

EFFECT OF DIFFERENT RATE OF N APPLICATION ON MAIZE – WHEAT CROPPING SYSTEM IN RELATION TO GREENHOUSE GASES (GHGS) EMISSION

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Abstract: A field experiment was conducted to study the effect of different rate of nitrogen application on GHGs emission under maize-wheat cropping system in an acid soil. Nitrogen rates were arranged with four levels including (N_1 : 0, N_2 : 80, N_3 : 160 and N_4 : 240 kg N ha⁻¹) in case of maize. However in case of wheat N rates was (N_1 = 0, N_2 = 50, N_3 =100 and N_4 =150 kg N ha⁻¹). GHGs were estimated by using Cool Farm Tool (CFT), and the result showed that the application of higher dose of N, emitted more total GHGs (11163 kg CO₂eq ha⁻¹ in maize and 7108 kg CO₂eq ha⁻¹ in wheat, respectively. Similar trend was followed by emission of N₂O and CO₂. A breakdown of various emission sources shows that the major emission sources at farm level is the production and use of synthetic fertilizer. GHGs emission increased with increasing N application both maize and wheat crop and was observed highest at highest N application rate i.e. 240 kg N ha⁻¹ and 150 kg N ha⁻¹ (11163 and 7108 kg CO₂eq ha⁻¹, respectively) and lowest at no nitrogen applied plot (1941 and 2124 kg CO₂eq ha⁻¹) respectively.

Keywords: Carbon dioxide, Cool Farm Tool, Nitrogen fertilizer, Nitrous oxide, Maize-wheat

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