CONCLUSION

It is clear that the studied wetland, 'water hyacinth pond,' in Mae Hia Agricultural Research Station and Training Center, has the treatment capacity for the wastewater effluent drained from the pig manure biogas digester. The percent removal of pollutants entering the wetland with the fluid waste varies among measured parameters whereas percent removal of BOD_5 is the highest (92.37 %) followed by that of COD (81.66 %), NH_3-N (49.26 %) and NO_3-N (48.64 %), respectively. There is no significant removal of PO_4-P in the studied wetland.

Although having significant removals of some basic parameters, especially BOD_5 and COD, but the removals of nutrients, says nitrogen, are not quite out standing level, and even no removal at all for phosphorus.

The efficiency for treating wastewater in this wetland seem to be mainly depended on its physical properties: inlet characteristics, water volume of the wetland, retention time, beside the characteristics of the wastewater flowing in. Because of the size of this wetland is comparatively big compared to the size of the pig farm and biogas production unit which is its original wastewater source. This wetland holds the water volume of almost 2,800 m3 and has long period of retention time of 140 days, meaning that the wastewater can be normally retained in the wetland for more than 3 months.

Aquatic plants in the studied wetland have some parts in treating the wastewater with different levels whereas water hyacinth dominantly work the most (from observation of their fluctuated stress), other species have less roles.

Therefore, even though there are some level of wastewater treatment by aquatic plants and biochemical prcesses, but due to high density of plants population and with no maintenance, this wetland is somehow acting more or less like a sedimentation pond for pollutants rather than directly treat the wastewater. "If the wetlands are not to harvested, vast majority of the nutrients that have been incorporate into the plant tissue will be returned to the water by decomposition process" (Brix, 1997) This quotation is seem to be true in the study wetland as the present of PO_4-P is higher in the mid-wetland sampling sites than the value determined at the inlet.

RECOMMENDATIONS

1. **The studied wetland needs regular maintenance with a proper planning: starting with the harvesting of water hyacinth and removal of sediment in the wetland,** in order to maintain its capacity for wastewater treatment by providing more efficient working-age of water hyacinth and removing the accumulated pollutants.

2. **There should be more studies about this wetland concerning different points of view and being more specific into detailed work,** for example, the study about properties of wetland's sediment, the study of utilizing the wetland for different using purposes.

3. **There should be precaution measures for activities around the wetland in order to limit their effects to wastewater treatment capacity of the wetland**, for example, controling of the cattle grazing around the wetland and the proper maintenance of the biogas unit cattle farm.