



Seasonal changes of plant biomass at a constructed wetland in a livestock watershed area

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ABSTRACT

Monitoring was conducted to evaluate the seasonal changes in plant biomass in a free water surface constructed wetland (CW) located in Nonsan City, South Korea. Korea has temperate climate so plant growth is in the summer and senescence during the winter. Plant biomass measurements were taken during the plant life cycle from May to October 2009. Two dominant plant species, *Phragmites australis* and *Miscanthus sacchariflorus*, were analyzed for the measurement of the weight, height, count and total planted area. To assess the health of plants, the relative growth rate (RGR) was also calculated. The increase in plant productivity is attributed to the increase in the availability of water, light, temperature and nutrients. Results showed that high plant biomass rate was observed during the summer season. The growth of plants stopped during autumn while a gradual decrease of plant count was observed during the end of summer. Since summer season is a period of most nutrient loadings coming from the livestock wastewater treatment plant and stormwater runoff, high levels of nutrients subjected into a CW system thereby increasing plant biomass rate because many of the nutrients are assimilated and stored into the plant system. However, the RGR of plants decrease as plants age.

Keywords: Constructed wetland; Nutrients; Plant biomass; Relative growth rate; Temperature

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