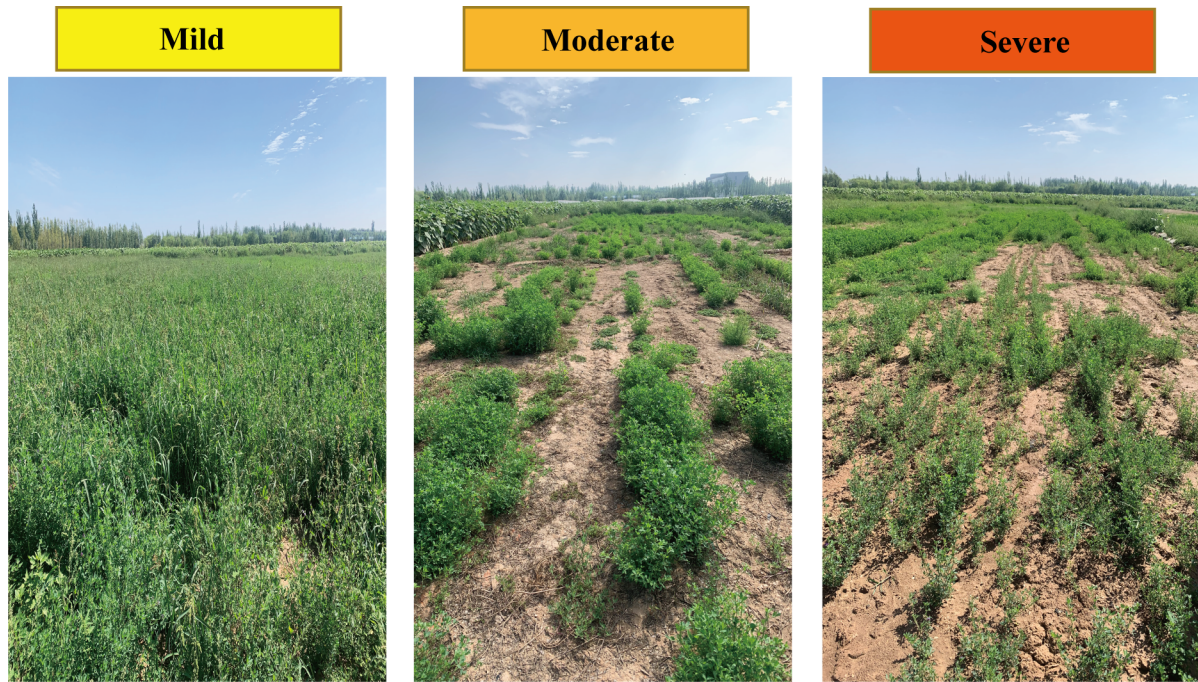
