The aim of this study was to determine the effects of different zinc application methods on yield and its components, and the mineral composition of grains in mungbeans. The experiment was conducted under field conditions in completely randomized block design as three repetitions during 2011-2012 in the Isparta/Turkey (37°49'37.0"N 30°32'09.1"E). In the study, Partow mungbean variety underwent seed treatments by keeping the grains in solutions prepared with distilled water containing 0.04% Zn, 0.05% Zn, and 0.06% Zn at 25°C for 6 h. After soaking, the seeds were dried in the oven (25 ± 1°C) until reaching their initial weights. In addition, for inoculating the seed with Zn, 7.5 g ZnSO4 7H2O was dissolved in 250 mL distilled water. The solution was sprayed on the seeds at 1% of the seed weights, and then the seeds were immediately planted. Also, zinc sulfate fertilization to soil was carried out using 50 kg ha-1. In addition to the 100 grain weight, both seed treatments and zinc inoculations had a positive effect on fruit and grain number, grain yield per unit area, and protein ratio properties compared to control. Grain yield was 1155 kg ha-1 in the control and 1338 kg ha-1 in the hydro-priming with percent increase of 15.84%. The average value for all zinc application methods increased as much as 1466 kg ha-1. Zinc applications reduced the phosphorus content of the grains; however, iron, potassium, and nitrogen content increased. Zinc content increased from 35.5 mg kg-1 to 39.1 mg kg-1 with the hydro-priming, and the average zinc content of all the zinc applications increased to 44.6 mg kg-1.