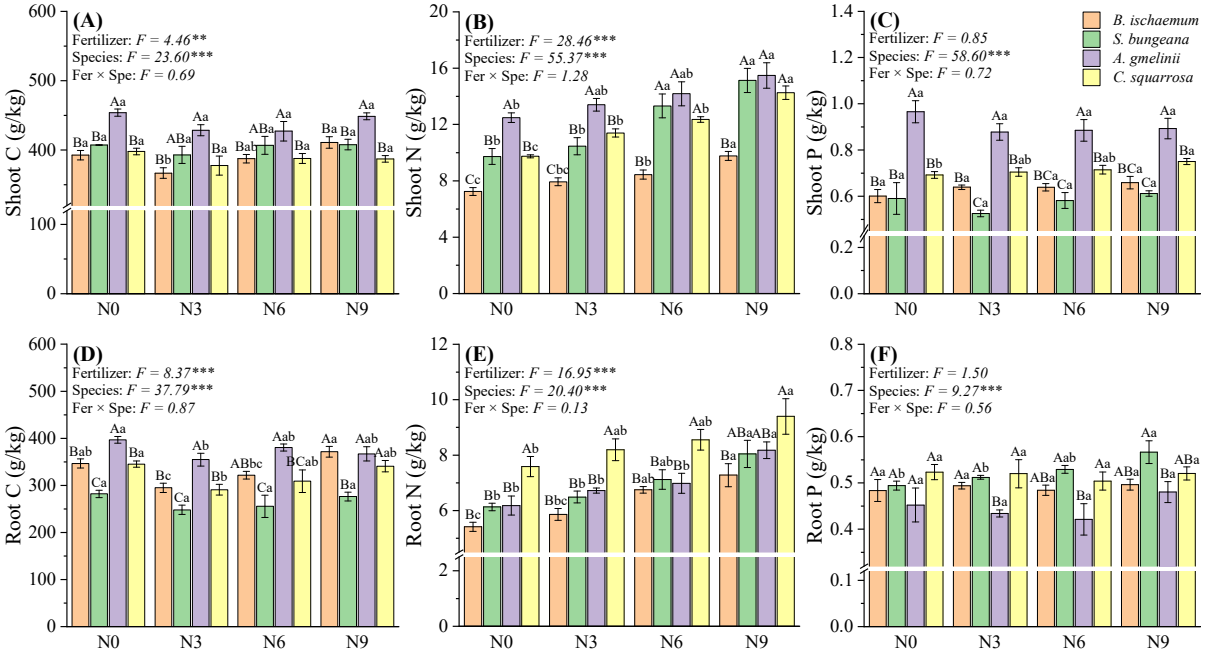

Fig. S1. Changes of C, N, and P contents in plant shoots and roots after N addition. Results of two-way ANOVA are attached to the upper part of the figures. Fertilizer, the main effects of fertilization; Species, the main effects of species; Fer × Spe, the interaction effects of fertilization and species. Different capital letters indicate significant differences among different species ($P < 0.05$), and different lowercase letters indicate significant differences among different N levels ($P < 0.05$). Values are means ± standard error (n = 4). *, $P < 0.05$, **, $P < 0.01$, ***, $P < 0.001$.

