

Table S1. Effect of nitrification inhibitor potential of phytonim on potential ammonia oxidation by ammonia monooxygenase activity ($\mu\text{g NO}_2\text{-g}^{-1} \text{ day}^{-1}$)

Treatments	0 hour	6 th hour	12 th hour	18 th hour	24 th hour	2 nd day	4 th day
T ₁	2.7 ± 0.93 ^g	2.9 ± 0.63 ^f	2.75 ± 0.32 ^f	2.93 ± 0.42 ^g	3.09 ± 0.36 ^{gh}	3.92 ± 0.77 ⁱ	5.23 ± 0.63 ^h
T ₂	2.42 ± 0.09 ^g	2.32 ± 0.29 ^g	2.2 ± 0.73 ^g	2.4 ± 0.70 ^h	2.57 ± 0.48 ^h	3.39 ± 0.26 ^j	4.64 ± 1.06 ^h
T ₃	3.31 ± 0.17 ^{ef}	3.11 ± 0.12 ^{de}	3.29 ± 0.16 ^{de}	4.44 ± 0.23 ^c	4.97 ± 0.47 ^b	13.08 ± 0.33 ^d	18.9 ± 3.63 ^c
T ₄	2.78 ± 0.17 ^g	2.42 ± 0.06 ^f	2.73 ± 0.26 ^f	3.53 ± 0.16 ^e	4.44 ± 1.17 ^d	8.67 ± 0.67 ^g	14.31 ± 0.56 ^f
T ₅	4.23 ± 0.85 ^a	3.75 ± 0.85 ^{ef}	3.09 ± 0.2 ^{ef}	4.11 ± 0.24 ^d	4.37 ± 0.57 ^{de}	7.29 ± 2.83 ^h	18.08 ± 4.16 ^d
T ₆	4.14 ± 0.45 ^{ab}	4.0 ± 0.40 ^{ab}	4.11 ± 0.27 ^{bc}	3.81 ± 0.25 ^d	3.66 ± 0.89 ^g	9.11 ± 2.14 ^f	12.27 ± 2.18 ^g
T ₇	3.93 ± 0.44 ^{bc}	4.13 ± 0.36 ^a	5.38 ± 0.39 ^a	5.45 ± 0.22 ^a	5.75 ± 0.01 ^a	27.07 ± 7.67 ^a	17.17 ± 5.21 ^e
T ₈	3.05 ± 0.33 ^{fg}	2.95 ± 0.37 ^g	2.09 ± 0.01 ^g	3.37 ± 0.21 ^{ef}	4.16 ± 0.6 ^{ef}	23.34 ± 1.59 ^b	13.67 ± 4.81 ^f
T ₉	2.86 ± 0.24 ^{fg}	3.86 ± 0.32 ^{bc}	4.46 ± 0.46 ^b	4.4 ± 0.42 ^c	4.85 ± 0.35 ^{bc}	18.45 ± 0.98 ^c	20.38 ± 3.39 ^b
T ₁₀	3.63 ± 0.49 ^d	3.22 ± 0.66 ^{ef}	2.96 ± 0.27 ^{ef}	3.25 ± 0.25 ^f	3.53 ± 0.2 ^g	13.24 ± 0.08 ^d	11.85 ± 2.21 ^g
T ₁₁	3.49 ± 0.38 ^{de}	3.69 ± 0.33 ^c	3.97 ± 0.48 ^c	4.87 ± 0.34 ^b	5.85 ± 0.19 ^a	13.29 ± 0.24 ^d	24.14 ± 0.95 ^a
T ₁₂	3.6 ± 0.18 ^d	3.5 ± 0.20 ^d	3.57 ± 0.49 ^d	3.62 ± 0.64 ^{de}	3.95 ± 0.23 ^f	9.53 ± 2.79 ^e	20.6 ± 1.81 ^b
CD (P ≤ 0.05)	0.56	0.45	0.49	0.46	0.76	0.27	0.37
SE(D)	0.27	0.22	0.23	0.22	0.36	0.13	0.18

