECT

### Protect young trees from damage

- Livestock
- Ungulates
- Voles
- Beavers
- Vehicles and farm equipment

### Control Weeds

- Early growth and survival depend on effective control.
- Permanent barriers are easier and less expensive to install at planting.
- Only apply chemical controls as per label instructions; use is restricted near water bodies.

### Prune to:

- Maintain tree form.
- Reduce rodent pests or manage disease.
- Focus growth in the main stem.
- Increase log value by confining branch knots to the core.
- Facilitate cropping between the trees.
- Facilitate livestock or vehicle access between the trees.

## Pruning

Pruning can be used to confine branch knots within a small diameter (less than 10 cm) of the core wood thereby producing high quality, knot-free (“clear”) wood on the outer diameter of the stem. Begin pruning when trees are 5- to 6- m tall. Remove all of the branches where the trunk diameter is greater than 10 cm, but never remove more than 50% of the live canopy at any given time. Prune periodically every 3 to 4 years until a 5.5 m long, clear tree bole is created. Each successive pruning operation should not remove more than 33 to 50% of the total crown while maintaining a live crown of one-third of the total tree height.

## For More Information

### BC Agroforestry Industry Development Initiative

[www.woodlot.bc.ca/agroforestry/](http://www.woodlot.bc.ca/agroforestry/)

### InfoBasket

Your link to agri-food information including a dedicated agroforestry portal.

[www.infobasket.gov.bc.ca](http://www.infobasket.gov.bc.ca)

**A Guide to Agroforestry in BC.** 2001. Small Woodlands Program of BC, published by Forest Renewal BC, Victoria, 319 pp.

### USDA Plant Guide

Online fact sheets on many tree species suitable to BC.

<http://plants.usda.gov/plantguide/>

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