

ROOT RIVER SWCD CONSERVATION HIGHLIGHTS

MITIGATION OF CLIMATE CHANGE HOW SOIL HEALTH PRACTICES CAN AID

NOVEMBER 2019

Those producers who have tried implementing some of the soil health practices such as cover crops and no-till in the short term may not be seeing some of the benefits. Especially if those practices have only been implemented for a couple of years and without a lot of consistency. Other, more seasoned producers may already see the benefits of going all-in by seeing reductions in their pesticide use or improvements in their soil tests (higher OM). Whether you're new to soil health or very experienced, producers who implement soil health practices can have a hand in reducing the effects of climate change.

The good news: Agricultural best management practices that improve soil health also help mitigate the effects of climate change. The Minnesota Board of Water and Soil Resources' (BWSR) Climate Change Trends and Action Plan details the benefits of these practices, drawing on new data compiled by the Minnesota Pollution Control Agency (MPCA). In October, the MPCA released a new study, Greenhouse Gas Reduction Potential of Agricultural Best Management Practices, which assesses the potential for conservation practices to reduce emissions. The most beneficial practices are those that get more perennial vegetation on the land, including buffers, grass waterways and filter strips. MPCA also found that practices such as no-till and cover crops can be extremely effective strategies for existing cropland.

How can the implementation of soil health principles help mitigate climate change? The answer is by reducing greenhouse gas emissions, namely carbon. Soils contain vast quantities of carbon — more than double the amount in the atmosphere. Healthy soil holds the carbon that plants absorb from the air and incorporate it into their root systems. Carbon is stored in the soil as roots, root exudates, and decomposed plant matter. Repeated plowing and high amounts of commercial fertilizer use can reduce soil carbon, soil fertility and water-holding capacity. The same practices that are known to improve soil health and water quality can increase carbon sequestration (the amount of carbon retained in the soil.) Beneficial practices such as cover crops, reduced tillage and perennial vegetation keep soil covered year-round, reinvigorating soil biology

and increasing carbon sequestration. Conservation practices also can reduce the amount of fertilizers, fuel and other inputs needed for agriculture, thus reducing greenhouse gas emissions and costs simultaneously.

According to the MPCA report, some of the most effective practices for greenhouse gas reduction include:

- Converting marginal farmland to grassland, managed pasture, or other native vegetation.

- Installing grassed waterways.

- Adding a perennial crop to the rotation (hay).

Soil health practices that keep cropland in production, such as no-till, strip till, cover crops and reduced fertilizer use, have a lower per-acre effect but can potentially cover many more acres. Minnesota contains more than 20 million acres of cropland.

- Planting cover crops on 5 million acres — just a quarter of Minnesota's cropland — would reduce emissions by 1 million tons, the equivalent of taking 200,000 cars off the road. Currently, cover crops are planted on about 3% of the state's cropland.

- Reducing commercial fertilizer use by just 15% on 10 million acres would reduce greenhouse gas emissions by 5.9 million tons, the equivalent of taking 1.2 million cars off the road.

By being proactive, producers can do their part by being a positive influence in the climate change discussion. If you know a neighbor or fellow producer who is implementing practices such as cover crops or no-till; strike up a conversation. Learn from those who are doing. Take some initiative to be a part of the solution. By being progressive, producers may be looked at as a part of the solution — and not as one of the contributors to greenhouse gas emissions.

Be a part of the conservation solution!

If you are interested in signing up for the local cover crop program or would like to learn more about the soil health principles call Bob Scanlan, Root River SWCD at 724-5261.

