

We thank **Anonymous Referee #4** for the constructive comments and suggestions. Please find our response below;

Comments: Introduction part needs little improvement; like, all aspects of *Clostridium* should be described at one place together instead of discussing at two different places (Page 12825 & 12826).

Answer: Combined as “The cost of production can be reduced by adding sewage sludge as a source of *Clostridium* mix culture (Fang et al., 2006). Nutritional deficiency in food waste was also balanced by adding sewage sludge and made food waste suitable for bio-hydrogen production (Shin et al., 2004). It means that integrated waste management can be done at wastewater treatment plant by co-digestion of sewage sludge and food waste. Although sewerage sludge is a good source of *Clostridium* mix culture, but at the same time, it contains hydrogen consumers. Heat treatment is mostly opted to deactivate hydrogen consumers. The traditional method of placing sewage sludge in boiling water is now no longer in practice and replaced by microwave heating that provide more uniform heating as compared to the boiling water method (Luo et al., 2010;Wang et al., 2011;Duangmanee et al., 2007). The temperature and time for heat treatment varied from 75°C to 121°C for 15 minutes to 2 hours, but 100°C for 15 minutes was mostly reported (Li and Fang, 2007;Fang et al., 2006). ”

Comment: There should be some information about the hydrogen production under hyper thermophilic conditions.

Answer: incorporated as “Whereas, hyper-thermophilic provide better pathogenic destruction but it may also decrease the bio-hydrogen production (Sahlström, 2003;Yokoyama et al., 2007).”

Comment: The study emphasis on hydrogen production without pH control practice so introduction part should have some discussion about selecting such practice

Answer: Introduction is updated as “The pH can be controlled by automatic pH controllers, addition of nutrients and buffers, manual monitoring and control (Yasin et al., 2011;Zhu et al., 2008;Kim et al., 2004). But all these methods increased the cost of operation. Along with cost, maintaining pH at specific point is not suitable especially when mix culture is used as the response of different microbial stream could be different to same pH level. So, by co-digestion, the pH of the anaerobic digestion process can be improved and it can be further adjusted to a desired initial value by adding HCl or NaOH. After adjusting the desired initial pH under co-

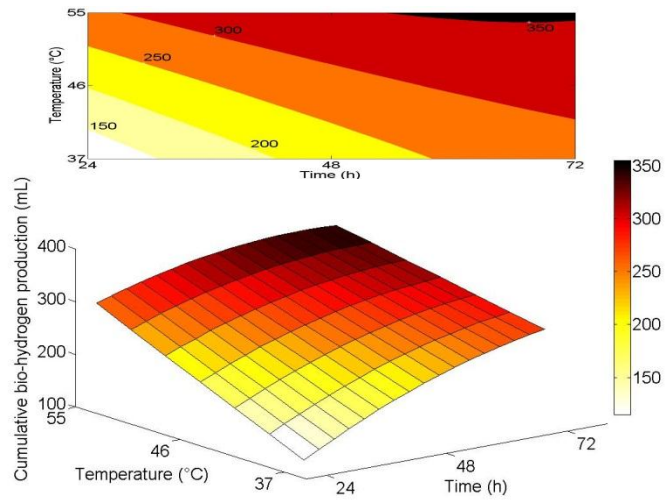
digested conditions, the bio-hydrogen production can be achieved under no pH control conditions, which can reduce the cost of operation (Fang et al., 2006).”

Comment: Figure 5 represents the consumption of glucose with time and temperature. More discussion should be done on glucose consumption representing the impact of temperature on specific waste with respect to time, in the light of modeled equations developed.

