

# Supporting Information

Laungani and Knops 10.1073/pnas.0900921106

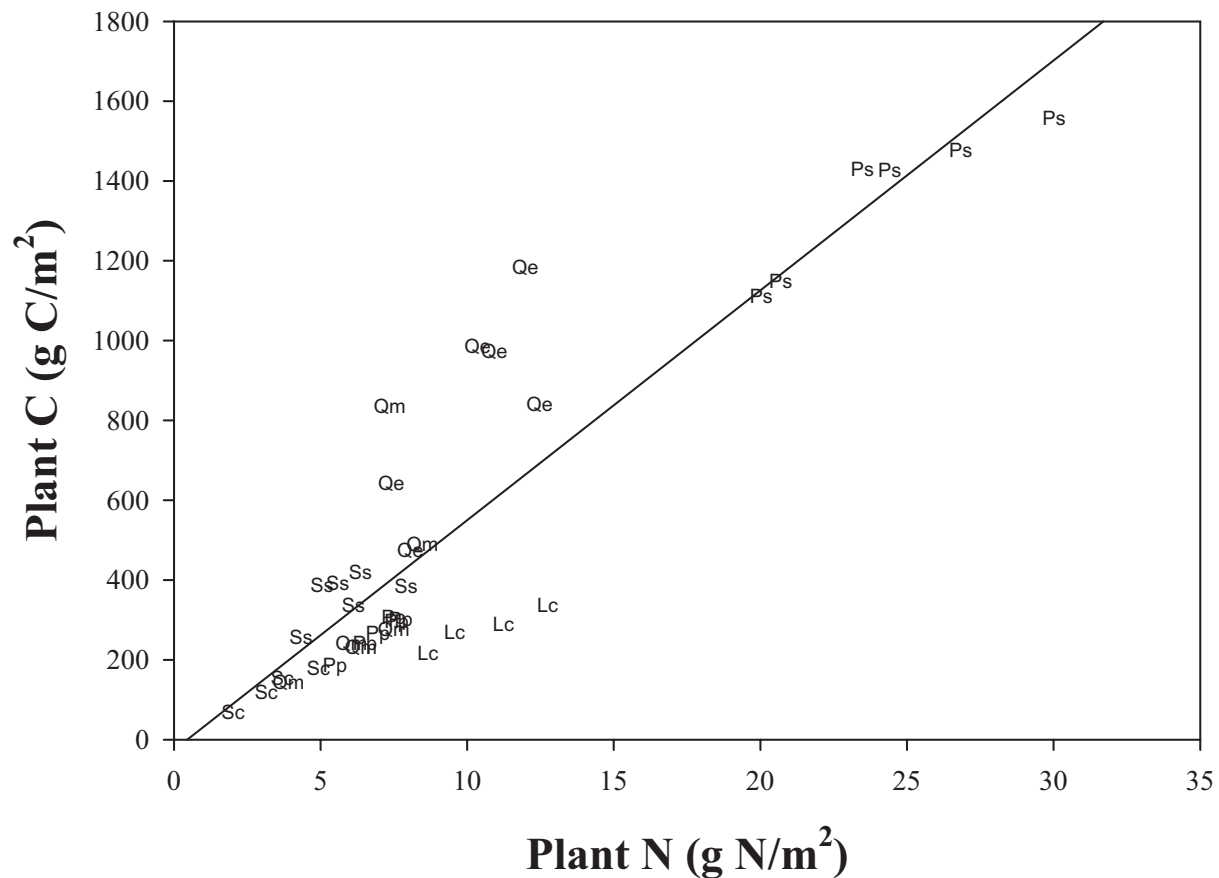