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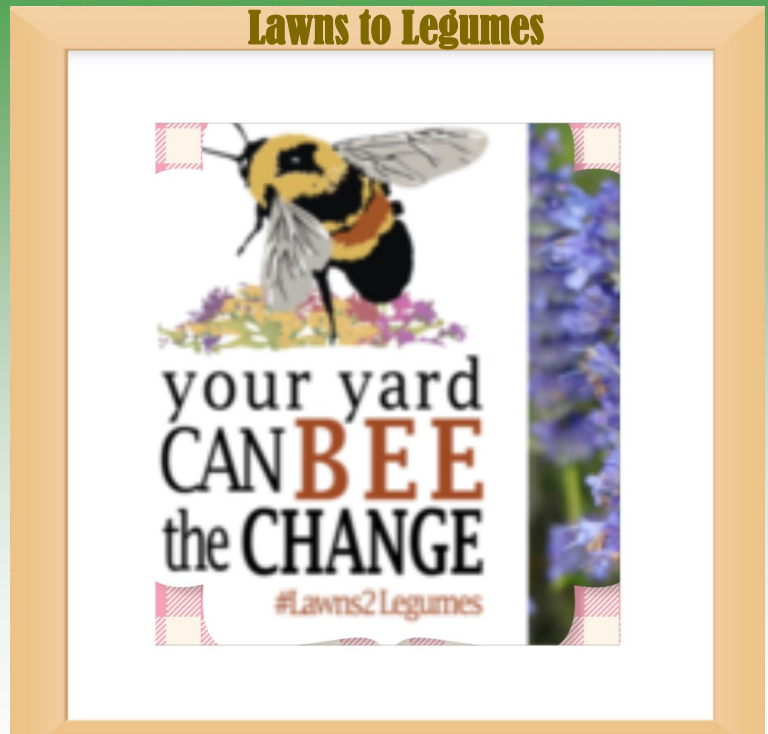


The Minnesota Board of Water and Soil Resources (BWSR) recently received state funding to develop **Lawns to Legumes** grant program focused on planting residential lawns with native vegetation and pollinator friendly forbs and legumes to protect a diversity of pollinators. The funding appropriation is through the Environment and Natural Resources Trust Fund (ENRTF). BWSR has been working with the ENRTF as well as other stakeholders and partners to develop program criteria.

The primary goal of Lawns to Legumes Program is to support as many Minnesota residents as possible in establishing pollinator habitat and increase the Rusty Patched Bumblebee and other at-risk species.

There are three primary components to this funding appropriation:

- 1) Establishment of “*Demonstration Neighborhoods*” (for neighborhood wide projects)
- 2) Individual Support involving cost-share, coaching and workshops (for individual residential landowners)
- 3) A Public Outreach campaign to raise awareness about pollinator habitat (to connect with all residents)



When will the Request for Proposals (RFP) for Demonstration Neighborhoods Open?

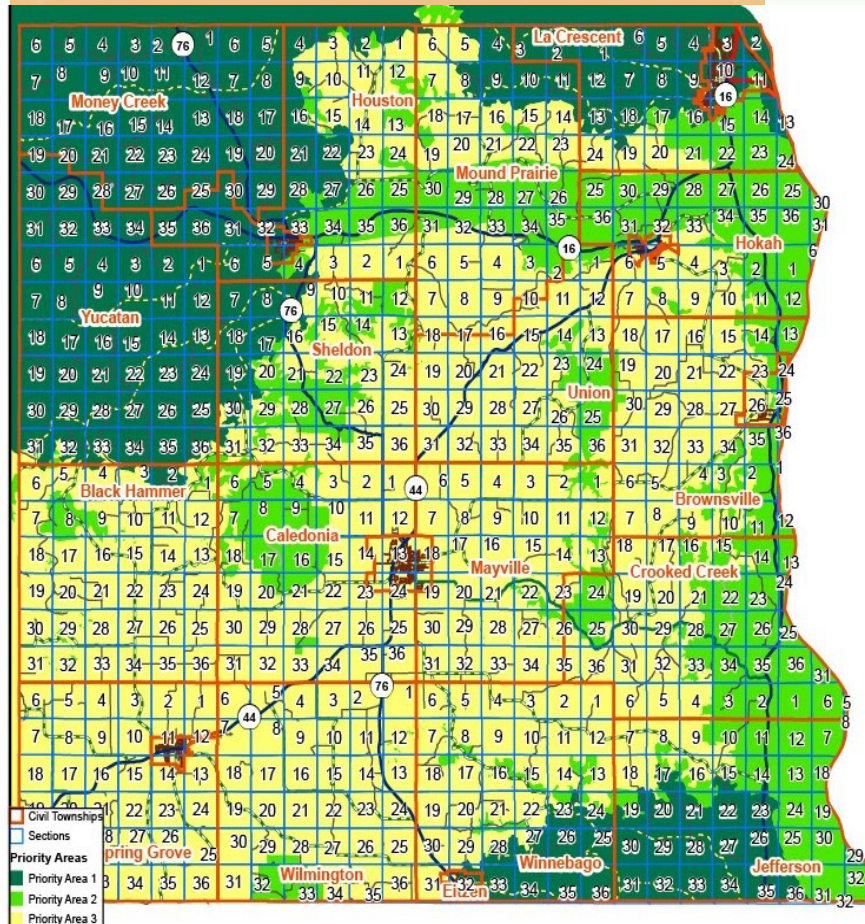
BWSR’s target date for issuing the Demonstration Neighborhoods RFP is between Nov. 15 and early December.

