

Supplementary Material

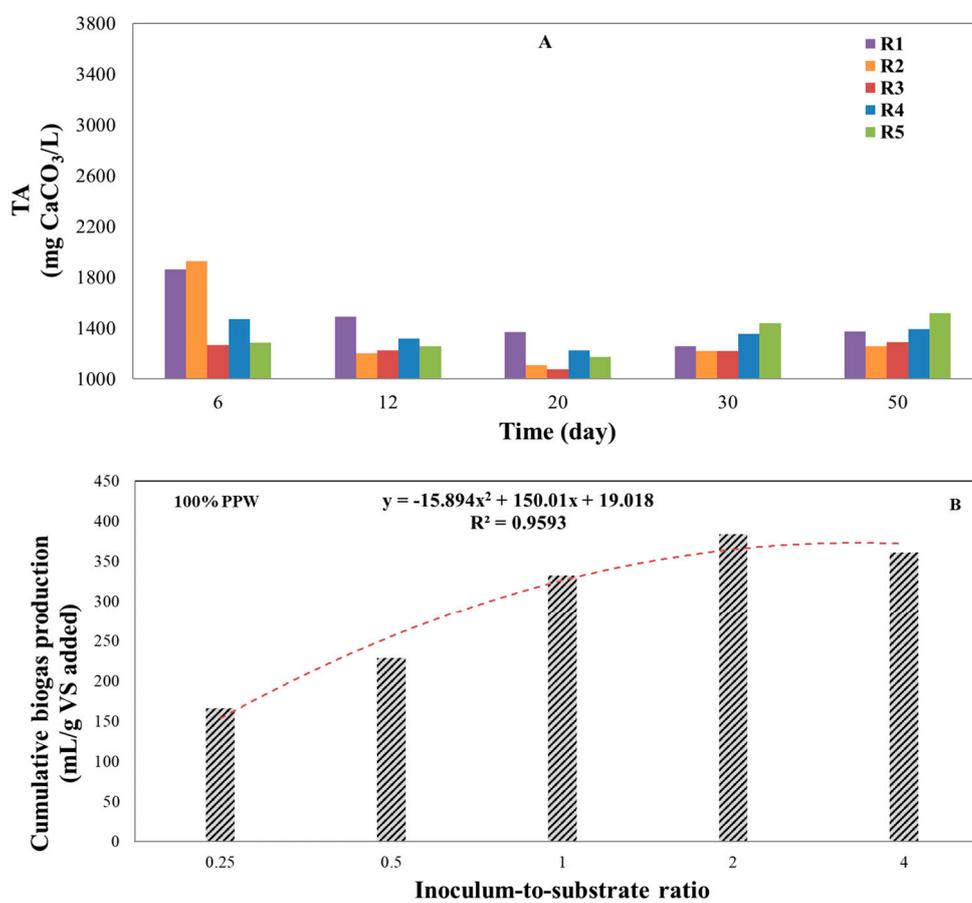


Figure S1. Alkalinity (A) and biogas-ISR correlation (B) for the PPW mono-digestion in different ISRs.

