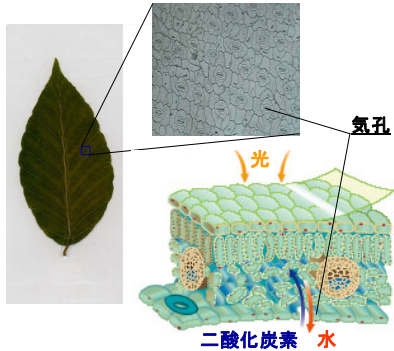


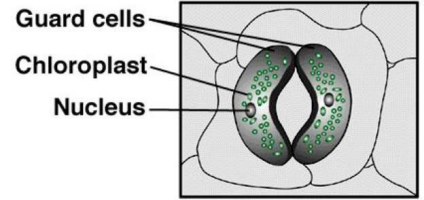
蒸散・気孔について

群落も個葉も基本は“気孔”



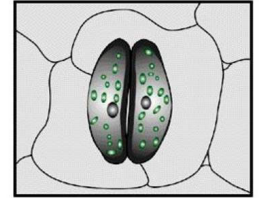
1

Estelle Levettin and Karen McMahon, Botany Visual Resource Library © 1998 The McGraw-Hill Companies, Inc. All rights reserved.



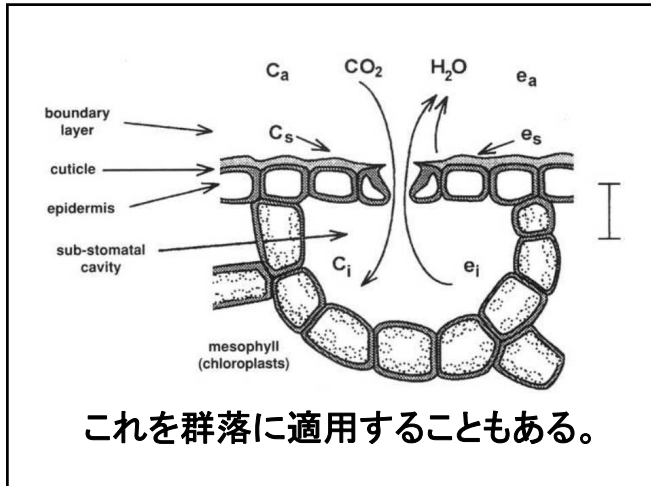
Open Stoma

蒸散とは一
気孔の開閉だ



Closed Stoma

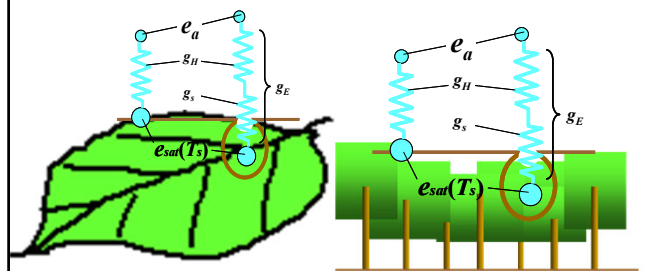
2



これを群落に適用することもある。

3

群落も個葉も基本は“気孔”



4

個葉

$$\frac{g_{sw}g_{aw}}{g_{sw} + g_{aw}} \approx g_{sw} \leftarrow g_{aw} = m\sqrt{\frac{u}{d}}$$

