Is It Possible To Continually Produce Fodder On Planted Drying Beds Treating FS

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More than a quarter of the world's population did not flush and forget about their shit. They must manage the accumulated FS.
Lack of management system in place for the FS

- Containment
- Emptying
- Transport
- Treatment
- Reuse/disposal

On-site facility

- Safely emptied
- Legally dumped
- Effectively treated

- Un SAFELY emptied
- Illegally dumped
- Not effectively treated

...not sustainable
...sustainable sanitation services.

...adopt and implement more resource efficient system

FERTILIZERS

FOOD FOR LIVESTOCK
Focus

- Has to be selected for the local context
- Great potential for fodder production, can offset some operation costs

...research is ongoing for adapting and optimizing the resource recovery
Lack of information on local potential plant

• Plant is the principal component of this system  
  (Byoung and Scholz, 2007)

• Lack of research on using locally adapted plants

• ...the potential for forage production in CWs is neglected 
  (Pare and al, 2011)
Identification of forage plants

Based on the superior growth performance and economic value......

*E. crus-galli*, *E. pyramidalis*, *P. geminatum* and *P. vaginatum* was selected for to analyze the effects of several harvest on forage production and quality.
How we can deal treatment process with several harvest for to use plant at an earlier stage of maturity.
System operation

Plantation

- 4 species: *E. crus-galli*, *E. pyramidalis*, *P. geminatum*, *P. vaginatum*
- 9 fragment/baril; 3 baril/sp.

Acclimatization Scaling up

- Watered with:
  - tap water -FS supernatant -FS
- Duration: 4 months

Operation at rated load

Total load:
200 kg TS/m2.year

Load frequencies:
3 loads/week

Duration:
3 months

Harvesting period:
at the end of each month
Physicochemical characteristics of FS

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Campaign</th>
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<tbody>
<tr>
<td></td>
<td>M1</td>
</tr>
<tr>
<td>TS (mg/l)</td>
<td>11.2±3.3</td>
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<tr>
<td>TSS (mg/l)</td>
<td>6.5±2.6</td>
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<td>COD (mg/l)</td>
<td>8466.7±4412.6</td>
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<tr>
<td>TN (mg/l)</td>
<td>460.8±152.8</td>
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<td>NH$_3^+$ (mg/l)</td>
<td>323.3±99.8</td>
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<td>NO$_3^-$ (mg/l)</td>
<td>8±6</td>
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<tr>
<td>TP (mg/l)</td>
<td>353.0±100.4</td>
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<tr>
<td>PO$_4^{3-}$ (mg/l)</td>
<td>258.7±82.2</td>
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➢ FS is slightly concentrated.... considerable variability
Forage production

*E. pyramidalis, P. geminatum, P. vaginatum* showed sustainable biomass production whereas *E. crus-galli* showed less tolerance to repeated harvesting.
For all species tested, harvest the plants repeatedly increased nutrient yields
Conclusion

- *E. pyramidalis*, *P. geminatum*, *P. vaginatum* was found to be suitable plant for sustainable biomass production with repeated harvesting;

- Regarding the forage quantity and quality, the results obtained indicate that this fodder plant had a suitability for reuse as a feeds for livestock and;

- It is possible to deal treatment process and forage production in planted drying beds.