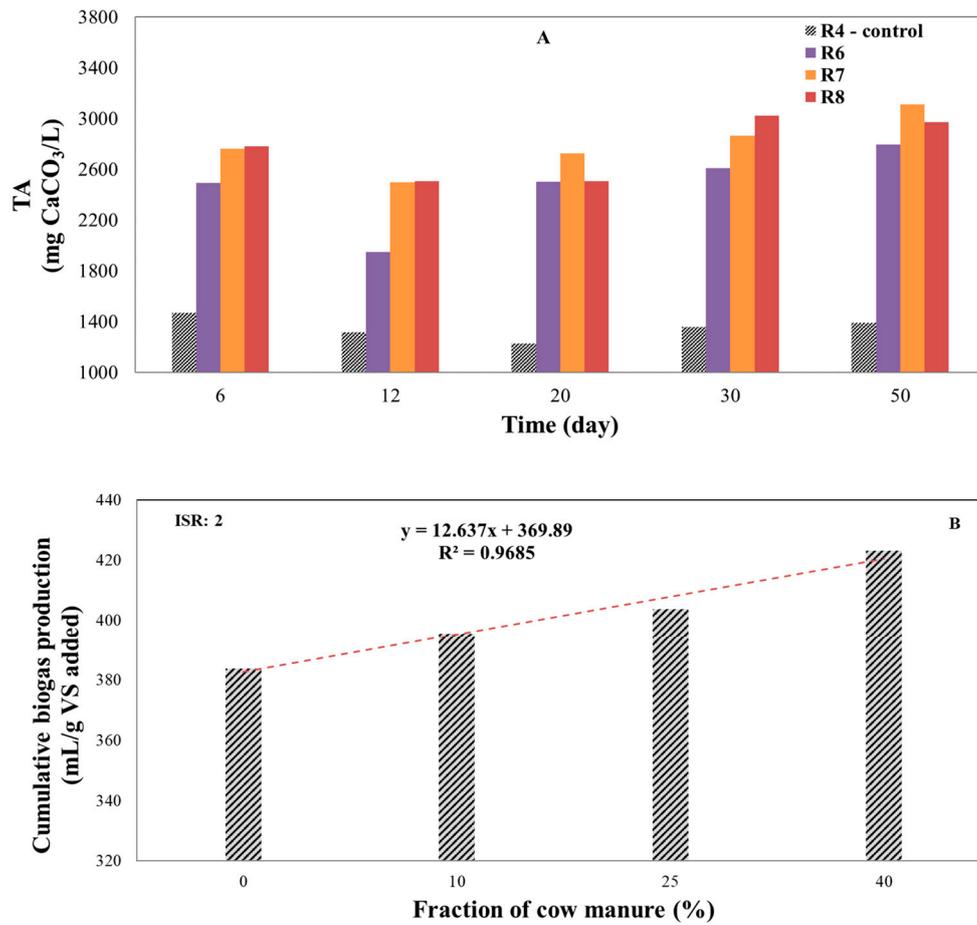


Figure S2. Alkalinity (A) and biogas-CM content correlation (B) for the different PPW-CM co-digestion ratios.

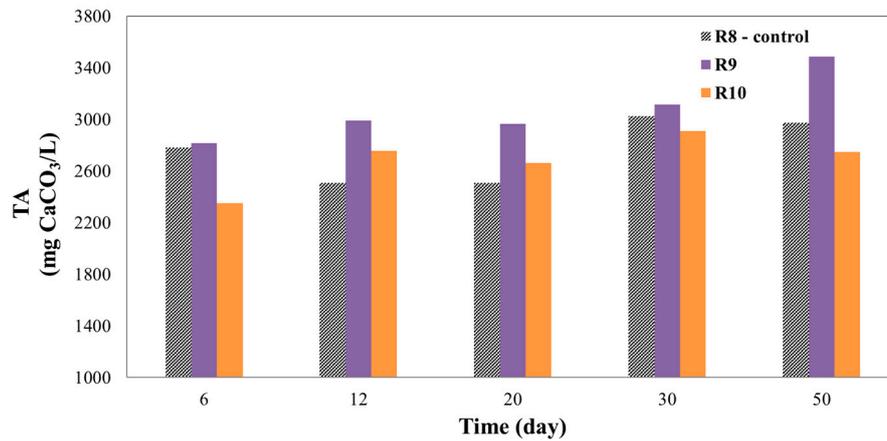


Figure S3. Alkalinity for the different pretreatment procedures.

