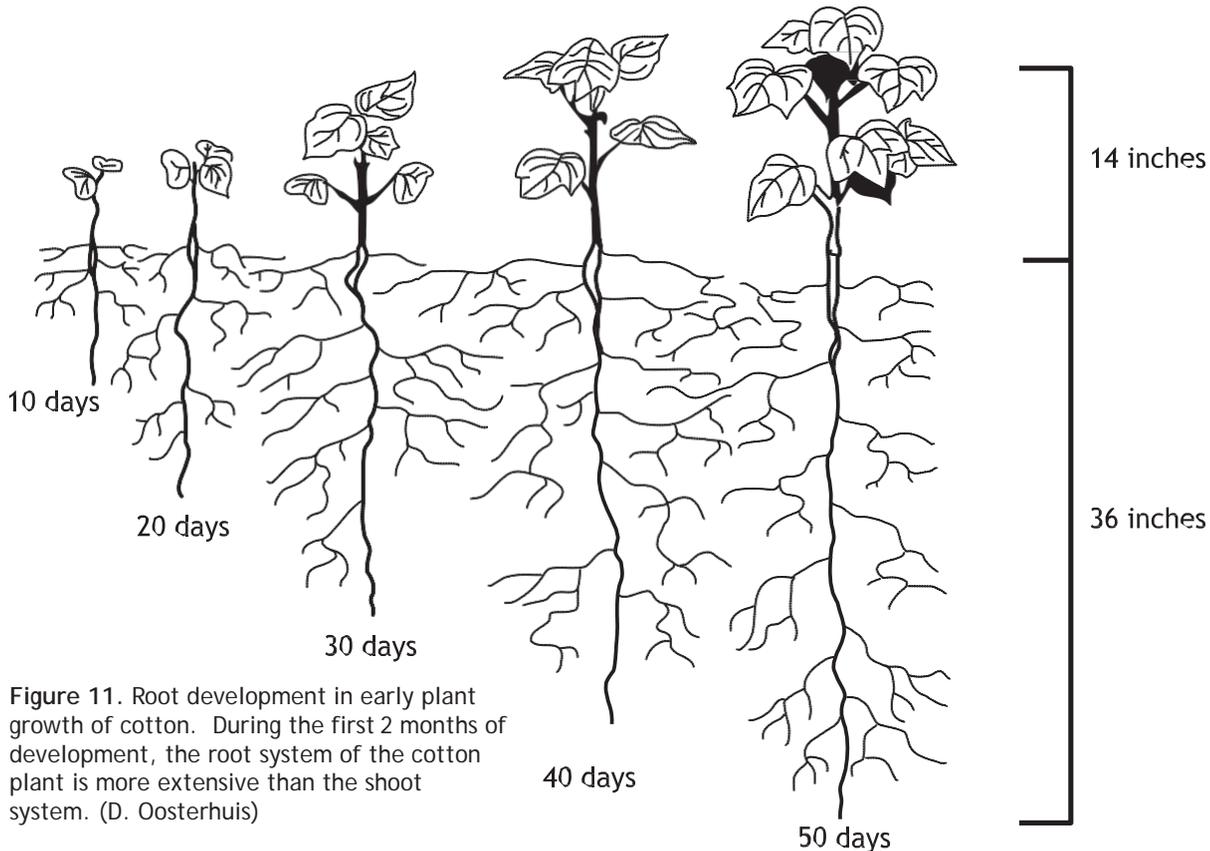


## ROOT Development

The function of roots is to absorb nutrients and water from the surrounding environment and transport these materials to the above ground portions of the plant. Much of the early development of the cotton plant is focused on growing a substantial root system. Growth of the above ground portion is relatively slow prior to canopy

development. The primary root, or taproot, penetrates the soil rapidly and may reach a depth of up to 10 inches or more by the time the cotyledons unfold. Root development may proceed at the rate of 0.5 to 2.0 inches per day, depending on conditions, such that the roots may be 3 feet deep when the above ground portion of the plant is only about 1 foot (Figure 11). Numerous



**Figure 11.** Root development in early plant growth of cotton. During the first 2 months of development, the root system of the cotton plant is more extensive than the shoot system. (D. Oosterhuis)

lateral roots spread outward from the taproot, forming a mat of roots extending several feet. The largest portion of the root system is located within three feet of the soil surface. Root distribution within the soil (root length density) is usually about 24 inches of root per cubic inch of soil but can vary considerably with soil and plant conditions. The total root weight comprises approximately 20% of the total dry weight produced by the plant during the growing season. However, the total root length produced during the same time may be several hundred yards. The total root length continues to increase as the plant develops until the maximum plant height is reached and fruit begins to form. Root length then begins to decline as older roots die.