

Yang, G., Yang, X., Zhang, W., Wei, Y., Ge, G., Lu, W., Sun, J., Liu, N., Kan, H., Shen, Y. and Zhang, Y. 2015. Arbuscular mycorrhizal fungi affect plant community structure under various nutrient conditions and stabilize the community productivity. – Oikos doi: 10.1111/oik.02351

Appendix 1

Statistical analysis

Table A1. Analysis of variance for the effects of AMF inoculation, nitrogen (N) and phosphorus (P) availability on the shoot biomass of community and plant functional groups and Shannon diversity.

Significant effects of treatments are indicated in bold.

Variable								
	DF	AMF	N	P	AMF × P	AMF × N	N × P	AMF × N × P
Shoot biomass		1,72	2,72	2,72	2,72	2,72	4,72	4,72
Total		<0.001	0.064	<0.001	<0.001	0.022	0.125	0.193
C ₃ grasses		<0.001	0.094	0.001	0.009	0.010	0.363	0.954
C ₄ grass		<0.001	0.743	<0.001	0.009	0.682	0.327	0.364
Non-N ₂ -fixing forbs		<0.001	0.111	<0.001	<0.001	0.125	0.238	0.296
Diversity								
Shannon index		<0.001	0.149	<0.001	0.007	0.142	0.214	0.260

Table A2. H values and the associated R^2 of plant functional groups calculated by using $Y = CX^{1/H}$ to describe the relationship between tissue N:P ratio of plants (Y) and soil (X) (n = 9).

	Replicates									
	1		2		3		4		5	
	H	R^2	H	R^2	H	R^2	H	R^2	H	R^2
C ₃ grasses										
–AMF	4.69	0.46*	4.18	0.41*	7.69	0.60*	7.94	0.48*	7.69	0.55*
+AMF	9.80	0.83***	13.89	0.83***	12.35	0.789**	8.47	0.81***	11.90	0.73**
C ₄ grass										
–AMF	8.55	0.53*	6.80	0.34*	5.18	0.41*	7.35	0.42*	8.85	0.14 ^{ns}
+AMF	9.71	0.76**	11.63	0.82***	12.95	0.84**	11.63	0.57*	18.87	0.53*
Forbs										
–AMF	5.75	0.51*	5.05	0.61*	5.15	0.61*	5.99	0.55*	5.08	0.63*
+AMF	8.47	0.80**	8.47	0.91***	11.49	0.82***	8.13	0.80**	14.29	0.45*

Table A3. Spearman's correlation coefficients between plant species in terms of aboveground biomass under soil N:P treatments (n = 45). Significant correlations are indicated in bold. * p < 0.05; ** p < 0.01; *** p < 0.001.

	<i>S. krylovii</i>	<i>A. frigida</i>	<i>C. squarrosa</i>	<i>L. chinensis</i>	<i>A. cristatum</i>	<i>P. tanacetifolia</i>
+AMF						
<i>S. krylovii</i>	1.0000					
<i>A. frigida</i>	0.1802	1.0000				
<i>C. squarrosa</i>	-0.0065	0.2042	1.0000			
<i>L. chinensis</i>	0.3405*	-0.0519	0.0972	1.0000		
<i>A. cristatum</i>	0.2327	0.0719	0.1141	0.4089*	1.0000	
<i>P. tanacetifolia</i>	0.0708	-0.232	-0.2030	-0.1335	-0.0766	1.0000
–AMF						
<i>S. krylovii</i>	1.0000					
<i>A. frigida</i>	0.5025***	1.0000				
<i>C. squarrosa</i>	0.5253***	0.4213**	1.0000			
<i>L. chinensis</i>	0.0592	0.0897	0.2327	1.0000		
<i>A. cristatum</i>	0.4499**	0.0897	0.3179*	0.0418	1.0000	
<i>P. tanacetifolia</i>	0.5233***	0.5897***	0.4616**	0.0186	0.3087*	1.0000

Table A4. Spearman's correlation coefficients between plant functional groups in terms of aboveground biomass under soil N:P treatments (n = 45). Significant correlations are indicated in bold. ** p < 0.01; *** p < 0.001.

