

OREGON AGRICULTURAL COLLEGE

EXTENSION SERVICE

RALPH D. HETZEL, Director.

ENGLISH WALNUT CULTURE.

By W. S. BROWN.

Supposed to be native of Greece, Persia, region south of Caspian Sea, and as far east as Burma.

Wild nut has thick hard shell and small kernel.

First introduced into Southern California by Spanish friars over century ago. Best strains introduced later from France.

Groves. Prince seedling grove at Dundee, Oregon.

Ferd Groner, Hillsboro, Oregon.

A. R. Martin, Junction City, Oregon.

Flowers and Seeds. Staminate catkins on naked buds, pollen disseminated by wind. Pistellate on tips of young twigs. Have feathery stigmas to catch pollen.

Propagation. North Cal. Black (*Juglans lindsii*) best for general grafting—plant nuts from heavy producers—not profitable to pick up scattered nuts.

Southern Cal. Black (*J. californica*) one of best varieties for southern part of Cal. Do not plant on wet soils. Oregon lands too wet.

Little known as to relative merits of different roots for grafting.

English roots have been abandoned almost entirely, being too susceptible to disease, drought, moisture, etc.

Eastern black (*Juglans nigra*) too slow in growth—best for wet land.

Planting nuts where they are to grow too uncertain—orchard is top-worked at different times and is uneven. Planting seedlings of black walnut not so good as nursery trees.

Grafting. Just before seedling starts growth in the spring. Seedlings in nursery row should have soil removed down to root collar. Stock is cut off with pruning shears even with ground. A sloping bevel is then cut on the stock and a split made about 1 inch down. The scion is cut likewise and inserted into the split on the stock. Inverted saddle graft also used.

Scions should be cut when entirely dormant and kept in slightly moistened sawdust, sphagnum, moss, or sand until needed.

Size of stock and scion:—Stock $\frac{3}{4}$ to 2 in. at the ground.

Scion $\frac{3}{8}$ to $\frac{5}{8}$ in.

Well matured wood of last year's growth.

Cut about 1 ft. long with 4 to 6 buds. In grafting, these sticks are cut to 2 buds.

After placing scion on stock, the graft should be wound with soft cotton twine or raffia fibre well soaked. This should be cut when growth has started nicely.

The bulletins of the Oregon Agricultural College are sent free to all residents of Oregon who request them.

Waxing.

Formula—

Resin	4 lbs.
Beeswax	1 lb.
Linseed oil	1 lb.
Powdered charcoal	$\frac{1}{4}$ lb.

Melt in kettle and apply warm, not too hot.

A crew of men can do work more economically than one man, some hoeing, some grafting, others tying and waxing.

Soil should be pulled back against grafts as soon as they are waxed.

Top working. Cut made from 2 to 5 ft. above ground if wood is $\frac{3}{4}$ in. in diameter or upon limbs from 2 to 4 in. in diameter usually just above forks of tree. Cleft grafts, 2 cuts made across end of stub at right angles, 4 scions set, thinned to one limb later. Some prefer making cuts parallel to each other on sides of limb when limb is large. Scions cut wedge-shape and inserted, cuts filled with paper and the whole waxed. Paper bag tied over graft. Should be done just before growth starts in spring and scions should be dormant. Usually best to top-work the entire top at once.

Budding. TIME:—Often has been done in Sept. and allowed to remain dormant over winter. More recent practice to bud in June and allow to grow through season. Buds should be cut in winter and kept dormant.

MANNER:—Flute or patch bud used in California.

Double hinge bud.

USES:—Not so certain as grafting. Can be used in summer on suckers on trees where grafts have not taken. This applies as well to trees top-worked as those grafted in nursery row.

Climate. Nearly as hardy as peach or apricot.

Heavy freezes after tree has leaved out in spring and before dormant in fall especially bad. Tree should not dry out in winter.

Varieties may be selected which leave out late in spring.

Does not stand heat well save for few varieties that may be selected. Sunburn on nuts sometimes serious.

Soil. Deep, fairly heavy soil—well drained but containing plenty of hygroscopic moisture. Trees on sandy or light soils shorter lived and do not bear the quantity and quality of fruit.

Planting. Distance from 50 to 60 ft. apart according to vigor of species. $60 \times 60 = 12$ to the acre. $50 \times 50 = 17$ to the acre, when planted on square. Hexagonal and quincunx plans may be used.

Interplanting and intercropping apples, cherries, prunes, etc., may be used as fillers until they begin to crowd walnuts. Danger is that cutting out will not be done soon enough.

Clover, alfalfa, or some cultivated crop like potatoes may be interplanted provided strips are left for cultivation along the rows and that plenty of moisture is provided.