Treatments	6 th day	8 th day	16 th day	24 th day	35 th day	45 th day
T ₁	6.23 ± 0.53 ^h	5.24 ± 0.44 ⁱ	2.54 ± 0.13 ⁱ	2.58 ± 0.02 ^g	1.87 ± 0.05 ^g	1.28 ± 0.11 ^h
T ₂	5.64 ± 1.26 ⁱ	4.47 ± 0.19 ^j	1.77 ± 0.27 ^j	1.36 ± 0.09 ⁱ	1.63 ± 0.05 ^h	1.01 ± 0.04 ⁱ
T ₃	22.6 ± 1.55 ^{ab}	28.46 ± 0.65 ^a	10.92 ± 0.87 ^a	6.14 ± 0.38 ^a	3.99 ± 0.41 ^a	2.83 ± 0.15 ^b
T ₄	18.11 ± 1.34 ^c	21.58 ± 2.16 ^c	7.6 ± 1.41 ^b	3.82 ± 0.24 ^{de}	2.14 ± 0.39 ^f	1.94 ± 0.42 ^e
T ₅	20.31 ± 3.27 ^{bc}	23.8 ± 2.25 ^b	7.57 ± 1.58 ^b	4.81 ± 0.01 ^c	3.23 ± 0.11 ^b	2.66 ± 0.11 ^c
T ₆	15.34 ± 2.66 ^{de}	19.05 ± 3.17 ^d	3.87 ± 1.6 ^h	3.63 ± 0.1 ^{ef}	2.4 ± 0.5 ^e	1.69 ± 0.14 ^f
T ₇	15.24 ± 3.33 ^{de}	12.59 ± 0.87 ^f	6.68 ± 0.04 ^c	3.78 ± 0.05 ^{de}	2.85 ± 0.02 ^c	2.29 ± 0.03 ^d
T ₈	11.62 ± 2.51 ^f	10.51 ± 0.04 ^g	4.26 ± 0.19 ^g	1.95 ± 0.13 ^h	2.66 ± 0.48 ^d	1.42 ± 0.09 ^g
T ₉	16.88 ± 1.32 ^d	13.43 ± 0.09 ^e	5.88 ± 0 ^e	3.51 ± 0.15 ^f	2.05 ± 0.2 ^f	1.85 ± 0.38 ^e
T ₁₀	10.54 ± 0.91 ^{fg}	8.64 ± 4.03 ^h	4.44 ± 0.32 ^g	1.97 ± 0.14 ^h	1.6 ± 0.18 ^h	1.94 ± 0.31 ^c
T ₁₁	23.76 ± 1.47 ^a	21.58 ± 1.46 ^c	6.35 ± 0.32 ^d	5.85 ± 0.09 ^b	4.06 ± 0.16 ^a	3.13 ± 0.28 ^a
T ₁₂	20.6 ± 1.2 ^{bc}	14.08 ± 4.79 ^e	4.76 ± 0.03 ^f	3.97 ± 0.06 ^d	2.33 ± 0.19 ^e	1.35 ± 0.05 ^{gh}
CD (P ≤ 0.05)	0.40	0.33	0.12	0.15	0.16	0.15
SE(D)	0.19	0.16	0.06	0.07	0.07	0.07

Table S2. Effect of nitrification inhibitor potential of phytonim on potential Nitrite Oxidation by nitrite oxidoreductase activity ($\mu\text{g NO}_3^- \text{g}^{-1} \text{day}^{-1}$)

Treatments	0 hour	6 th hour	12 th hour	18 th hour	24 th hour	2 nd day	4 th day
T ₁	13.3 ± 0.3 ^{de}	13.3 ± 0.2 ^f	14 ± 0.3 ^{ef}	13.8 ± 0.5 ^{cd}	14.1 ± 0.2 ^{cd}	13.8 ± 0.3 ^e	13.2 ± 0.5 ^{hi}
T ₂	13.7 ± 0.2 ^d	13.8 ± 0.3 ^{de}	13.6 ± 0.1 ^f	14.1 ± 0.2 ^e	14 ± 0.2 ^e	13.5 ± 0.8 ^e	12.9 ± 0 ⁱ
T ₃	14 ± 0.4 ^{cd}	14.7 ± 0.3 ^{cd}	15.1 ± 0.5 ^d	15.7 ± 0.3 ^b	16.3 ± 0.6 ^b	20.8 ± 0.7 ^b	22 ± 0.8 ^b
T ₄	12.8 ± 0.4 ^e	13.4 ± 0.6 ^f	14.9 ± 1 ^d	14.3 ± 0.1 ^c	14.3 ± 0.6 ^c	15.2 ± 0.5 ^e	14.1 ± 0.4 ^g
T ₅	13.8 ± 0.5 ^d	14.3 ± 0.4 ^{de}	14.4 ± 0.5 ^{ef}	15.5 ± 0.4 ^b	15.6 ± 3.1 ^b	18.5 ± 0.9 ^c	19.4 ± 0.6 ^c
T ₆	13.6 ± 0.4 ^d	13.5 ± 0.3 ^{de}	13.7 ± 0.2 ^f	13.1 ± 0.7 ^d	13.9 ± 0.5 ^d	13.7 ± 0.7 ^e	13.2 ± 0.7 ^{hi}
T ₇	16.3 ± 0.1 ^a	16.9 ± 0.3 ^b	17 ± 0.3 ^b	17.7 ± 0.4 ^a	18.9 ± 0.8 ^a	23.1 ± 0.7 ^a	25.3 ± 0.1 ^a
T ₈	15.1 ± 0.4 ^b	15.4 ± 0.4 ^c	16.1 ± 0.8 ^c	15.7 ± 0.3 ^b	14.5 ± 1 ^b	15.4 ± 0.6 ^{de}	14.5 ± 0.5 ^g
T ₉	16.8 ± 0.2 ^a	17.4 ± 0.5 ^a	18.1 ± 0.8 ^a	17.9 ± 0.5 ^a	19 ± 0.4 ^a	19.9 ± 0.6 ^a	18.8 ± 0.1 ^d
T ₁₀	14.6 ± 0.6 ^{bc}	14.3 ± 0.1 ^{bc}	13.9 ± 0.6 ^f	13.7 ± 0.6 ^{cd}	13.9 ± 0 ^{cd}	14.6 ± 0.2 ^e	13.5 ± 0.2 ^h
T ₁₁	13.9 ± 0.5 ^{cd}	13.9 ± 0.5 ^{de}	14.8 ± 0.9 ^{de}	14.1 ± 0.4 ^c	15.1 ± 0.6 ^c	16.7 ± 0.5 ^{cd}	17.9 ± 0.7 ^e
T ₁₂	13.2 ± 0.4 ^{de}	13.4 ± 0.4 ^{ef}	13.8 ± 0.6 ^f	13.8 ± 0.5 ^{cd}	14.1 ± 0.3 ^{cd}	15.8 ± 0.2 ^e	15.4 ± 0.8 ^f
CD (P ≤ 0.05)	0.42	0.38	0.26	0.36	0.44	0.54	0.42
SE(D)	0.20	0.18	0.12	0.16	0.21	0.26	0.20

