The present study discusses the role of biochar in enhancing methane (biogas) production from organic solid waste (OSW) employing a co-culture of [*Pseudomonas*](https://www.sciencedirect.com/topics/earth-and-planetary-sciences/pseudomonas) aeruginosa and Methanosarcina mazei. The high porosity, alkalinity, and high ion-exchange capacity of biochar make it an efficient support material for microbial cell growth and proliferation. Here the effect of different doses of biochar on [biogas](https://www.sciencedirect.com/topics/earth-and-planetary-sciences/biogas) production parameters, i.e., cumulative methane production, maximum methane production rate, and lag phases, are studied. The synergistic effect of biochar for its supplemental methane production via ammonia mitigation potential is also studied. The results illustrate a maximum methane yield of 109±0.42 mlCH4gCarboinitial with a maximum of 54.83±0.20% [COD](https://www.sciencedirect.com/topics/earth-and-planetary-sciences/chemical-oxygen-demand) removal was achieved at 12.5 g/L biochar concentration. Also, there is a significant improvement in the lag phase from 13.2 ± 0.3 h at control (without biochar) to 8.8±.15 h at the same 12.5 g/L effective biochar concentration. The effect of ammonia addition revealed low methane production rates, which were subsequently reduced with the biochar amendment that conversely increased the methane production rates in each experimental batch. Thus the result showed that biochar addition could significantly affect methane production rates, ammonia inhibition potential and also showed increased volatile fatty acid generation.

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