

The two principal components PC1 and PC2 with the largest difference contribution rate of principal components were extracted. The eigen values of the first two principal components were all greater than 1, and the cumulative variance contribution rate was 47.31% (Table 1). All index data were standardized (Z_n represents standardized data, N represents index).

The variance contribution rate of each principal component was taken, and the weighted average of the principal components was carried out to construct a comprehensive score model for evaluating the growth and development of pepper seedlings with different light quality as $Y=25.43\% \times Y1 + 21.88\% \times Y2$.

Table S1 Principal component analysis results of tomato seedlings.

Component scoring coefficient matrix					
Indicator	Y1	Y2	Indicator	Y1	Y2
Seedling height	-0.32	0.06	Total chlorophyll	0.18	0.24
Stem diameter	-0.17	0.25	Carotenoid content	0.25	0.11
Hypocotyl	-0.21	0.02	Fv/Fm	-0.04	0.02
True leaf number	0.08	0.22	Y(II)	0.14	0.11
Whole fresh weight	-0.18	0.34	ETR	0.13	0.11
Root fresh weight	-0.12	0.27	SOD activity	-0.10	-0.03
Shoot fresh weight	-0.18	0.33	POD activity	0.25	0.10
Whole dry weight	-0.11	0.36	CAT activity	-0.26	0.00
Root dry weight	0.07	0.15	Soluble protein content	0.17	-0.03
Shoot dry weight	-0.14	0.36	MDA content	0.20	-0.02
Compactness	0.22	0.25	Time of the first flower	-0.07	-0.15
Root-shoot ratio	0.23	0.06	The node of the first flower	-0.02	-0.10
Specific leaf weight	0.28	0.04	Number of fruits on the 15th day	0.10	0.03
Percentage of shoot dry matter	0.14	0.16	Number of fruits on the 30th day	0.00	0.07
Seedling index	0.29	-0.01	Number of fruits per plant	0.05	-0.10
chlorophyll a	0.20	0.19	Weight of fruits per plant	0.03	0.07
chlorophyll b	0.14	0.12			
Variance contribution %			25.43 (Y1)		21.88 (Y2)

Table S2 Each principal component score and total score of each treatment

Treatment	Y1	Y2	total	rank
CK	0.11	-0.05	0.06	5
B30	0.10	-0.04	0.06	4
B60	0.21	-0.09	0.12	3
UV-A2	0.11	0.18	0.28	1
UV-A6	0.15	0.09	0.24	2
FR20	-0.29	-0.14	-0.43	7
FR30	-0.40	0.06	-0.34	6