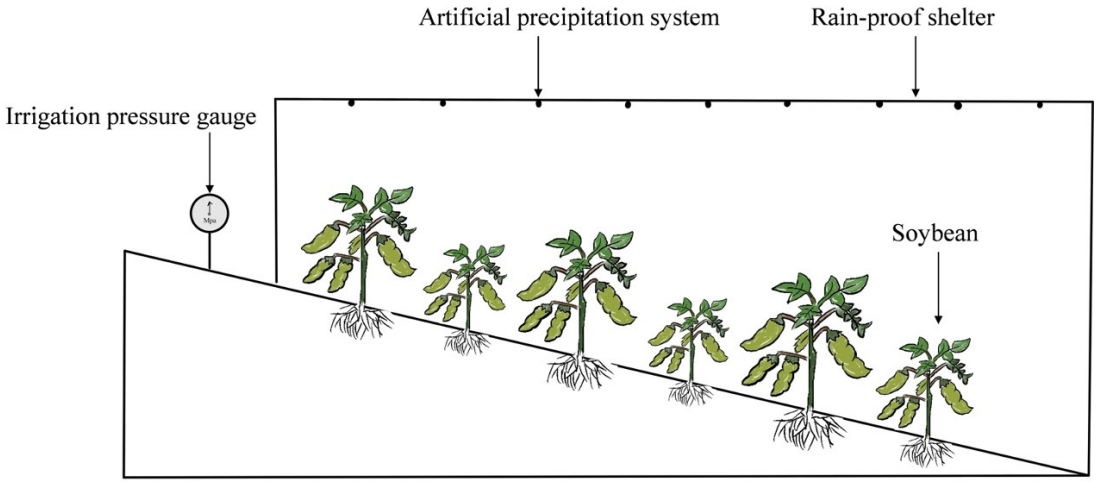


Figure S1. The open–closed-type rain-proof shelter for slope soybean field.

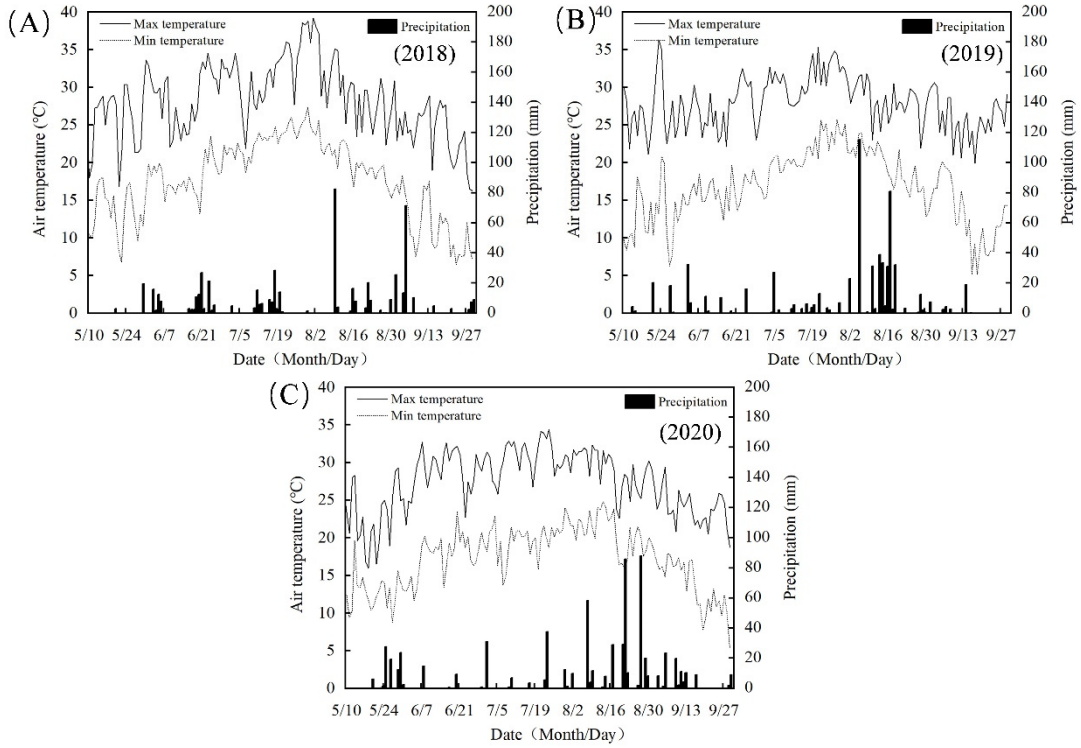


Figure S2. Daily minimum and maximum temperatures, and precipitation at the experimental site throughout the soybean growing seasons (2018 to 2020).

Table S1. The details of soil characteristics.

Property	Value	Method	Reference
Sand (%)	45.13	Using the laser diffraction particle size analyze	Li et al.,2020
Silt (%)	41.4		
Clay (%)	13.47		
Texture	Silt loam		
CEC (cmol L^{-1})	8.27	Sodium acetate method	Chapman, 1965
pH	6.8	Soil/solution ratio of 1:5	Li et al., 2021
Bulk density	1.49	Using the gravimetric method	Chen et al., 2021

Note: CEC represent the cation exchange capacity.

Table S2. The diversity and richness of bacterial and fungal communities.

Date (month/day)		Growth stages of soybean	Artificial precipitation（mm）
2018	6/5~6/29	Seeding stage	69.36
	6/30~7/25	Branching stage	125.80
	7/26~8/25	Podding stage	146.88
	8/26~9/21	Maturing stage	81.60
2019	5/25~6/20	Seeding stage	75.53
	6/21~7/19	Branching stage	137.12
	7/20~8/20	Podding stage	159.91
	8/21~9/16	Maturing stage	86.17
2020	6/6~6/30	Seeding stage	64.50
	7/1~7/26	Branching stage	118.25
	7/27~8/26	Podding stage	137.27
	8/27~9/22	Maturing stage	110.71

Table S3. The ANOVA result of soybean root traits.

Root traits	Source of error	Variance	Freedom	F	P
Length	Plot	12652.3718	2	0.0453	0.9559
	Slope	7432228.122	2	26.6033	0.0001
	Imazethapyr	12492464.51	1	89.4323	0.0001
	Slope*Imazethapyr	2161177.711	2	7.7358	0.0093
	Error	1396862.717	10	-	-
	Total	23495385.44	17	-	-
Surface area	Plot	9.5985	2	0.0039	0.9962
	Slope	52524.1513	2	21.0821	0.0003
	Imazethapyr	223946.9779	1	179.775	0.0001
	Slope*Imazethapyr	23020.3332	2	9.2399	0.0053
	Error	12457.0686	10	-	-
	Total	311958.1296	17	-	-
Volume	Plot	0.0056	2	0.0295	0.971
	Slope	2.115	2	11.0804	0.0029
	Imazethapyr	24.1235	1	252.7595	0.0001
	Slope*Imazethapyr	1.4365	2	7.5257	0.0101
	Error	0.9544	10	-	-
	Total	28.6351	17	-	-

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