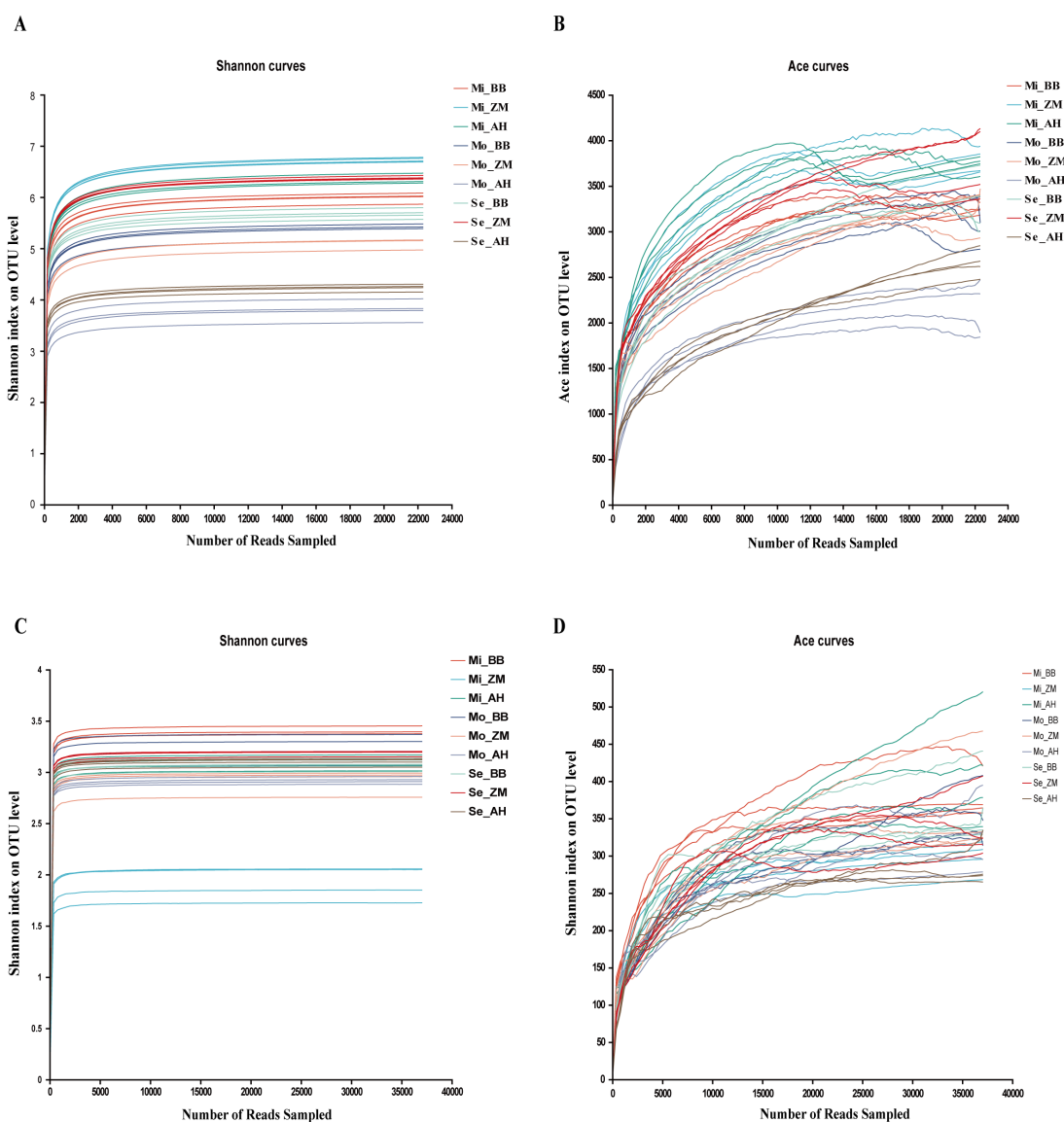