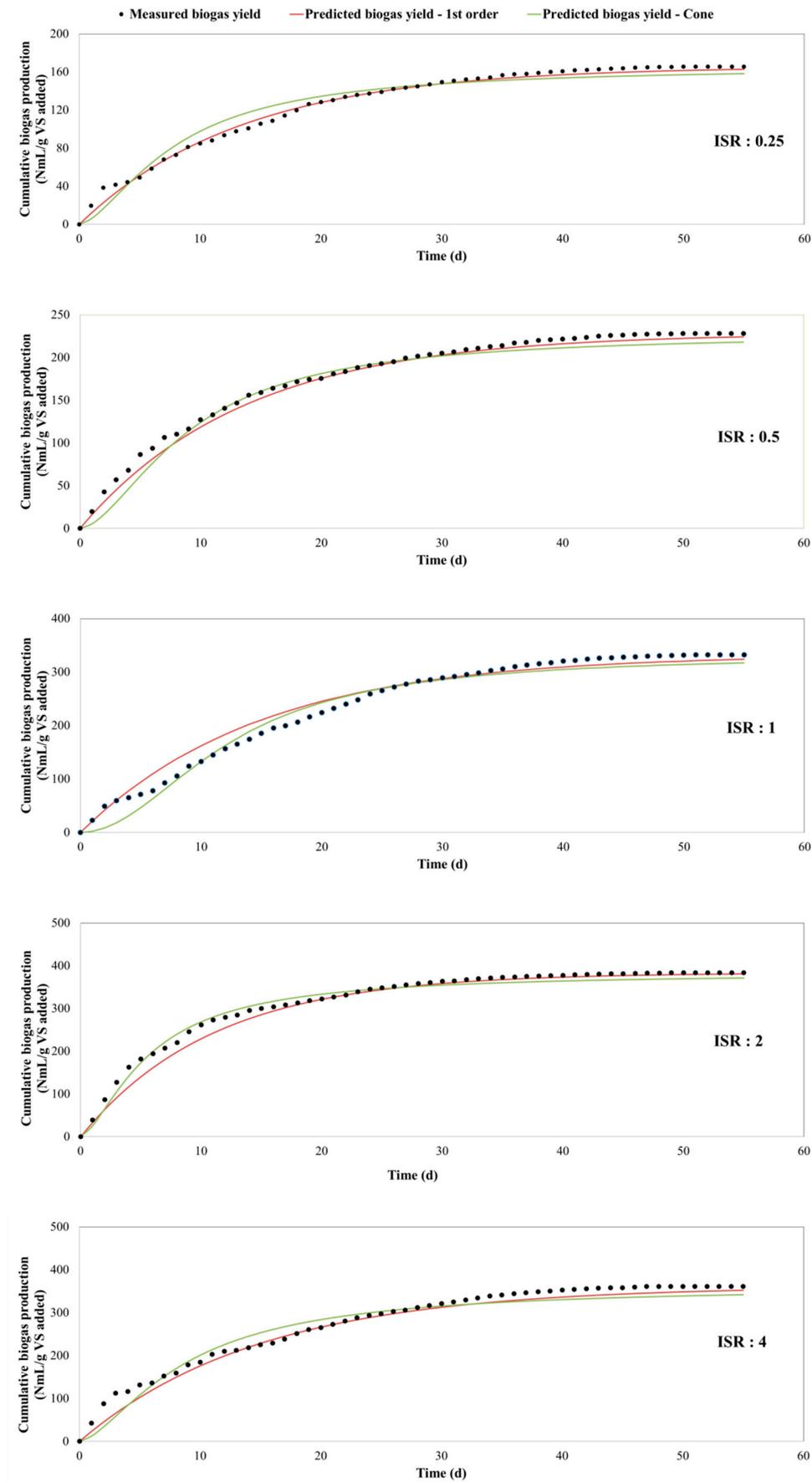


Figure S4. Plot of measured and predicted biogas yields for different ISRs.