When will interested residents be able to apply for cost-share funding?

In December 2019, Blue Thumb will begin accepting applications from residents for the individual support component of Lawns to Legumes. The program divides the state into different priority areas based on the presence of the rusty-patched bumblebee. Check the map to determine what priority area you are live in.

Applicants who are accepted into the Lawns to Legumes individual support program can receive up to \$350 of funding through a reimbursement process. A 25% match will be required for each successful applicant. Funding decisions will be made and all notifications emailed in February for spring 2020 installations.

Feel free to contact your SWCD office with questions.



Top Ten MN Plants for Native Bumblebees:

- | | |
|---------------------------------------|---|
| Blazingstars <i>Liatris species</i> | Virginia Bluebells <i>Mertensia virginica</i> |
| Wild White Indigo <i>Baptisa alba</i> | Beardtongues <i>Penstemon species</i> |
| Milkweeds <i>Asclepias species</i> | Red Columbine <i>Aquilegia canadensis</i> |
| Goldenrods <i>Solidago species</i> | Asters <i>Aster species</i> |
| Beebalm <i>Monarda species</i> | Blue Giant Hyssop <i>Agastache foeniculum</i> |



Volunteer Nitrate Monitoring Program

The Root River SWCD participates in the Volunteer Nitrate Monitoring Program which is an ongoing study of nitrates in drinking water from private wells. Once a year volunteers will receive a test kit from a certified lab, take their sample and mail it back to the lab. The volunteer receives a copy of their results each year.

Currently, we are seeking a volunteer for the four specific areas listed below:



- Crooked Creek Township (Section 3 *South 1/2*; Section 2 *SW 1/4*; Section 22 *South 1/2*; Section 26 *West 1/2*; Section 27; Section 28 *East 1/2*)
- Jefferson Township (Section 9 *East 1/2*; Section 10; Section 11 *West 1/2*; Section 15 *North 1/4*)
- Mound Prairie Township (Section 19 *SE 1/2*; Section 20 *SW 1/4*; Section 29, 30, Section 31 *NE 1/4*; Section 32 *NW 1/4*)
- Yucatan Township (Sections 26, 27; Section 24 *SW 1/4*; Section 22 *SE 1/4*)



If you would be interested in participating or know of someone in those areas that might be interested, please contact Janice at the Root River SWCD, (507) 724-5261 ext. 3 or email messnerjanice@gmail.com.

MN Buffer Law Program Update

The Buffer Law that was signed into law by Governor Dayton in 2015, as we know, seen updates and clarifications in 2017. It clarified the application of the buffer requirement to public waters, provided additional statutory authority for alternative practices, addressed concerns over the potential spread of invasive species, including Palmer Amaranth, through buffer establishment, established a Riparian Protection Aid Program to fund local government buffer law enforcement and implementation, and allowed landowners to be granted a compliance waiver until July 1, 2018.

As of July 2019, Houston County parcels adjacent to Minnesota waters are 95-100% compliant with the Buffer Law. A buffer, also known as a riparian filter strip, is veg-

ated land adjacent to a stream, river, lake or wetland. Buffers help filter out phosphorus, nitrogen, and sediment, and are an important conservation practice for helping keep water clean.

