

Table S1. Evaluation of different fungicides concentrations on radial growth of *P. cajani*

metiram + dimethomorph		cymoxanil + mancozeb		famoxadone + cymoxanil		mancozeb		metalaxyl-M + mancozeb	
Dose ^a	Growth ^b	Dose	Growth	Dose	Growth	Dose	Growth	Dose	Growth
0	68.2	0	66.5	0	65.4	0	64.7	0	65.8
0.1	43.8	0.1	63.8	0.1	52.3	0.1	60.6	0.1	64.4
0.25	24.1	1	50.4	1	42.1	1	58	1	45
0.35	22.9	10	40.5	10	32.1	2.5	57.9	10	18.3
0.45	1.8	25	27.9	100	12.5	5	57	25	3.8
0.5	0	50	2.6	120	9.5	7.5	51.6	35	0
0.75	0	60	0	130	3.5	10	43.5	45	0
1	0	70	0	140	0	25	30.2	50	0
10	0	75	0			50	19.3	75	0
100	0	100	0			75	7.2	100	0
						100	0		

^a Concentration of the product in µg/ml; ^b Radial growth of the mycelium in mm

Table S2. Summary of analysis of variance (ANOVA) of different fungicides (A) and their time of applications (B) during sporangia and zoospore formation in *P. cajani* under *in vitro* condition

Growth stage	Parameters	Interaction	F value	Pr (>F)	CD		CV
					5%	1%	
Sporangia	Total number	A	286.79	< 2e-16 ***	0.235	0.313	11.75
		B	97.79	< 2e-16 ***	0.192	0.256	
		A × B	17.41	<1.7e-14 ***	0.469	0.627	
	Viable	A	235.78	< 2e-16 ***	0.289	0.386	16.52
		B	40.07	<4.07e-13 ***	0.236	0.315	
		A × B	6.27	<4.90e-07 ***	0.579	0.773	
	Non-viable	A	17.55	<7.50e-10 ***	0.229	0.306	25.32
		B	16.13	<2.19e-07 ***	0.187	0.25	
		A × B	5.37	<3.86e-06 ***	0.458	0.612	
	Abnormal	A	10.26	<9.93e-07 ***	0.178	0.237	23.28
		B	9.43	<5.24e-05 ***	0.145	0.194	
		A × B	4.30	<5.57e-05 ***	0.355	0.474	
Zoospores	Total number	A	452.44	<2e-16 ***	0.235	0.313	11.41
		B	76.09	<2e-16 ***	0.192	0.256	
		A × B	50.31	<2e-16 ***	0.47	0.627	
	Motile	A	944.54	<2e-16 ***	0.179	0.239	10.36
		B	95.40	<2e-16 ***	0.146	0.195	
		A × B	60.09	<2e-16 ***	0.359	0.479	
	Encysted	A	44.05	<2e-16 ***	0.206	0.275	19.71
		B	23.65	<1.53e-09 ***	0.168	0.225	
		A × B	16.41	<5.32e-14 ***	0.412	0.55	
	Germinated	A	2.268	0.063•	0.088	0.118	14.58
		B	2.042	0.121 ^{ns}	0.072	0.096	
		A × B	2.721	0.005**	0.176	0.236	

A: three replicative data of six treatments including five fungicides (metiram + dimethomorph, cymoxanil + mancozeb, famoxadone + cymoxanil, mancozeb, metalaxyl-M + mancozeb) and a water control were used for Analysis of variance (ANOVA). EC₅₀ value amount fungicides was added to the growth media (for details refer to Table 1)

B: The fungicides were applied to the media at four different time points (T¹-T⁴) during sporangia and zoospores formation (for details refer to table 2 and 3).

Significant codes: ***0.001; **0.01; •0.1; ^{ns} non-significant.

CD: Critical differences were calculated in both 5% and 1% confidence level.

CV: Coefficient of variant was estimated for each individual parameter based on interaction between fungicides and their different time of applications

Table S3. Effect of different fungicides and fungicide application methods on controlling of Phytophthora blight on susceptible ICP 7119 cultivar

