Peanut root distribution patterns are not well understood and have not been studied extensively. There is a lack of information on the classification of root distribution patterns for many peanut genotypes under mid-season drought, which could be useful for peanut drought breeding programs. The goal of this study was to determine the root distribution pattern of 40 peanut genotypes under mid-season drought. The experiment was conducted in 2007 on the research farm of Khon Kaen University, Thailand. All plots were well-irrigated, except during the period from 50 to 83 days after planting when water was withheld, corresponding to a mid-season drought. Root samples were obtained using the auger method on the most water-stressed date at the end of the drought period. The samples were collected at two positions, including at the center between two plants in the row and between row positions. The soil was sampled to a depth of 90 cm and was separated into three layers, including upper (0 to 30 cm), middle (30 to 60 cm) and deeper (60 to 90 cm) soil layers. Root length density (RLD) was analyzed with the Winrhizo program. For each peanut genotype the relative contribution to each layer was calculated and defined as %RLD. Then, the forty peanut genotypes were categorized as either high and low %RLD depending on the mean of %RLD in each layer for the three soil layers. The range for the high %RLD genotypes for the upper layer was 67.3-56.1%, whereas the range for the low %RLD genotypes was 54.9-39.1%. For the middle layer, the range of the high %RLD genotypes was 33.4-27.2%, while the range for the low %RLD was 27.0-17.8%. For the lower layer, the range for the high %RLD genotypes was 28.7-17.4%, while the range for the low %RLD genotypes was 17.0-5.6%. The 40 peanut genotypes were then categorized into six combinative groups, based on the high and low %RLD for each of the three layers. The relationship between %RLD in the lower layer (60 to 90 cm) and yield was determined and found to be positive, indicating that %RLD in the lower layer is an important trait that affects pod yield and top dry weight under mid-season drought conditions.