Supplementary Material



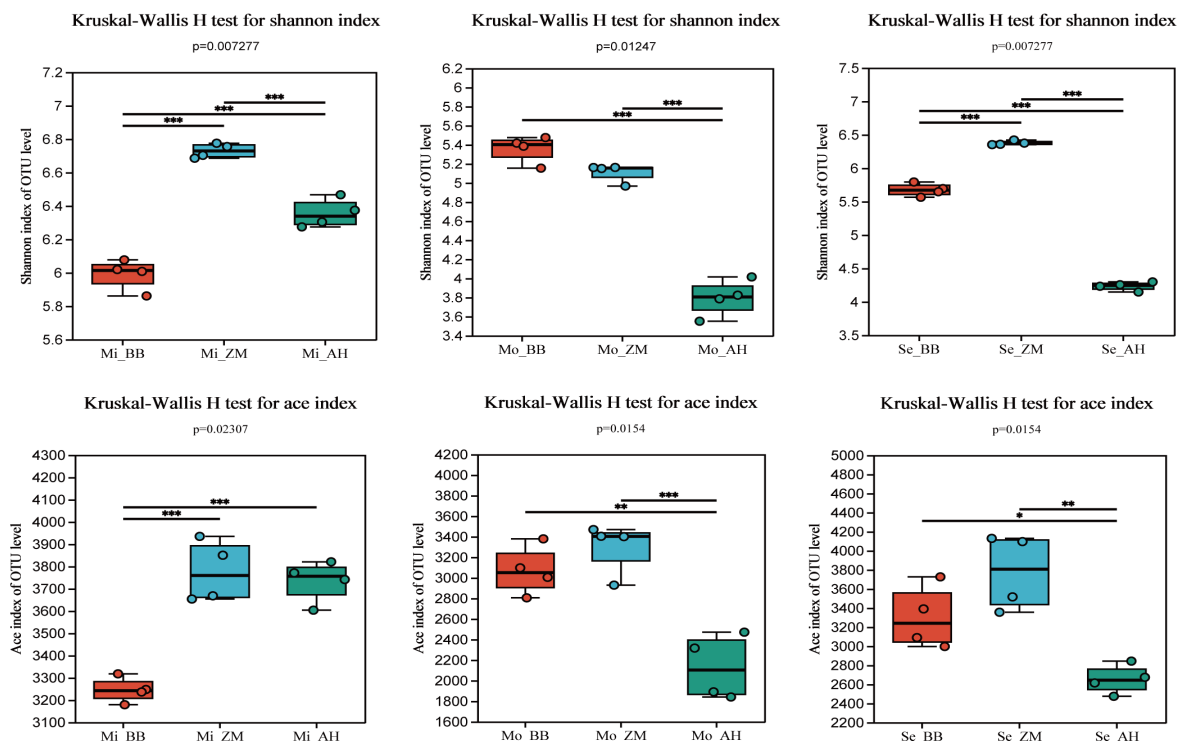
Supplementary Figure 1. Growth performance of alfalfa in soils with varied degrees of saline-alkali soil.



Supplementary Figure 2. Rarefaction curves. **(A)** Rarefaction curve of bacterial Shannon index, **(B)** Rarefaction curve of bacterial Ace index, **(C)** Rarefaction curve of fungal Shannon index, **(D)** Rarefaction curve of fungal Ace index.

