



The Amateur in You, Part 1

What have you been pondering?



Working near trees and other vegetation

People who have several tall or leafy trees in their yards sometimes wonder whether the plants can interfere with their signals, either transmitted or received. Also, you might have asked before setting up a station in the woods, like for a race or a special event, whether doing so will work in spite of the surrounding vegetation.

Vegetation can affect performance

On one hand, trees, shrubs, and other vegetation *can* affect radio signal performance. On the other hand, just how much it affects its ability is density-dependent and frequency-dependent. While radio signals do not seem to be impeded much by wood, it's attenuated (reduced in signal strength) much more so by moisture content. So, leafy trees will tend to interfere more than a bunch of bare branches, and in wintertime, evergreens tend to absorb radio signals more than other tree types.

If you have a few trees on your property, your VHF and UHF signals are not likely to be affected by them, even if your antenna is installed right on a tree itself. If your station is set up within a *forest of trees*, your VHF and UHF signal can be affected much more, especially if the trees are covered with snow or fresh rainwater.

If your radio signals are lower in frequency such as in the HF range, the plant life should have little effect on your signals. But running at higher than 1 GHz, especially on microwave frequencies, even sparse vegetation can absorb your signals, producing a profound attenuating effect on them.

Vegetation can be overcome

If you do discover that your VHF or UHF radio signal has been compromised by vegetation, you can often overcome its effects by installing a better antenna. Rather than relying



on a simple whip antenna for your HT, try connecting it to an external half-wave antenna, such as a J-pole, or a mobile antenna set on a ground plane. You can even improve on those by using a colinear vertical antenna. And if that's still not enough, you might need to use a Yagi antenna, which exhibits high gain, but at the cost of directivity.

You can also get around some vegetation interference by raising your antenna higher and / or increasing your transmit power. Keep in mind that changing your transmit power will do little for your reception. If you find it difficult to get your antenna above the tree canopy, mounting it at a location that's a little higher up on a nearby hill slope might help your signal tremendously.

Another way to reduce interference imposed by trees and shrubs is by narrowing the bandwidth of your signal. Most VHF and UHF radios have a *Narrow* bandwidth setting that might prove useful, as long as radios on both ends of the signal use the same bandwidth setting. On an HF rig, using a narrow-band filter can produce like results, such that CW communication can penetrate a forest a lot easier than a similarly powered SSB signal.

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