عنوان مقاله:

Comparison of energy consumption and greenhouse gas emission footprint caused by agricultural products in greenhouses and open field in Iran

محل انتشار:

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خلاصه مقاله:

Decisions can be taken to increase energy efficiency and to mitigate the emissions to the environment by examining the energy audit and greenhouse gas (GHG) emissions footprint of crop production in different ways and in different regions, with comparable principles. In this study, energy consumption and energy indices of tomatoes production in four regions of Iran including East Azerbaijan province (open field), the provinces of Kermanshah, Tehran and Isfahan (greenhouse) were compared using related articles data. Chemical fertilizers and irrigation water in tomato production in open field and diesel fuel and chemical fertilizers in the tomato production in greenhouses system was greatest energy consumer in Iran. Energy consumption of irrigation water for tomato production in open field was markedly higher than the production in the greenhouse. In this study, the inputs of diesel fuel, chemical fertilizers, chemicals, plastics, and electricity used in the production of tomatoes, which contribute to the GHG emission footprint, were calculated via coefficients related to GHG emission. The highest and lowest greenhouse gas emissions in greenhouse tomato production in Tehran province and East Azerbaijan province farms were determined to be 13661.37 kgCO2eq ha-1 and 1274.02 kgCO2eq ha-1, respectively. Overall, tomato production in open field leads to lower greenhouse gas emissions and energy consumption per unit area, but according to more energy output in cultivation of tomato in greenhouse, energy efficiency of tomato production in greenhouse was higher.

کلمات کلیدی:

Energy efficiency, Energy Audit, Environment, pollutants