Root uptake from vadose zone

Root uptake from vadose zone

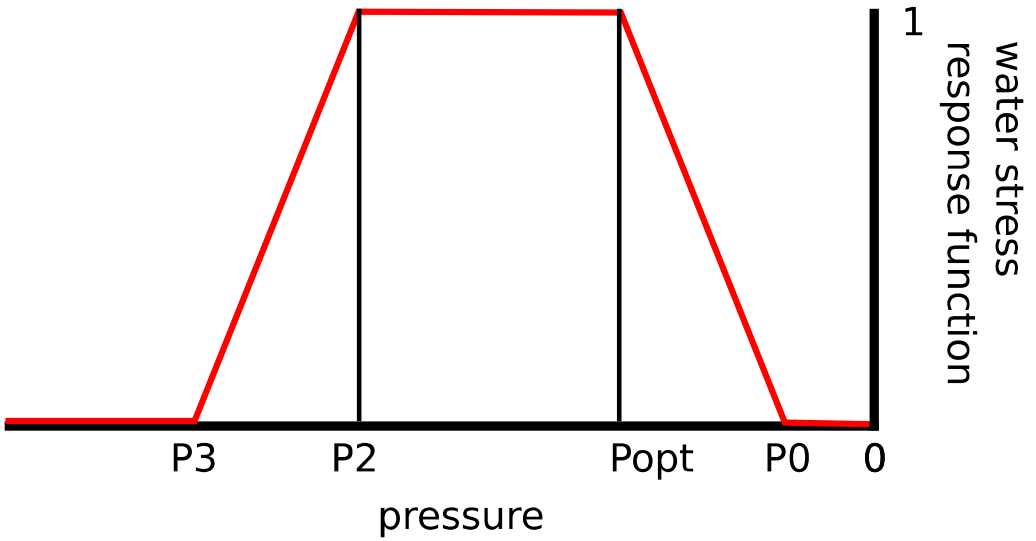
$$\frac{\partial \theta}{\partial t} = \frac{\partial}{\partial x}\left(K(h)\left(\frac{\partial h}{\partial x} + \cos(\alpha) \right) \right) - \boldsymbol{S}$$

$$S(h) = \alpha(h) S_p$$

S(h)	Sink term	[1/T]
α(h)	Water stress response function	[-]
S_p	Potential root water uptake	[1/T]

Water stress response function

Feddes et al. [1978]



P0	anaerobiosis point	[L]
Popt	Optimal pressure head	[L]
P2	Optimal pressure head	[L]
P3	wilting point pressure head	[L]

P0 – root respiration: consumption of oxygen O_2 production of carbon dioxide CO_2

P3 – turgor: osmotic pressure in plant cells *vs.* soil water pressure

Root uptake from vadose zone

$$\frac{\partial \theta}{\partial t} = \frac{\partial}{\partial x}\left(K(h)\left(\frac{\partial h}{\partial x} + \cos(\alpha) \right) \right) - S$$

$$S(h) = \alpha(h) S_p$$