

## **Deer Impact Project: Instructions for Constructing Deer Fence**

Thank you for participating in the Deer Impact Project. Please use the following instructions to install your fencing and plant your seedlings. The recommended fence size is no larger than 15-foot x 15-foot and no less than 10-foot x 10-foot, it does not have to be square.

### **The following supplies will be provided (in multiple shipments):**

- One 100' roll of plastic mesh netting
- Five 6-foot T-posts
- Five 3/4" x 7'4" PVC pipe with pre-drilled holes
- One roll monoline for the top line and corner posts
- Five gripples, to tension the monoline and corners
- Eight 12" stakes
- 12" cable ties to attach PVC and netting to posts
- 6" cable ties to attach mesh netting to monoline
- Flagging tape
- Four wire twist ties to secure the gate
- One pair of safety goggles
- One yard stick to measure seedlings
- Thirty red oak seedlings, 15 installed inside the fence, 15 outside
- Thirty numbered tags to identify each seedling

### **To be provided by the landowner:**

- Two people (recommended)
- small ladder or stepstool to reach the top of the fence (if necessary)
- T-post pounder or sledge hammer
- Hammer to install stakes
- Wire cutters or knife to cut monoline
- Knife or pruning shears to cut netting
- Gloves

## **Installation Instructions**

**Note: Do not modify the existing vegetation or use weed control inside or outside the fence unless that was already part of your current maintenance of the site. If you do alter the vegetation, apply the same methods both inside and outside the enclosure.**

**1. Determine Fence Location:** Find a relatively level flat area. Avoid placing the fence too close to existing trees that could drop limbs and damage the fence. Avoid areas that may flood and look out for deer trails. It is best not to block a deer trail, leaving some room around the outside of the fence for deer to walk around.

**2. Install T-Posts:** Install T-posts at each corner (approximately 15' apart) with a hand-held post pounder or sledgehammer so that the inverted triangle at the base goes below the soil line to prevent freeze-thaw lifting. Install the fifth T-post 4 to 6-feet from the corner gate post 1 (see diagram below). **Caution: Use eye protection when installing T-posts, as metal fragments can chip off.**

**3. Install PVC Pipe and Top Monoline:** Lay each PVC pipe on the ground at the base of each T-post with the drilled holes next to each T-post to make stringing the top line easy. Starting between post 1 and post 2, thread the monoline through the holes on the PVC pipe at post 2, and proceed pulling the monoline and threading it through each PVC pipe all the way around and through the gate post 1. Roll out an extra 6 feet or so of line and cut the monoline from the spool.

Thread each end of the monoline through each side of a gripple (see diagram below) and pull just a few inches of monoline through but do not tighten the line yet. Now, stand each PVC pipe up vertically and snug with each T-post, with the top monoline up, and secure the PVC firmly to each T-post with two 12-inch cable ties at the top and bottom.

Once all five PVC pipes have been fastened to the T-posts, return to the gripple and slowly tighten the top line, setting the tension so that the PVC pipes just start to slightly bend inward. **DO NOT** over-tighten; gripples are like cable ties, they do not loosen – they only tighten. Leave one end short and the other longer when tensioning with the gripple. If you overtighten the line, you can cut the monoline near the gripple that has the shorter end pulled through the gripple. Once cut, then pull all of the line through the gripple and reinsert and tension it properly. You can always add more tension later after the corner braces are in place and the mesh installed.

**4. Attach Mesh Netting and Corner Bracing:** After the monoline is tensioned, attach the mesh netting. Start at the corner at gate post 1. Position the roll square to the post with a 2-inch overlap (one square of the mesh) above the monoline and 4" or so overlapping the ground. Secure the netting to the post with five 12" cable ties spaced evenly from top to bottom.

Once the netting is attached to post 1, install the corner brace at an angle (like staking a tent). Cut an approximately 20-foot length of monoline. Hammer a stake at a 45-degree angle about 6-8 feet from the post 1. Loop the monoline around the top of the PVC pipe above the top line, and loop it around the ground stake, connecting the two ends with a gripple. Carefully tension the corner brace at post 1 so that the slight inward bend of the PVC pipe is now pulled straight and vertical.

