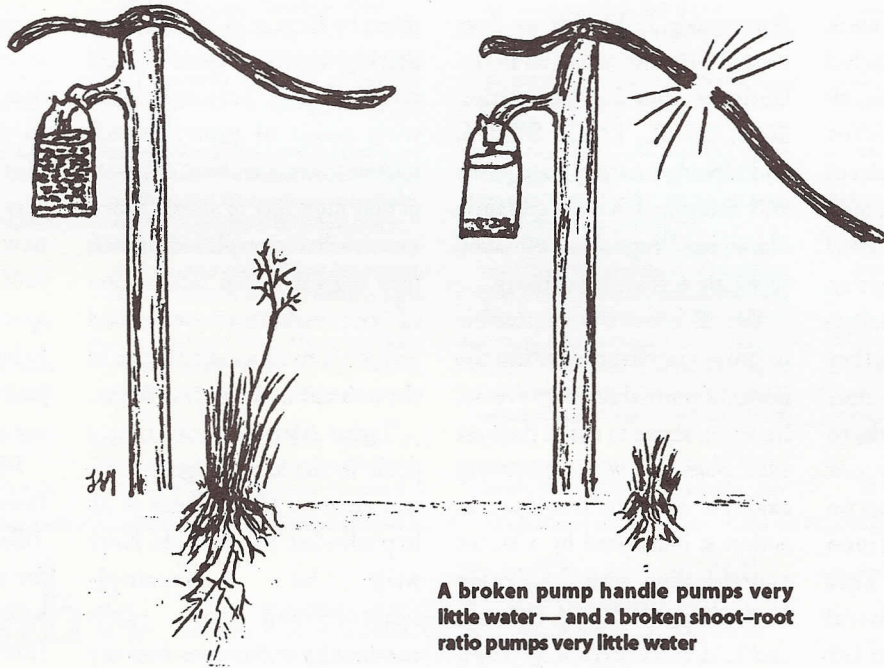


Grass Roots the Unseen Resource

by Lewis L. Yarlett



A broken pump handle pumps very little water — and a broken shoot-root ratio pumps very little water

Throughout the world, archeologists and researchers have recorded the siltation and loss of ancient irrigation systems due to the loss of grass cover and root systems from hillsides. A grazing culture brought in part by nomads invading the middle east destroyed hillside vegetation as well as meadows — on the hills, three to six feet of soil has been lost.

We recognize grasses from what we see above ground, but more than half of a grass plant's total volume is beneath the surface, in the form of fibrous roots and underground stems or rhizomes. These roots anchor the plant to the soil and absorb water and nutrients. A perennial grass stores food in its roots after it has made the season's growth. These reserves sustain the plant while it is dormant and make nutrients available for new growth in the spring. Underground stems or rhizomes of many grasses provide a vegetative method of

reproduction as an alternative to seeds.

Detail information is lacking on the amount, depth, and behavior of the roots of Florida grasses. However, considerable

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research is available from similar species which grow in Kansas and Oklahoma. While soils and climate are not the same, the root-shoot relationship remains much the same.

It is estimated that 60 percent of the underground parts of the bluestem species are in the top

six to eight inches of the soil and represent a total of 2.6 to 4.5 tons of underground parts. Although the major percentage of the grass roots are in the top six to eight inches, hair-like roots penetrate

to great depths, often six to eight feet. These are the roots that sustain a grass plant during drought periods. There are records of hair roots at a depth of ten to fourteen feet. This may vary in Florida due to high water regimes.

We marvel at the rapid growth

of the aboveground parts of a grass, yet the root production of perennial species is equal to or in excess of the top production. On average, most tall grasses, such as the bluestems, will replace 30 percent of their roots annually. Shorter grasses, like bahiagrass, replace less.

What happens when more than half of the top growth is harvested, grazed, or mowed? Crider performed a comprehensive study of leaf removal and root development. [Crider 55] It was found that in all grasses, the amount of leaf volume removed had a direct effect on the growth of new roots. All root growth stopped for twelve days when 80 percent of the leaves were clipped. Removal of 90 percent stopped all root growth for eighteen days.

Crider, F.J. 1955. *Root Growth Stoppage*. Technical Bulletin No. 1102. U.D.F.S. SCS Washington, D.C.