Cultivation. Cultivation necessary to maintain proper amount of water for growth. Where irrigation is practiced, allowing grass and weeds to grow and pasturing with horses and hogs, seems to give good results.

Cultivation should be kept up frequently during summer as for an apple orchard.

Pruning. Central leader type vs. open modified leader type. Former used to large extent in California. Head from 4 to 6 ft. high. Balance limbs coming out from trunk as uniformly as possible, keeping them from getting too thick for entrance of light. Cut back young branches

to 18 to 30 inches, depending upon vigor and position of branch. Seven foot stake often driven to support tree.

Modified leader type has top cut out of young tree at about 30 inches. Four or five branches as well distributed and separated on the trunk as possible are allowed to remain for permanent branches. Seven foot stake driven at foot of tree and branches tied up to this stake. This treatment keeps lower branches from drooping to ground and should be kept up for two or three years until the branches have become stiff enough to support themselves. Cut branches back as advised above.

Lower branches of walnut bear the best. A tree to do its best must have sufficient light for maturing fruit in the center.

Picking. Husks open and allow nuts to fall. If there has been insufficient moisture due to dry season or lack of irrigation husks are apt to stick to nut. Sunburn also causes husk to cling tightly to nut. Some of late clinging nuts shaken off by pole with hook on the end.

Washing. Nuts taken in sacks to central washing and drying plant where they are placed in large cylindrical drums, made of coarse wire netting, which revolve slowly under a stream of water.

Nuts with husks sticking to them are washed in cylinders with sharp projections.

Drying. Nuts placed on trays about 3x6 in. deep and dried in the open in California. With the fall rains in Oregon, it is necessary to have artificial dryers. May be similar to hop dryers.

Sampling. At packing-house the inspector picks out 100 nuts at random. 80 to 90 per cent of sound fairly light colored meats will allow sample to pass for first class. Not over 10 per cent of badly shriveled meats will be allowed.

Bleaching. Method followed in California. To remove discoloration and dirt from shells and give nuts a brighter, lighter appearance. Old process with sulfur. Fumes tainted the kernel somewhat. Process now used is electric, consisting of passing electric current through a 4 per cent solution of salt by means of electrodes. This causes chloride gas to be liberated.

Nuts placed on sloping trays in an enclosing box and nuts are shaken from one tray to another while a spray of electrically treated salt water passes over them. At bottom nuts pass through fresh water to remove salt. Bleaching should not be necessary for Oregon walnuts if gathered frequently.

Grading. Nuts carried on belt from bleaching box to the grader. First they are passed over screens with meshes 1 in. square, then they fall on a screen with meshes $\frac{3}{4}$ in. square. These screens shaken by machinery to cause nuts to fall through. Sloping cylinders with openings the proper size are sometimes used. The cylinder is revolved mechanically. Nuts are then dried again and elevated to bins for storage.

Selling. Growers of California are organized on a cooperative basis. Prices range from 12 to 18c a lb. according to quality.

Varieties. **FRANQUETTE**—Most widely tried. French variety about 200 years old. Introduced in Cal. in 1871 by Felix Gillet. Nut medium to large, decidedly elongated and pointed, medium smooth, sutures strong, uniform in shape and true to type; strongly sealed but easily cracked. Attractive in appearance, meat moderately plump and of excellent flavor.

Tree. Very late in sending out foliage and thus escapes late frosts; this tends to prevent blight. Tree grows best in moist, cool climate. Foliage abundant. Harvest season late. Comes into bearing rather late in life. Not a heavy bearer. Trees 6 yrs. average 9 to 10 lbs, 10 to 15 yrs. average about 40 lbs. Mature trees average about 100 lbs.

MAYETTE. Wide variation in type. Likely that many seedlings of the Mayette have been passed as budded variety. Kerr strain one of best.

Nut: Decidedly flat, square-cut, can be set up on basal end. Medium in size, thin shelled but well sealed, well filled with meat which averages about 50 per cent of total weight, flavor of meat excellent.

Tree: More thrifty growth than Franquette, coming into bearing sooner and bearing more nuts.

MEYLAN. Grown in Oregon to some extent.

Nuts: Broad flattened base, rounded to very broad point at other end. Surface very smooth, light colored and attractive. Meats fairly plump and of excellent flavor. Not a heavy bearer.

Other varieties worthy of trial: Eureka, Concord, Gladys, Willson.

Walnut Blight. A bacterial disease that has caused considerable loss to California growers for several years. Widely distributed in Oregon. Causes black sunken spots on leaves and new growth. Attacks young nuts, causing shriveling and darkening of meat. Attacks of this disease vary with different seasons. Wet springs usually more conducive to trouble.

Spraying not practical remedy. Varieties coming into leaf late in spring not so often attacked. We must breed strains immune to blight if possible.