Fungicide application methods	Fungicides	Per cent disease incidence
Seed-treatment (ST)	metiram + dimethomorph	40.2
	cymoxanil + mancozeb	52.9
	famoxadone + cymoxanil	56.3
	mancozeb	45.1
	metalaxyl-M + mancozeb	31.5
Soil-drench (SD)	metiram + dimethomorph	32.3
	cymoxanil + mancozeb	31.0
	famoxadone + cymoxanil	51.3
	mancozeb	33.4
	metalaxyl-M + mancozeb	21.9
Foliar-spray (FS)	metiram + dimethomorph	36.6
	cymoxanil + mancozeb	55.1
	famoxadone + cymoxanil	65.2
	mancozeb	74.9
	metalaxyl-M + mancozeb	40.4
Seed-treatment + Soil-drench (ST+ SD)	metiram + dimethomorph	11.6
	cymoxanil + mancozeb	15.8
	famoxadone + cymoxanil	16.3
	mancozeb	11.3
	metalaxyl-M + mancozeb	6.6
Soil-drench + Foliar-spray (SD +FS)	metiram + dimethomorph	22.0
	cymoxanil + mancozeb	23.9
	famoxadone + cymoxanil	27.8
	mancozeb	23.8
	metalaxyl-M + mancozeb	8.6

Table S4. Analysis of variance (ANOVA) for evaluation of different fungicides and their different application methods for controlling of Phytophthora blight in different pigeonpea cultivars.

Source of variation	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Methods [‡]	2	7201.2	3600.6	68.6023	< 2.2x10 ⁻¹⁶ ***
Fungicides [#]	3	994	331.3	6.3129	0.0005922***
Cultivars [§]	3	12202.2	4067.4	77.4964	< 2.2 x10 ⁻¹⁶ ***
Methods × Fungicides	6	1345	224.2	4.2709	0.0007402***
Methods × Cultivars	6	7325.9	1221	23.2634	< 2.2 x10 ⁻¹⁶ ***
Fungicides × Cultivars	9	789.6	87.7	1.6717	0.1064015 ^{ns}
Methods × Fungicides × Cultivars	18	1802.7	100.2	1.9082	0.0238056*
Residuals	96	5038.6	52.5		

[‡]Three different fungicide application methods (seed-treatment + soil-drench, soil-drench + foliar-spray and soil-drench alone). [#]Four fungicides (metiram + dimethomorph, cymoxanil + mancozeb, famoxadone + cymoxanil, mancozeb, and metalaxyl-M + mancozeb). [§]Three moderately resistant (ICPL 20135, ICPL 99010, ICPL 99048) and a susceptible (ICP 7119) pigeonpea cultivars. Df: Degrees of freedom. Significant codes: ***0.001; * 0.05; ^{ns} non-significant.

Table S5. Evaluation of Fungicide application methods and fungicides to manage the Phytophthora blight on different pigeonpea cultivars.

Fungicide application methods	Fungicides	Cultivars	Per cent disease incidence
Soil-drench (SD)	metiram + dimethomorph	ICP 7119	18.00
		ICPL 20135	6.09
		ICPL 99010	1.67
		ICPL 99048	8.57
	cymoxanil + mancozeb	ICP 7119	25.59
		ICPL 20135	12.57
		ICPL 99010	5.98
		ICPL 99048	14.26
	mancozeb	ICP 7119	23.37
		ICPL 20135	11.96
		ICPL 99010	1.67
		ICPL 99048	7.52
	metalaxyl-M + mancozeb	ICP 7119	14.61
		ICPL 20135	7.98
		ICPL 99010	1.67
		ICPL 99048	1.67
Seed-treatment + Soil-drench (ST+SD)	metiram + dimethomorph	ICP 7119	9.27
		ICPL 20135	6.21
		ICPL 99010	1.90
		ICPL 99048	1.88
	cymoxanil + mancozeb	ICP 7119	7.98
		ICPL 20135	5.87
		ICPL 99010	1.90
		ICPL 99048	5.37
	mancozeb	ICP 7119	8.16
		ICPL 20135	6.21
		ICPL 99010	1.93
		ICPL 99048	1.89
	metalaxyl-M + mancozeb	ICP 7119	1.90
		ICPL 20135	1.90
		ICPL 99010	1.91
		ICPL 99048	1.89
Soil-drench + Foliar-spray (SD+FS)	metiram + dimethomorph	ICP 7119	9.80
		ICPL 20135	6.49
		ICPL 99010	1.67
		ICPL 99048	8.81
	cymoxanil + mancozeb	ICP 7119	6.66
		ICPL 20135	9.27
		ICPL 99010	1.67
		ICPL 99048	7.26
	mancozeb	ICP 7119	4.21
		ICPL 20135	1.67
		ICPL 99010	10.08
		ICPL 99048	8.81
	metalaxyl-M + mancozeb	ICP 7119	6.09
		ICPL 20135	6.35
		ICPL 99010	3.83
		ICPL 99048	8.81