

4th International Conference on

Bioprocess and Bio Therapeutics

October 20-21, 2016 Houston, USA

Effect of *Jatropha curcas* L. press-cake and inorganic NP fertilizers on productivity of potato (*Solanum tuberosum* L.) and soil properties

Gizachew F and Inyew

Haramaya University, Ethiopia

Low soil fertility is a major constraint to potato production in Ethiopia. A field experiment was conducted at Rare research farm, main campus of Haramaya University in Ethiopia, during the main growing season of 2011 under supplementary irrigation to evaluate the effects of *Jatropha curcas* L. press-cake and inorganic NP fertilizers on the productivity of potato (*Solanum tuberosum* L.) and soil properties. The treatments consisted of four rates of *Jatropha* press-cake (0, 2, 4 and 6 t ha⁻¹) and five rates of combined mineral N and P (0 + 0; 0 + 46; 50 + 0; 50 + 46; 100 + 92 kg N + P, respectively, ha⁻¹) fertilizers. The experiment was laid out as a randomized complete block design (RCBD) in a factorial arrangement and replicated three times. Well sprouted medium-sized potato tubers of a potato variety named Badhasa were planted on 30 May 2011 at the spacing of 75 cm between rows and 30 cm between plants accommodating approximately 44,444 seed pieces ha⁻¹. The plot sizes were 3.75 m x 3.9 m. The distance between plots and blocks was maintained at 1 and 2 m, respectively. All agronomic and soil data were collected and analysis of variance was done. The results indicated that *Jatropha* press-cake along with mineral fertilizer significantly enhanced potato tuber yields and soil OM. Thus, from the results of the study, it could be deduced that 2 t *Jatropha* press-cake ha⁻¹ resulted in an optimum total tuber yield.

gibtan120@yahoo.com

Effects of different organic loading rates on the anaerobic digestion of goose manure in semi-continuous stirring tank reactor

Muhammad Hassan¹, Weimin Ding¹, Esmail Mehryar^{1,2}, Zahir Talha¹¹Nanjing Agricultural University, China²Isfahan University of Technology Isfahan, Iran

Anaerobic digestion of goose manure was adopted in semi-continuous stirring tank reactors. The CSTR was run at three different organic loading rates: 1.4 gVS/L/day, 2.9 gVS/L/day and 4.4 gVS/L/day. The organic loading rate of 2.9 gVS/L/day was proved as the optimum loading rate with maximum methane enhancement. At high organic loading rate the anaerobic process inhibition was observed. Overall, smooth methane production was observed by the goose manure without ammonia inhibition. Statistically, the methane production by low TS content CSTR was found more significant as compared with the high TS CSTR anaerobic digestion of goose manure. The highest VS and CODs removal was also belonged to the 6% TS basis CSTRs. The pH was found optimum for the microbial activities during the whole anaerobic digestion period. The total volatile fatty acids (TVFAs), soluble chemical oxygen demand (CODs), pH, total available ammonia (TAN), free ammonia (FA) and alcohol production was recorded at each three days interval during the whole anaerobic digestion period. Due to organic loading management method almost 50% methane enhancement was recorded.

wmding@njau.edu.cn