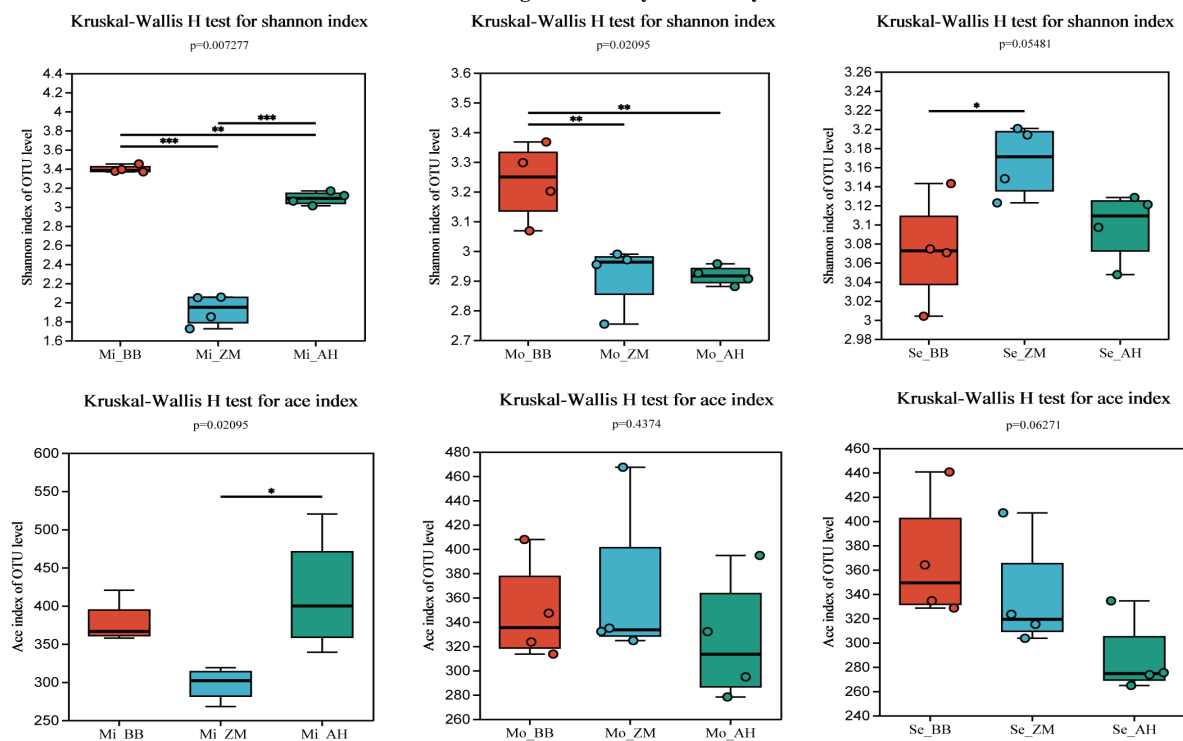
A

Bacterial community α -diversity



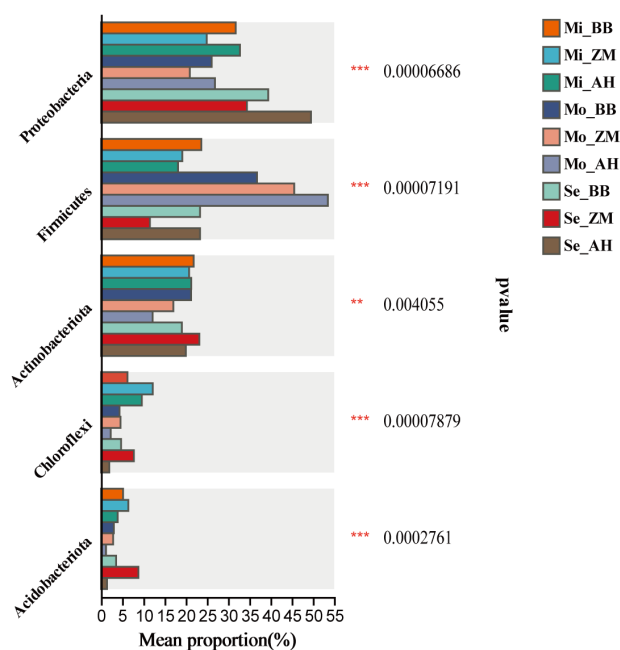
B

Fungi community α -diversity

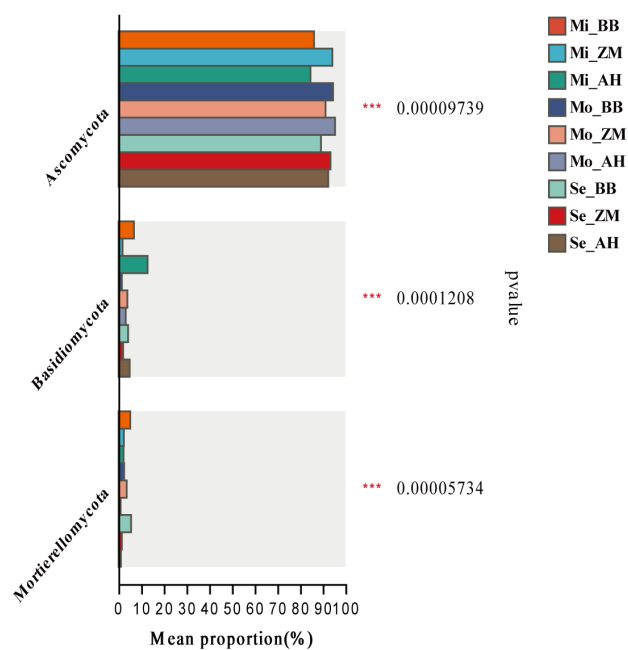


Supplementary Figure 3. Analysis of inter-group differences in Shannon and Ace indices of bacteria and fungi. **(A)** Differential analysis of bacterial Shannon and Ace indices, **(B)** Differential analysis of fungal Shannon and Ace indices.

