Abstract

The most important environmental challenges in the world, particularly the Middle East is global warming caused by the accumulation of greenhouse gases and resulting climate change. Global warming is very disturbing due to the scarcity of water resources. This study compared the greenhouse gas emissions in the two systems; agroforestry and dryland wheat production in the Azna, Khorramabad. Data were collected using questionnaires from wheat farmers. Energy input was human labor, machinery, seed, fuel, fertilizer and pesticides. The relationship between consumption of inputs and greenhouse gas emissions were identified using literatures. The highest share in energy consumption at convential wheat production system belonged to chemical nitrogen fertilizers (7546 MJ) followed by diesel fuel (4116 MJ) and at agroforestry system belonged to chemical nitrogen fertilizers (6315 MJ) followed by diesel fuel (4276 MJ). Share of inputs used in production and emissions were determined. Share of inputs in GHGs emissions were determined. Resuts indicated that greatest GHG emission at conventional system belongs to nitrogen fertilizer and fuel equals to 226 and 130 kg of CO2e and at agroforestry system was belong to nitrogen fertilizer and fuel equals to 234 and 109 kg of CO2e. Therefore, reducing and optimizing fuel consumption and provide nitrogen management strategies should be taken to reduce greenhouse gas emissions.

Key words: environmental challenges, Global warming, Energy input, Nitrogen fertilizer

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Greenhouse gases emission in rain-fed wheat production under agroforestry and conventional management in Khorramabad condition

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