Studies by the Minnesota Pollution Control Agency show that buffers are critical to protecting and restoring water quality and healthy aquatic life, natural stream functions and aquatic habitat due to their immediate proximity to the water. Minnesota Buffer Law

requires perennial vegetative buffers up to 50 feet along lakes, rivers & streams.

In 2019 Soil and Water Conservation Districts (SWCDs) were mandated to check 1/3 of all buffers each year along with year along with 25-50 random spot checks. The Monitoring Plan can be viewed on the SWCD website, http://www.co.houston.mn.us/RRSWCD/RSRRSWCD_Buffer_Compliance.aspx.

During the summer months, the SWCD reviewed parcels and did find a few buffers that had

been eroded due to flooding or high water. Per the Buffer Law, buffers must remain at their original measurement. If you have lost buffer, please contact us and we will come out and measure your buffer. Feel free to contact the Root River SWCD office with further questions regarding the Buffer Law, (507) 724-5261 ext. 3.





Joan Heim-Welch

Joan Heim-Welch is Root River SWCD's 2019 Conservationist of the Year. Joan and her husband Todd reside in rural Brownsville, MN. Joan has two adult children, Brian and Tracy.

Joan operates a diversified crop and livestock operation raising corn, soybeans, cereal grains and hay along with cover crops on silt loam soils in the Driftless area of southeast MN. In addition, Joan operates a cow-calf beef herd on the rolling pastures. The farm is comprised of 630 acres in Brownsville and Crooked Creek Townships that were purchased by Joan and her late husband Arne in the early 1980s.

With areas of the farm being top of a ridge landscape the land is vulnerable to sediment and nutrient losses. To counteract erosion, Joan and Arne committed to implementing many types of conservation practices over the years, beginning with a grade stabilization structure completed in 1984.

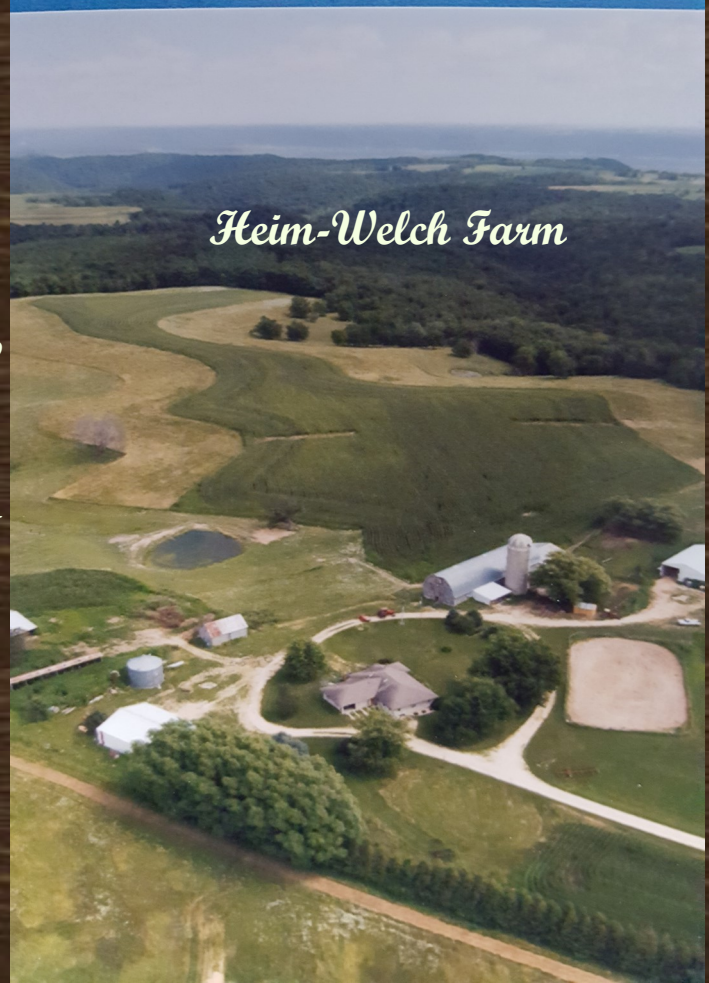
A common practice for the Heim's was to do timber stand improvement, a practice that targets removal of trees in bad condition or of undesirable quality while improving the woodland for desirable trees.

