The spectral characteristics of wheat coleoptile and epicotyl were studied by the cytophotometric method. In the coleoptile, the optical density of the 300-μm section of its apex, parenchyma and conductive bundle in the middle and lower parts was estimated. In the epicotyl, the optical density of the parenchyma of the cortex and the central cylinder in the upper part of the organ was examined. In coleoptile and epicotyl, the presence of several different pigment systems absorbing in the blue and red parts of the visible spectrum and not overlapping in their spectral characteristics was detected. The tissue-specificity in the distribution of pigment systems in the structures studied is established. The method of determining the optical properties of tissues in vivo at the top of the coleoptile confirmed the presence of phytochrome regulation system. It is suggested that differences in optical density of more than 30 − 50% in different parts of the visible spectrum indicate the presence of active pigment systems in tissues. The change in the average absorption index against the background of leveling the differences along the sections of the spectral curve indicates the predominance of the contribution of structural rearrangements to the optical properties of tissues.