$$E = g_{sw}(C_{ws} - C_{wa})$$

既知

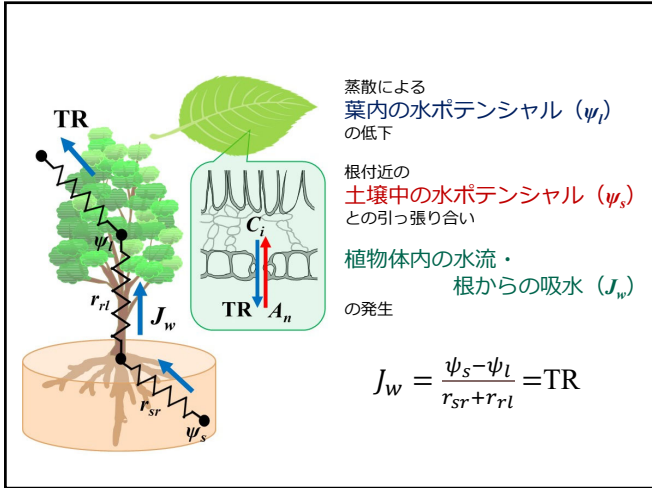
5

群落

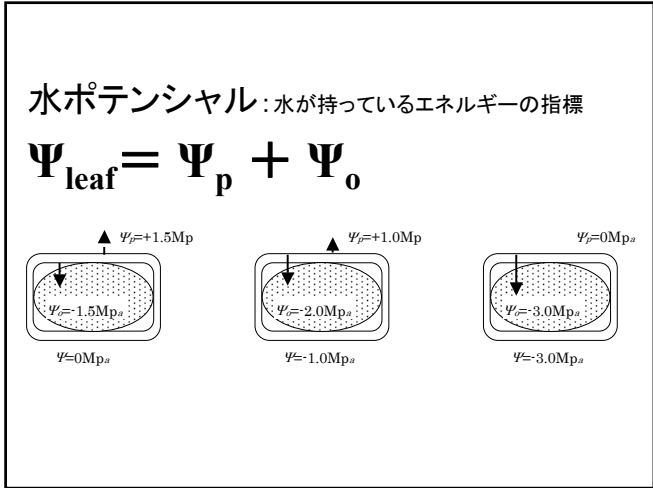
$$\lambda E = \frac{\Delta(R_n - G) + \rho c_p g_H (e_{sat}(T_a) - e_a)}{\Delta + (1 + g_H/g_s)\gamma}$$

g_s 以外、気象観測により全て既知

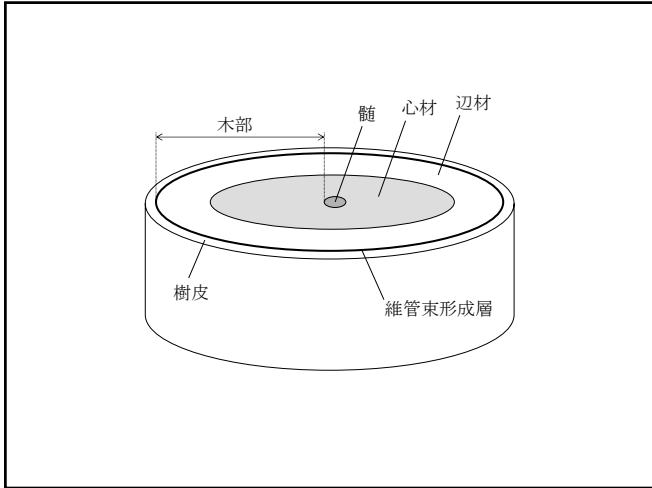
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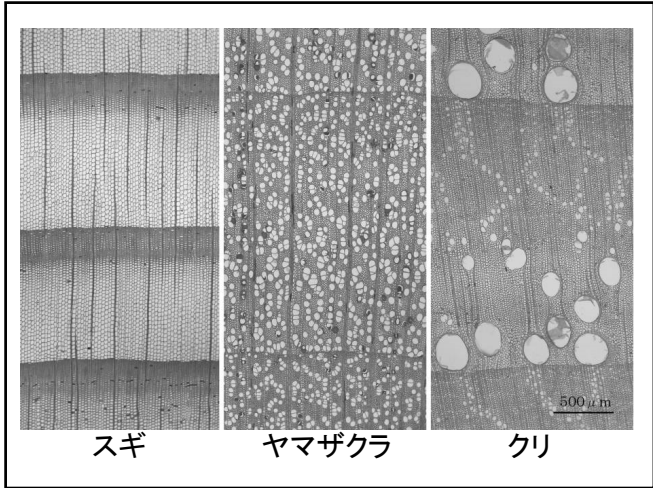
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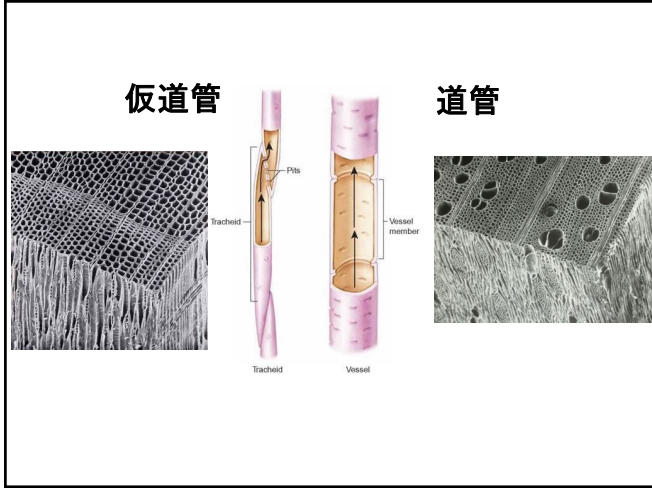
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9