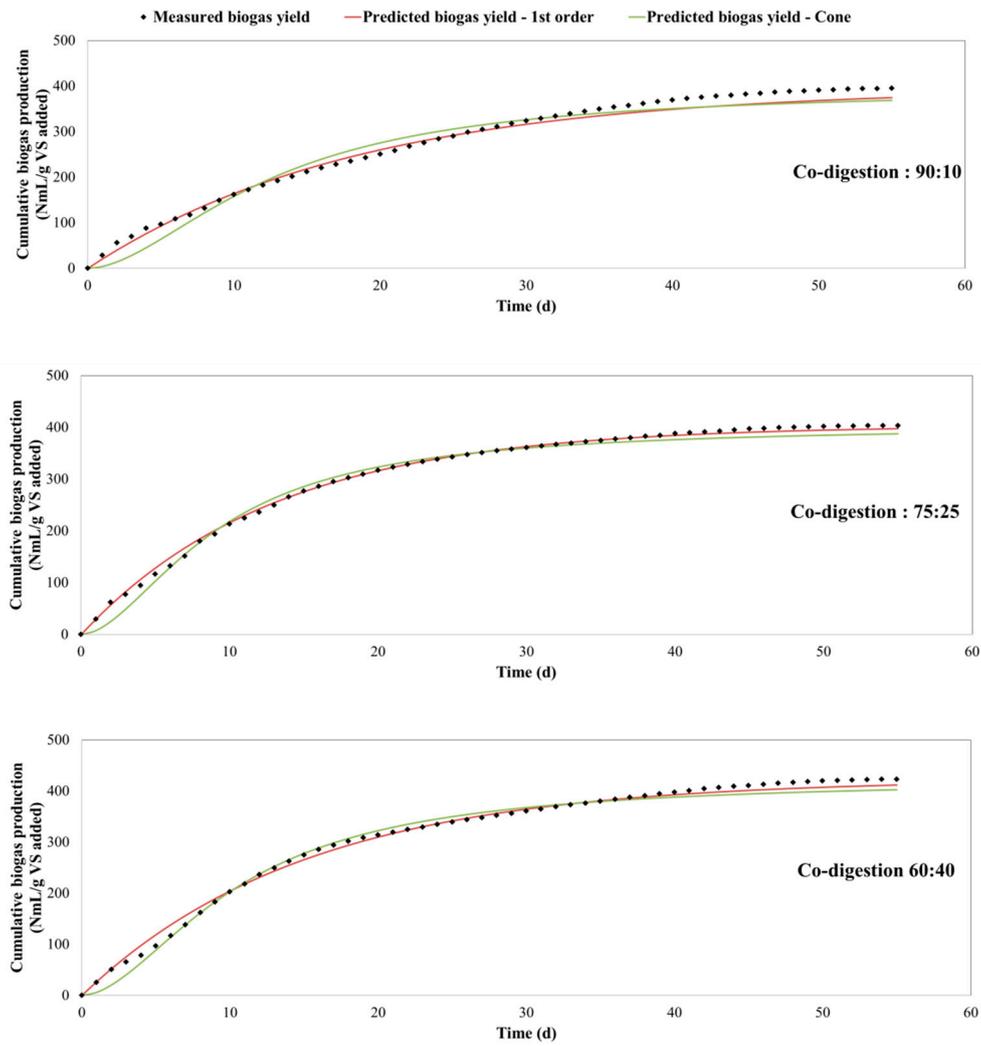


Figure S5. Plot of measured and predicted biogas yields for different co-digestion ratios.

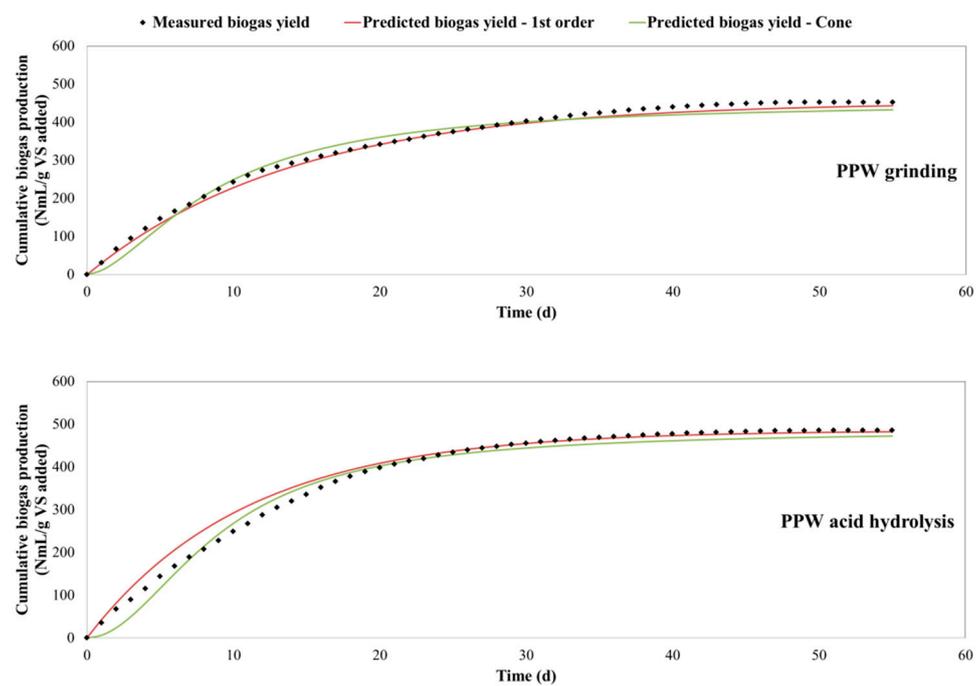
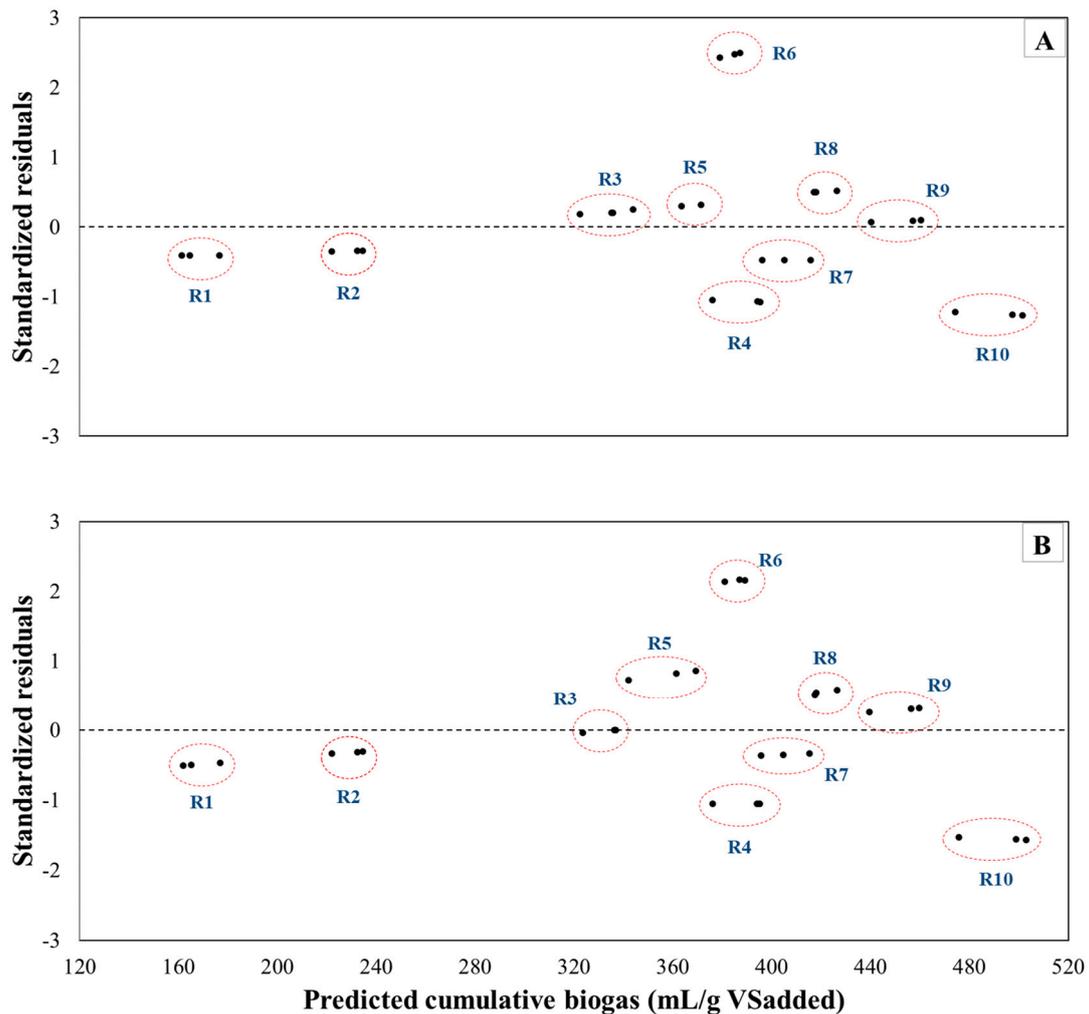


