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## G76-315 Establishing Black Walnut

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## Establishing Black Walnut

This publication contains information on establishing a black walnut plantation.

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*Rick Hamilton, District Extension Forester*

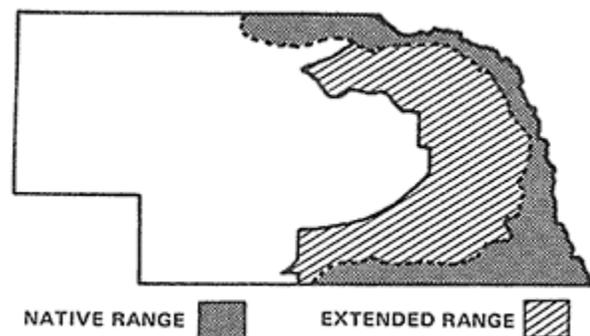
*Neal E. Jennings, Assistant State Forester and Community Forest Specialist*

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Based on current market conditions, \$20,000 to \$30,000 worth of black walnut timber can be harvested from a managed acre within 50 years. The total cost of establishing an acre rarely exceeds \$100, including site preparation, cost of seedlings, planting, and weed control. The decision to invest in a walnut plantation can be based on:

1. The rate of return on \$100 per acre invested is 11.3 percent to 11.9 percent, yielding \$20,000 to \$30,000 within 50 years. The same investment at 6 percent interest would yield \$1,842 at the end of 50 years.
2. Ideal sites are stream bottoms, flood plains, or odd corners. Such areas may be placed in walnut production with little or no loss of agricultural production.
3. Historically, walnut has increased in value faster than the inflation rate. Using present market figures probably greatly underestimates the future market value.



**Figure 1. Where walnuts can be grown as a commercial crop in Nebraska.**

Figure 1 shows where walnut can be grown as a commercial crop. Some isolated areas further west will

support adequate walnut growth.

### Site Selection

Walnut is a soil-sensitive species. The soil should be deep and have good internal drainage. A minimum of 40 inches of soil without clay or gravel limitations is required for economical wood production. The best sites are on stream terraces, in coves, or anywhere silt has collected over the years--sandy loam, loam or silt loam soils.

Table I is a comparison of growth on two different sites. All trees are 8 years old. Site 1 - a shallow, upland clay-loam soil. Site 2 - a deep, well drained alluvial soil.

Tree No.	Diameter (inches)		Total Height (feet)		Av. Height Growth Per Year (feet)	
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2
1	2.0	3.30	14	20	1.75	2.5
2	2.5	2.90	9	17	1.12	2.12
3	1.0	3.43	9	20	1.12	2.5
4	1.75	3.12	8	20	1.0	2.5
5	2.0	2.67	7	18	.88	2.25
6	1.0	3.50	6	22	.75	2.75
7	1.5	3.68	6	24	.75	3.00
8	.75	4.06	7	25	.88	3.12
9	1.0	3.95	7	26	.88	3.25
10	1.5	4.00	8	21	1.0	2.62
Av.	1.5	3.46	8.1	21.3	1.01	2.66

### Ground Preparation

Ground preparation for trees should be the same as any other crop. It is better to delay planting a year than to plant on a poorly prepared site.

Walnut seedlings cannot be successfully planted directly into grass sod. Poor survival and slow, deformed growth will occur. The grass must be destroyed prior to planting through tillage or herbicides.

### Plant Seedlings or Nuts

Trees grown from nuts initially out-perform trees grown from seedlings. The tap root is not disturbed and more vigorous growth occurs the first 3 years. After 3 years there will be no difference in growth rate.

Planting nuts is cheaper and easier. The problems with planting nuts are:

1. Squirrels will dig and eat the nuts about as fast as they are planted.
2. It is easy to gather nuts which are not any good - hence, a whole year is lost.
3. Pre-emergent chemicals cannot be used for weed control.

In general, planting seedlings is better. Seedlings 1/4 inch in diameter, 1 inch above the soil line, and 18 inches tall are of excellent quality. Seedlings should be planted in the spring as soon after receipt as possible.

Seedlings may be obtained from private nurseries or from the Nebraska State Forester through the Clarke-McNary tree program. Seedlings from the State Forester may be ordered each year from November 1 through April 15th. Contact your County Extension Agent or Natural Resource District office for order forms.

### **Spacing Recommendations**

The spacing between rows and within rows is determined by the site, size of maintenance equipment, and future uses of the area. On most sites 200 to 300 trees per acre should be planted. This gives 140 to 200 square feet of space per tree. The poorer trees should eventually be removed, leaving 50 to 75 trees per acre. Extra trees are planted to insure an adequate number of straight, vigorous trees.

Black walnut may be planted for nut production. The same number of trees should be planted per acre. The planting should be thinned the 7th or 8th year to 25 to 40 trees per acre. The remaining trees develop large crowns, which increases nut production.

Space the rows further apart (30 to 40 feet or more) if other crops are to be planted between rows. Plant closer within the row (4 to 6 feet).

<b>Spacing (feet)</b>	<b>Square ft. per tree</b>	<b>No. of trees per acre</b>
10 x 14	140	311
10 x 20	200	217
12 x 12	144	302
12 x 16	192	227
14 x 14	196	222
6 x 20	120	363
4 x 30	120	363
4 x 40	160	272

### **Weed Control**

Grass and weeds compete with young trees for soil moisture, light, and nutrients. Weeds and grass are the most important factors limiting the growth and survival of newly planted trees.

Chemicals, mowing, cultivation, and/or mulch can be used to control weeds and grass. The pre-emergent herbicide simazine (Princep) is widely used in Nebraska. Use 4 pounds active ingredient per acre

immediately after planting.

The area between tree rows should be mowed or cultivated to prevent growth of tall weeds. Weed control should continue for a minimum of 3 years.

### **Fertilization**

Walnut trees should not be fertilized at time of planting or in later years. Research has shown that any additional growth is extremely susceptible to drought, winter kill or wind damage. Fertilizer often only increases weed and grass growth.

### **Rodent Control**

Rodents can cause damage to seedlings in three ways: 1) deformity or forking by destroying the terminal bud, 2) repeated die-back of the main stem by girdling at the root collar, and 3) mortality by destruction of the root system (usually by gophers).

Rodents which work above ground can best be controlled by keeping the area surrounding the young trees clean. Mulch should be raked away from the trees before winter to prevent nesting by rodents. Gophers may be controlled by poison baits placed in the ground around the trees. Chemical rodent repellents are available but their effectiveness is questionable.

### **Grazing Damage**

Young trees and livestock are not compatible. Plantings must be fenced or protected from livestock.

### **Herbicide Damage**

Walnut trees of all ages are extremely susceptible to injury from 2,4-D and 2,4-5-T herbicides.

Spray drift from aerial or ground application of these chemicals is a serious threat. Death, deformity, or loss of tree vigor occurs.

Possible damage can be minimized if these chemicals must be used close to the trees.

1. Spray only on calm days.
2. Use the amine form.
3. Use low pressure.
4. Spray in the fall if possible after leaves have dropped.
5. Inform your neighbors of the hazard of chemical drift to your trees.

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***File G315 under: FORESTRY***

***B-5, Tree Planting***

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