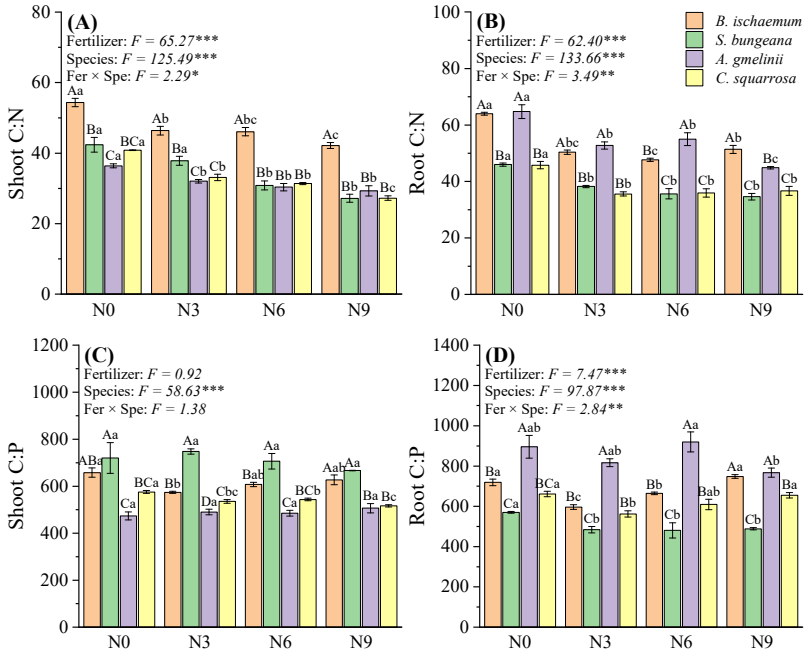

Fig. S2. Changes of C:N and C:P ratios in shoots and roots of plants after N addition. Results of two-way ANOVA are attached to the upper part of the figures. Fertilizer, the main effects of fertilization; Species, the main effects of species; Fer × Spe, the interaction effects of fertilization and species. Different capital letters indicate significant differences among different species ($P < 0.05$), and different lowercase letters indicate significant differences among different N levels ($P < 0.05$). Values are means ± standard error (n = 4). *, $P < 0.05$, **, $P < 0.01$, ***, $P < 0.001$.

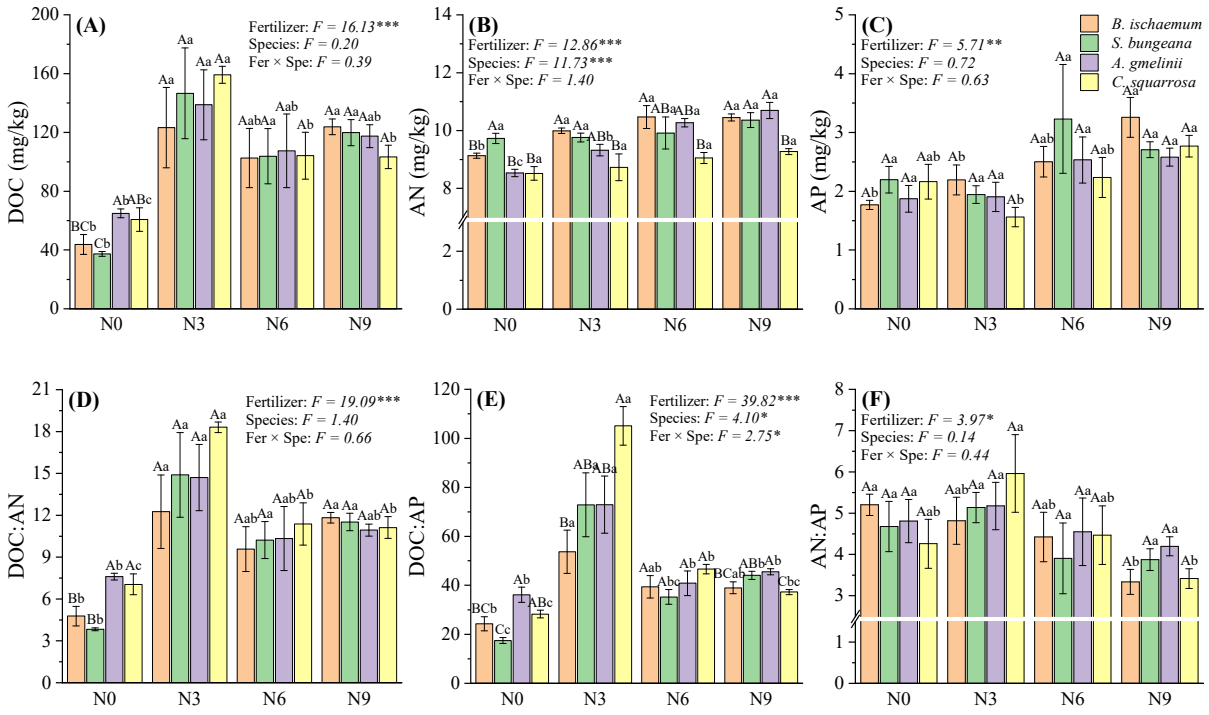

Fig. S3. Changes of dissolved organic carbon (DOC), available nitrogen (AN), and available phosphorus (AP) contents and their ratios in rhizosphere soil of plant species after N addition. Results of two-way ANOVA are attached to the upper part of the figures. Fertilizer, the main effects of fertilization; Species, the main effects of species; Fer × Spe, the interaction effects of fertilization and species. Different capital letters indicate significant differences among different species ($P < 0.05$), and different lowercase letters indicate significant differences among different N levels ($P < 0.05$). Values are means ± standard error (n = 4). *, $P < 0.05$, **, $P < 0.01$, ***, $P < 0.001$.