An integral part of the farming operation has always been a beef cow-calf herd that grazes some of the more challenging slopes of the farm. Joan utilizes a rotational grazing system to ensure that pastures are not over-grazed, thereby providing sufficient perennial ground cover. This practice improves soil health by allowing more infiltration of water and reducing the occurrence of nutrient runoff.



Conservation practices installed and managed on the Heim farm include contour strip cropping, maintaining buffer strips, thousands of feet of grassed waterways, implementing several grade stabilization structures, brush management within pastures and woodland areas, timber stand improvement, diversions, acres devoted to the conservation reserve program (CRP) such as tallgrass prairies, conservation security program (CSP), including acres devoted to pollinator plots and private forest management projects with the DNR. Joan voluntarily does nitrate monitoring and certified her farm with the MN Dept. of Agriculture's "Water Quality Certification Program."

Joan is an avid conservationist, a vital resource to the community, a steadfast partner with the Root River SWCD office and strives to make continued improvements on her land. Congratulations Joan!





Minnesota Agricultural Water Quality Certification Program

The Minnesota Agricultural Water Quality Certification Program (MAWQCP) is a voluntary opportunity for farmers and agricultural landowners to take the lead in implementing conservation practices that protect our water. Those who implement and maintain approved farm management practices will be certified and in turn obtain regulatory certainty for a period of ten years.

Through this program, certified producers receive:

- * Regulatory certainty: certified producers are deemed to be in compliance with any new water quality rules or laws during the period of certification
- * Recognition: certified producers may use their status to promote their business as protective of water quality
- * Priority for technical assistance: producers seeking certification can obtain specially designated technical and financial assistance to implement practices that promote water quality

Through this program, the public receives:

- * Assurance that certified producers are using conservation practices to protect Minnesota's lakes, rivers and streams



The Minnesota Agricultural Water Quality Certification Program (MAWQCP) certifies farmers for managing the land within their operation in a way that protects water quality. Area Certification Specialists assist farmers through the certification process. You can get started by contacting the Root River Soil and Water Conservation District or our Area Certification Specialist, Mark Root, Olmsted SWCD, MSROOTMAWQCP@gmail.com, 507-226-5923. The application form is also available on the Minnesota Department of Agriculture website, <https://www.mda.state.mn.us/environment-sustainability/minnesota-agricultural-water-quality-certification-program-1>

After you complete the program application the Area Certification Specialist will work with you on the assessment process, which includes an online assessment tool and on-farm field verification. Lastly, compliance with existing laws and rules needs to be complete when the certification agreement is signed.

Once a landowner is certified they are eligible for MAWQCP grants of up to \$5000.00 to implement Best Management Practices on their land. This grant will supplement the cost of the practice as an add-on after other public funds are applied, not to exceed a total public payment cost of 75%. (Additional funds for CRP are not allowed in this grant program).

Grant applications are reviewed as received. Eligible practices are identified by the MAWQCP certifying agent and approved by the MDA staff. Applications for the MAWQCP Financial Assistance Grant have no application deadline and are awarded on a first come basis until all funds are expended.

Root River SWCD had one landowner in 2019 that successfully applied for the grant and installed 2 grassed waterways on their property.

For more information visit the Minnesota Department of Agriculture website, <https://www.mda.state.mn.us/environment-sustainability/minnesota-agricultural-water-quality-certification-program>.



CONSERVATION TREES



Common Ninebark



The Root River SWCD is announcing their annual tree sale. Trees play an important role in conservation. They serve as wind-breaks, assist in providing vegetation on streambanks resulting in decrease run-off into streams and effectively address water quality issues. They provide a significant amount of wildlife habitat and improve esthetics in our communities.

The SWCD offers an array of conifers, hardwoods, and small trees and shrubs. A majority of the trees that are offered are native to the area. This year we have added the common ninebark as one of our offerings. This acts as a substitution for the cranberry bush.

Did you lose a techny arborvitae and would like to replace it? We are able to special order these in bundles of 25, or potted (one gallon or two gallon).

