The watermelon cultivar ‘Crimson Tide’ was grafted onto three different rootstocks and grown under saline conditions to investigate effects of salinity on grafted and non-grafted watermelon. One Cucurbita maxima and 2 Lagenaria siceraria landraces (Skp and Brecik) were used as rootstock. Plants were irrigated with two different saline solutions [0.5 (control) and 8.0 dS m⁻¹] by two days interval at the first 15 days of experiment and one day interval at the last 15 days of experiment. The experimental design was randomized block. Each treatment was replicated three times with three plants. Grafted plants had higher plant growth parameter than non-grafted plant under saline conditions. Reduction in shoot dry weight was 41% in non-grafted plants while it was varied from 22% to 0.8% in grafted plants under saline conditions. Accumulation of sodium (Na⁺) was higher in non-grafted plants than grafted one. Calcium (Ca++) and magnesium (Mg++) concentration were higher in all grafted plants than non-grafted plants. Non-grafted plants had higher K⁺ concentration than other treatments under saline conditions. Ratios of Ca++/Na⁺, K⁺/Na⁺ and Mg++/Na⁺ were significantly affected by salt treatments and positively correlated with plant growth parameters. The ratios were lower in non-grafted plants than grafted plants under saline conditions.