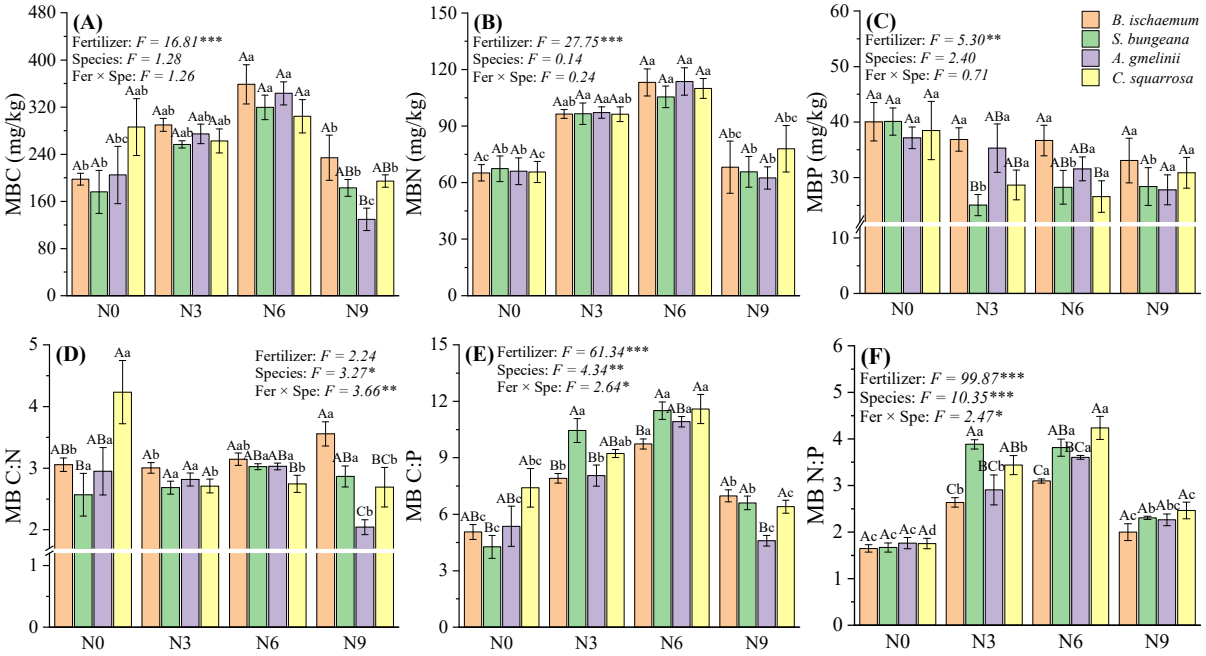

Fig. S4. Changes of microbial biomass C, N, and P contents and their ratios in rhizosphere soil of plant species after nitrogen addition. Results of two-way ANOVA are attached to the upper part of the figures. Fertilizer, the main effects of fertilization; Species, the main effects of species; Fer × Spe, the interaction effects of fertilization and species. Different capital letters indicate significant differences among different species ($P < 0.05$), and different lowercase letters indicate significant differences among different N levels ($P < 0.05$). Values are means ± standard error (n = 4). *, $P < 0.05$, **, $P < 0.01$, ***, $P < 0.001$.