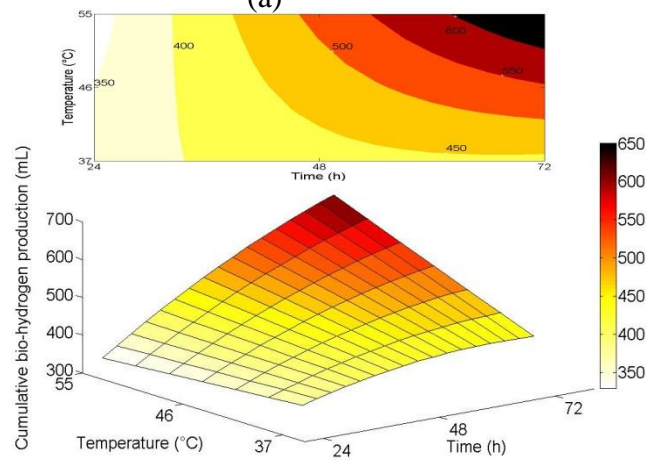
Answer: Updated as “As a whole, the glucose consumption at the end of incubation was higher at 37°C as compared to 55°C for food waste. The noodle waste and rice waste represented quite opposite picture of glucose consumption with temperature as observed for food waste at the end of incubation.”

Comment: The representation of three dimensional figures needs improvement in term of readability.

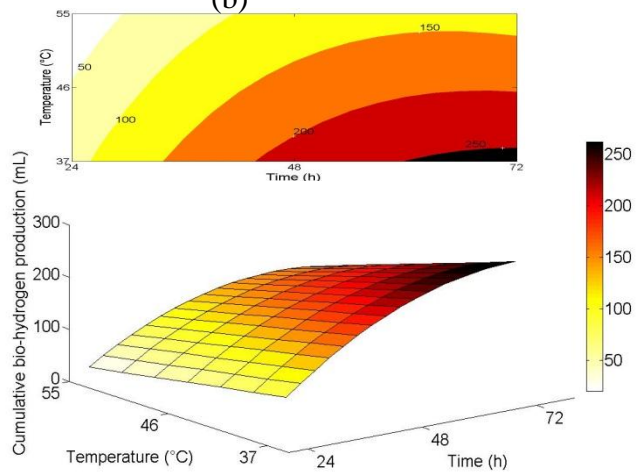
Answer: the figures were re drawn to overcome this issue. The revised figures are given below,



(a)

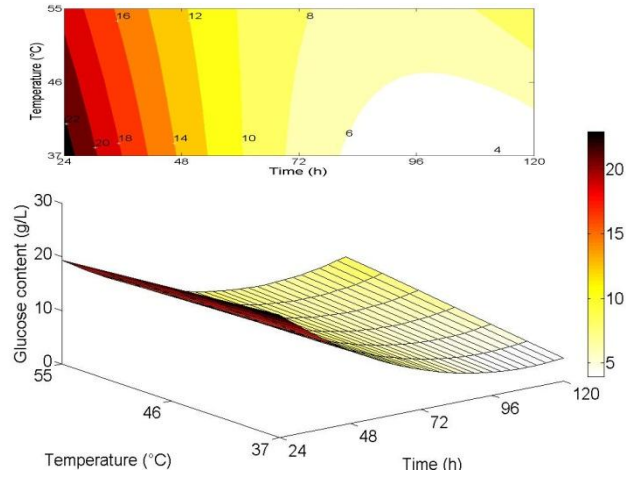


(b)

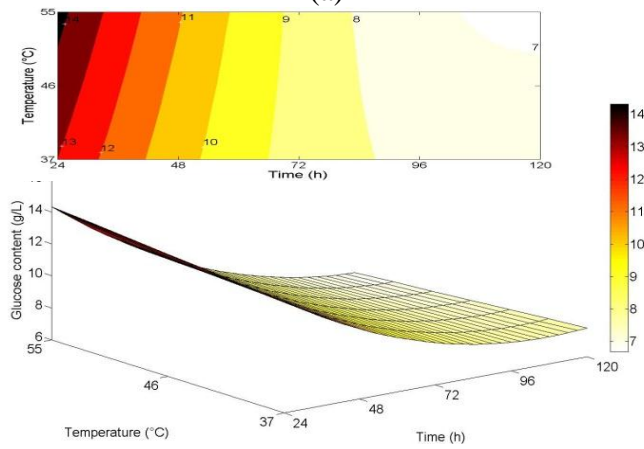


(c)

