Nitrogenase Activity as an Indicator in Everglades Systems

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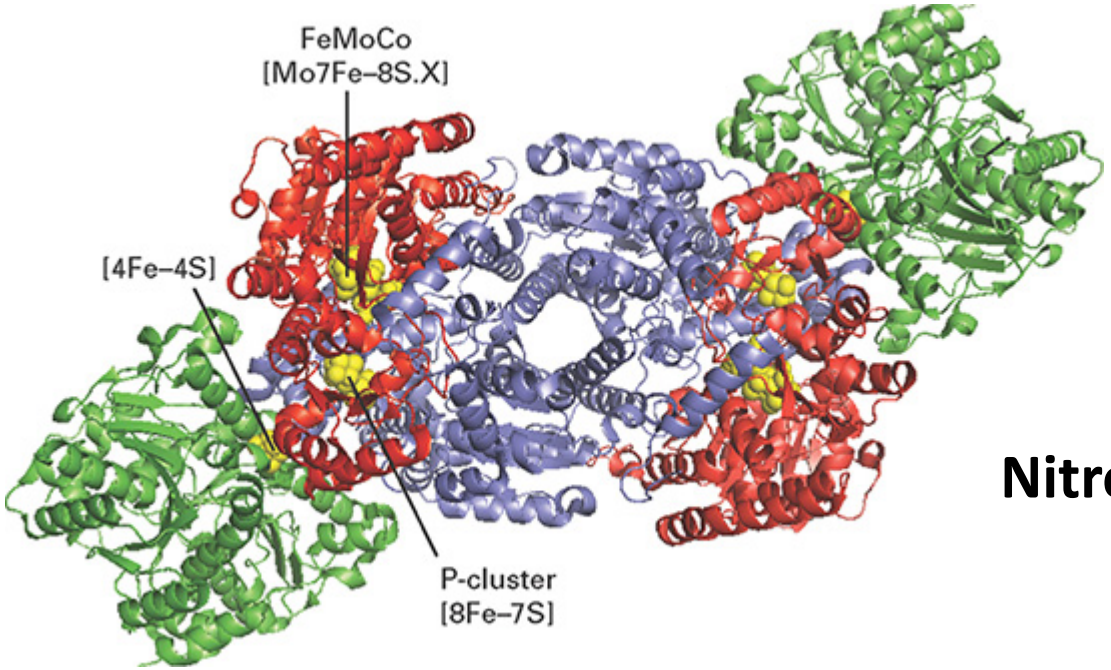
Biological N_2 Fixation