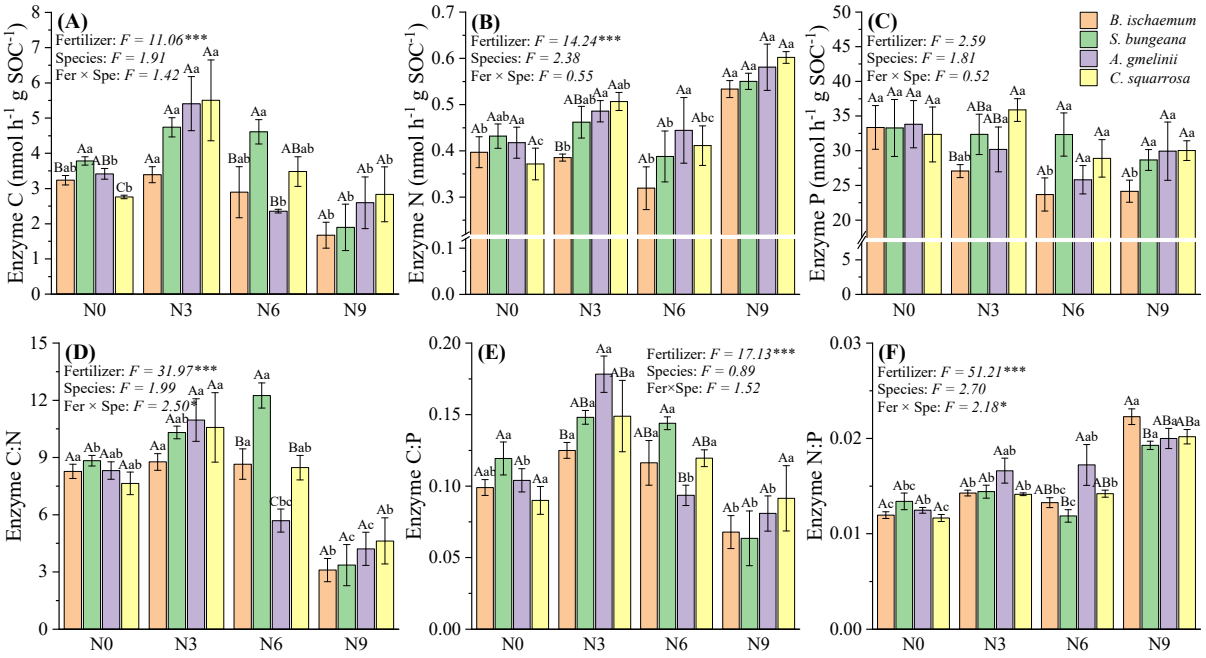

Fig. S5. Changes of enzyme activities and their ratios in rhizosphere soil of plant species after N addition. Results of two-way ANOVA are attached to the upper part of the figures. Fertilizer, the main effects of fertilization; Species, the main effects of species; Fer × Spe, the interaction effects of fertilization and species. Enzyme C represents C-acquiring enzymes, including β-1,4-glucosidase (BG) and β-D-cellobiosidase (CBH). Enzyme N represents N-acquiring enzymes, including β-1,4-N-acetylglucosaminidase (NAG) and L-leucine aminopeptidase (LAP). Enzyme P represents P-acquiring enzyme, namely alkaline phosphatase (ALP). Different capital letters indicate significant differences among different species ($P < 0.05$), and different lowercase letters indicate significant differences among different N levels ($P < 0.05$).Values are means ± standard error (n = 4). *, $P < 0.05$, **, $P < 0.01$, ***, $P < 0.001$.

