

# Differences in quality of soil from Jarrah forest and a farmed land assessed

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In this 3rd year group project, a number of strategies were used to determine the quality of soils under virgin Jarrah forest (32°20'05.5"S 116°04'51.3"E) and a Banana plantation at University of Western Australia (UWA) (31°59'05.3"S 115°49'08.6"E). Soils collected from these sites were analysed for their chemical, physical and biological properties. A wheat crop was also grown with different nitrogen and phosphorus rates to assess productivity of these soils. Chemical analyses indicated that soils collected from farmed land had higher levels of plant-available N, P, and K compared to Jarrah forest soil. In contrast, Jarrah forest soil had higher organic carbon content and lower pH compared to the farmed land. The soil microbial status assessed through the 16S rRNA method showed higher abundance of microbes in farmed soil. The better quality of farmed soil compared with Jarrah forest soil as shown by the chemical and biological tests was also confirmed by better growth of wheat crop (3rd leaf extension rate, root and shoot biomass) in a glasshouse experiment. The result of this experiment showed that wheat grown in banana soil performed better than those grown in Jarrah forest soil. A significant difference in both the shoot (15.8 g/pot) and root (110 g/pot) biomass were observed in N100 with P0 treatment between the banana plot and Jarrah forest soil. In Jarrah forest soil, the application of Nitrogen at 100kg/ha and 0kg/ha of Phosphorus had gradually reduced the biomass of both shoots (4.44 g/pot) and roots (5.94 g/pot).