Roll the netting beyond the next corner post (post 2), stretch it tight, and keep it square with a 2-inch overlap above the top line and the 4-inch overlap on the ground and secure it with five 12" cable ties. Once secure, install the corner brace and tension as described on post 1. Continue attaching netting and corner bracing on the next three posts. When you reach the starting gate post 1, secure the netting to post 1 temporarily with the wire twist ties (this will be your entry door), extend the roll 6-12" beyond post 1, and cut the roll of netting free.

**5. Attach Netting to the Monoline:** Attach the mesh netting to the top monoline with 6" cable ties approximately every 18" around the perimeter and wherever the fence is sagging.

**6. Stake Netting to the Ground:** Secure the netting to the ground with a stake in between all posts except at the gate. This will keep deer from crawling underneath. Keep the mesh on a straight line between posts, and place your stake in the middle. Cross the stake through the mesh and create just a little downward tension on the netting, but not enough to pull down the top line, and hammer the stake flush to the soil line. Secure the gate netting to the ground with a log or a board that is easy to move. If you fence over a gully or depression, you can fill the gap

under the fence with rocks, slash, or other obstructions to exclude deer yet still allow water to flow.

**7. Flagging:** Tie flagging tape streamers around the entire fence perimeter including the gate and corner lines to alert deer and people to the new obstruction.

**8. Planting the Seedlings:** Plant 15 provided Red oak (*Quercus rubra*) seedlings within the enclosure and 15 seedlings outside the enclosure. See the tree planting instructions for further information. Space them approximately 3-feet by 3-feet apart. Planting in rows and tagging them immediately will help to locate them later. For the unfenced trees, plant at least 6-feet or more from the edge of the fence, spacing trees about 3-feet by 3-feet in rows and tagging.

**Note: Please do not modify the existing vegetation or use weed control inside or outside the fence unless that was already part of your ongoing maintenance of the site. If you do alter the vegetation, apply the same methods both inside and outside the enclosure.**

## **10. Maintenance and Common Problems**

**It is recommended to walk the perimeter to find and repair breaks monthly or after any large storms.** If you placed your fence close to an existing woods or tree line, falling branches and trees can cause a break in the fence, especially after a severe storm. Deer may run through these fences, especially during the fall rut. Keep extra pieces of netting to patch any large breaks. Small tears or breaks can be repaired with any variety of string, cable ties, wire, etc. Rabbits will cut out little squares in the bottom of the fence to create pathways into plantings. These are not normally a problem, and you do not need to repair them unless a deer enlarges one and gains access.

Allow weeds to grow through the fence, which will help secure it to the ground. Vines should never be allowed to grow unchecked on the fence, they increase wind resistance, causing that section of the fence to be pulled down and/or to blow over. Check the tension of the top line and corner braces periodically and tighten as necessary.

