

Neutron Probe Tube Installation

The following tips are to help in the installation of Neutron Probe Tubes, especially in heavy clay soils and using auger equipment supplied by ICT International Pty Ltd.

1. Hole Size

Use the auger size provided (48mm). By increasing the size of the hole (to 50mm ie size of the tube itself) you risk the chance of “floating” the probe tube during the subsequent irrigation.

2. Soil Moisture

It is recommended not to put tubes in under very wet or dry conditions.

- a. Dry Conditions
 - makes for difficult augering as the auger will tend to follow cracks therefore moving the actual hole of centre from the designated point and/or put the hole on an angle.
 - hard ground reduces the augers ability to penetrate.
- b. Wet Conditions
 - the wet soil chokes the auger.
 - more importantly, the probe site is prone to compaction from foot prints around the tube and on plants adjacent to the site.

3. Augering

(with a motorised auger this is a two man job)

- a. Pin point the desired tube location.
- b. Use the hand shell auger to produce a hole approximately 7-10cm deep.
- c. Lubricate the spiral auger (attached to the motor) down the length of the shaft with water (or a thin oil) so the beads of moist soil (especially from depth) will slide up the screw more easily thus making augering easier. This will have to be done once or twice during the drilling.
- d. Work the auger up and down the hole increasing the depth with each downward thrust. **Be careful not to let the auger bite too deep or you will have great difficulty in extracting it.** Raise the auger close to the surface and when it has stopped rotating clean excess soil away. Do this as needed.
- e. Once the required depth has been achieved, continue augering whilst raising and lowering the auger the full length of the hole to clean excess soil out and also hone the hole wall.
- f. Simply remove the auger in one swift upward thrust from the hole.

4. Installing Probe Tube

- a. Place the tube on top of the hole and lubricate the hole with water (or a thin oil).

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- b. Place the “Tube Driver” into the top of the tube. By hand, push the tube in as far as you can. Once the tube has stopped, revert to a sledge hammer to drive the tube the rest of the way. **Be careful to hit the tube squarely and firmly. Loose, stray hits can bend the tube. Check the top of the tube regularly so it doesn’t crimp. If it does drive the tube down far enough and cut the crimped section off with a hacksaw.**
- c. Drive the tube down so the top is 10cm from the surface.

Finished

Finally, cap the tube and mark its position with a rod (or equivalent marker). Placing ribbon or survey tape on the top of the marker aides in locating it more easily.

This whole operation will take approximately 10 minutes by experienced operators.

N.B. If you happen to bend the tube whilst driving it in and it is deep enough for the probes sensor, simply cut the top of the tube of with a hacksaw 10cm from the ground surface. If the tube is a total mess it is best to start again.

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