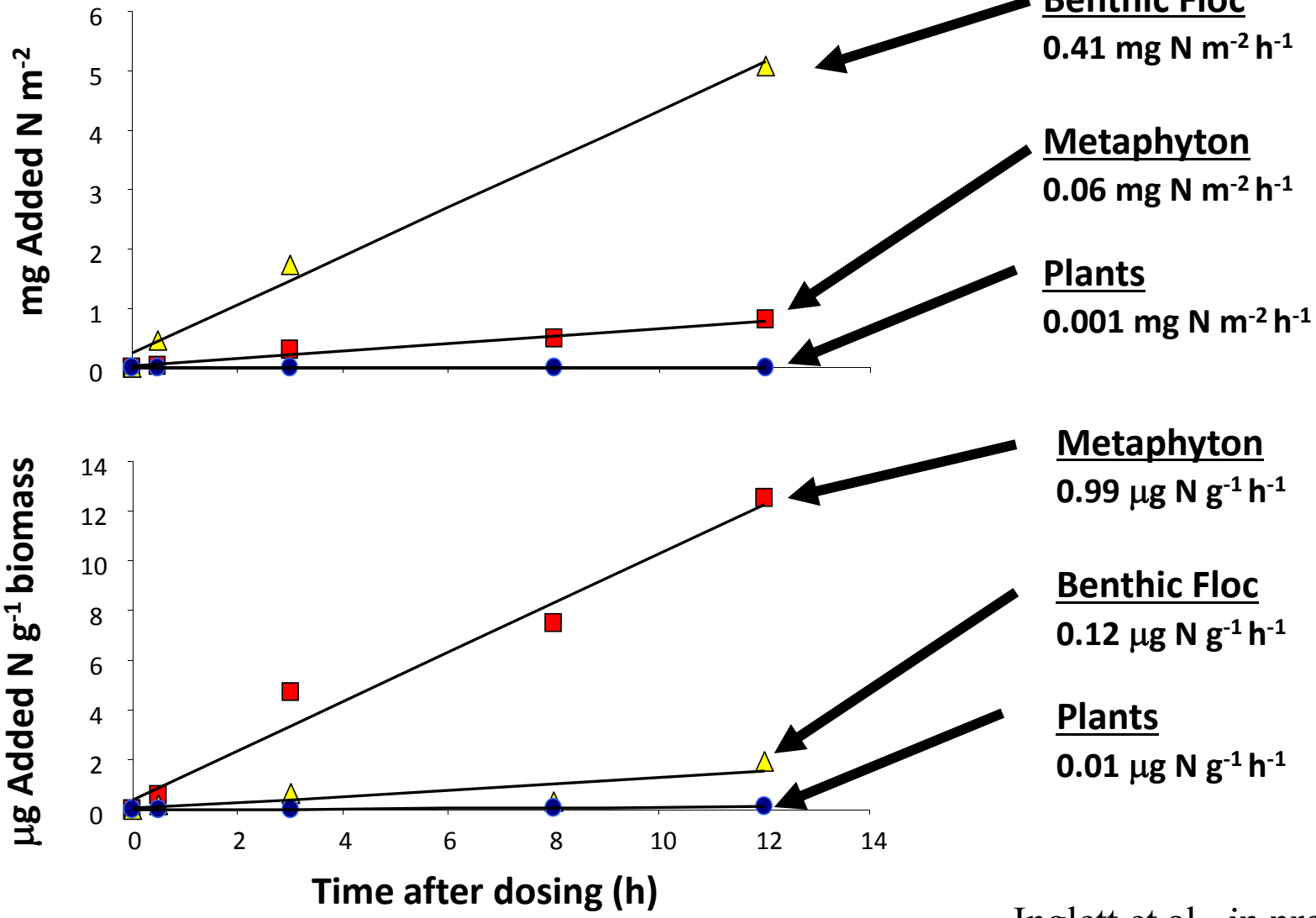
$$N_2 + 8H^+ + 8e^- \rightarrow 2NH_3 + H_2$$

$$3C_2H_2 + 8H^+ + 8e^- \rightarrow 3C_2H_4 + H_2$$



Nitrogenase

Uptake of Added ^{15}N



Inglett et al., *in prep*

Nitrogenase Activity

Everglades region	System/Component Type	Units	Rate	Ref.
WCA-2A	Eutrophic floating mat periphyton	nmol g^{-1} h^{-1}	116	1
	Oligotrophic floating mat periphyton	nmol g OC^{-1} h^{-1}	147-240	1
	Oligotrophic floating mat periphyton w/ added P	nmol g OC^{-1} h^{-1}	200-2150	2
	Detritus	nmol g^{-1} h^{-1}	4-212	1
	Soil	nmol g^{-1} h^{-1}	0.07-2.0	1
National Park	Marl prairie soil crust	nmol g^{-1} h^{-1}	1	3
	Marl prairie soil crust	nmol g^{-1} h^{-1}	1-7	4
	P-impacted prairie soil crust (2003 site)	nmol g^{-1} h^{-1}	0.2-62	4
	Mangrove pneumatophores	nmol g^{-1} h^{-1}	0-4.8	5

[1]Inglett et al. 2004, [2]Inglett et al. 2009, [3]Liao and Inglett 2012, [4]Liao and Inglett 2014, [5]Pelegri et al. 1997