

DECLARATION

I certify that dissertation does not incorporate without acknowledgement of any material previously submitted for a Degree or Diploma in any University and to the best of my knowledge and believe that it does not contain any material previously published or written or orally communicated by other person or except where due reference is made in the text.


R.H.K. Ranasinghe

Admission no: 08/8050



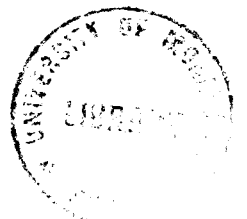
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.....

Dr. U.P. Nawagamuwa.

(supervisor)



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LIST OF SYMBOLS

a_s	- cross sectional area of the soil sample (m^2)
A	- shape factor (m)
b	- Campbell pore-size distribution index (-)
C_g	- soil-gas concentration ($kg\ m^{-3}$, $mg\ l^{-1}$)
C_r	- relative soil-gas concentration (-)
C_o	- oxygen concentration in the atmosphere ($mg\ l^{-1}$)
C_i	- initial concentration in the diffusion chamber ($mg\ l^{-1}$)
D	- diameter of the soil sample(m)
d_{eq}	- Equivalent pore diameter(m)
D_p/D_o	- soil-gas diffusivity (-)
D_p	- gas diffusion coefficient in soil ($m^2\ soil\ air\ m^{-1}\ soil\ sec^{-1}$)
D_o	- gas diffusion coefficient in free air ($m^2\ air\ sec^{-1}$)
g	- gravitational acceleration ($m\ sec^{-2}$)
k_a	- air permeability (μm^2)
$k_{a, in-situ}$	- In-situ air permeability(μm^2)
$k_{a,100}$	- air permeability at soil water matric potential at 100 cm H_2O (μm^2)
L_s	- length of the sample(m)
Q	- flow rate of the gas through the soil layer(m^3/s)
X	- pore connectivity factor(m^3)
ϵ	- soil air content.(m^3/m^3)
η	- dynamic viscosity (g/ cm s)
ΔP	- pressure difference across the sample
θ	- soil water content(m^3/m^3)
ψ	- soil water potential (m)
Φ	- total porosity of the soil(m^3/m^3)
ϵ_{100}	- soil air content at soil water matric potential at 100 cm H_2O (m^3/m^3)
τ	- tortuosity (-)