Treatments	6 th day	8 th day	16 th day	24 th day	35 th day	45 th day
T ₁	13.9 ± 0.4 ^{gh}	13.7 ± 0.3 ^h	14.1 ± 0.5 ^{gh}	13.8 ± 0.1 ^g	13.1 ± 0 ^{hi}	13.3 ± 0.6 ⁱ
T ₂	12.7 ± 0.5 ⁱ	12.5 ± 0.5 ⁱ	12.1 ± 0.4 ⁱ	12.8 ± 0 ^h	12.7 ± 0.1 ⁱ	12.4 ± 0.4 ^j
T ₃	22.1 ± 0.4 ^b	23.7 ± 0.6 ^b	23.3 ± 0.4 ^b	24 ± 0.3 ^b	22.1 ± 0 ^b	22.4 ± 0.3 ^b
T ₄	15 ± 0.2 ^f	14.4 ± 0.8 ^f	14.9 ± 0.1 ^{fg}	15.5 ± 0.2 ^f	14.4 ± 0.4 ^{fg}	14.1 ± 0.2 ^{gh}
T ₅	18.7 ± 0.4 ^d	18.2 ± 0.2 ^d	18.8 ± 0.1 ^c	17.6 ± 0.2 ^d	17.8 ± 0.2 ^d	17 ± 0.7 ^d
T ₆	13.8 ± 0.1 ^h	13 ± 0.6 ^h	14 ± 0.1 ^h	13.7 ± 0 ^g	13.7 ± 0.3 ^{gh}	13.9 ± 0.4 ^h
T ₇	24 ± 0.5 ^a	26.5 ± 0.1 ^a	27.5 ± 0.7 ^a	25 ± 0.6 ^a	25.1 ± 0.1 ^a	24 ± 0.7 ^a
T ₈	14 ± 0.4 ^{gh}	13.9 ± 0 ^{gh}	15 ± 0.3 ^f	14.9 ± 0.3 ^f	14.6 ± 0.4 ^f	14.9 ± 0.3 ^f
T ₉	20.7 ± 0.3 ^c	20.6 ± 0.3 ^c	19 ± 0.5 ^c	19.1 ± 0.2 ^c	20.5 ± 0.6 ^c	19.6 ± 0.1 ^c
T ₁₀	14.8 ± 0.1 ^{fg}	13.2 ± 0.3 ^f	13.4 ± 0.4 ^h	13.6 ± 0.2 ^{gh}	13.4 ± 0.1 ^{hi}	13.1 ± 0.5 ⁱ
T ₁₁	16.8 ± 0.6 ^e	18.1 ± 0.2 ^e	17.2 ± 0.4 ^d	16.7 ± 0.2 ^e	16 ± 0.1 ^e	15.7 ± 0.2 ^e
T ₁₂	14.6 ± 0.5 ^{gh}	15 ± 0.4 ^{fg}	15.9 ± 0.1 ^e	15.1 ± 0.2 ^f	14.9 ± 0.1 ^f	14.6 ± 0.3 ^{fg}
CD (P ≤ 0.05)	0.50	0.39	0.44	0.41	0.39	0.26
SE(D)	0.23	0.18	0.21	0.19	0.17	0.12

Table S3. Effect of nitrification inhibitor potential of phytonim on nitrate reductase activity ($\mu\text{g NO}_2^- \text{g}^{-1} \text{day}^{-1}$)