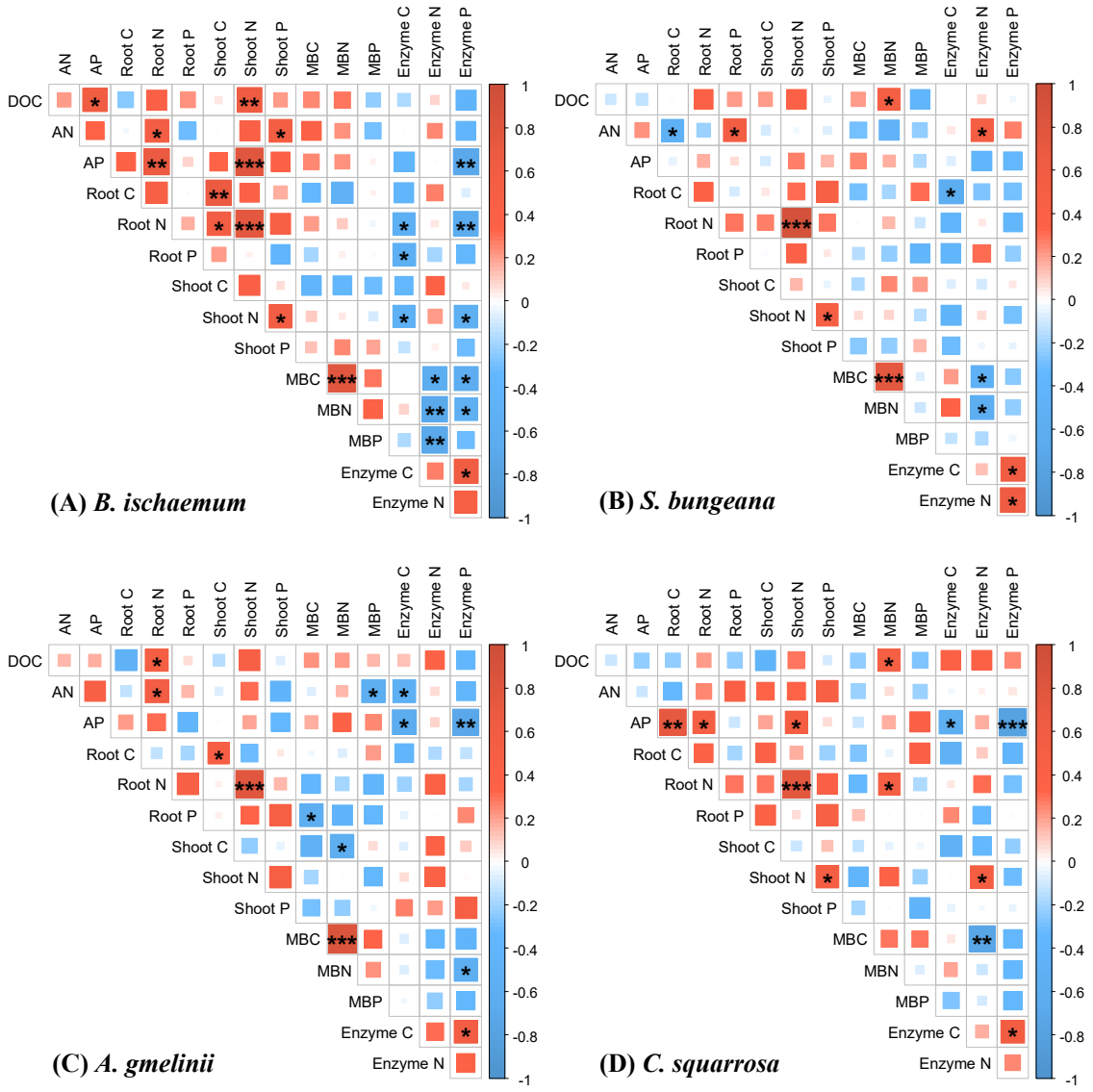

Fig. S6. Correlation heat maps among rhizosphere soil nutrients, plant tissue nutrients, microbial biomass and soil enzyme activities. DOC, soil dissolved organic carbon; AN, soil available nitrogen; AP, soil available phosphorus; Shoot C, N, and P represent C, N, and P contents in plant shoots, respectively. Root C, N, and P represent C, N and P contents in plant roots, respectively. MBC, MBN, and MBP represent microbial biomass C, N, and P contents. Enzyme C, N, and P represent the activities of C-, N-, and P-acquiring enzymes, respectively. *, $P < 0.05$, **, $P < 0.01$, ***, $P < 0.001$.

