Table S1. Relative colony growth of four fungal isolates under different PEG-6000 concentrations after 30 days of incubation. Relative colony growth (%) was calculated by dividing the mean colony diameter of each fungal isolate at each PEG-6000 concentration by the mean colony diameter of its respective control (0% PEG-6000) and multiplying by 100. The control treatment for each isolate was established as 100%. Values represent relative growth percentages calculated from the mean colony diameters of three biological replicates (n = 3).

Fungal isolate	0% PEG	10% PEG	15% PEG	20% PEG
Pochonia chlamydosporia	100%	128.9%	160.0%	188.2%
Pochonia sp.	100%	96.7%	99.8%	100.9%
Cadophora sp.	100%	108.5%	108.7%	108.9%
Phialophora livistonae	100%	100.5%	104.6%	108.5%

Table S2. Two-way analysis of variance (ANOVA) for the effects of fungal inoculation, irrigation level, and their interaction on morphological and growth parameters of tomato seedlings.

Variable	n	Inoculation F	Inoculation p	Irrigation F	Irrigation p	Interaction F	Interaction p
Stem diameter	96	0.1093	0.8966	14.6323	**< 0.0001**	2.2796	**0.0436**
Height	96	0.9325	0.3976	30.9571	**< 0.0001**	2.1127	0.0602
No. Leaves	96	1.8301	0.1667	5.6787	**0.0014**	0.2221	0.9686
Root length	96	0.8043	0.4508	8.9561	**< 0.0001**	2.2230	**0.0486**
Fresh root weight	96	5.3516	**0.0065**	3.2888	**0.0246**	1.4612	0.2015
Dry weight root	96	4.0280	**0.0214**	2.6470	0.0543	1.1400	0.3465
Fresh shoot weight	96	0.9668	0.3845	106.3485	**< 0.0001**	0.8057	0.5683
Dry shoot weight	96	1.3093	0.2754	13.8826	**< 0.0001**	1.5411	0.1749

F-values and corresponding p-values are presented for the main effects of fungal inoculation and irrigation level, as well as their interaction. The analysis included three inoculation treatments and four irrigation levels (25%, 50%, 75%, and 100%). Each variable was evaluated using 96 observations (n = 96). Statistical significance was established at $p < 0.05$.

Table S3. Two-way analysis of variance (ANOVA) for the effects of fungal inoculation, irrigation level, and their interaction on biochemical parameters in leaves and roots of tomato seedlings.

Variable	n	Inoculation F	Inoculation p	Irrigation F	Irrigation p	Interaction F	Interaction p
Catalase/ leaves	36	0.0672	0.9352	0.6939	0.5648	0.7458	0.6185
Catalase/root	36	2.4271	0.1097	5.3286	**0.0059**	4.7034	**0.0027**
Phenols/leaves	36	2.3035	0.1216	1.7025	0.1932	1.8813	0.1256
Phenols/root	36	2.7869	0.0816	1.3568	0.2797	0.4084	0.8661
Glutathione peroxidase /leaves	36	1.0515	0.3650	0.6437	0.5945	1.8824	0.1254
Glutathione peroxidase /root	36	0.2075	0.8140	5.4257	**0.0054**	1.6087	0.1880
Proline/leaves	36	3.8044	**0.0367**	2.0153	0.1386	0.9929	0.4523
Proline/root	36	8.8230	**0.0013**	4.0747	**0.0179**	4.4199	**0.0038**
Proteins/leaves	36	0.8391	0.4444	0.5458	0.6557	1.8583	0.1299
Proteins/root	36	2.2265	0.1297	4.6543	**0.0106**	1.2467	0.3183

F-values and corresponding p-values are presented for the main effects of fungal inoculation and irrigation level, as well as their interaction. The analysis included three fungal inoculation treatments and four irrigation levels (25%, 50%, 75%, and 100%). Each biochemical parameter was analyzed using 36 observations (n = 36). Statistically significant p-values ($p < 0.05$) are indicated in bold.

