



SILVICULTURE FIELD TIP

Field tested ideas.

Contact the author for further information.



Division of Forestry

Field Tip No. 5

edited by Bob Pajala

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HARDWOOD PLANTING FOR CRP: RECOMMENDATIONS AND EXPERIENCES OF FIELD FORESTERS

The Conservation Reserve Program (CRP) now allows fields currently in grass to be converted to hardwood trees. The following experiences of field foresters offer a variety of silvicultural options for such conversions. Contact the authors for additional information. Note that some of the recommendations may not be currently allowable under CRP. Also note that many of the herbicide recommendations apply only to tree planting for erosion control practices and not general forestry. See the letter of explanation on last page.

Dean Makey, PFM Specialist
Brainerd Area

Our site preparation methods have consisted mainly of furrowing with a fire plow or one-bottom plow, and scalping attachments on a machine tree planter. Each method has had good results if done properly. When considering site preparation, band application of mechanical or chemical methods is needed since grass cover between rows is required to control erosion while the trees are establishing themselves.

Species which have had good survival include red, white, and bur oak, green ash, and Ginnalla maple. Silver maple has had poor survival.

CRP soils are marginal. We have concentrated hardwood planting on the better of these soils.

Landowner goals for planting are mainly to improve wildlife habitat. Timber production is of secondary importance.

Richard Pierce, District Forester,
Alexandria

The following are some ideas regarding site prep on CRP land for planting of hardwoods. Sites range from one to five years of age seeded with alfalfa and brome grass.

CRP is a soil erosion practice, therefore, the entire cover cannot be destroyed. The following are three possible solutions to the site prep problem.

- Spray four foot bands of Roundup on 12 foot centers. Probably the

cheapest and fastest method.

- Plow, disc and harrow 4 to 6 foot bands on 12 foot centers. The best for the trees, however, small equipment is hard to find. Also, at least 4 trips down each row are needed.
- Hand plant, use Tubex and spray 3 to 4 foot bands around each tree. This method is time consuming and expensive, but very effective. Very little disturbance of the ground is a plus.

Howard Mooney, District Forester
Detroit Lakes

Site Prep: The biggest problem in converting CRP grass fields is that these areas were originally seeded to an alfalfa/brome grass mixture. Trees cannot compete with alfalfa. In the past we have band sprayed Roundup to kill alfalfa, but this caused another problem - thistles. Because of thistle problems, we avoid tilling the soil or using herbicides such as Roundup. Ideally, we want a light grass cover. I would recommend using a broadleaf herbicide such as Banvel, using a 4 foot wide (minimum) band. This would be the most economical and easiest site prep. We use a machine planter with scalpings. If there is a grass problem in the tree row, Fusilade or Princep could be used in a narrow band (2 foot wide).

Species: The main species we recommend are red oak, green ash, and shrubs. Red oak will be promoted whenever possible. Spacing is 10'X10' or 10'X12', depending on landowner's mowing equipment. Mowing between rows

is often necessary, either for thistle control or for tall grass control. Broadleaf weed control with herbicides is usually not feasible.

Stock Size: Seedlings should be sized to enable planting by machine. Undercutting seedlings in the nursery is needed to develop more lateral roots. Root pruning at time of lifting is also needed to facilitate proper planting. Ideally, we would like to plant a short seedling with more lateral roots, especially for red oak.

Another factor that will greatly affect hardwood planting is the price of stock. Increasing hardwood seedling prices decreases hardwood planting affordability for many farmers.

Other Considerations: Tubex has shown great promise for open field plantings. Seedlings have attained a 4' height into two growing seasons (using a 4' tube), more than twice the growth of open planted seedlings. Cost again is a limiting factor.

Daren Wysocki, PFM Specialist
Aitkin Area

In the past couple of years, I have worked with some NIPF landowners in planting hardwoods on old, unused fields. The following are some of the things that seem to work.

Site Prep: Have tried everything from bareland plantings to chemical-mechanical site preparation. I would shy away from the bareland plantings due to competition from grasses. A planting machine with scalpors can help in this instance. One landowner had run a disc over the planting site in a hayfield planting - had an excellent catch, but probably will need some chemical follow-up within a year. This light disking did not break any sod.

Some of the better plantations have had shallow furrows plowed every 9', followed by an application of Princep (simazine) to control grasses. We have planted both in the furrows and on the turned over earth adjacent to the furrows. If we plant on the turned over earth, it is a good idea to run a light disc down the row to help settle the soil. These plantations will be going into the second and third growing season, so there will be some more waiting time before the final verdict is in.

Tractors and breaker plows are about the only equipment used on these sites, and are readily available. The grass competition is the biggest concern. There are herbicides that can deal with that. However, be careful about thistles and other noxious weeds invading the site, not so much from a

competition standpoint, as from a county weed inspector standpoint.

Species Mix: We have tried some small scale pure hardwood plantings (mostly oak) in field settings - not much over 3 acres. I have encouraged mixing of species, mostly alternating rows of conifers (Norway pine and white spruce) with red oak. This is done as a hedge. At least we can pull one of the species through the first few years. I have also noticed that the hardwoods are hardier seedlings than conifers, and will put up with more abuse during storage and planting.

