

**Table 2.** Effect of biopesticides and NPK levels on vegetative growth of potato.

Parameters	Plant height, cm		No. of areal stems		No. of leaves		Percentage of diseased plants			
	2007	2008	2007	2008	2007	2008	2007	2008		
<i>Treatments</i>										
Control	34.52	34.54	3.84	3.85	35.66	35.43	12.1	11.7		
<i>Trichoderma harzianum</i>	34.49	34.51	4.09	4.12	39.19	39.21	5.7	5.5		
<i>Bacillus thuringiensis</i>	34.51	34.45	3.84	3.85	35.65	35.50	6.9	7.3		
L.S.D. (0.05%)	<b>0.06</b>	<b>0.06</b>	<b>0.04</b>	<b>0.02</b>	<b>0.22</b>	<b>0.30</b>	<b>1.1</b>	<b>1.3</b>		
N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O								
0	0	0	34.47	34.46	3.85	3.84	36.21	36.20	10.9	10.5
10	10	20	34.25	34.24	3.86	3.89	36.85	36.84	11.4	11.2
20	20	40	34.49	34.49	4.13	4.19	37.70	37.86	11.9	11.8
40	40	80	34.82	34.80	3.85	3.85	37.57	35.94	12.7	12.9
L.S.D. (0.05)			<b>0.144</b>	<b>0.07</b>	<b>0.02</b>	<b>0.02</b>	<b>0.26</b>	<b>0.35</b>	<b>0.3</b>	<b>0.6</b>

**Table 3.** Effect of biopesticides and NPK levels on dry weight of different parts of potato

Parameters	D. W. of roots (g)		D.W. of Shoots(g)		D.W. of tubers(g)		Total dry weight(g)			
	2007	2008	2007	2008	2007	2008	2007	2008		
<i>Treatments</i>										
Control	1.37	1.36	7.07	7.08	8.37	8.36	16.81	16.80		
<i>Trichoderma harzianum</i>	1.67	1.69	7.56	7.58	11.34	11.14	20.57	20.41		
<i>Bacillus thuringiensis</i>	1.36	1.33	7.06	7.08	8.49	8.50	16.91	16.91		
L.S.D. (0.05%)	<b>0.04</b>	<b>0.02</b>	<b>0.06</b>	<b>0.05</b>	<b>0.05</b>	<b>0.03</b>	<b>0.09</b>	<b>0.10</b>		
N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O								
0	0	0	1.34	1.31	6.48	6.46	7.52	7.51	15.34	15.28
10	10	20	1.46	1.46	7.39	7.36	9.29	9.30	18.14	18.12
20	20	40	1.67	1.65	7.81	7.83	11.55	11.26	21.03	20.74
40	40	80	1.39	1.41	7.35	7.35	9.25	9.26	17.99	18.02
L.S.D. (0.05)			<b>0.04</b>	<b>0.02</b>	<b>0.07</b>	<b>0.04</b>	<b>0.06</b>	<b>0.04</b>	<b>0.11</b>	<b>0.09</b>

**Table 4.** Effect of interaction between biopesticides and NPK levels on vegetative growth of potato

Biopesti- -cides	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Plant height (cm)		N0. of Areal stems/plant		No. of leaves/plant		Percentage of diseased plants	
				2007	2008	2007	2008	2007	2008	2007	2008
<b>Control</b>	0	0	0	34.18	34.17	3.81	3.80	35.31	35.43	12.0	13.0
	10	10	20	34.34	34.32	3.84	3.85	35.70	35.63	11.7	11.5
	20	20	40	34.73	34.80	3.88	3.89	35.92	25.82	11.2	11.5
	40	40	80	34.84	34.85	3.82	3.85	35.71	34.83	12.1	11.9
<i>Tricoder- ma harzian um</i>	0	0	0	34.41	34.46	3.89	3.90	38.04	37.77	3.2	3.1
	10	10	20	34.26	34.40	4.64	4.78	41.25	41.59	3.9	3.5
	20	20	40	34.41	34.40	4.64	4.78	41.25	41.59	2.8	2.9
	40	40	80	34.87	34.85	3.91	3.90	38.30	38.21	4.2	4.3
<i>Bacillus thuringi- tensis</i>	0	0	0	34.82	34.73	3.83	3.83	35.28	35.40	3.9	3.8
	10	10	20	34.16	34.11	3.86	3.87	35.67	35.65	4.3	4.7
	20	20	40	34.32	34.27	3.87	3.89	35.94	36.16	3.2	3.4
	40	40	80	34.74	34.69	3.80	3.80	35.70	34.76	4.9	5.2
<b>L.S.D(0.05)</b>				<b>0.14</b>	<b>0.13</b>	<b>0.09</b>	<b>0.03</b>	<b>0.52</b>	<b>0.70</b>	<b>0.3</b>	<b>0.2</b>