Table S4. Two-way ANOVA of log_2-transformed relative expression (fold change).

Gene	Source of variation	df	Sum of squares	F statistic	p value	Significance
NCED	Fungal inoculation	2	14.8739	0.7846	0.4677	ns
NCED	Irrigation level	3	12.3072	0.4328	0.7314	ns
NCED	Inoculation × irrigation	6	49.2764	0.8664	0.5334	ns
PIP2	Fungal inoculation	2	29.2289	1.6365	0.2156	ns
PIP2	Irrigation level	3	17.7712	0.6633	0.5827	ns
PIP2	Inoculation × irrigation	6	83.8653	1.5652	0.2004	ns
ERD1	Fungal inoculation	2	8.6604	0.7037	0.5047	ns
ERD1	Irrigation level	3	29.9151	1.6204	0.2109	ns
ERD1	Inoculation × irrigation	6	36.8691	0.9985	0.4489	ns
PAL53	Fungal inoculation	2	20.6930	1.0510	0.3651	ns
PAL53	Irrigation level	3	18.1695	0.6152	0.6118	ns
PAL53	Inoculation × irrigation	6	90.5500	1.5330	0.2102	ns
FE-SOD	Fungal inoculation	2	8.0453	**0.8996**	**0.4200**	**ns**
FE-SOD	Irrigation level	3	44.9895	3.3537	0.0356	*
FE-SOD	Inoculation × irrigation	6	35.9126	1.3386	0.2790	ns

Table S5. Planned comparisons of fungal inoculation versus uninoculated controls at each irrigation level.