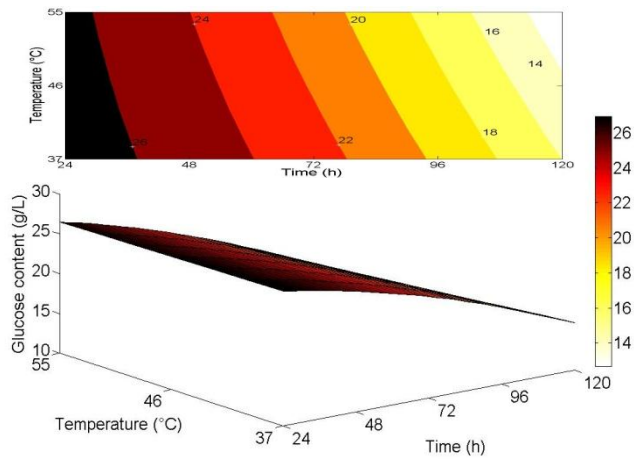
Figure 3. Three dimensional response plots for bio-hydrogen production (a) Food waste, (b) Noodle waste, (c) Rice waste



(a)

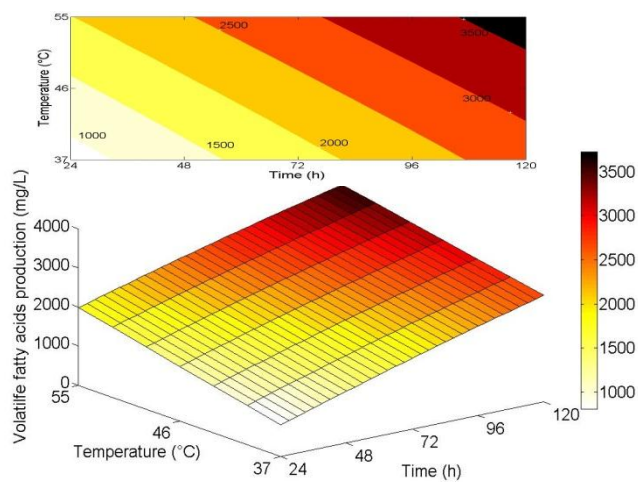


(b)

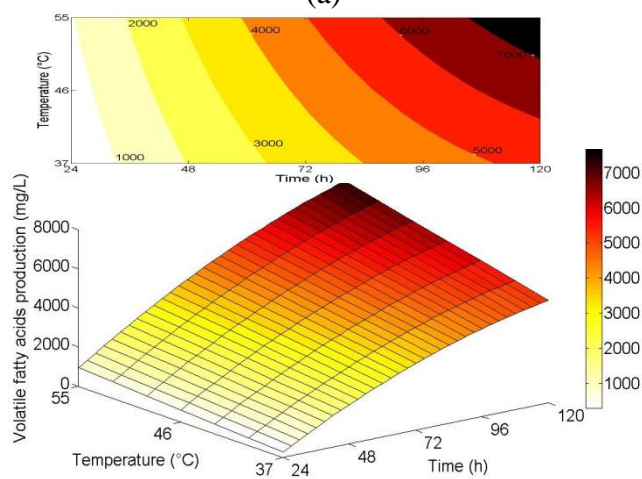


(c)

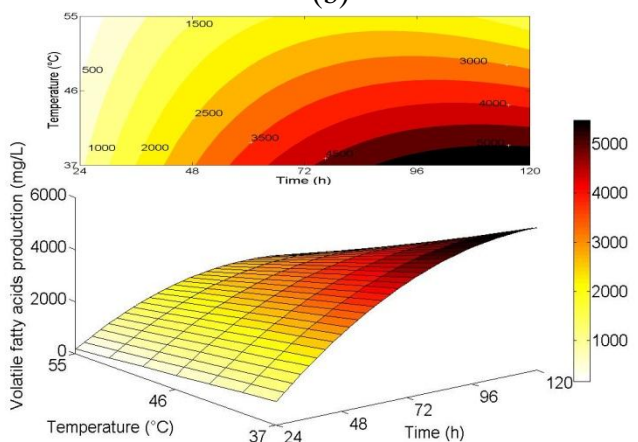
Figure 5. Three dimensional response plots for glucose consumption a) Food waste, (b) Noodle waste, (c) Rice waste