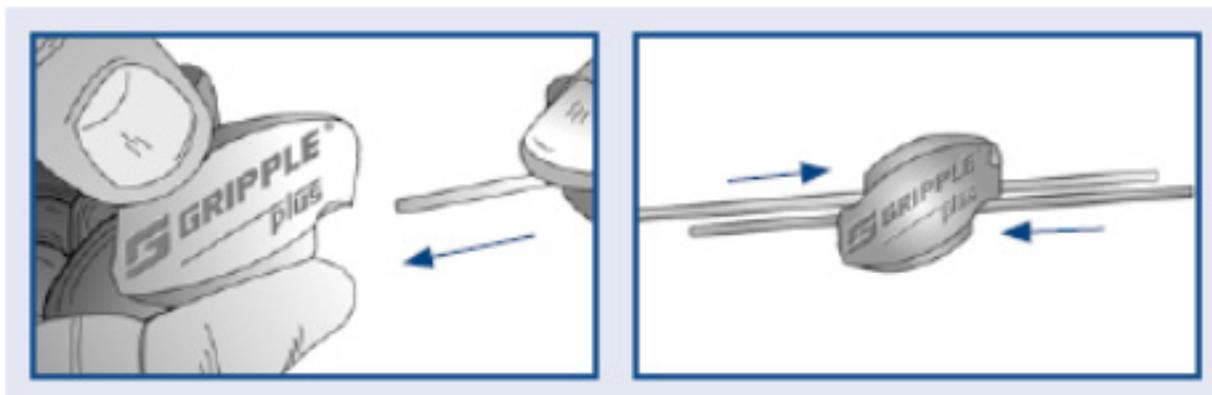
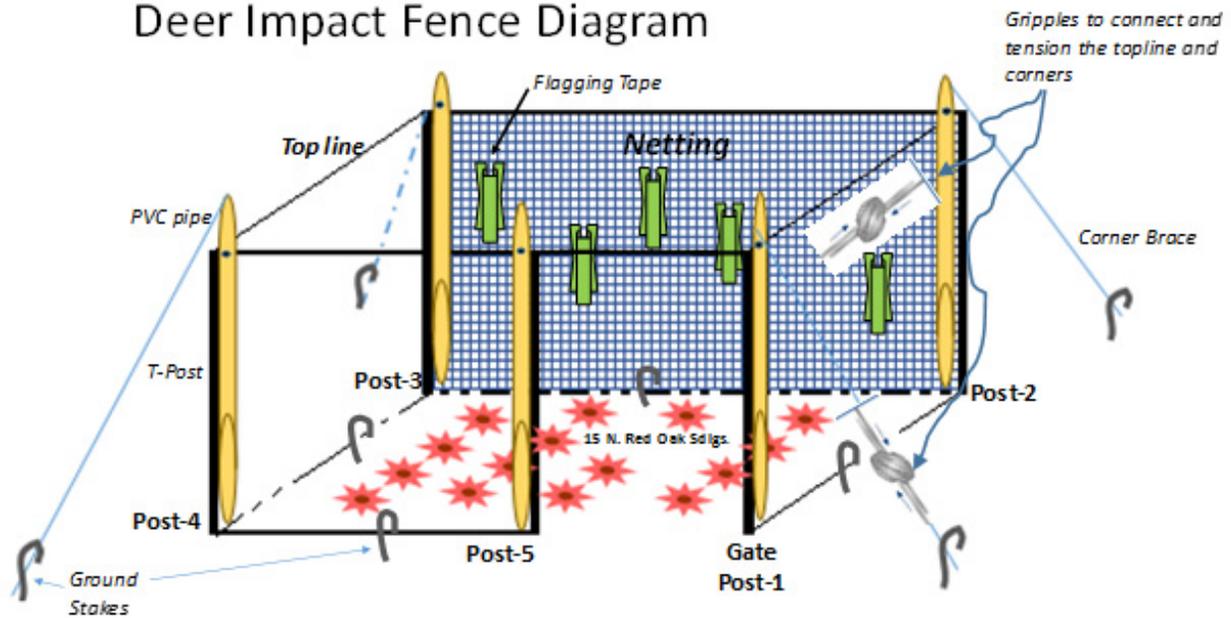
See installation photos online at [www.ifwoa.org/deerstudy](http://www.ifwoa.org/deerstudy).

**If you would like to send photos of your enclosure, use the photo upload link at [www.ifwoa.org/deerstudy](http://www.ifwoa.org/deerstudy) or email to [ifwoa1@gmail.com](mailto:ifwoa1@gmail.com) (maximum of 2 photos please).**

**Once the seedlings are planted, take initial seedling height measurements and record on the enclosed data sheet. Return the data sheet in the included self-addressed stamped envelope, send a scanned copy to [ifwoa1@gmail.com](mailto:ifwoa1@gmail.com) or enter your data online at [www.ifwoa.org/deerstudy](http://www.ifwoa.org/deerstudy).**

**For questions about this project or installation, contact [ifwoa1@gmail.com](mailto:ifwoa1@gmail.com) or call 765-583-3501.**

## Deer Impact Fence Diagram



Using a gripple to tension: Put each end of the wire through the gripple (note there are arrows on the gripple to show where to insert the end) and pull on the ends to tension.

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Project coordinator is Liz Jackson and the Indiana Forestry & Woodland Owners Association. Contact the coordinator at 765-583-3501 or [ifwoa1@gmail.com](mailto:ifwoa1@gmail.com).

## **Deer Impact Project: Seedling Planting Instructions**

To monitor the effects of deer browse on forest regeneration, you will be receiving 30 Red oak (*Quercus rubra*) seedlings, shipped from the Indiana Division of Forestry nursery, planting 15 inside and 15 outside the enclosure. The following are some instructions for caring for, planting, tagging, and monitoring the seedlings.