Gene	Irrigation (%)	Fungus	Control	Mean $\log_2$ fungus	Mean $\log_2$ control	Δ $\log_2$ expression	Geometric FC ratio	95% CI lower	95% CI upper	Unadjusted p	Holm-adjusted p	Significant
NCED	100	Pl	AC	-2.9994	0.0000	-2.9994	0.1250	0.0034	4.5593	0.2445	1.0000	No
NCED	100	P	AC	-0.8651	0.0000	-0.8651	0.5490	0.0151	20.0175	0.7338	1.0000	No
NCED	75	Pl	AC	-2.5034	-2.8984	0.3950	1.3150	0.0361	47.9436	0.8764	1.0000	No
NCED	75	P	AC	-2.5839	-2.8984	0.3145	1.2436	0.0341	45.3427	0.9015	1.0000	No
NCED	50	Pl	AC	0.0628	-2.3804	2.4433	5.4388	0.1492	198.2988	0.3408	1.0000	No
NCED	50	P	AC	-3.8770	-2.3804	-1.4966	0.3544	0.0097	12.9210	0.5572	1.0000	No
NCED	25	Pl	AC	-2.6785	-0.7138	-1.9647	0.2562	0.0070	9.3406	0.4421	1.0000	No
NCED	25	P	AC	-4.8636	-0.7138	-4.1499	0.0563	0.0015	2.0539	0.1118	0.8944	No
PIP2	100	Pl	AC	-3.2673	0.0000	-3.2673	0.1039	0.0032	3.4071	0.1931	1.0000	No
PIP2	100	P	AC	-0.8378	0.0000	-0.8378	0.5595	0.0171	18.3539	0.7343	1.0000	No
PIP2	75	Pl	AC	-3.2306	-3.5294	0.2988	1.2301	0.0375	40.3532	0.9036	1.0000	No
PIP2	75	P	AC	-3.0856	-3.5294	0.4438	1.3602	0.0415	44.6215	0.8572	1.0000	No
PIP2	50	Pl	AC	0.5686	-2.8788	3.4474	10.9084	0.3325	357.8463	0.1705	1.0000	No
PIP2	50	P	AC	-4.8095	-2.8788	-1.9308	0.2623	0.0080	8.6044	0.4365	1.0000	No
PIP2	25	Pl	AC	-0.6582	-1.5714	0.9132	1.8832	0.0574	61.7768	0.7115	1.0000	No
PIP2	25	P	AC	-6.1008	-1.5714	-4.5294	0.0433	0.0013	1.4205	0.0757	0.6058	No
ERD1	100	Pl	AC	-2.5288	0.0000	-2.5288	0.1733	0.0096	3.1417	0.2239	1.0000	No
ERD1	100	P	AC	-1.3188	0.0000	-1.3188	0.4009	0.0221	7.2679	0.5212	1.0000	No
ERD1	75	Pl	AC	-3.4621	-3.5277	0.0656	1.0465	0.0577	18.9738	0.9744	1.0000	No
ERD1	75	P	AC	-3.3297	-3.5277	0.1980	1.1471	0.0633	20.7980	0.9229	1.0000	No
ERD1	50	Pl	AC	-0.6280	-3.6344	3.0064	8.0355	0.4432	145.6901	0.1507	1.0000	No
ERD1	50	P	AC	-3.1742	-3.6344	0.4602	1.3757	0.0759	24.9429	0.8222	1.0000	No
ERD1	25	Pl	AC	-2.3286	-2.6607	0.3320	1.2588	0.0694	22.8224	0.8712	1.0000	No
ERD1	25	P	AC	-5.6547	-2.6607	-2.9940	0.1255	0.0069	2.2757	0.1524	1.0000	No
PAL53	100	Pl	AC	-2.9307	0.0000	-2.9307	0.1311	0.0034	5.1220	0.2639	1.0000	No
PAL53	100	P	AC	-0.4704	0.0000	-0.4703	0.7218	0.0185	28.1891	0.8559	1.0000	No
PAL53	75	Pl	AC	-3.1080	-3.5587	0.4508	1.3668	0.0350	53.3783	0.8618	1.0000	No
PAL53	75	P	AC	-2.6113	-3.5587	0.9474	1.9284	0.0494	75.3138	0.7148	1.0000	No
PAL53	50	Pl	AC	-0.0490	-2.2672	2.2183	4.6533	0.1191	181.7335	0.3951	1.0000	No
PAL53	50	P	AC	-2.8896	-2.2672	-0.6224	0.6496	0.0166	25.3699	0.8101	1.0000	No
PAL53	25	Pl	AC	-0.3630	0.4613	-0.8243	0.5648	0.0145	22.0562	0.7504	1.0000	No
PAL53	25	P	AC	-6.3005	0.4613	-6.7618	0.0092	0.0002	0.3599	0.0144	0.1149	No
FE-SOD	100	Pl	AC	-3.1574	0.0000	-3.1574	0.1121	0.0095	1.3251	0.0799	0.5593	No
FE-SOD	100	P	AC	-0.9428	0.0000	-0.9428	0.5202	0.0440	6.1502	0.5901	1.0000	No
FE-SOD	75	Pl	AC	-4.9789	-3.8331	-1.1458	0.4519	0.0382	5.3431	0.5133	1.0000	No
FE-SOD	75	P	AC	-3.9158	-3.8331	-0.0828	0.9442	0.0799	11.1633	0.9622	1.0000	No
FE-SOD	50	Pl	AC	-2.3409	-4.0695	1.7286	3.3140	0.2803	39.1800	0.3267	1.0000	No
FE-SOD	50	P	AC	-3.4371	-4.0695	0.6324	1.5501	0.1311	18.3267	0.7174	1.0000	No
FE-SOD	25	Pl	AC	-3.5950	-2.2551	-1.3400	0.3950	0.0334	4.6703	0.4453	1.0000	No
FE-SOD	25	P	AC	-5.9634	-2.2551	-3.7083	0.0765	0.0065	0.9045	0.0420	0.3363	No

Δ $\log_2$ = mean $\log_2$(fungus) − mean $\log_2$(control); geometric FC ratio = 2^(Δ $\log_2$).
95% confidence intervals are nominal (unadjusted); Holm correction was applied to 8 contrasts per gene, not across genes.
Each contrast uses the common residual variance from the 3 × 4 factorial model (residual df = 24).