(a)



(b)



(c)

Figure 7. Three dimensional response plots for VFA production a) Food waste, (b) Noodle waste, (c) Rice waste

Comment: Page 12825 Line 2 replace “one century” with “a century”

Answer: Replaced as advised

Comment: Page 12825 Line 5 reconsider use of preposition “reduction of”

Answer: Replaced by “reduction in”

Comment: Page 12825 Line 9 Rephrase “more than 80% of food waste consists of the volatile solids

Answer: Revised as “The food waste contains more than 80% volatile solids”

Comment: Page 12826 Line 4 describe hydrogen consumers

Answer: Revised as “it contains hydrogen consumers like methanogens”

Comment: Page 12826 Line 8 add suitable preposition “temperature and time heat treatment”

Answer: Updated as “The temperature and time for heat treatment”

Comment: Page 12826 Line 23 rephrase “yields are misleading if it is calculated in term of”

Answer: Revised as “The yields are misleading if calculated in term of added or start up values of VS, COD and glucose as it seems quite impossible that the whole of added material is converted into hydrogen”

Comment: Page 12827 Line 16 “It was grounded in a meat grinder” need revision to explain “it”.

Answer: Revised as “The food waste was then grounded in a meat grinder with equal amount of water and resultant slurry was used for bio-hydrogen production”

Comment: Page 12827 Line 24 Revise “two series of experiment”

Answer: Revised as “Two series of experiments were conducted in duplicate in 550 mL digesters with working volume of 400 mL”

Comment: Page 12831 Line 25 place suitable unit to describe 79.25

Answer: It was 79.25 mL but the specific discussion is revised in term of percentage as “During 0-24 hours of incubation, bio-hydrogen increased with increase in temperature for food waste, i.e. 115 mL of bio-hydrogen was produced at 37°C that increased 76.09 % and 152.17% at 46°C and 55°C, respectively.”

Comment: Page 12831 Line 25 Replace “at” with “during”

Answer: Revised as mentioned in previous comment.

Comment: Page 12832 Line 13 Revise “it has a negative impact of temperature on bio-hydrogen production”

Answer: Revised as “temperature has a negative impact of on bio-hydrogen production.”

Comment: Page 12832 Line 21 Revise “The effect of temperature on P and yield was calculated on the basis of VS_{fed} was same”

Answer: Revised as “The bio-hydrogen yield calculated on the basis of VS_{fed} lay in the range achieved by Lin et al. (2013b) and temperature impact on yield was same as observed for P.”

Comment: Page 12833 Line 6 “the COD removal efficiency decreased with an increase in temperature” required explanation like given for RW in previous paragraph

Answer: Revised as “The increase in temperature from 37°C to 55°C increased 42.41% bio-hydrogen yield calculated on COD_{removed} basis for food waste. The increase in bio-hydrogen production due to same increase in temperature from 37°C to 55°C was 23.37%.”

Comment: Page 12833 Line 7 Place “,” after picture

Answer: The sentence was revised as “When the yield measuring scale was shifted from VS_{removed} to COD_{removed}, the results represent quite different picture of temperature impact”

Comment: Page 12833 Line 20 delete “a” from “on a daily basis”

Answer: Deleted as “The yield was further studied on daily basis and it was observed that the highest yield of 33 mL/ glucose_{removed} for 0-24h duration belonged to noodle waste under mesophilic condition.”

Comment: Page 12833 Line 20 please specify the yield

Answer: Specified as “The yield calculated on glucose basis”

Comment: Page 12835 Line 20 Revise “indicator of higher production of bio-hydrogen production as observed”

Answer: Revised as “The higher concentration of VFA can also be used as an indicator for higher production of bio-hydrogen as observed by Dong et al. (2009)”