In this study, the zinc content of pepper plants was determined when different doses of Zinc sulphate (ZnSO$_4$.7H$_2$O) or ethylenediaminetetraacetic acid (Zn-EDTA) were applied using the hyperspectral method.

This study was performed in a greenhouse, and two different fertilisers (ZnSO$_4$.7H$_2$O and Zn-EDTA) were applied at five doses to the plants. There were fifty pots that had five recurrences, and each pot contained three pepper plants. Three leaf samples from each pot were taken at five different growing stages for analysis. An ASD FieldSpec HandHeld spectroradiometer and a plant probe were used to obtain data from the leaves. The zinc (Zn) concentrations were determined by stepwise multiple linear regression analysis of the first degree derivation of spectral reflectance peaks with maximum R$^2$; possible wavelengths for zinc (Zn) measurements were determined. Reflectance peaks, its first order derivatives and the equation of prediction models for Zinc sulphateheptahydrate (ZnSO$_4$.7H$_2$O) and ethylenediaminetetraacetic acid (Zn-EDTA) were compared. To reveal the relationships between zinc (Zn) concentration of the leaf samples fertilised with either ZnSO$_4$.7H$_2$O or Zn-EDTA, the correlation analysis of the vegetation index was performed. The relationships between plant vegetation indices and zinc (Zn) concentration were visualised by diagrams. The reflectance peaks at the 640 nm wavelength were significant for both fertilisers. The highest accuracies were obtained at 400-500 nm for ZnSO$_4$ treatments, whereas the 900-1000 nm wavelengths were better for Zn-EDTA treatments.

As a result, different spectral wavelengths should be used for the determination of zinc (Zn) concentration from hyperspectral reflectance peaks, but the vegetative index of the plants cannot be determined by the hyperspectral reflectance method.