

**O**ne way to get a handle on the topic of "root diversity" is to look at some of the root types we're likely to find around our homes:

## FIBROUS ROOTS

The roots shown in the artsy picture at the right, from a weed in my garden, the Three-seeded Mercury, Acalypha rhomboidea, are fibrous roots. On our [Roots Page](http://www.backyardnature.net/roots.htm) we tell of a rye grass plant which had 380 miles of branching and rebranching roots, and 14 billion root hairs. Those branching and rebranching roots were fibrous roots. Fibrous roots are probably the most common root type

## STORAGE ROOTS

The horseradish root shown below, which stores plant food in the form of starchy carbohydrate, is a storage root. When we eat storage roots such as horseradish, carrots and parsnips we're "stealing" the carbohydrate the plant had stored for its own use later on, perhaps the next year. In the case of carrots and parsnips, the storage root is also a tap root. In dahlias and sweet potatoes, storage roots develop on branch roots. Many biennials -- plants that live for two years -- spend their first year collecting carbohydrate in their storage roots, then the second year they use their stored carbohydrate to grow fast, maybe overtopping the plants around them that don't have energy stored in the form of carbohydrate.



## TAPROOTS

Taproots result when the main root growing downward, the primary root, grows much larger than the secondary roots. If you have dug up dandelions in your backyard, you've seen their taproots. In gardens, carrots are even better taproot examples. Oak, hickory, and conifer trees produce taproots, at least when young. At the right you see the taproot of a seedling Water Oak. The yellow line denotes where the soil's surface was when I pulled the seedling from my garden soil, so you can see that, at least in the case of this seedling, the taproot can penetrate the soil far deeper than the top of the plant extends into the air.



## AERIAL ROOTS

You can see aerial roots on English Ivy, Poison Ivy, Trumpet Creeper,  the Virginia Creeper (shown below), and lots of other vines and creepers. Aerial roots anchor climbing stems to vertical surfaces. In the Virginia Creeper picture at the left the vine's aerial roots stick to one of the slats of a yellow-painted window shutter. The diagonal item is the vine's stem, which in real life is about the size of a small lollipop's rolled-paper handle (2 mm diameter), and you can plainly see how each tendril of the aerial root ends in a flat appendage that sticks to the slat's old paint. These things stick so well that when later I pulled the stem away, the roots broke but the stickers stayed stuck! Remember that here we are seeing roots arising from along the plant's stem, not at it's base. You could follow this stem to the ground and then below the ground you'd find regular fibrous roots. The main job of these aerial roots is to support the vine as it climbs up the window shutters, not to absorb water and nutrients. Organs arising where they are not typically found, such as these roots arising from along a stem, are said to be adventitious.

## PROP ROOTS

You can see another kind of adventitious root if you grow corn (maize) in your garden. On mature corn stalks you can often see prop roots arising from the lower parts of corn stalks. Prop roots prop up stems that might otherwise fall over during a stiff breeze or when the ground becomes soft. They are much more common in tropical and subtropical areas than in our Temperate Zone. I'm trying to get a picture of some good  prop roots, so hold on...

## ROOTS WITH NODULES

"Roots with nodules" isn't usually thought of as a root type, but nodule-bearing roots are so important to ecology and they are so easy to find in typical backyards that we're mentioning them here. Some roots, particularly those on plants in the Bean Family, are equipped with tiny, white, bag-like things, sometimes as large as BBs, called *nodules*. Inside these nodules reside special fungi that help the plant acquire usable nitrogen, which the plant must have in order to live and grow. The nodules at the right were found on a White Clover growing not a yard from my door!

