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"Filling gaps and removing traps
for sustainable resource management"

Experimental Substantiation of the Use of Agricultural Waste in Obtaining Biodiesel

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Abstract

The territory of the Turkestan region of the Republic of Kazakhstan is the most promising for growing pumpkins. The climate of the region is characterised by high spring-summer-autumn temperatures, and the well-developed root system of this melon crop is perfectly adapted for cultivation on irrigated lands. The peel formed during pumpkin processing can be considered as a promising specific raw material for the production of products with higher value added, for example, as an energy source. This study substantiate the use of the rind and pumpkin seeds of *Cucurbita pepo* L. as a potential source of biofuels.

To test the effectiveness of the technique, an experiment was conducted in the laboratory. The rind of *Cucurbita pepo* L. (Cucurbitacea) was washed with detergent, rinsed with clean water, reduced in size $0.5 \times 0.5\,\mathrm{cm}^{-2}$ and dried in a Nabertherm muffle furnace at 110textdegreeC for 72 hours. After drying, the peel was crushed using a hand blender (Philips HR 2102 White).

The sample was extracted with methanol : chloroform (1:2) according to the Folch method. The solid and non-lipid material was removed, the solvent was dried. As a result of the experiment, it was found hat per 100 grams of pumpkin peel there are 3 grams of the total lipid fraction, and per 100 grams of seeds 8 grams. Based on the experimental results obtained in this work, it was concluded that the potential use of pumpkin peel waste as a biofuel is possible on an industrial scale in the Republic of Kazakhstan.

Keywords: Biodiesel, biofuel, Folch method, pumpkin

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