Treatments	0 hour	6 th hour	12 th hour	18 th hour	24 th hour	2 nd day	4 th day
T ₁	19.7 ± 2.5 ^g	18.1 ± 1.9 ^e	17.8 ± 1.3 ^f	19.1 ± 1.9 ^g	22.5 ± 5.7 ⁱ	22.5 ± 1.5 ^h	23.6 ± 2 ^g
T ₂	19.9 ± 0.7 ^g	18.7 ± 2.1 ^e	20.3 ± 2.4 ^e	20.6 ± 3 ^f	20.2 ± 2.8 ^h	18.5 ± 5 ⁱ	18.6 ± 2.8 ^h
T ₃	22.8 ± 0.9 ^{bc}	26.3 ± 1.3 ^a	32.8 ± 3.3 ^{ab}	43.6 ± 4.1 ^{ab}	48.9 ± 6.5 ^c	52.3 ± 5.4 ^c	72.8 ± 3.1 ^b
T ₄	21.1 ± 1.1 ^f	23.7 ± 3.1 ^{cd}	31.3 ± 0.4 ^{bc}	37.3 ± 0.7 ^{cd}	41.1 ± 3.1 ^e	47.8 ± 1.9 ^{de}	62.6 ± 2.4 ^c
T ₅	21.4 ± 1.1 ^{de}	23.9 ± 2.4 ^{cd}	32.8 ± 3.7 ^{ab}	35 ± 2 ^{ab}	41.5 ± 3.3 ^e	44.9 ± 1.1 ^f	57.1 ± 4.3 ^d
T ₆	21.5 ± 1.7 ^{de}	24 ± 2 ^{cd}	30.2 ± 3 ^c	33.4 ± 1.9 ^d	37 ± 2.4 ^f	41.7 ± 1.3 ^g	50.6 ± 2.2 ^f
T ₇	23.6 ± 1.5 ^a	25.8 ± 4.8 ^{ab}	32.3 ± 5.2 ^{ab}	49.3 ± 4.5 ^{bc}	59.5 ± 2.2 ^a	66.8 ± 4.1 ^a	81.9 ± 6.7 ^a
T ₈	22.4 ± 0.4 ^{bc}	24.7 ± 3 ^{bc}	32.8 ± 1.3 ^{ab}	41.3 ± 3.1 ^{ab}	51 ± 6.3 ^b	57 ± 9.3 ^b	72.8 ± 5.9 ^b
T ₉	20.4 ± 3 ^{fg}	23.2 ± 2.3 ^d	27.8 ± 2.2 ^d	32.6 ± 1.1 ^e	39.9 ± 4.4 ^e	49.9 ± 4.3 ^{cd}	57.8 ± 3.5 ^d
T ₁₀	21.7 ± 1 ^{de}	24.9 ± 1.7 ^{bc}	33.6 ± 2.6 ^a	39.1 ± 2.8 ^a	45.4 ± 6.3 ^d	48.7 ± 3 ^{de}	56.3 ± 7 ^d
T ₁₁	22.1 ± 2.4 ^{cd}	26.2 ± 3 ^a	31.6 ± 1.5 ^{bc}	36.5 ± 4.1 ^{bc}	40 ± 3.5 ^e	46.4 ± 3 ^{ef}	63.9 ± 6.5 ^c
T ₁₂	23.2 ± 2.7 ^{ab}	24.7 ± 2.1 ^{bc}	28.2 ± 3.1 ^d	31.9 ± 3.1 ^e	34.9 ± 3.9 ^g	41.5 ± 5.4 ^g	53.4 ± 3.1 ^e
CD (P ≤ 0.05)	0.38	0.39	0.31	0.43	0.38	0.48	0.36
SE(D)	0.18	0.18	0.15	0.21	0.17	0.23	0.16

Treatments	6 th day	8 th day	16 th day	24 th day	35 th day	45 th day
T ₁	22.3 ± 4.3 ^g	20.1 ± 5.9 ^f	19.8 ± 1.9 ⁱ	20.3 ± 2 ^g	19.5 ± 5.6 ^g	20.8 ± 2.6 ^h
T ₂	19.5 ± 6.1 ^g	18.2 ± 0.2 ^f	17.8 ± 3 ⁱ	18.3 ± 6.2 ^g	18 ± 3.5 ^g	18.5 ± 0.2 ⁱ
T ₃	77.3 ± 1.9 ^b	87.6 ± 4.6 ^a	94.5 ± 7.4 ^a	66.1 ± 3.1 ^a	54.7 ± 2 ^a	40.9 ± 4.6 ^b
T ₄	65.4 ± 4.1 ^{cd}	71.5 ± 5.2 ^c	78.7 ± 0.7 ^b	55.7 ± 2.4 ^d	41.5 ± 4.4 ^e	32.9 ± 5.2 ^f
T ₅	62.2 ± 2.2 ^{de}	64.9 ± 6.1 ^{de}	76.2 ± 5.4 ^{bc}	61.2 ± 4.3 ^b	50.8 ± 5.7 ^b	45.4 ± 6.1 ^a
T ₆	57.2 ± 1.5 ^f	62.3 ± 4.6 ^e	66.9 ± 5.2 ^{de}	56 ± 5.6 ^d	34.9 ± 4.3 ^f	30.2 ± 4.6 ^g
T ₇	91.3 ± 3.9 ^a	75.8 ± 3.3 ^b	63.7 ± 8.1 ^{ef}	58.7 ± 6.7 ^c	49.5 ± 3.1 ^{bc}	40.5 ± 8 ^b
T ₈	76.3 ± 5.2 ^b	61.3 ± 4.8 ^e	55.2 ± 3.1 ^h	51.7 ± 5.9 ^{ef}	44.5 ± 5.6 ^d	34.7 ± 4.8 ^e
T ₉	65.2 ± 2 ^{cd}	72.8 ± 3 ^{bc}	63.3 ± 1.1 ^f	57.3 ± 4.2 ^{cd}	48.7 ± 1.3 ^c	40 ± 3 ^{bc}
T ₁₀	61.1 ± 5 ^c	67.9 ± 2.6 ^d	59 ± 2.8 ^g	50.3 ± 2.4 ^f	44.9 ± 4.4 ^d	36.3 ± 5.9 ^d
T ₁₁	68 ± 6.9 ^c	72.3 ± 7.2 ^{bc}	75 ± 3.1 ^c	59.3 ± 6.5 ^{bc}	43.7 ± 4.3 ^d	38.7 ± 3.9 ^c
T ₁₂	60.6 ± 3 ^e	62.4 ± 3.3 ^e	69.5 ± 3.1 ^d	52.7 ± 6.5 ^c	39.9 ± 6.3 ^e	32.1 ± 4.3 ^f
CD (P ≤ 0.05)	0.51	0.46	0.31	0.39	0.43	0.46
SE(D)	0.25	0.22	0.15	0.19	0.21	0.22

