SPATIAL HETEROGENEITY OF PHYSICAL AND CHEMICAL VARIABLES IN THE SEDIMENT OF SETIU WETLAND DURING MONSOON AND NON-MONSOON SEASON

By

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Specially dedicated to beloved family:

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"Bila yang tertulis untukku adalah yang terbaik untukmu, Kanku jadikan kau kenangan yang terindah dalam hidupku, Namun takkan mudah bagiku meninggalkan jejak hidupku yang telah terukir abadi sebagai kenangan yang terindah"- Samsons.

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%	percentage
°C	degree celsius
C	Carbon
cm	centimeter
cm^3	centimeter cubic
g	gram
kg	kilogram
L	Liter
mg m^{-3}	miligram per meter cubic
mL	mililiter
mm	milimeter
g/cm^3	gram per cubic centimeter

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ABSTRACT

Study the spatial heterogeneity of physical and chemical variables of sediment in wetland is a study of the soil quality. In recent years, the wetlands have increasingly become subject to economic pressures resulting in widespread wetland clearing for aquaculture expansion. Therefore, this study was carried out to determine the status of physical and chemical elements of the soil affected by the aquaculture pond. This study also find for any changes between two seasons which are non-monsoon (summer) and monsoon (rainy season). The value range for porosity during non-monsoon is 31% to 49%; and 36% to 55% during monsoon. Particle density is inversely related to porosity and the value range from 2.18 g/cm^3 to 5.31 g/cm^3 for both seasons which are higher than the standard value, 2.65 g/cm^3. For bulk density, the analysis between two seasons is not much different; range from 0.99 g/cm^3 to 1.54 g/cm^3. Soil textural is variably found during summer and only sandy loam was identified in monsoon sample. Besides, the moisture value is unevenly distributed. The lowest percentage is 0.05% and the highest is 11.84% for both seasons. Meanwhile, in summer time the pH is around 7 to 8; and around 7 to 7.9 in monsoon which are basic. The percentage of organic carbon rise from 1.71% (non-monsoon) to 2.75% (monsoon) in average rate. The same condition occurs for nitrogen. The highest value of organic carbon and nitrogen was observed nearby to aquaculture cage.

ABSTRAK

Kajian heterogen ruang bagi pemboleh-ubah fizikal dan kimia dalam enapan tanah lembap adalah berkenaan kualiti tanah. Sekarang, tanah lembap menjadi tumpuan ekonomi menyebabkannya digunakan untuk aktiviti akuakultur. Oleh sebab itu, kajian ini dijalankan bagi menentukan status elemen fizikal dan kimia tanah yang dipengaruhi oleh kolam akuakultur. Kajian ini juga bertujuan mencari perubahan antara dua musim iaitu bukan-monsun (musim panas) dan monsun (musim hujan). Julat nilai keliangan pada bukan-monsun adalah 31% hingga 49%; dan 36% hingga 55% pada monsun. Ketumpatan partikel adalah songsangan kepada keliangan dan nilainya antara 2.18 g/cm^3 hingga 5.31 g/cm^3 pada kedua-dua musim iaitu lebih tinggi daripada nilai piawai, 2.65 g/cm^3. Bagi ketumpatan pukal, analisa antara dua musim tidak menunjukkan banyak perbezaan; julatnya antara 0.99 g/cm^3 hingga 1.54 g/cm^3. Tekstur tanah adalah pelbagai semasa musim panas dan hanya tanah loam dikenalpasti dalam sampel monsun. Selain itu, taburan kelembapan adalah tidak sekata. Peratusan paling rendah adalah 0.05% dan paling tinggi adalah 11.84% untuk kedua-dua musim. Dalam pada itu, pada musim panas nilai pH adalah sekitar 7 hingga 8; dan sekitar 7 hingga 7.9 pada monsun iaitu bes. Peratusan karbon organik meningkat daripada 1.71% (bukan-monsun) hingga 2.75% (monsun) dalam kadar purata. Keadaan yang sama turut diperhatikan untuk nitrogen. Nilai karbon organik dan nitrogen yang tinggi diperhatikan berhampiran kawasan sangkar akuakultur.