Figure S6. Plot of measured and predicted biogas yields after potato peels pretreatment.**Figure S7.** Plot of standardized residuals for each replicate from first-order (A) and cone model (B).

Each point is one replicate, where the prediction made by the model on the x-axis and the accuracy of the prediction is on the y-axis. The distance from the line 0 determines how good or bad is the prediction for that value. As it is shown from the plot, all the replicates except R6 are pretty distributed, tending to cluster towards the middle of the plot. R6 showed higher residual and was clustered around a higher value of the y-axis.

Table S1. Biogas and methane yields from the control reactor RC2 treating cow manure.

| Parameter | Unit | RC2 |
|-----------------|--------------------------|-------------|
| Biogas yield | mL/g VS _{added} | 308.9 ± 4.7 |
| Methane content | % | 50.7 ± 0.4 |
| Methane yield | mL/g VS _{added} | 156.5 ± 1.4 |

Table S2. Pearson's correlation coefficients of hydrolysis constant of first-order model with process parameters. Statistically significant values are indicated by symbols: *P < 0.01; **P < 0.05. G: biogas production potential (NmL/g VS_{added}); K: the observed hydrolysis constant (1/d).

| | ISR | Co-Digestion Ratio | VS Removal Rate | pH | K | G |
|-----------------------|---------|-----------------------|--------------------|----------|-------|---|
| ISR | 1 | | | | | |
| Co-Digestion Ratio | 0.199 | 1 | | | | |
| VS Removal Rate | 0.651** | 0.740** | 1 | | | |
| pH | -0.225 | -0.976* | -0.755** | 1 | | |
| K | -0.080 | 0.132 | 0.100 | -0.093 | 1 | |
| G | 0.613 | 0.742** | 0.994* | -0.753** | 0.190 | 1 |