Table S4. Effect of nitrification inhibitor potential of phytonim on urease activity ($\mu\text{g NH}_4^+ \text{g}^{-1} \text{day}^{-1}$)

Treatments	0 hour	6 th hour	12 th hour	18 th hour	24 th hour	2 nd day	4 th day
T ₁	20.6 ± 0.6 ^c	21.9 ± 0.4 ^d	23.6 ± 0.7 ^f	24.5 ± 0.9 ^{def}	25.2 ± 0.4 ^{ef}	26 ± 0.6 ^f	26.2 ± 1.1 ^h
T ₂	19.4 ± 0.3 ^f	20.5 ± 0.6 ^e	22.3 ± 0.3 ^g	23.5 ± 0.3 ^f	24.2 ± 0.5 ^{fg}	24.9 ± 1.7 ^{gh}	25.6 ± 0.1 ^h
T ₃	26.5 ± 0.8 ^a	28.1 ± 0.7 ^a	30 ± 1 ^b	32.3 ± 0.6 ^a	34.7 ± 1.3 ^a	37 ± 1.5 ^b	40.9 ± 1.5 ^b
T ₄	25.1 ± 0.9 ^b	26.7 ± 1.1 ^b	28 ± 1.9 ^c	29.5 ± 0.3 ^b	30.3 ± 1.2 ^b	33 ± 1.1 ^c	36.3 ± 0.7 ^c
T ₅	23.7 ± 0.9 ^c	24.2 ± 0.8 ^c	25.6 ± 1 ^{de}	27.3 ± 0.7 ^c	28.8 ± 6.3 ^c	30.9 ± 1.9 ^d	33.2 ± 1.3 ^e
T ₆	21.7 ± 0.8 ^d	22.6 ± 0.6 ^d	23.5 ± 0.3 ^f	25.1 ± 1 ^d	27.2 ± 1 ^d	29.1 ± 1.5 ^e	31.4 ± 1.5 ^f
T ₇	26.1 ± 0.1 ^a	26 ± 0.5 ^b	26.5 ± 0.6 ^d	24.8 ± 0.7 ^{de}	26.9 ± 1.5 ^d	26.7 ± 1.4 ^f	28.1 ± 0.3 ^g
T ₈	24 ± 0.8 ^c	24.8 ± 0.8 ^c	24.7 ± 1.5 ^{ef}	25.6 ± 0.6 ^d	26.5 ± 2 ^{de}	26.9 ± 1.1 ^f	25.4 ± 1.1 ^{hi}
T ₉	23.3 ± 0.3 ^c	24 ± 1 ^c	24.3 ± 1.6 ^f	25 ± 0.9 ^d	24.1 ± 0.7 ^{fg}	24.5 ± 1.1 ^h	28.4 ± 0.1 ^g
T ₁₀	21.6 ± 1.1 ^d	22.3 ± 0.3 ^d	23.6 ± 1.1 ^f	23.8 ± 1.2 ^{ef}	23.7 ± 0.1 ^h	25.8 ± 0.4 ^{fg}	24.2 ± 0.4 ⁱ
T ₁₁	26.2 ± 1 ^a	28.7 ± 1.1 ^a	31.3 ± 1.9 ^a	33.1 ± 0.8 ^a	36 ± 1.2 ^a	39.5 ± 1.1 ^a	42.5 ± 1.4 ^a
T ₁₂	23.4 ± 0.8 ^c	24.7 ± 0.8 ^c	26 ± 1.2 ^d	27.6 ± 1 ^c	29.1 ± 0.6 ^{bc}	33.6 ± 0.4 ^c	35 ± 1.7 ^d
CD (P ≤ 0.05)	0.37	0.48	0.48	0.51	0.38	0.34	0.47
SE(D)	0.18	0.23	0.23	0.25	0.17	0.16	0.23