It is nice to be able to plant wildlife shrubs for variety and diversity, but I haven't had much luck, due to small stock and damage by wildlife.

Soil Considerations: One should match the tree to the site, but landowner goals and seedling availability will have an impact on what is planted. The goal of the CRP is stabilizing erosion-prone soil, providing habitat to wildlife, and providing forest products in that order. This is different than forest plantations. The bulk of this hardwood planting would occur in the forest-prairie transition zone, and tolerance to drier conditions and rapid soil drainage should be considered.

Mark Wurdeman, PFM Specialist
Cambridge Area

Here is a compilation of experiences foresters have had over the years working with different systems of getting trees planted and established on open fields.

1. In an open field, mowing strips in August, followed by a September application of Simazine and RoundUp tank mixed, provides excellent site preparation for spring planting. Herbicide bands must be 4' wide. Mowing strips accomplishes several things. It allows the herbicide to contact freshly growing vegetation. The mowed strips will show the location of the herbicide treated rows for planting in the spring. The mowed strips will also have a different type of vegetation from the unmowed area so a definite zebra pattern is apparent for locating rows for future management.

2. In the absence of fall site preparation, a May 1 application of Simazine/RoundUp or Surflan/RoundUp should knock down and control competition. Two things that will improve the effectiveness is to mow the

site as soon as it is dry enough, preferably in strips. The second is to use the maximum recommended water per acre to ensure delivery of the herbicide to the effective zone.

3. To help mark herbicide location in a spring application, use an agriculture spray dye, e.g. BullsEye. Some of these dyes only last a short time, so refer to the label.

4. Use a coffee can to mix Simazine into pancake batter consistency prior to mixing in the spray tank. Failure to pre-mix will leave an insoluble doughball in the bottom of the tank.

5. Agitation is mandatory for Simazine. Mobile tanks must have an agitation system. Backpack sprayers also need to be agitated constantly, e.g. shake the tank as you walk between trees.

6. To protect a seedling from spray drift, slide a stovepipe over the tree and then apply the herbicide. Stovepipe selection should be based on size of tree (pipe diameter) and height of applicator (length of pipe). Leaving the pipe seam open allows easier placement of the pipe over the tree; just spray 3 sides of tree.

7. **DRIFT** - Worst enemy to seedlings. Do not spray with 5+ mph winds when applying.

8. When designing a large plantation that will have curved planting rows or other peculiarities making it hard to find the rows in year two, plant a marker tree species occasionally. Scotch pine, green ash, red-osier dogwood and red pine make good row markers. Either their rapid growth or color will stand out against the grass and define the rows. Add approximately 5% marker trees to the order. This is eligible for cost-share.

9. Simazine will not control foxtail or canary grass. It also does nothing but release alfalfa.

10. Surflan controls foxtail and most of the other annual grasses.

11. If quackgrass is present in the field, consider wholesale elimination prior to planting. RoundUp at the high rate (1-1/2 qt/ac) will take it out, then reseed with cover crop and annual rye (and red clover). Manage the cover for a season, mow strips in August, spray strips in september, plant next spring.

12. Princep 4G is a good formulation of Simazine for application in small wildlife cover plantings (on CRP or erosion control practices). Anything over an acre should use the concentrated formulations due to economics. 4G must have rain to get it delivered to the root zone for it to be effective. Fall applications are the best. Spring applications should be watered.

13. A cheap and effective method to control weeds in small wildlife cover plantings or windbreaks is to use mulch. Mulch can be ground corn cobs, saw dust from a sawmill (not a workshop), chopped leaves, wood chips from powerline R/W clearing, etc. Most power companies look for places to dump their wood chips. If they are in the area they will dump them in yard.
Note: The decomposing mulch will use nitrogen, so you will need to add 10-10-10 fertilizer around each seedling.

14. Surflan is marginally effective in the spring by itself. Using a tank mix with RoundUp and the maximum water per acre greatly improves its effectiveness.

15. A corn stalk chopper/flail mower can be retrofitted to straddle tree rows by removing the center flails. Remove enough to allow at least 18" free of choppers. This is a good way to knock down noxious weeds and other weeds in the plantation, especially so they don't lodge on the seedlings over winter.

16. Control all noxious tree species surrounding the planting site. Leaving these trees uncontrolled will allow them to regenerate in your nicely prepared planting strips. PathWay (formerly Tordon RTU) should be applied to freshly cut stumps.

17. If it looks like you've lost the plantation to grass and weeds, conduct an intensive regeneration survey. If there is adequate survival to justify managing the site, schedule a broadcast application of herbicide in the fall. Use the maximum rates allowed for the site. Match the herbicide to the weeds and consider a tank mix if permitted. On CRP grounds a broadcast application is permitted if prescribed by the forester and approved by the county committee (NOTE: the forester should check with ASCS and SCS to let them know that this will be recommended prior to discussing with landowner). There will be enough mulch on the site to keep erosion below T.