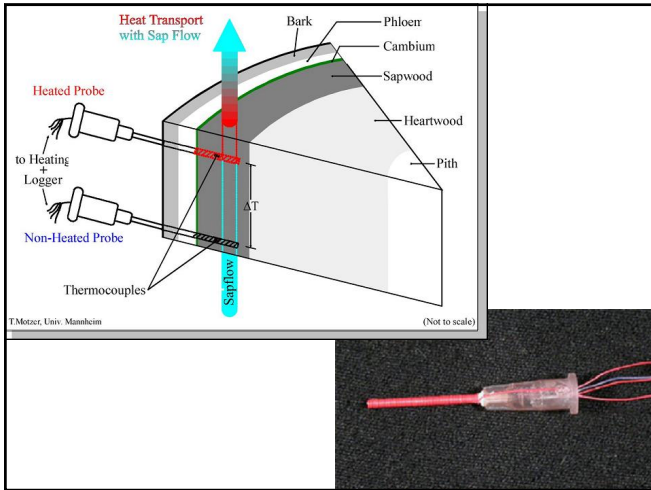
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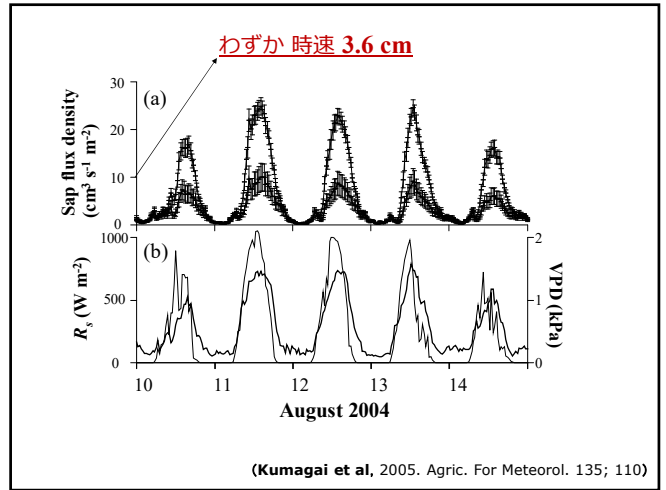
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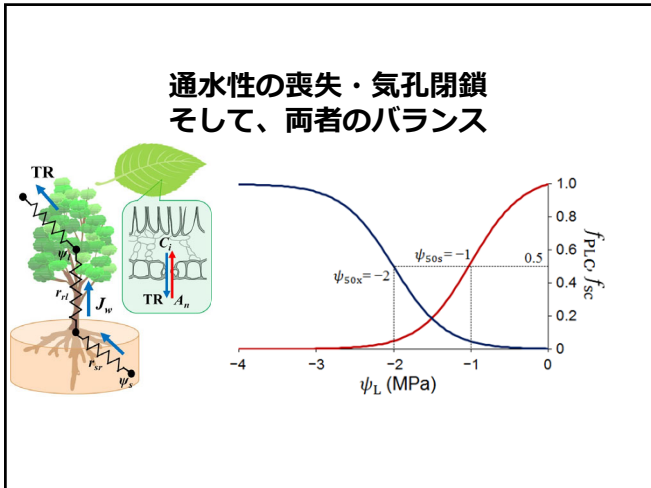
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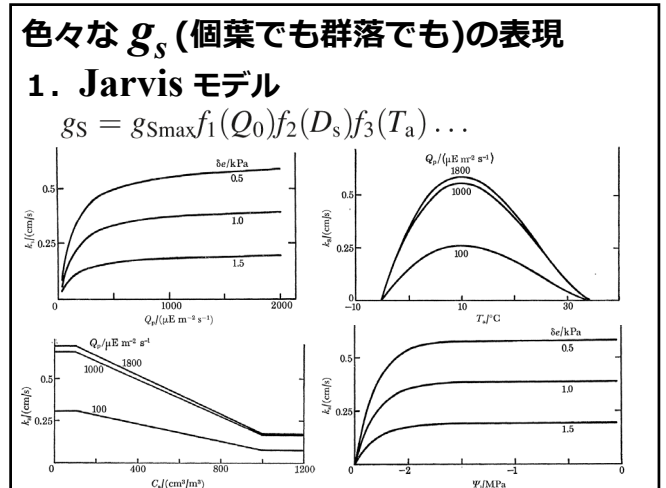
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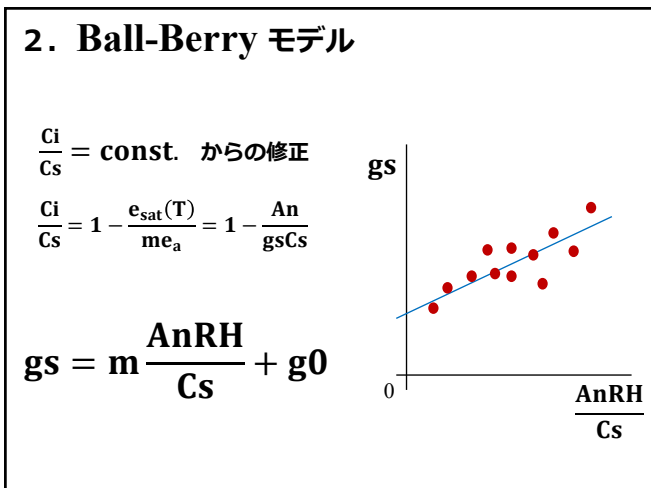
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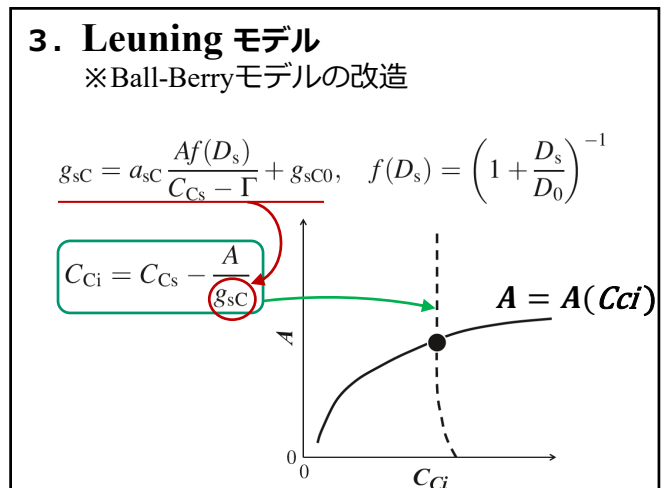
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16



