食品废弃物风干处理后厌氧消化特性研究 Anaerobic Digestion Characteristics for Air-dried Food Waste

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关键词： 食品废弃物 厌氧发酵 接种率 含水率 风干

摘 要： 为了抑制食品废弃物厌氧发酵过程中产酸速度，采用食品废弃物风干预处理方法，研究高温条件下不同接种率和含水率对风干食品废弃物厌氧消化过程的影响。研究结果表明：风干处理能有效缓解酸化初期的酸中毒现象；含水率和接种率的交互作用明显影响风干食品废弃物产气率和污染物去除率；在高接种率时，低含水率的系统更有利于风干食品废弃物的处理，处理后的系统有较高的缓冲能力；在55%接种率、92%含水率条件下能实现风干食品废弃物厌氧发酵的顺利进行，且单位可挥发性固体风干食品废弃物的产CH4率达到了0.246L/g，而最大的产CH4率在接种率为75%、含水率为88%条件下获得，为0.471L/g，且在产气稳定时期，气体中CH4体积分数维持在75%左右；COD的去除率以及TS的去除率都随接种率的提高而上升，最高的COD去除率为91.6%，最高的TS去除率为32.7%。 Under high temperature condition, the effects of inoculation rates and moisture contents on anaerobic digestion of air-dried food waste were studied. The results showed that air-dried food waste could effectively alleviate the acidosis at the initial acidification phase. The interaction of inoculation rates and moisture contents makes an impact on the methane production. High inoculation rate and low moisture content is advantage to anaerobic digestion of air-dried food waste which gives the system a higher buffer capacity. When the inoculation rate is 55% and the moisture content is 92%, the process of anaerobic digestion operates normally with the methane production rate of 0.246L/g. The highest methane production rate reaches to 0.471L/g at 75% inoculation rate and 88% moisture content. The removal rates of COD and TS increase with inoculation rate, and the highest is 91.6% and 32.7%, respectively.

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