Treatments	6 th day	8 th day	16 th day	24 th day	35 th day	45 th day
T ₁	27.1 ± 0.8 ^{fg}	26.6 ± 0.6 ^{gh}	25.8 ± 1 ^{ef}	25.1 ± 0.1 ^{fg}	24.8 ± 0.1 ^d	23.7 ± 1.1 ^b
T ₂	26.6 ± 1.1 ^{fg}	25.5 ± 0.9 ^{hi}	24.6 ± 0.7 ^f	23.7 ± 0 ^{fg}	23.4 ± 0.2 ^d	23.1 ± 0.7 ^b
T ₃	42.7 ± 0.7 ^h	41.8 ± 1.3 ^b	34.8 ± 0.8 ^a	35.2 ± 0.7 ^a	34.7 ± 0 ^a	35.4 ± 0.6 ^a
T ₄	38.6 ± 0.4 ^c	37.3 ± 1.5 ^c	31.4 ± 0.2 ^c	31.9 ± 0.5 ^{bc}	32.4 ± 0.8 ^{ab}	33.8 ± 0.3 ^a
T ₅	36.2 ± 0.8 ^d	34.5 ± 0.3 ^d	28.4 ± 0.1 ^d	29.2 ± 0.3 ^{cd}	28.5 ± 0.4 ^{bc}	26.6 ± 1.3 ^b
T ₆	33.7 ± 0.1 ^e	33 ± 1.1 ^e	26.9 ± 0.3 ^e	27.9 ± 0.1 ^{de}	26.8 ± 0.7 ^{cd}	25.3 ± 0.8 ^b
T ₇	27.1 ± 1 ^g	29.8 ± 0.1 ^f	29.3 ± 1.4 ^d	26.5 ± 1.1 ^{de}	23.3 ± 0.2 ^d	24.4 ± 1.3 ^b
T ₈	28.3 ± 0.8 ^f	27.4 ± 0.1 ^g	25.1 ± 0.5 ^f	22.8 ± 0.6 ^g	25 ± 0.8 ^d	23.6 ± 0.5 ^b
T ₉	25.9 ± 0.5 ^g	24.8 ± 0.7 ⁱ	22.1 ± 1 ^g	25.5 ± 0.4 ^{ef}	27.7 ± 1.1 ^{cd}	25.5 ± 0.2 ^b
T ₁₀	26.4 ± 0.2 ^{fg}	24.7 ± 0.5 ⁱ	22.6 ± 0.8 ^g	23.3 ± 0.4 ^{fg}	25.6 ± 0.2 ^d	24.3 ± 0.9 ^b
T ₁₁	45.3 ± 1.1 ^a	43.4 ± 0.4 ^a	32.8 ± 0.8 ^b	34.6 ± 0.4 ^{ab}	34.1 ± 0.2 ^{ab}	33.5 ± 0.3 ^a
T ₁₂	38.8 ± 1.1 ^c	35.4 ± 0.8 ^d	28.3 ± 0.2 ^d	27.3 ± 0.4 ^{de}	28.1 ± 0.3 ^{de}	27.8 ± 0.6 ^b
CD (P ≤ 0.05)	0.31	0.47	0.45	0.28	0.53	0.40
SE(D)	0.15	0.23	0.22	0.13	0.25	0.19

Table S5. Effect of nitrification inhibitor potential of phytonim on soil dehydrogenase activity ($\mu\text{g TPF released g}^{-1} \text{ day}^{-1}$)

Treatments	0 hour	6 th hour	12 th hour	18 th hour	24 th hour	2 nd day	4 th day
T ₁	6.9 ± 0.09 ^{ab}	6.8 ± 0.33 ^b	6.5 ± 0.13 ^g	6.3 ± 0.35 ^f	7.2 ± 0.8 ^f	7 ± 0.34 ^h	6.8 ± 0.23 ^h
T ₂	6.3 ± 0.14 ^d	6.9 ± 0.93 ^b	7.1 ± 0.32 ^f	9.4 ± 0.29 ^{cd}	9.5 ± 0.37 ^e	12.6 ± 0.9 ^g	15.8 ± 0.2 ^g
T ₃	7 ± 0.98 ^a	6.9 ± 1.05 ^b	7.9 ± 0.65 ^{cd}	9.6 ± 0.43 ^c	10.4 ± 1.1 ^d	18.6 ± 0.4 ^{cd}	23 ± 0.3 ^c
T ₄	7.1 ± 0.84 ^a	7.3 ± 0.37 ^a	8.3 ± 0.06 ^b	10.8 ± 0.5 ^b	12.2 ± 0.9 ^a	23.8 ± 1.0 ^a	28.9 ± 0.8 ^a
T ₅	6.7 ± 0.4 ^{bc}	7.1 ± 0.46 ^{ab}	7.4 ± 0.43 ^{ef}	8.8 ± 0.34 ^e	9.5 ± 0.48 ^e	15.2 ± 1.1 ^f	18.2 ± 0.9 ^f
T ₆	6.9 ± 0.78 ^{ab}	7.1 ± 0.5 ^{ab}	7.6 ± 0.52 ^{de}	9.4 ± 1.16 ^{cd}	10.5 ± 0.3 ^d	17.6 ± 0.5 ^e	20.1 ± 0.5 ^{de}
T ₇	6.6 ± 0.5 ^c	7 ± 0.18 ^{ab}	7.9 ± 0.82 ^{cd}	9.8 ± 0.24 ^e	11.3 ± 0.2 ^b	19.4 ± 0.7 ^b	23 ± 1.04 ^c
T ₈	6.9 ± 0.52 ^{ab}	7.1 ± 1.07 ^{ab}	8.7 ± 0.34 ^a	11.7 ± 0.7 ^a	12.3 ± 0.6 ^a	23.1 ± 0.5 ^a	27.8 ± 1.1 ^b
T ₉	6.9 ± 0.16 ^{ab}	7.2 ± 0.47 ^{ab}	7.2 ± 0.26 ^f	9 ± 0.34 ^{de}	9.7 ± 0.56 ^e	15.9 ± 0.4 ^f	19.8 ± 0.4 ^e
T ₁₀	6.6 ± 0.64 ^c	6.9 ± 0.01 ^b	7.7 ± 0.09 ^{de}	9.6 ± 0.69 ^e	10.8 ± 0.5 ^{cd}	17.9 ± 1.4 ^{de}	20.8 ± 1.2 ^d
T ₁₁	6.3 ± 0.01 ^d	6.8 ± 0.25 ^b	8.2 ± 0.15 ^{bc}	10.9 ± 1.0 ^b	12.6 ± 0.0 ^a	23.4 ± 0.7 ^a	27.2 ± 0.4 ^b
T ₁₂	6.6 ± 0.29 ^c	6.9 ± 0.25 ^b	7.7 ± 0.32 ^{de}	9.7 ± 0.5 ^c	11 ± 0.66 ^{bc}	18.9 ± 0.4 ^{bc}	20.5 ± 0.3 ^{de}
CD (P ≤ 0.05)	0.49	0.64	0.57	0.69	0.66	0.66	0.57
SE(D)	0.24	0.31	0.27	0.33	0.32	0.32	0.26