A

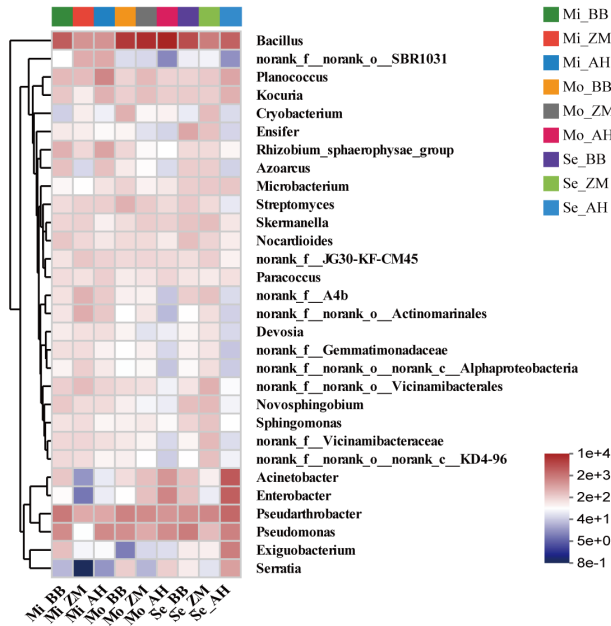


B

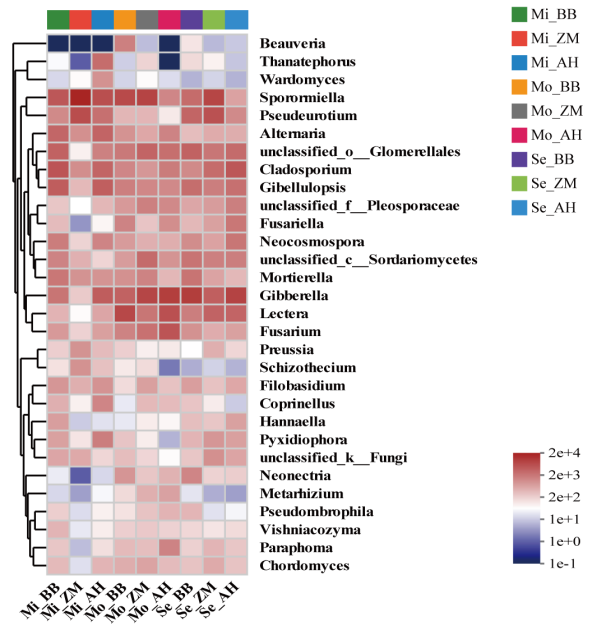


Supplementary Figure 4. Differential significance testing of variations in the main species composition of rhizosphere microbial communities at the phylum level among different alfalfa varieties in different degrees of saline-alkali soil. **(A)** Differential testing at the bacterial phylum level, **(B)** Differential testing at the fungal phylum level.