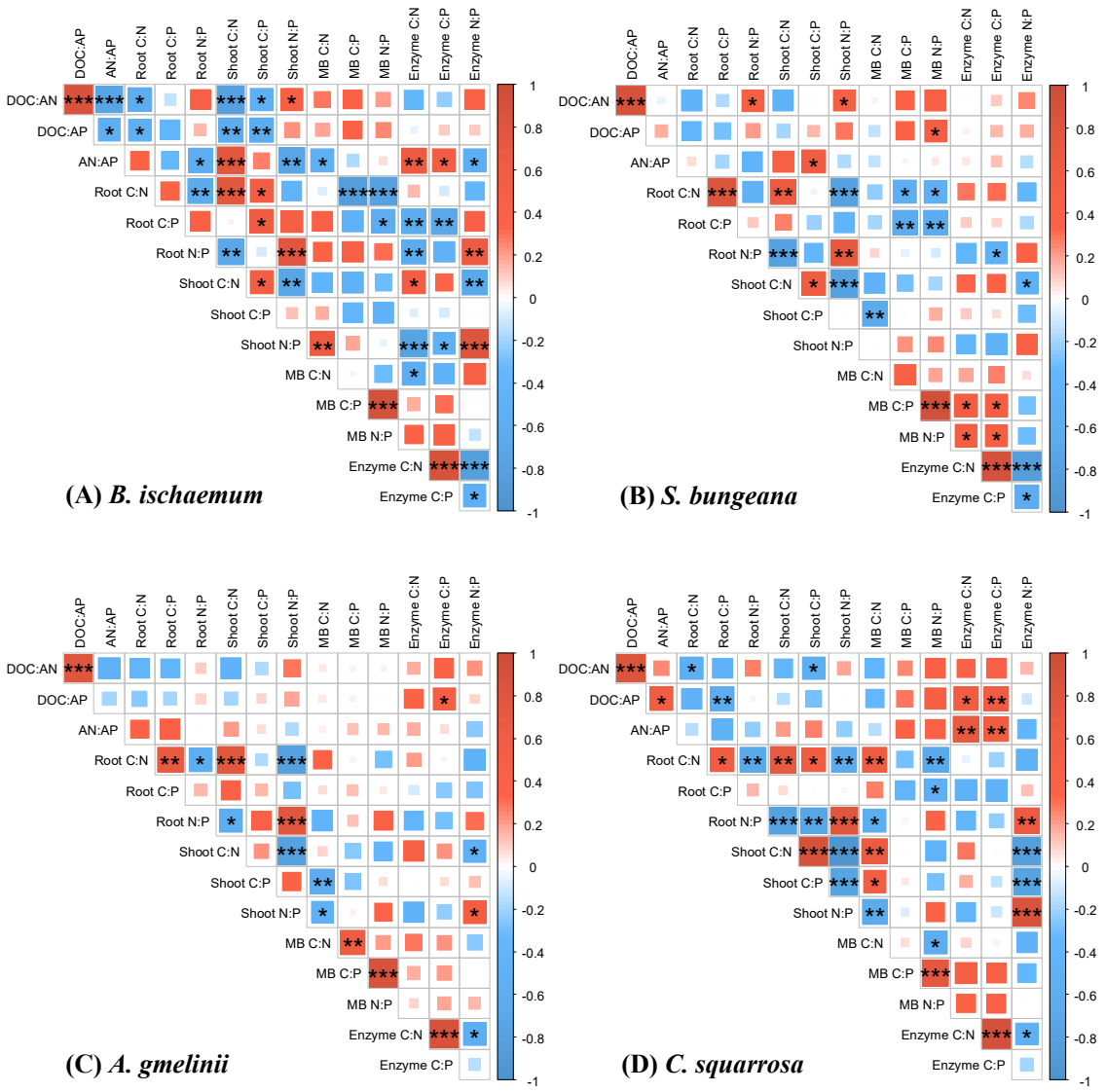

Fig. S7. Correlation heat maps among stoichiometry ratios of rhizosphere soil nutrients, plant tissue nutrients, microbial biomass and soil enzyme activities. DOC, soil dissolved organic carbon; AN, soil available nitrogen; AP, soil available phosphorus; Shoot C, N, and P represent C, N, and P contents in plant shoots, respectively. Root C, N, and P represent C, N, and P contents in plant roots, respectively. MBC, MBN, and MBP represent microbial biomass C, N, and P contents. Enzyme C, N, and P represent the activities of C-, N-, and P-acquiring enzymes, respectively. *, $P < 0.05$, **, $P < 0.01$, ***, $P < 0.001$.

Table S1 Permutational multivariate analysis of variance showing differences of plant nutrients and their stoichiometry among different species.

Species	N0		N3		N6		N9	
	R^2	P	R^2	P	R^2	P	R^2	P
B. ischaemum / *S. bungeana*	**0.494**	**0.042**	**0.666**	**0.031**	0.457	0.059	**0.734**	**0.025**
B. ischaemum / *A. gmelinii*	**0.620**	**0.030**	**0.728**	**0.029**	**0.617**	**0.039**	0.228	0.158
B. ischaemum / *C. squarrosa*	0.287	0.116	0.230	0.272	0.204	0.348	**0.549**	**0.021**
S. bungeana / *A. gmelinii*	**0.812**	**0.026**	**0.833**	**0.032**	**0.688**	**0.028**	**0.686**	**0.025**
S. bungeana / *C. squarrosa*	**0.599**	**0.032**	**0.593**	**0.028**	0.300	0.108	**0.722**	**0.040**
A. gmelinii / *C. squarrosa*	**0.737**	**0.029**	**0.643**	**0.025**	0.468	0.063	0.294	0.144

Significant results ($P < 0.05$) are indicated in bold.