Treatments	6 th day	8 th day	16 th day	24 th day	35 th day	45 th day
T ₁	6.9 ± 0.86 ⁱ	6.2 ± 0.4 ^h	5.9 ± 0.45 ^h	6 ± 0.43 ^g	6 ± 0.65 ^g	6 ± 0.64 ^g
T ₂	14.3 ± 0.4 ^h	12.3 ± 0.1 ^g	11.4 ± 0.7 ^g	10.9 ± 1.0 ^f	9.4 ± 0.95 ^f	8.9 ± 1.1 ^f
T ₃	20.9 ± 0.8 ^d	18.5 ± 0.7 ^c	15.2 ± 0.3 ^c	13.5 ± 0.8 ^c	11.3 ± 0.6 ^{cd}	10.4 ± 0.4 ^{cd}
T ₄	27.7 ± 0.5 ^a	23.9 ± 1.3 ^a	18.2 ± 1.3 ^b	15.5 ± 0.1 ^b	13.2 ± 0.9 ^a	11.6 ± 0.8 ^a
T ₅	16.1 ± 1.2 ^f	14.9 ± 1.4 ^f	12.7 ± 0.2 ^f	11.6 ± 1.3 ^e	10.8 ± 0.7 ^{de}	9.5 ± 1.27 ^e
T ₆	18.7 ± 0.8 ^e	17.1 ± 0.3 ^d	14.1 ± 0.2 ^d	12.1 ± 1.4 ^d	11.9 ± 0.2 ^b	10.3 ± 1.6 ^d
T ₇	20.3 ± 0.9 ^d	17.6 ± 1.2 ^d	15.3 ± 0.7 ^c	13.9 ± 0.8 ^c	11.1 ± 0.8 ^{cd}	10.8 ± 1.3 ^{cd}
T ₈	26.5 ± 0.9 ^b	23.7 ± 1.3 ^a	19.1 ± 1.0 ^a	16.6 ± 1.4 ^a	13.1 ± 1.1 ^a	11.4 ± 0.7 ^{ab}
T ₉	16.9 ± 0.5 ^{fg}	14.7 ± 0.1 ^f	12.9 ± 0.1 ^{ef}	11.2 ± 0.3 ^{ef}	10.4 ± 0.8 ^e	9.1 ± 0.88 ^{ef}
T ₁₀	18.5 ± 0.5 ^e	16.4 ± 1.2 ^e	14.6 ± 0.8 ^d	12.2 ± 1.3 ^d	11.5 ± 0.3 ^{bc}	10.9 ± 1.4 ^{bc}
T ₁₁	25.5 ± 0.9 ^c	22.5 ± 0.6 ^b	18.7 ± 0.2 ^{ab}	15.5 ± 0.2 ^b	12.8 ± 0.1 ^a	10.3 ± 0.2 ^d
T ₁₂	17.8 ± 0.9 ^{ef}	15.3 ± 0.4 ^f	13.3 ± 0.3 ^e	10.9 ± 0.7 ^f	9.6 ± 0.89 ^f	9.3 ± 1.39
CD (P ≤ 0.05)	0.46	0.68	0.70	0.56	0.77	0.81
SE(D)	0.22	0.33	0.34	0.27	0.37	0.39

Table S6. Effect of nitrification inhibitor potential of phytonim on FDA hydrolysis (μg fluorescein released $\text{g}^{-1} \text{hr}^{-1}$)

