The aim of this study was to investigate the effect of the deltamethrin pesticide on biological properties of maize (Zea mays L. saccharata Sturt). Maize seeds were exposed to environmentally relevant dosages (0.01, 0.05, 0.1 and 0.5 ppm) of deltamethrin. On the 7th day of germination, morphological, anatomical and physiological responses were determined. All seedling growth characters were decreased with increasingly deltamethrin levels. The most negative effect on radicle length of maize was observed by the highest deltamethrin concentration with a 61% decrease (\(P<0.05\)). Both stomata density and stomata dimension reduction caused by increasing concentrations of deltamethrin. Moreover, the pigments like chlorophyll a, chlorophyll b, total chlorophyll and carotenoids decreased with the increase in deltamethrin concentration. Conversely, anthocyanin and proline content increased in parallel with deltamethrin concentration. As a result, all morphological traits and pigments except for proline and anthocyanin were significantly reduced with increase in pesticide concentration, compared to control (\(P<0.05\)).