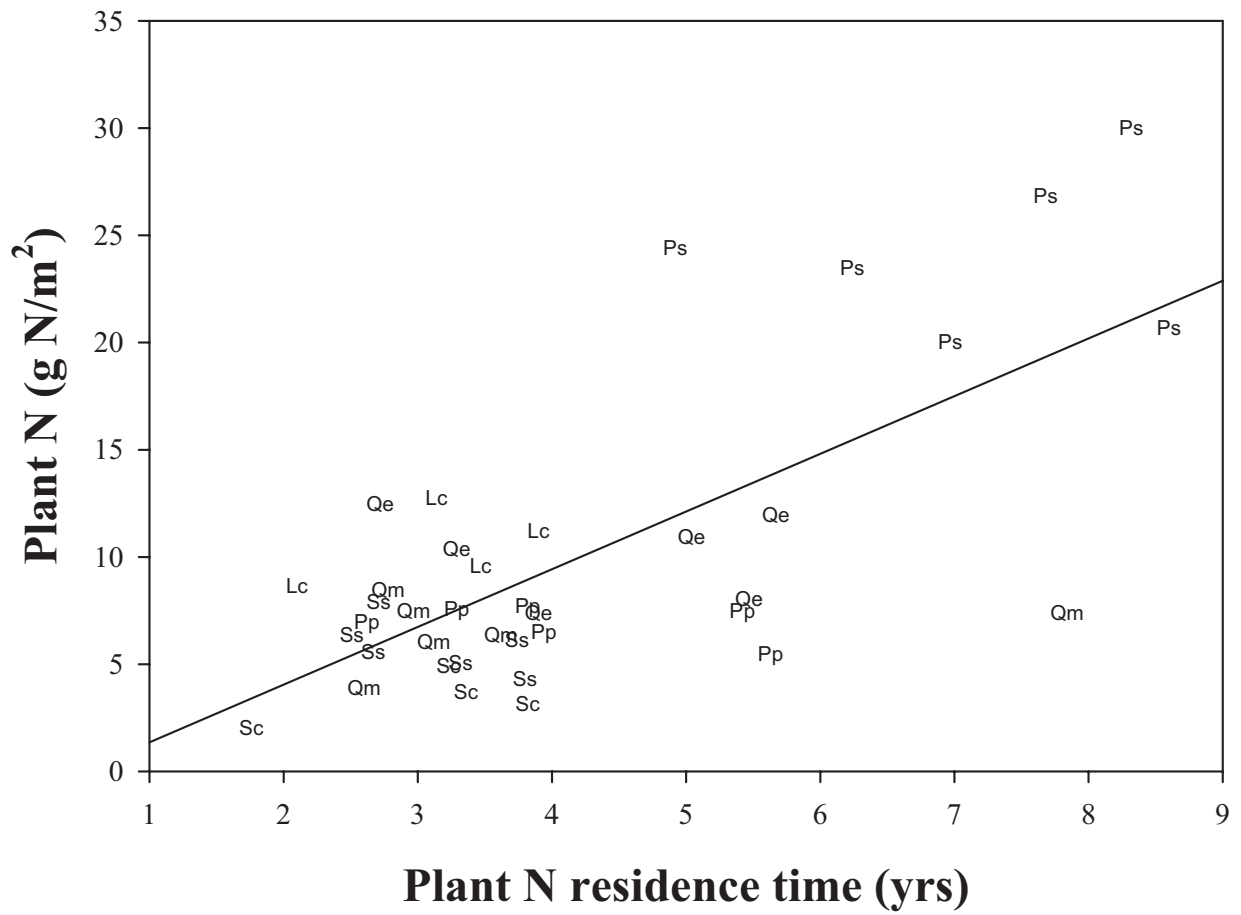
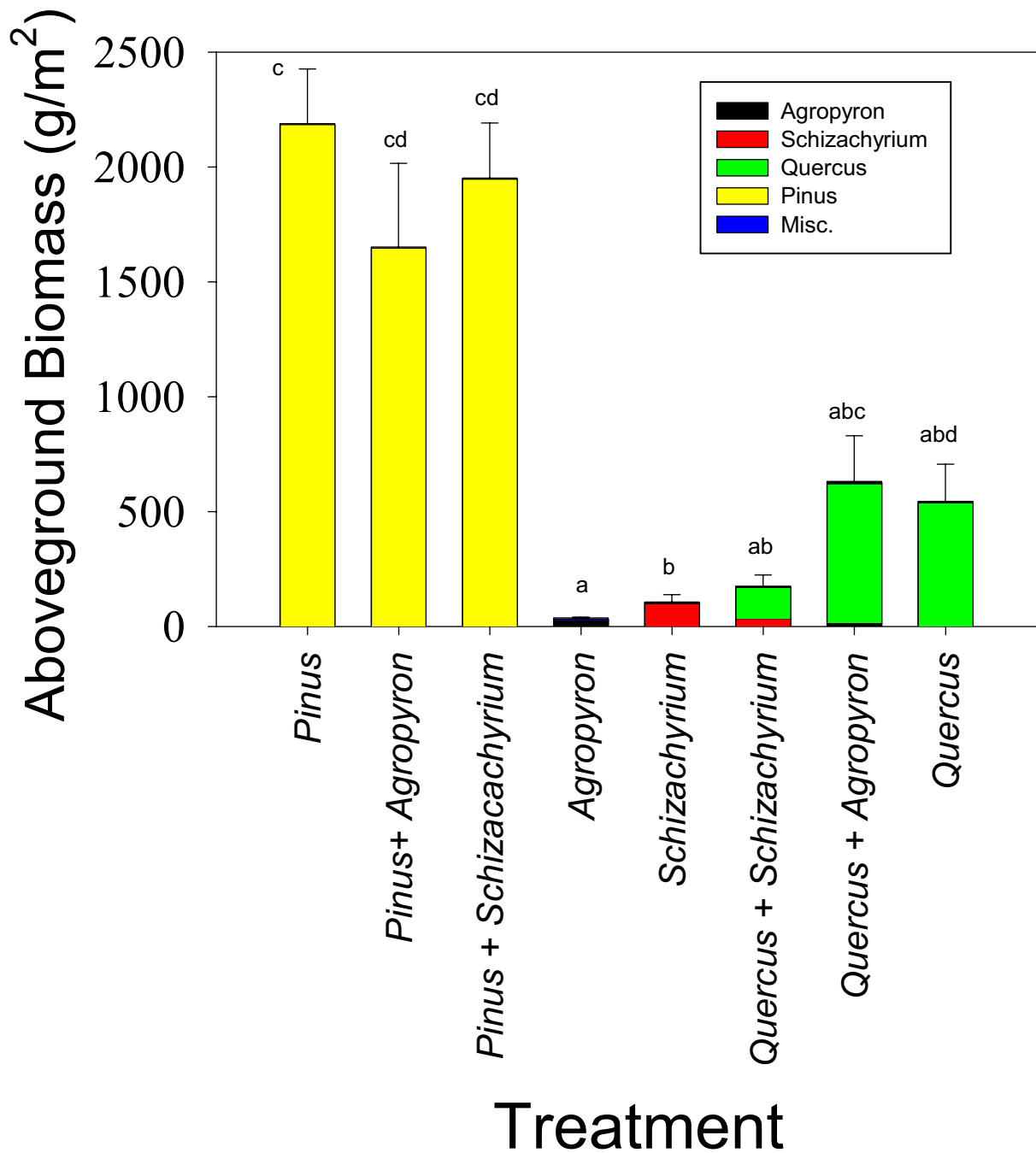


