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CARBON AND WATER FOOTPRINTS OF MICRO CRAFT BREWERIES USING A LIFE CYCLE ASSESSMENT APPROACH

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Abstract

Craft beer production is a growing economic activity in Mexico. However, few studies evaluate the environmental impact assessment of this industry. This study aimed to determine the carbon and water footprints of micro craft breweries and identify those parts of the process that can be improved to reduce them. Life cycle assessment methodology was used to calculate the carbon and water footprint. The calculations were conducted using data from questionnaires applied to micro craft beer producers and the emission factor reported by organizations and raw material producers. A Craft Beer Carbon Footprint Simulator (CBCFS) was developed using Microsoft Excel to quantify the water and carbon footprints. The results showed that the average carbon and water footprints were 169 kg and 90 m³ per hectolitre, respectively. Electricity was the highest contributor to the direct carbon footprint, and raw material transportation to the indirect carbon footprint. The carbon footprint can be reduced by implementing specific process and product management measures, such as installing preheaters for mash and sparge water or purchasing raw materials from suppliers located closer to breweries. The water footprint is challenging to reduce since almost 99% of the water footprint is related to raw materials production.

Key words: Baja California, beer, energy, Tijuana

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