**Once the seedlings are planted, take initial seedling height measurements and record on the enclosed data sheet. Return the data sheet in the included self-addressed stamped envelope, send a scanned copy to [ifwoa1@gmail.com](mailto:ifwoa1@gmail.com) or enter your data online at [www.ifwoa.org/deerstudy](http://www.ifwoa.org/deerstudy).**

**If you would like to send photos of your enclosure or seedlings, see the photo upload link on the website or email to [ifwoa1@gmail.com](mailto:ifwoa1@gmail.com) (maximum of 2 photos please).**

**Storage at Home:** Ideally, seedlings should be planted as soon as possible after arrival. If this is not feasible, bare-root seedlings may be stored for several days in a cool, damp basement or cellar. If temperatures are less than about 70° F, seedlings may be left outside in a shaded area that is also sheltered from the wind for very short-term storage. When storing seedlings for more than several days, seedling packages should periodically be opened to inspect the roots. If the roots are beginning to dry out, spray them down with a modest amount of water and re-wrap the packages tightly.

**Preparing Seedlings for Planting:** Usually, there is nothing additional that needs to be done to prepare bare-root seedlings for planting after removing them from bundles. When hand planting, there may be some seedlings with unusually long roots that will need to be pruned to properly fit them into the planting hole. However, root pruning should only be done when absolutely necessary. It is always preferable to use the appropriate planting tool to create the proper sized planting hole rather than to prune roots on a majority of seedlings to accommodate a particular size planting hole. If roots appear to be drying, soaking them in a bucket of water for 30 minutes to an hour immediately prior to planting will re-hydrate them. This is especially important if soil conditions are drier than optimal.

**Planting Conditions:** Ideal weather for tree planting is overcast with temperatures between freezing and 70° F with high humidity. This reduces the chances of seedling desiccation or overheating. Of course, trees can be planted in sunny, dry weather with precautions taken to prevent root drying. Tree planting should wait until the soil is workable. Planting in saturated soil alters soil structure around tree roots, creating less favorable rooting conditions. A simple way to test soil moisture suitability is to squeeze a clump of soil in your hand until it forms a ball. Then gently compress the soil ball between your thumb and fingers. If it readily crumbles, soil moisture is suitable for tree planting. If it stays “gummed up” in a sticky ball, the soil is too wet for tree planting.

**Planting Technique:** Plant 15 provided Red oak (*Quercus rubra*) seedlings within the enclosure and 15 seedlings outside the enclosure. Inside the fence, space them approximately 3' from fence and 3' apart. Planting in approximate rows and tag the trees as you plant using the plastic tags will help you to locate them later. For the exterior trees, choose one corner of the fence and plant 6' or more from the fence. Again, space the trees about 3' apart in rows and tag as you go to assist with finding them.

Through all stages of the planting process, roots should be kept cool and moist. While planting, keep seedlings in a bucket, box, or tree planting bag with the roots packed in the moist sphagnum moss the seedlings were packaged in at the nursery. The planting hole or slit must be large enough to fully accommodate the seedling root system so no roots are sticking out and exposed to the air, or are too cramped with the roots turned up in a "J" shape or to the side in an "L" shape. The seedling's root collar should be planted at about the same depth it was in the nursery bed or up to one inch deeper. The planting hole or slit should be closed to provide good root-soil contact without excessively compacting the soil around the roots. No air pockets should remain around the roots. The seedlings should be erect. To test whether a seedling was properly planted, gently grasp the end of the stem between thumb and forefinger and firmly, but not forcefully, tug on it. If planted properly, the seedling will remain firmly planted. If not planted properly, it will slip out of the ground when tugged on in this manner.

**Tagging the Seedlings:** The installation package included 30 plastic tags numbered 1 through 30, 15 of one color to tag trees inside the enclosure and 15 of the other color for tagging outside the enclosure. After planting, attach a label to each seedling, making sure not to tie too tightly around the stem and tag near the bottom so it is not as noticeable to the deer.

**Once the seedlings are planted, take initial seedling height measurements and record on the enclosed data sheet. Return the data sheet in the included self-addressed stamped envelope, send a scanned copy to [ifwoa1@gmail.com](mailto:ifwoa1@gmail.com) or enter your data online at [www.ifwoa.org/deerstudy](http://www.ifwoa.org/deerstudy).**

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*These instructions were adapted for the Deer Impact Project and were modified from the publication "Planting Forest Trees and Shrubs in Indiana: 10 Steps to Success," authored by Ron Rathfon, Doug Jacobs, and Lenny Farlee, Purdue University Department of Forestry and Natural Resources, FNR-IDNR-36, April 2009. View online at <https://www.extension.purdue.edu/extmedia/FNR/FNR-idnr-36.pdf>*

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