	C ₃ grasses	C ₄ grasses	Forbs
+AMF			
C ₃ grasses	1.0000		
C ₄ grasses	0.0841	1.0000	
Forbs	0.0364	0.0283	1.0000
-AMF			
C ₃ grasses	1.0000		
C ₄ grasses	0.4984***	1.0000	
Forbs	0.4255**	0.5501***	1.0000

Appendix 2

Shoot biomass (Figure A1) and mycorrhizal benefit (Figure A2) of plant functional groups

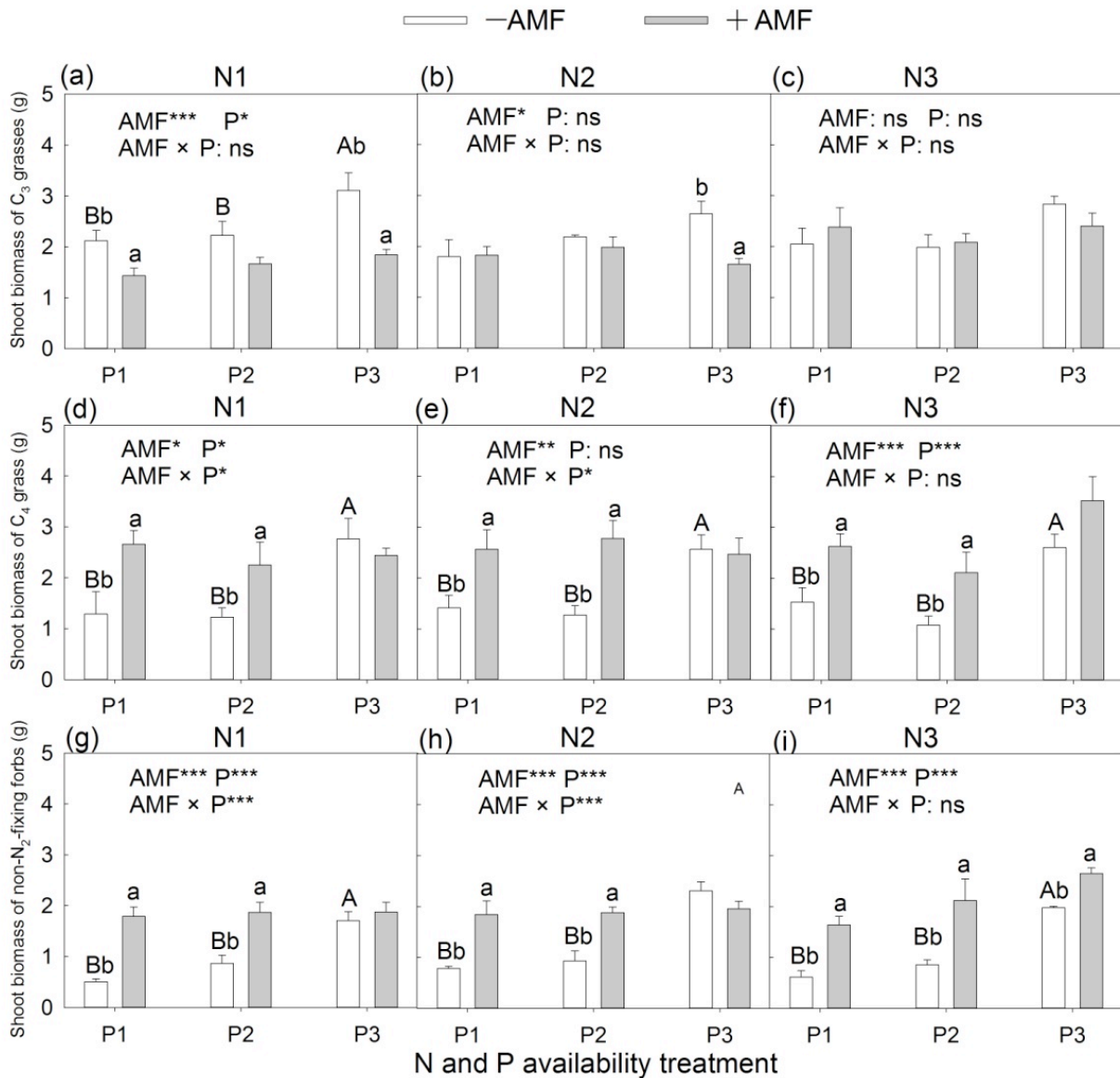


Figure A1. Effects of AMF inoculation, N and P availability on shoot biomass of C_3 grasses (a, b and c), C_4 grass (d, e and f) and non- N_2 -fixing forbs (g, h and i). Bar groups with different capital letters indicate a significant difference ($p < 0.05$) among three P addition rates within the +AMF or -AMF treatments. Bar groups with different lowercase letters indicate a significant difference ($p < 0.05$) between the +AMF and -AMF treatments. Data are means \pm SE. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; ns, $p > 0.05$.

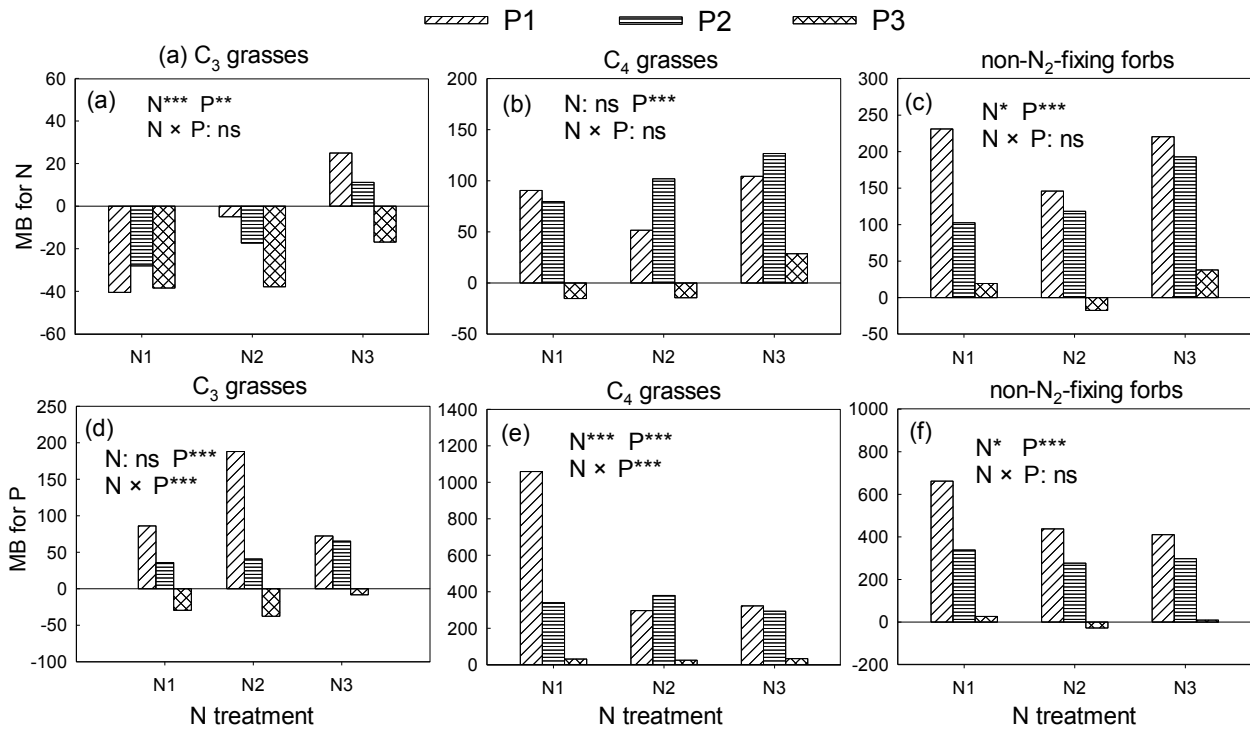


Figure A2. Effects of N and P availability on mycorrhizal benefit (MB) in the term N and P contents of C₃ grasses (a and d), C₄ grass (b and e) and non-N₂-fixing forbs (c and f). Data are means ± SE. * p < 0.05; ** p < 0.01; *** p < 0.001; ns, p > 0.05.