Abstract:

Sustainability indicators are quantified information which helps to explain our view to the environment and agricultural sustainability. In recent decades, several indicators or set of indicators were suggested to quantification of sustainability in agricultural systems. In the present study thermodynamic approach suggested by Steinborn and Svirezhev were used. The objectives of this study were quantifying sustainability of agro-ecosystems in Jovin, Sabzevar, based on over-production of entropy in the six-year period (2005-2010). To achieve these objectives, cultivated area, yield and production data for different crops (wheat, barley, corn, sugar beets, alfalfa) at this agro-ecosystem were collected. The excess of entropy in different crops were calculated and demonstrated that how use of high artificial energy could change the excess of entropy in an agroecosystem. Chemical fertilizer energy was found to have the highest impacts on the excess of entropy production. While this technic allows only for rough estimate of entropy in agor-ecosystems, it can be stated that, due to a reduction of artificial energy input, sustainability could be improved.

Keywords: Entropy, Sustainability evaluation, Sustainability indices

University of Zabol

Graduate school

Faculty of Agriculture

Department of Agronomy

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Title

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Supervisor:

Dr. M.R. Asgharipour

Advisor:

Dr. M. Ramroudi

By:

F.soleymanazizi

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