

Brewery's spent grain (BSG) is a by-product of the production of beer. On every 1 dm³ of beer is 0.2 kg of wet brewery's spent grain produced. This means that BSG is produced in a huge amount worldwide. Because the BSG contain a lot of sugar, protein, and moisture, have a tendency to rot in a short time and become harmful stuff. One of the main ways to utilize BSG is to use them as feedstock for feeding cattle. Sometimes when the distance between the brewery plant and the farm is too much better solution is composting or conversion to biogas. The main advantages of biogas production over composting are renewable energy production and the lack of emission of harmful volatile organic compounds to the air. Thanks to biogas production from BSG, we can utilize by-products, produce energy to beer production, and produce fertilizer for farmers. One of the latest methods to increasing a biogas production is the addition of biochar to substrates, in this case to BSG. In this project, we based on the newest solution in which biochar is produced from substrate (BSG) to methane fermentation. Although it is known that biochar addition can increase biogas production from methane fermentation, the mechanism, and quantitative descriptions of these impacts is still unclear. The aim of this work is to find and quantification properties of biochar that have impacts on biogas production from BSG. Based on empirical data from measurements in a laboratory scale, we would like to find out the main mechanisms and quantified them by a mathematical model. The main expected effect of the work is to obtain models of biochar impact and the discovery of correlations between biochar properties and the efficiency of methane fermentation of BSG.