Fig. S1. Regression between standing plant nitrogen pool and standing plant carbon pool ( $P < 0.01$ ,  $R^2 = 0.90$ ). For species abbreviations, please refer to Fig. 2.





**Fig. S3.** Regression between plant nitrogen residence time and standing plant nitrogen pool ( $P < 0.01$ ,  $R^2 = 0.49$ ). For species abbreviations, please refer to Fig. 2.



**Fig. S4.** Mean ( $\pm 1$  SE) above-ground standing biomass of a competition experiment of *Pinus strobus*, *Quercus ellipsoidalis*, *Schizachyrium scoparium*, and *Agropyron repens*. *Pinus strobus* and *Q. ellipsoidalis* were established in monoculture and in competition with either *A. repens* or *S. scoparium*. Biomass was sampled in 1996 after six growing seasons; pines were planted as 1-year-old seedlings; and all other species were seeded in October 1989 into six replicated  $1.5 \times 2.7$  m plots for each treatment. Treatments are significantly different (data Ln transformed, one-way ANOVA,  $df = 7$ ;  $F = 72.7$ ,  $P < 0.001$ ) and treatments with a different letter are  $P < 0.05$  in a Tukey *post hoc* comparison.

**Table S1. Backwards elimination regression of plant carbon pool, with plant nitrogen pool and the carbon gain per unit nitrogen as predictors**

Factor	Standardized $\beta$	$F$	$P$
Plant nitrogen pool	0.896	11.9	0.000
Carbon gain per unit nitrogen		Eliminated	

Overall regression  $N = 38$ ,  $F = 141$ ,  $R^2 = 0.90$   $P = 0.000$ . Carbon gain per unit of nitrogen was not significant ( $P = 0.977$ ) and was eliminated.

**Table S2. Backwards elimination regression of plant nitrogen pool, with plant nitrogen pool and the carbon gain per unit nitrogen as predictors**

Factor	Standardized $\beta$	$F$	$P$
Ecosystem nitrogen losses		Eliminated	
Nitrogen fixation		Eliminated	
Gross nitrogen mineralization		Eliminated	
Nitrogen residence time	0.702	5.9	0.000

Overall regression  $N = 38$ ,  $F = 34.9$ ,  $R^2 = 0.49$ ,  $P = 0.000$ . The three eliminated variables all had  $P > 0.2$ .