Our trees are offered at a low cost and are sold in bundles of 25. If you are looking for a specific specie or size not listed on our order form please feel free to inquire.

Trees arrive at the SWCD office in mid-April and those that have placed orders are notified of pick-up dates. It is important that you place your tree order today before stock runs out. Tree quantities are available on a first come, first serve basis only and can go quickly.

NOW is the time to make a difference in conservation.

2019 Houston County Soil Temp Study

The Root River SWCD performed a soil temperature study in spring of 2019 with a goal of gaining information pertaining to the rate at which soils warm up prior to spring planting. Comparisons were made in regard to tillage, previous crop and soil cover crop methods. A testing end goal of 5 consecutive days of 50+ degrees at 6" soil depth was established. In 2019, this occurred during the week of May 5-11. A start date of April 1 was established with soil temperature testing occurring 3-5 days per week with an average weekly temperature being recorded on each of the test sites. Parameters were set to maintain consistency including soil temperature depth (6"), daily timing of soil temperature test (mid-day between 10 a.m. and 2 p.m.), and soil types and slope. All soil types were either Seaton Silt Loam or Black Hammer Southridge Silt Loam (all B and C slopes). Efforts were taken to minimize potential differences in slope direction by taking temperature samples from similar land uses on different slope directions, and then taking the average. In all, 18 different soil test sites were chosen ranging from fall chiseled fields to several sites of fall cover crop and some hay fields. Below are the results summarized from the week of May 5th – 11th.

One field included a strip of soybeans with no cover and a strip of soybeans with a manure application. The strip with the manure warmed up slower than the open soybean field by 2 degrees on the last day of the study. On all three farms we lumped together similar tillage and cropping scenarios in order to summarize the results (ex. Corn silage fields and corn with chopped stalks removed are similar ground cover so we lumped those results). On all of the fields, similar tillage/cropping were also combined regardless of the slope direction, then averaged in order to take slope out of the equation as a reason for a certain scenario to warm up at a different rate than another.

Below are the results. We found that fall chiseled fields, whether it was fall chiseled sod or corn ground were some of the slowest fields to warm up in the spring (fall chiseled sod was the coldest in the study, corn was 3rd coldest). We hypothesize that potentially healthier soils are more apt to warm up quicker in the spring due to a more active soil biome. We are hoping to duplicate this study in the spring of 2020 to compare results and provide consistency.

Final Temperature Results:

Rye/Vetch cover crop after oats = 54-55 degrees
 Corn silage/Chopped corn stalks with stalks removed = 52-56 degrees
 Corn Stalks/Fall Rye Cover Crop = 52-53 degrees
 Mixed Hay = 52 degrees

Fall Chiseled Corn = 51 degrees
 Soybean Stubble = 50-52 degrees
 Fall Chiseled Sod = 49-50 degrees
 Alfalfa = 52 degrees



Conservation Tree Descriptions

CONIFERS - TRANSPLANTS

Variety	Size	Maturity Size	Description
Pine, Norway (Red Pine)	7" – 15"	75 - 100'	Needles are 4 – 6" long, flexible, and a dark yellow-green color. Prefers well-drained, moist soils, but will tolerate dry conditions. Prefers full to partial sun. Growth spread ranges from 50-75'. Fast growth rate.
Pine, White	7" – 15"	75 - 100'	Needles are 3-5" long, very soft and flexible, and a bluish-green color. Grows well in rich, moist soil, but does best in moist, sandy loams. Full sun to partial shade. Growth spread ranges from 50-75'. Fast growth rate. Soft, picturesque tree. Good lumber tree.
Spruce, Colorado	7" – 15"	70 - 100'	1" – 1 ½" needle all shades of blue and green with very sharp tips. Prefers well-drained, moist soils but will tolerate dry conditions. Moderately tolerant of shade. Provides a 20-35' growth spread. Medium growth rate.
Spruce, Norway	7" – 15"	40 - 100'	Full sun and drought tolerant 20-50' growth spread. Does well in dry, moist or wet conditions. Fastest growing spruce. Dense draping branches. Needles are ½ to 1" long. Not native.
Spruce, White	7" – 15"	50 - 80'	Needles are 1/3 – 3/4" long. Tolerant of shade. Does best in moist, well-drained, gravelly soils. Drought sensitive. Good wildlife cover and useful windbreak tree. Medium growth rate.
Fir, Balsam	12" – 18"	50 - 75'	Shade tolerant with 20-30' growth spread. Prefers moist, wet regime. Sensitive to drought. Bears small cones. Slow growth rate.

