This study examined the production of laccase enzyme by *Rhizopous oligosporus* MN-1 using a surface culture fermentation technique. Using the OFAT (One Factor at a Time) technique, the optimization study was carried out for the production of laccase enzyme using different fermentation parameters. In order to produce laccase enzyme, a number of parameters, including the effect of temperature, pH, a variety of carbon and nitrogen sources, and a variety of micronutrient concentrations, were observed. The highest laccase enzyme yield was btained with 5g sucrose, 5g yeast extract 1.5g KH_2PO_4, 0.20g $FeSO_4.7H_2O$, 0.25g $MgSO_4.7H_2O$, 1.20g $CaCl_2$, 0.5g $CuSO_4.5H_2O$, 0.20g $ZnSO_4$. The highest laccase enzyme activity was observed in extracellular extract which was (1.325 ± 0.489 U/mL) and lowest laccase activity was found as (0.087 ± 0.014 U/mL) and from intracellular extract, it was reported that the highest laccase enzyme activity as (0.532± 0.234 U/mL) and lowest laccase enzyme activity as (0.122± 0.019 U/mL) while keeping the pH of the fermentation medium at 6.0 and maintained the temperature of fermentation medium at 30°C for 2 weeks with all of the optimized culture medium ingredients. For the partial purification of laccase, chloroform extraction technique was employed. Following purification, the enzyme's characterization was also completed. The laccase enzyme was subjected to the test by varying the temperature, pH, and substrate concentration. It was discovered that laccase can withstand temperatures as high as 37°C and that a pH between 5.5 and 6.0 is ideal. After getting laccase enzyme, it was applied as a fertilizer on the crop of corn plant, *Zea mays*. 40% and 60% concentrations of laccase enzyme were found best for the overall performance of corn plant. Laccase enzyme was also used to remediate polluted water.