18. When planting hardwoods, consider a randomly mixed plantation. Depending of the availability of planting stock, oaks, ashes, white pine and other upland hardwood trees and shrubs. Instruct the planter to mix the various seedlings and randomly plant them. Do not plant the seedlings in alternating rows.

19. An alternative to 18. would be a mixed plantation of pine and hardwood where the pine is being used as a nurse crop for the hardwood. Although scots pine is not highly sought as a forest product, it does make a great nurse crop tree due to its fast growth, tolerance of grass competition and bushy branching habits. Plantations should be designed to allow for eventual removal or elimination of the nurse rows (6'X12' spacing). Managing the conifers for christmas trees reduces their effectiveness as a nurse crop. Cost-share is available for the whole plantation if the conifers are not managed as christmas trees. If they are, deduct the christmas trees from the tree order and planting bills. Site prep costs remain the same.

Valiree Hanson, Assistant District Forester, Caledonia

Recent reforestation projects have proven even more conclusively that establishing a hardwood plantation takes more than just sticking a few trees in the ground and walking away. The following is by no means a complete guide to successfully planting hardwoods, but rather provides hints on what has worked well in Houston County.

Animal predation and vegetative competition are two major factors inhibiting good hardwood plantings. Therefore we encourage planting at a heavy rate, 800 trees per acre in most cases, so that some losses can occur without leaving the plantation understocked. We also strongly encourage the use of some type of herbicide to knock back sod competition. Herbicide can be applied as a broadcast spray (infrequently prescribed), as a band application, or as a spot treatment. Usually a band application is used as this is the easier one to apply mechanically, thereby needing less time and money. The herbicide can be applied either before planting, the prior fall or early spring, or right after the trees are planted but before bud break. Commonly we use a combination of pre-emergent herbicides such as Princep and Surflan, Princep and Attrex, Oust or

sometimes a post-emergent like Roundup. These plantations nearly always need another chemical release in the first 5 years after planting.

For those who don't want to use any chemicals, the chore of getting the trees above the sod competition is very labor consumptive and/or expensive. Mowing, tree mats, tree shelters, and scalping have all been tried, sometimes with more success than others. In nearly all cases, the herbicide has been the more effective treatment and the most cost effective choice.

Another factor limiting the success of hardwood plantings is not choosing the right tree for the soil type. A soils map and a probe come in handy here. On the best, well drained silt loams you can plant most any hardwood and succeed so long as the competition is controlled. On drier sites, and sites with more rock, we move to trees such as white oak which tolerate those conditions better. A good rule of thumb is also to look and see what tree species are growing on similar topography nearby.

Lastly, a word about not just getting the hardwoods established, but getting them established in such a fashion as to encourage them to grow straight right from the start. We have tried interplanting conifers, two rows of conifer to one row of hardwood or one to one. The conifers shade and compete with the hardwoods so the hardwood tree's survival instinct forces it to reach for the light above. Then, as spacing gets crowded, the conifers are removed. This is also a cheaper way to get your hardwoods going as conifer seedlings are usually about half the price of hardwood seedlings. A note here though is that some cost share programs, in particular the CRP 15 year option, do not allow that high a proportion of conifers.

Hardwood plantations are not often easy to establish, but their value both as timber and as mast producers for wildlife as they mature provides a high return on the landowner's commitment.

STATE OF MINNESOTAOFFICE MEMORANDUMDEPARTMENT OF NATURAL RESOURCES - FORESTRY

FILE: 3480-2-1

TO: Regional and Area Forest Supervisors

May 12, 1989

FROM: Mike Phillips *MJP*
Pesticide and Soil Program Supervisor
St. Paul

PHONE: 612-297-4924

SUBJECT: Weed Control in Erosion Control Programs

Forestry uses were removed from the simazine herbicide labels in 1987. This has had the effect of reducing the options for weed control for the Conservation Reserve Program, Agricultural Conservation Program and other programs implemented for the purpose of erosion control. Recent discussions were held between the Division of Forestry, the Department of Agriculture (MDA) and the Environmental Protection Agency (EPA) to review additional options for chemical weed control for these programs. The EPA agreed that for tree plantings in programs where a primary purpose is for erosion control, it is a reasonable interpretation that herbicides containing a shelterbelt use on the label can be used in these erosion control programs. This interpretation also applies to herbicides with labels which the MDA feels contains language consistent with shelterbelt use.

The MDA supports this interpretation. Therefore, herbicides labeled for shelterbelt use, such as Princep products, can be used in these erosion control programs. In addition, the following herbicides contain language in the labels consistent with shelterbelt use: Treflan 5G, Norosac 4G, Dyclomec 4G, Fusilade 2000, Poast, Weedone 170, Kerb 50W, Goal 1.6, Casoran 2G, Roundup, Ronstar Weedone LV4, and Oust. The MDA has strongly indicated that these uses are only for sites where applications are to support tree planting for erosion control.

MJP:ss

cc: Cal Blanchard
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