DECIDUOUS TREES

Variety	Size	Maturity Size	Description
Maple, Sugar	12" – 18"	50 - 75'	Brilliant orange red fall color. Tolerates shade. Thrives on fertile moist and well drained soils. Collect sap in the spring for your own maple syrup. Valuable for wood products and excellent firewood. Slow growth rate.
Oak, Red	12" - 18"	60 - 80'	Fastest growing Oak. Does best on moist or well-drained sites in full to partial sun. Valuable wood products tree. Acorns provide excellent wildlife food source. Fall color is red to a winter bronze.
Oak, White	12" – 18"	75 - 100'	Does best on slightly moist to well-drained sites. Full to partial sun. Acorns provide excellent wildlife food source. Brown, purple autumn foliage. May hold some leaves over winter. Excellent firewood & valuable wood products tree. Slow growth rate.
Walnut, Black	12" – 18"	70 - 100'	A large tree with medium green, compound leaves. Does best on rich, deep, fertile, well-drained soils. Requires full sun. Widely planted and highly regarded for top quality lumber. Excellent food source for wildlife. Yellow fall color. Rapid growth rate.

SMALL TREES & SHRUBS

Variety	Size	Maturity Size	Description
Nannyberry	12" – 18"	15 – 18'	Upright shrub with growth width 6 – 10'. Full sun, partial sun or shade; sandy loam to silty clay loam. White spring flower turning to drupe, black fall fruit. Drought tolerant. High wildlife rating. Medium growth rate.
Crabapple, Red Splendor	12" – 18"	20 - 25'	Full sun with sandy loam to clay loam soil texture. Should have moderate drainage with dry, moist or wet moisture regime. Growth width 20'. Pink spring flower precedes red fruit from spring through winter. High wildlife rating. Fast growth rate.
Ninebark, Common	12" – 18"	6 – 10'	Sun to Part Shade. Growth width 6– 12'. Features small pink or white five petaled flowers appearing in dense flat rounded 1-2" dia. spirallike clusters in late spring. Flowers change to drooping clusters of reddish fruit (inflated seed capsules). Shallow lobed leaves up to 3" long that change to an undistinguished yellow in fall. Noted for its exfoliating bark which peels in strips to reveal layers of reddish to light brown inner bark providing winter interest. Valuable nectar source for pollinators.
Dogwood, Red Osier	12" – 18"	6 - 12'	Attractive red stems with white flowers followed by white berries. Growth spread of 6-12'. Red twigs create winter color. Tolerates almost any location, growing in moist soils and full sun. Effective bank cover holds soil well. Excellent wildlife food source and cover. Fast growth rate.
Lilac, Common Purple	12" – 18"	10 - 15'	Delicate, fragrant, purple flowers in May. Perfect for border, screens or windbreaks. Hardy with 6 – 12' growth spread. Prefers rich, well-drained sites and requires full sun. Good for wildlife cover. Not native. Medium growth rate.
Plum, American	12" - 18"	10 - 30'	Small tree with an 8 – 25' spread that produces fragrant white flowers in early spring. Bears 1" red which can be used for jellies. Excellent for wildlife food and habitat. Requires well drained soil and a sunny location. Quite drought tolerant.

HOW MANY TREES DO I NEED & HOW FAR APART DO I NEED TO PLANT THEM?

Windbreaks/Shelterbelts - Shrubs: 6 ft. apart in rows, Trees: 15 ft. apart in rows (Rows should be 15 – 20 ft. apart)

Wildlife Planting - Mixed plantings of shrubs & trees average 10 ft. apart in rows and between rows (about 500 seedlings per acre).

Fiber Production - Average spacing of 8 ft. apart in rows and nine feet between rows (about 700 seedlings per acre).

