This work investigates the nitrogen ions (N+) implantation effects on Zinc Sulfide (ZnS) thin film deposited on Si substrate by radio frequency (RF) magnetron sputtering at room temperature. The film was exposed to N+ of energy 25 keV using an ion implanter at different doses (1×10^{16} and 1×10^{17} ions/cm^2). The un-implanted and the N+ implanted films were characterized by X-ray diffraction (XRD) for structural study, atomic force microscopy (AFM) for surface roughness, Four Probe method for resistivity measurements and UV-vis spectroscopy for the band gap calculation. The XRD results revealed polycrystalline ZnS with diffraction peaks along (222), (110) and (311) planes, indicating its cubic crystal structure. The N+ implantation in the ZnS decreased its crystallite size due to ions induced structural disorder. The surface roughness of the film was increased with the increase of N+ dose. Electrical resistivity and band gap of the ZnS were decreased due to ion-implantation. These changes were attributed to the structural disorder occurred due to N+ implantation in the film. The un-implanted and N+ implanted ZnS (10^{17} ions-cm^{-2}) films were employed to fabricate metal-semiconductor-metal (MSM) photodetectors using N+ contacts. The photodetection response of the ZnS was investigated through current-voltage (I-V) measurements. The N+ implanted ZnS displayed higher current under UV light as compared to the un-implanted ZnS which was explained on the basis of the ion-induced changes in the film.