SOUTHERN EXPOSURE SEED EXCHANGE®

P.O. Box 460, Mineral, VA 23117
Phone: (540) 894-9480 Fax: (540) 894-9481
gardens@southernexposure.com

GOLDENSEAL CULTURE

Goldenseal has been cultivated since the early 1900s and many of the current recommendations for growing goldenseal are surprisingly consistent with those found in a 1914 USDA Farmers' Bulletin. The best success with goldenseal will probably be obtained in areas where goldenseal is native. Success in other areas will depend on how well those conditions can be duplicated.

Site Selection

Site selection is the most important factor for producing healthy goldenseal. Goldenseal grows best in a rich, moist, loamy soil with good air and water drainage. Planting on a slight slope will improve drainage. Do not plant in a bottom or in a heavy, poorly drained soil. If growing in the forest, look for a site where there are other woodland plants growing such as mayapple, trillium, bloodroot, and black cohosh. Do not select a site where there is no undergrowth because it is probably too dark for goldenseal. Conversely, try to avoid sites where the undergrowth is particularly thick, such as in a rhododendron thicket, for the effort required to remove the plants and their roots would be too costly. A site with mixed, deeply rooted hardwoods is preferred to a solid stand of conifers or other shallow rooted trees which can compete with the goldenseal for moisture and nutrients. Plantings established under oak, poplar, walnut, and basswood have been successful.

If growing under artificial shade in an open field situation, it is important to choose a site with few weeds or to control the weeds before planting. Grasses can be a very big problem if planting into a pasture without adequately turning the soil to kill existing weeds and seeds.

Do not plant in an area known to be infested with soil-borne diseases, especially Rhizoctonia. Also, to reduce the risk of disease, do not replant goldenseal immediately after a crop of goldenseal.

Shade

Goldenseal needs to be grown in the shade, which can be provided artificially or by a natural forest canopy. Artificial shade can be provided by a wood lath structure, a polypropylene shade structure, or by vining plants growing over a support. In a study in progress in western NC, four levels of shade are being evaluated. To date, the best plant growth has occurred under 63% to 80% shade. Plant stand counts and survivability have been highest under 47% and 63% shade. The influence on root growth will not be determined until fall 2000.

When designing the shade structure or preparing an area in the forest, provide for adequate air circulation. For artificial shade, make the structure 7 ft tall or higher with two ends open to the prevailing breeze. For forest culture, select a site with good air and water drainage in an area shaded by tall – preferably hardwood – trees.

Site Preparation

In a woodland site, remove small, undesirable trees, tree roots, weeds, and other undergrowth. In all

cases, till or turn the soil and amend, if necessary. To promote good water drainage and to warm the soil early in the spring, raised beds should be constructed. Beds should be 2 to 6 inches tall and 3 to 4 ft across. Leave sufficient space between beds to allow for easy walking, pushing a wheelbarrow, and kneeling for weeding and picking fruit.

Soil Amendments

Several months before planting, collect soil samples for fertility testing and nematode assays. For most soil testing laboratories, it will be necessary to identify the crop as "native ornamentals." If soil tests reveal low organic matter at the planned site, increase it through addition of compost. In a study conducted on forest soil in western NC, goldenseal produced the highest root yield when grown in soil amended with 2.7 to 5.2 tons of lime/acre that resulted in a soil pH of 5.5 to 6.0. In this same study, plant survival and root yields decreased as nitrogen (supplied as ammonium nitrate) rate increased. The addition of superphosphate had no effect on plant survival or growth. Based on these results and grower experiences, on a high organic matter soil goldenseal should only receive light fertilization, preferably from an organic source. Sandier soils will require more. In all instances, a balanced fertilizer can be applied at a low rate each spring as growth commences. Some people are reporting positive growth responses to high applications of calcium in the form of gypsum. Preliminary results from studies on the influence of gypsum on goldenseal at the Mountain Horticultural Crops Research Station, however, did not support these observations. In our studies, gypsum applied at 2000 to 5000 lb of calcium per acre, resulted in reduced leaf number and leaf size, increased disease incidence and earlier dieback compared to plants grown in soil without additional calcium.

Propagation

Goldenseal can be propagated from rhizome pieces, root cuttings, one-year-old seedlings, or seed. It takes 5 to 7 years to grow harvestable roots from seed and 3 to 5 years to grow harvestable roots from rhizome pieces. Root cuttings or seedlings usually take 4 to 6 years. Fall planting has been successful in all growing areas. Spring planting has also been very successful in the Southeast. In a recent study, goldenseal planting stock (rhizomes with roots or one year old seedlings) held at 40^0 F until planting in early July experienced no ill effects as a result and could not be distinguished from the spring planted material by the following season.

Mulch

Goldenseal should be mulched to hold in soil moisture, reduce weed growth, moderate temperatures, and provide winter protection. The mulch layer should be several inches deep at time of planting. Depending on the type of mulch, it may need to be replenished every year or two. In areas where the soil tends to freeze and thaw, several inches of extra mulch should be provided to protect the roots during the winter. The mulch should be raked back to a depth of 1 to 2 inches before the plants emerge in the spring.

Goldenseal is commonly mulched with whole or shredded leaves, hardwood bark chips, hardwood bark and sawdust mixture, or straw. Although straw is used successfully in many areas of the country, in studies at two locations in NC straw has performed poorly. The straw tends to hold excessive moisture near the crown of the plant causing rot. Slugs have also caused significantly more damage in the straw mulched plots than in any other mulch treatment. In two years of growth, hardwood and pine bark mulches have performed well. Plants grown with fresh sawdust mulch were nitrogen deficient the first year but grew well the second year.