



WALNUT NOTES

Interplantings

Interplanting nurse trees and shrubs with walnut trees can greatly improve walnut growth and quality (fig. 1). In addition, nurse crops have been used for esthetic reasons; for wildlife food or cover; and for intermediate crops like Christmas trees, pulpwood, or fenceposts. But nurse crops should be selected carefully-not all are equally effective on every site.

Figure 1.-Walnut interplanted with autumn olive. Note the lack of a competing herbaceous understory in these plantings.



Most nurse crops we've tested have been nitrogen-fixers-they take nitrogen from the atmosphere and add it to the soil in a form available to other plants. Walnut trees use a lot of soil nitrogen, but many sites being planted to walnut are low in available nitrogen.

The following nitrogen-fixing species have been tried in walnut interplanting.

Autumn olive, a multiple-stemmed, densely foliated shrub, has stimulated walnut growth on all but the best walnut sites. Unfortunately, the cultivar of autumn olive originally planted as food and cover for wildlife is spread by seeds into uncultivated areas, and several States are discouraging the future planting of autumn olive.

Russian olive, a small, densely foliated tree, is a suitable alternative to autumn olive in the northern part of the walnut range. Russian olive can also spread to uncultivated areas; it is prone to diseases that will limit its growth.

European (Black) alder and *black* locust have stimulated the growth of walnut on some sites, but both can overtop and suppress walnut trees if they are not managed. Fortunately, both species are relatively short-lived because of locust borer damage on black locust and European alder's sensitivity to juglone

Nurse crops can help walnut trees in other ways besides increasing the availability of soil nitrogen. They protect walnut trees from wind, moderate soil and air temperatures, improve soil texture, reduce the incidence and severity of foliar diseases, and reduce competition from the understory. Of these benefits, reduced competition from the understory, especially grasses, may be the most important (see Note 2.06: Ground Cover Management). Walnut trees alone will not produce enough shade to exclude the understory vegetation before tree competition reduces growth (see Notes 3.03: First Thinning and 3.04: Second Thinning). Interplanting other trees or shrubs with walnut apparently helps maintain a high total crown cover without as much tree-to-tree competition as in pure walnut plantations.

Only a few non-nitrogen-fixing trees or shrubs have been tested in walnut interplantings. Amur honeysuckle, a densely foliated shrub, is promising because it has a growth rate and crown structure similar to autumn olive. Eastern white pine has been encouraged because it can be harvested early in the walnut rotation for Christmas trees or later for pulpwood. Hardwood species such as white ash, red oak, and sugar maple that have widespreading branches and dense foliage can provide the necessary shade to suppress the competing understory vegetation.

The following table lists some possible species for interplanting with walnut, their origin, degree of shade tolerance, expected growth rates, mature height, ability to fix nitrogen, and major uses:

Common and scientific name	Shade tolerance ¹	Growth fate*	Mature height	Fixes nitrogen	Major uses ³
Autumn olive (<i>Elaeagnus umbellata</i>)	M	M-R	15-20	Yes	W,E
Russian olive (<i>Elaeagnus angustifolia</i>)	M-I	M - R	25-30	Yes	W,E
European alder (<i>Alnus glutinosa</i>)	I	R	40-50	Yes	W,E,P
Black locust (<i>Robinia pseudoacacia</i>)	I	R	70-80	Yes	W,P
Amur honeysuckle (<i>Lonicera maackii</i>)	M	M-R	15-20	No	W,E
Eastern white pine (<i>Pinus strobus</i>)	TM	M	80-100	No	W,E,P,L
Red oak (<i>Quercus rubra</i>)	M	M-R	60-80	No	W,E,P,L
White ash (<i>Fraxinus americana</i>)	M	M-R	70-90	No	W,E,P,L
Sugar maple (<i>Acer saccharum</i>)	T	S-M	80-100	No	W,E,L

¹T = shade tolerant, M = intermediate tolerance, I = intolerant.

²R = exceeds that of walnut, M = similar to walnut, S = slower than walnut.

³W = wildlife habitat, E = esthetic or screening, P = pulpwood or posts, L = forest products (lumber, veneer, gunstocks, millworks, etc.).

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