

ROOT PLOWING



A Technique To Increase Row Crop Yields and Save Hedgerows



The root plow is a heavy-shanked chisel which allows farmers to keep hedgerows on their property, without sacrificing crop production. Root plowing prevents tree roots from competing with adjacent row crops for subsoil moisture. The hedgerow treatment takes very little time and allows farmers to grow crops right up to the edge of the hedgerow. Root plows are available for free use by contacting the Kansas Fish & Game Commission. (Photo by Iris David)

Osage orange hedgerows were planted in Kansas by the early settlers in an effort to delineate property lines, to fence livestock in (or out), and to reduce wind erosion. The brushy cover that these hedgerows produced adjacent to crop lands and pastures was valuable to wildlife of all kinds and today remains the heart of hard core cover on many farms.

Hedgerows were not without their adverse effects as far as some farmers were concerned. One of the main objections to hedgerows was their great thirst. This resulted in reduced yields of corn, milo, or soybeans 45 to 75 feet out into fields bordered by hedges. After noticing this effect of hedges over a period of years some farmers began to take out the hedgerows to solve the problem.

Several techniques were evaluated in a five-year study by the State Extension Service Foresters and the Kansas Fish and Game Commission at Marion Reservoir in an effort to find a way to overcome moisture sapping and still keep the hedgerows for their beneficial values. Root plowing side trimming, and post cutting were evaluated alone and in various combinations. The final results showed that unless root plowing was part of the treatment, the increases in yield were either sporadic and unpredictable, or no increase in yield occurred. Root plowing alone resulted in the ability to grow satisfactory stands of grain right up to the hedgerow.

Yield increases of as much as 240 bushels occurred adjacent to root plowed hedges along one mile of hedge in the first 75 feet of field in the very dry summer of 1980.

What exactly is root plowing? Root plowing is simply the severing of hedge tree roots so that they do not reach out into adjacent ground to compete with crops for water. Root plowing is usually done with a heavy-shanked chisel adapted for this particular purpose. Hedge roots are almost entirely within the top 18 to 20 inches of soil. Consequently, the root plow should reach at least 20 inches deep. The Fish and Game Commission has a number of root plows available for loan to farmers, so they can treat their own

hedges. You may be able to adapt an existing implement to do the job. A bulldozer with a ripper blade, frequently used in laying pipeline or cable, will also work nicely.

Some tips are in order, if you decide to root plow your hedgerows: 1) Stay out 15 to 18 feet from the trunk of the tree and at least out as far as the edge of the branches so you can cultivate over the root plow furrow. The roots are easier to sever, and you will kill any suckering

hedge by routine cultivation. 2) Be careful of buried pipelines, cables, etc. 3) Two trips over the furrow, the first trip at 12 to 15 inches and the second all the way down, makes for a lot less wear and tear on equipment. 4) Root plowing has been tried on osage orange and Chinese elm hedgerows with success. Root structure and other factors may prevent satisfactory results with other tree species. 5) Root plowing has not appeared to have any noticeable effects on the hedge trees

themselves, even when both sides were treated. 6) Hedge roots seem to be regrowing into the field at about one to one and one-half feet per year. Thus, one time treatments should last at least 10 years before retreatment is warranted.

Root plowing or root pruning is proving to be a very cost effective way for farmers to gain additional crop yields at minimal expense and effort, without sacrificing the benefits that hedge rows have always brought to the countryside.



This photograph, taken at the end of the scorching summer of 1980, demonstrates root plowing results. The bare soil in the foreground lies adjacent to untreated hedgerow, while the lush milo growth beyond lies adjacent to hedgerow which has been root plowed.

Root Plow Rental Agreement

I Agree To:

1. Read the brochure that is provided with the root plow
2. If possible, use a medium sized tractor (75 HP) max. Larger tractors can tear up the plow without the operator noticing it.
3. Not exceed 1 MPH when plowing.
4. As mentioned in the brochure, make two passes with the first pass only going about halfway down followed by the second full depth pass.
5. Notify the Shawnee County Conservation District if any damage to the plow has occurred even if it is normal wear and tear. This is important so it can be repaired and ready for the next person.
6. Plan on treating the tree sprouts that will come up along the plowed furrow.
7. Notify the District when I am finished.

I (renter) will not hold the Shawnee County Conservation District, their supervisors or employees responsible in any way for damages or losses that might, in any way, result from the use of the root plow. Furthermore, I specifically agree to accept all liability with respect to the root plow while in use. I understand and agree to the conditions of this agreement. I also acknowledge that the equipment has been examined prior to rental and is in good condition.

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| Signature of Renter | Phone | Date |
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| Address | City | State | Zip Code |
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