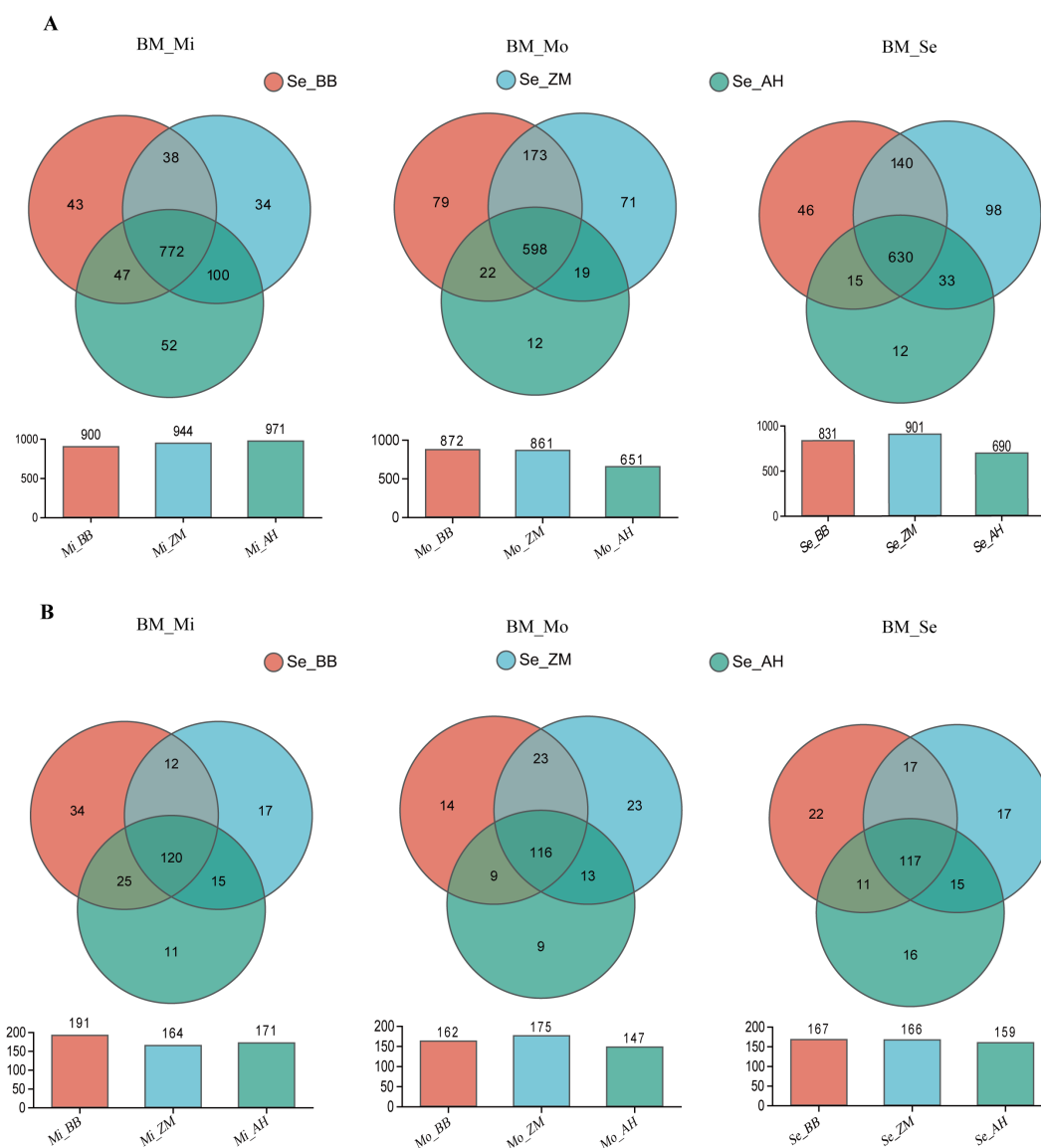
A



B



Supplementary Figure 5. A heat map clustering shows the average relative abundance of the top 30 genera of all samples, **(A)** The top 30 genera of bacteria, **(B)** The top 30 genera of fungi.



Supplementary Figure 6. Visualization of common and unique microbial genera in the rhizosphere of different varieties in saline-alkaline soil. **(A)** Bacteria, **(B)** Fungi.

Table S1. Bacteria and fungi α -diversity index

Sample group	Bacteria				Fungi			
	Shannon	Simpson	Ace	Chao1	Shannon	Simpson	Ace	Chao1
Mi_BB	5.99	0.01	3245.21	3173.65	3.40	0.06	377.56	371.52
Mi_ZM	6.73	0	3776.76	3696.61	1.92	0.36	297.58	297.92
Mi_AH	6.35	0.01	3734.2	3650.07	3.09	0.08	414.58	341.95
Mo_BB	5.36	0.02	3071.4	2947.03	3.23	0.08	347.94	342.67
Mo_ZM	5.11	0.05	3300.63	2898.17	2.92	0.12	364.67	327.69
Mo_AH	3.79	0.15	2129.57	1919.4	2.92	0.11	324.85	289.54
Se_BB	5.67	0.01	3300.95	2961.7	3.07	0.10	366.80	331.27
Se_ZM	6.38	0.01	3774.5	3458.11	3.17	0.08	337.15	324.99
Se_AH	4.23	0.05	2651.97	2114.66	3.10	0.09	286.95	272.78