Treatments	0 hour	6 th hour	12 th hour	18 th hour	24 th hour	2 nd day	4 th day
T ₁	2.4 ± 0.1 ^g	2.6 ± 0.3 ^e	2.7 ± 0.4 ^e	2.8 ± 0.2 ^g	2.9 ± 0.4 ^g	3.1 ± 0.5 ^f	3.2 ± 0.5 ^f
T ₂	2.4 ± 0.3 ^{fg}	2.75 ± 0.3 ^d	2.8 ± 0.1 ^e	3.0 ± 0.1 ^f	3.1 ± 0.4 ^f	3.2 ± 0.1 ^f	3.4 ± 0.4 ^e
T ₃	2.7 ± 0.3 ^{bc}	2.8 ± 0.3 ^{bcd}	3.0 ± 0.1 ^{bc}	3.4 ± 0.2 ^c	3.6 ± 0.5 ^b	3.9 ± 0.2 ^b	4.2 ± 0.5 ^b
T ₄	2.8 ± 0.3 ^b	2.9 ± 0.2 ^b	3.2 ± 0.5 ^a	3.7 ± 0.7 ^{ab}	3.9 ± 0.2 ^a	4.4 ± 0.1 ^a	4.8 ± 0.3 ^a
T ₅	2.5 ± 0.3 ^{ef}	2.7 ± 0.3 ^{de}	2.8 ± 0.5 ^{de}	3.2 ± 0.1 ^e	3.3 ± 0 ^e	3.5 ± 0.3 ^{bc}	3.8 ± 0.1 ^{cd}
T ₆	2.6 ± 0.4 ^{de}	2.7 ± 0.5 ^{cd}	2.9 ± 0.4 ^{de}	3.3 ± 0.3 ^{cd}	3.4 ± 0.3 ^{cd}	3.7 ± 0.3 ^c	4.0 ± 0.7 ^c
T ₇	2.5 ± 0.4 ^{fg}	2.8 ± 0.4 ^{bcd}	3.0 ± 0.2 ^{cd}	3.4 ± 0.3 ^c	3.6 ± 0.1 ^b	4.0 ± 0.6 ^b	4.2 ± 0.5 ^b
T ₈	2.7 ± 0.1 ^{bc}	2.9 ± 0.3 ^{bc}	3.1 ± 0.1 ^{dc}	3.8 ± 0.2 ^a	3.8 ± 0.5 ^a	4.3 ± 0.1 ^a	4.7 ± 0.1 ^a
T ₉	2.7 ± 0.1 ^{cd}	2.7 ± 0.5 ^{cd}	2.8 ± 0.4 ^e	3.2 ± 0.4 ^{de}	3.3 ± 0.4 ^e	3.4 ± 0.2 ^e	3.7 ± 0.2 ^d
T ₁₀	2.6 ± 0.1 ^{def}	2.7 ± 0.3 ^{cd}	2.9 ± 0.1 ^{de}	3.3 ± 0.3 ^{de}	3.4 ± 0.2 ^c	3.6 ± 0.2 ^c	3.9 ± 0.2 ^{cd}
T ₁₁	2.9 ± 0.1 ^a	3.1 ± 0.1 ^a	3.3 ± 0.3 ^a	3.6 ± 0.3 ^b	3.9 ± 0 ^a	4.4 ± 0.2 ^a	4.7 ± 0.4 ^a
T ₁₂	3.0 ± 0.2 ^a	3.1 ± 0.3 ^a	3.2 ± 0.1 ^{ab}	3.4 ± 0.4 ^c	3.5 ± 0.4 ^{bc}	3.6 ± 0.3 ^{cd}	3.8 ± 0.3 ^{cd}
CD (P ≤ 0.05)	0.0366	0.37	0.38	0.38	0.27	0.35	0.47
SE(D)	0.01767	0.18	0.18	0.18	0.13	0.16	0.23

Treatments	6 th day	8 th day	16 th day	24 th day	35 th day	45 th day
T ₁	3.4 ± 0.2 ^h	3.5 ± 0.2 ^g	3.6 ± 0.4 ^f	3.4 ± 0.5 ^f	3.2 ± 0.6 ^e	3.0 ± 0.4 ^h
T ₂	3.6 ± 0.5 ^e	3.7 ± 0.4 ^f	3.9 ± 0.3 ^f	3.8 ± 0.4 ^e	3.4 ± 0.3 ^e	3.2 ± 0.4 ^g
T ₃	4.6 ± 0.3 ^b	5.1 ± 0.3 ^b	5.5 ± 0.3 ^c	5.4 ± 0.4 ^b	5.1 ± 0.2 ^b	4.8 ± 0.5 ^b
T ₄	5.3 ± 0.1 ^a	5.9 ± 0.3 ^a	6.5 ± 0.3 ^{ab}	6.3 ± 0.2 ^a	5.8 ± 0.2 ^a	5.5 ± 0.2 ^a
T ₅	4.0 ± 0.2 ^{ef}	4.4 ± 0.6 ^{de}	4.8 ± 0.6 ^{de}	4.7 ± 0.4 ^{cd}	4.5 ± 0.1 ^{cd}	4.3 ± 0 ^{ef}
T ₆	4.3 ± 0.2 ^{cd}	4.7 ± 0.5 ^c	5.0 ± 0.2 ^d	4.8 ± 0.4 ^c	4.6 ± 0.1 ^{cd}	4.4 ± 0.1 ^{de}
T ₇	4.5 ± 0.7 ^{bc}	5.0 ± 0.2 ^b	5.4 ± 0.3 ^c	5.2 ± 0.3 ^b	5.0 ± 0.3 ^b	4.7 ± 0.1 ^{bc}
T ₈	5.1 ± 0.2 ^a	5.7 ± 0.3 ^a	6.4 ± 0.2 ^b	6.2 ± 0.2 ^a	5.9 ± 0.3 ^a	5.5 ± 0.2 ^a
T ₉	4.0 ± 0.1 ^f	4.3 ± 0.3 ^e	4.7 ± 0.2 ^e	4.6 ± 0.1 ^d	4.4 ± 0.2 ^d	4.2 ± 0.4 ^f
T ₁₀	4.1 ± 0.2 ^{ef}	4.6 ± 0.1 ^{cd}	4.9 ± 0.2 ^{de}	4.8 ± 0.3 ^c	4.7 ± 0.2 ^c	4.6 ± 0.2 ^{cd}
T ₁₁	5.2 ± 0.2 ^a	5.9 ± 0.2 ^a	6.7 ± 0.4 ^a	6.1 ± 0.3 ^a	5.7 ± 0.1 ^a	5.5 ± 0 ^a
T ₁₂	4.2 ± 0.4 ^{de}	4.7 ± 0.2 ^c	5.0 ± 0.2 ^d	4.9 ± 0.1 ^c	4.5 ± 0.2 ^{cd}	4.4 ± 0.4 ^{ef}
CD (P ≤ 0.05)	0.45	0.49	0.51	0.34	0.48	0.55
SE(D)	0.21	0.23	0.24	0.16	0.23	0.26