



WALNUT NOTES

Ground Cover Management

The ideal ground cover in a black walnut plantation would be similar to that in a dense mature forest or mixed black walnut stand. Unfortunately, when a plantation is established, regardless of the type of site preparation, the walnut seedlings will not be tall or dense enough to shade out the vegetation that competes against them. Most plantations go through a natural succession from annual weeds to perennial weeds and then grasses if trees are widely spaced and free to grow.

Criteria for Choosing a Cover Crop

The type and amount of ground competition can greatly affect black walnut survival and growth. In general, legumes increase tree growth if they persist; and grasses reduce growth. More testing is needed before we can make specific recommendations on ground cover; however, the following is a list of general criteria to consider when selecting a cover crop for your plantation.

1. Ground cover should not compete strongly with your walnut.
 - does most of the vegetative growth occur during periods of walnut growth or when soil moisture is inadequate?
 - does the ground cover produce phytotoxins-chemicals that will limit walnut growth?
2. Ground cover should be easy to establish and maintain on your site.
 - are varieties available that are adapted to your section of the country?
 - is seed readily available at a reasonable cost?
 - will ground cover persist long enough to justify the cost of establishing it?
 - are shade-tolerant varieties available
3. Ground cover should produce adequate biomass to control other weeds.
 - can the ground cover overtop and smother existing herbaceous competition?
 - will the ground cover increase or decrease fire hazard in your plantation?
4. Ground cover should improve soil structure and/or fertility.
 - does the ground cover fix nitrogen and if so, how much annually?
 - will the ground cover result in rapid litter accumulation and increased organic matter in the soil?
5. Ground cover should be relatively free of pests, especially pests that may attack walnut.

Your choice of ground cover is probably limited to those species used for hay, pastures, or green manure cropping. For silvicultural treatments, use half of the seeding rate suggested for agricultural uses unless site preparation is minimal. Contact your local extension agent for more information on how to establish the ground cover and how much of what varieties to plant. The agent knows about the soil types in your area and what other landowners are growing. The following list describes some of the most common ground covers, their principal uses, seeding rate for agricultural use, rate of establishment, pattern of stem growth, longevity, and whether tested as a cover crop with black walnut or other hardwoods.

Species	Principal uses	Seedling rate (lbs/acre)	Rate of establishment	Pattern of stem growth	Longevity	Tested'
Alfalfa	forage pasture	10-20	moderate	erect	perennial	NA
Red clover	forage pasture green manure	8-10	rapid	erect	short-lived perennial	NA
Ladino or White clover	pastures bees	2-4	moderate	prostrate	perennial	NA
Tall fescue	forages pastures	20-35	rapid	upright	perennial	
Timothy	forages pastures	5-10	moderate	upright	perennial	NA
Birdsfoot trefoil	ground cover pasture	5-10	moderate	procumbent	perennial	0
Crownvetch	ground cover forages	15-20	slow	procumbent	perennial	t
Alsike clover	pastures bees	4.5-8	moderate	decumbent	short-lived perennial	NA
Sweet clover	green manure forages bees	10-15	rapid	upright	biennial	+
Bromegrass	forages pasture	15-20	moderate	upright	perennial	NA
Orchardgrass	forage pasture	10-15	moderate	upright	perennial	NA
Sericea lespedeza	ground cover forages	10-18	slow	upright	perennial	t
Annual lespedeza	forage pasture green manure	15-25	rapid	procumbent	annual	
Hairy vetch	green manure	40-45	rapid	vines	annual	t +
Crimson clover	green manure forage bees	15-20	rapid	erect	annual	+ t

(Table continued on next page)

(Table Continued)

Species	Principal uses	Seedling rate (lbs/acre)	Rate of establishment	Pattern of stem growth	Longevity	Tested ¹
Kentucky bluegrass	pasture groundcover	15-25	slow	upright	perennial	NA
Bermuda grass	ground cover pasture forage	7-12	rapid	procumbent	perennial	NA
Soybeans	oils green manure	30-50	rapid	upright	annual	t
Subterranean clover	pasture	20-25	rapid	procumbent	annual	t
lbs/acre	ground cover	60-70	slow	vines	perennial	NA
Arrowleaf clover	forage pasture bees	5-8	rapid	erect	annual	+ t

¹NA = no data available; + = beneficial to some hardwoods; t + = beneficial to all hardwoods tested; 0 = mixed results with hardwoods; and - = reduced growth on tested hardwoods.

J. W. Van Sambeek