This study was carried out as a pot experiment to determine the effects of dolomite alone or together with leonardite on Ca and Mg uptake of pepper plants. The doses of 8 and 16 g.pot-1 of dolomite which were equivalent to 4000 and 8000 kg.ha-1 incorporated to soil as either alone or together with 8 and 16 g.pot-1 of leonardite. Each pot fertilized by 200 mg.kg-1 N, 150 mg.kg-1 P2O5 and 150 mg.kg-1 K2O. Results revealed that application of neither dolomite nor dolomite + leonardite applications were effective on root dry matter development; however, 4000 kg.ha-1 dolomite + 4000 kg.ha-1 leonardite incorporation yielded the highest shoot dry weight. Ca concentrations of plants were increased by increasing doses of dolomite and leonardite. Dolomite incorporation alone at the dose of 4000 kg.ha-1 improved plant Mg concentration, all other applications was reduced plant Mg contents compared to non-treated (NT) variant. Zn and Mn concentration were also measured in this study. Zn concentration was 96 mg.kg-1 at non-treated variant which was reached its highest value as 221 mg.kg-1Zn at 4000 kg.ha-1 dolomite dose. The lowest obtained value within the dolomite and dolomite + leonardite applied pots was 143 mg.kg-1Zn which was still 49% higher than NT. Mn concentration was gradually increased by increasing dose of both applications, starting from 80 mg.kg-1Mn in NT to 192 mg.kg-1Mn at the highest application doses of dolomite and dolomite + leonardite. Stimulating effect of leonardite was observed in shoot dry weight, Ca, Cu and Mn concentration whereas Mg and Zn concentration was diminished by leonardite addition to the dolomite.