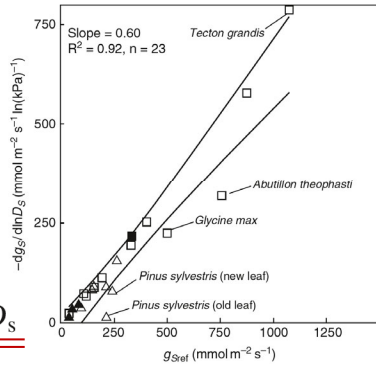
17



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4. Oren モデル

$$g_s = K_s \frac{A_s}{A_L} \frac{1}{D} \frac{1}{h} [\psi_s - (\psi_L + h\rho_w g)] \text{ からの変形}$$



$$g_s = g_{sref} - \delta \ln D_s$$

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5. Medlyn モデル

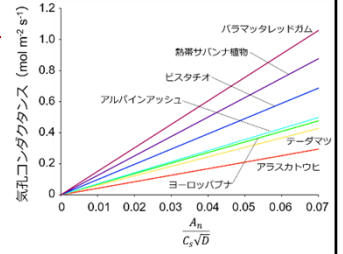
$$TR - \lambda A_n \text{ の時間積分が最小となる問題 } \frac{\partial TR}{\partial A_n} - \lambda = 0$$

$$\frac{A_n}{TR} = \frac{C_s - C_i}{1.6D} \quad A_j = J \frac{C - \Gamma^*}{4C + 8\Gamma^*} \text{ の3式から、} C_i \text{ の2次方程式を導く。}$$

$$g_{sh}^* \approx g_0 + 1.6 \left(1 + \frac{g_l}{\sqrt{D}} \right) \frac{A_n}{C_s}$$

光合成生産に対する最適水利用

$$\ast g_l \propto \sqrt{\Gamma^* \lambda}$$



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