**Table 5.** Effect of interaction between biopesticides and NPK levels on dry weight of different parts of potato.

Biopesti- -cides	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	DW . of roots, (g.)		DW. of Shoots (g)		DW. of Tubers (g)		Total dry weight, (g)	
				2007	2008	2007	2008	2007	2008	2007	2008
<b>Control</b>	0	0	0	1.22	1.27	6.28	6.27	6.88	6.87	14.38	14.41
	10	10	20	1.37	1.35	6.18	7.25	8.14	8.14	15.69	16.74
	20	20	40	1.32	1.26	7.48	7.49	10.22	10.21	19.02	18.96
	40	40	80	1.32	1.26	7.39	7.31	8.20	8.20	16.91	16.77
<i>Tricoder- ma ha- rzianum</i>	0	0	0	1.55	1.55	6.83	6.81	8.30	8.31	16.68	16.67
	10	10	20	1.65	1.69	7.49	7.53	11.45	11.50	20.59	20.72
	20	20	40	1.84	1.84	8.43	8.47	14.23	13.36	24.5	23.67
	40	40	80	1.61	1.67	7.48	7.51	11.39	11.19	20.48	20.37
<i>Bacillus thuringi- tensis</i>	0	0	0	1.25	1.11	6.51	6.25	7.35	7.35	15.11	14.71
	10	10	20	1.34	1.35	7.20	7.28	8.24	8.26	16.78	16.89
	20	20	40	1.59	1.55	7.50	7.52	10.20	10.19	19.29	19.26
	40	40	80	1.24	1.30	7.20	7.23	8.15	8.17	16.59	16.7
<b>L.S.D(0.05)</b>				<b>NS</b>	<b>0.04</b>	<b>0.14</b>	<b>0.08</b>	<b>0.11</b>	<b>0.07</b>	<b>0.21</b>	<b>0.09</b>

**Table 6.** Effect of biopesticides and NPK levels on chemical composition of potato plants.

Parameters	N % / Plant		P%/Plant		K%/ Plant				
	2007	2008	2007	2008	2007	2008			
<b>Treatments:</b>									
<b>Control</b>	3.13	3.14	0.320	0.327	1.24	1.23			
<i>Tricoderma harzianum</i>	3.40	3.41	0.335	0.341	1.26	1.26			
<i>Bacillus thuringiensis</i>	3.14	3.13	0.322	0.326	1.24	1.24			
<b>L.S.D. (0.05%)</b>	0.02	0.02	0.004	0.004	0.01	0.01			
	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O						
<b>0</b>	<b>0</b>	<b>0</b>		3.10	3.10	0.317	0.323	1.24	1.23
<b>10</b>	<b>10</b>	<b>20</b>		3.16	3.16	0.330	0.333	1.24	1.24
<b>20</b>	<b>20</b>	<b>40</b>		3.51	3.51	0.333	0.343	1.27	1.26
<b>40</b>	<b>40</b>	<b>80</b>		3.14	3.15	0.322	0.324	1.23	1.24
<b>L.S.D. (0.05)</b>	<b>0.03</b>	<b>0.02</b>		<b>0.005</b>	<b>0.004</b>	<b>0.004</b>	<b>0.004</b>	<b>0.01</b>	<b>0.01</b>

**Table 7.** Effect of interaction between biopesticides and NPK levels on chemical composition of potato plants.

Biopesticides	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	N % / Plant		P%/Plant		K%/ Plant	
				2007	2008	2007	2008	2007	2008
<b>Control</b>	0	0	0	3.08	3.09	0.31	0.32	1.23	1.22
	10	10	20	3.12	3.14	0.32	0.33	1.24	1.23
	20	20	40	3.11	3.13	0.31	0.32	1.26	1.25
	40	40	80	3.11	3.13	0.31	0.32	1.22	1.23
<i>Tricoderma harzianum</i>	0	0	0	3.12	3.13	0.32	0.33	1.25	1.25
	10	10	20	3.19	3.19	0.34	0.34	1.24	1.24
	20	20	40	4.10	4.13	0.35	0.36	1.31	1.30
	40	40	80	3.16	3.17	0.32	0.33	1.23	1.24
<i>Bacillus thuringiensis</i>	0	0	0	3.08	3.08	0.31	0.31	1.24	1.22
	10	10	20	3.14	3.14	0.32	0.33	1.24	1.24
	20	20	40	3.19	3.18	0.32	0.32	1.24	1.24
	40	40	80	3.14	3.14	0.32	0.32	1.24	1.23
<b>L.S.D (0.05)</b>				<b>0.01</b>	<b>0.04</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>

**Table 8.** Effect of biopesticides and NPK levels on yield and its components of potato.

Parameters			No. of tubers		Average weight of tubers (g.)		Yield of small tubers/ faddan (ton)		Yield of medium tubers/ faddan (ton)		Yield of large tubers/ faddan (ton)		Total yield / faddan (ton)	
<i>Treatments:</i>			2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008
<b>Control</b>			4.34	4.35	47.84	48.44	0.536	0.533	9.88	9.69	2.01	2.01	12.43	12.24
<i>Trichoderma harzianum</i>			5.02	5.08	50.16	54.34	0.578	0.599	12.49	13.30	2.43	2.39	15.50	16.30
<i>Bacillus thuringiensis</i>			4.35	4.43	48.16	49.66	0.529	0.540	10.87	10.75	2.06	2.11	13.47	13.42
<b>L.S.D. (0.05%)</b>			<b>0.06</b>	<b>0.02</b>	<b>0.26</b>	<b>0.06</b>	<b>0.02</b>	<b>0.01</b>	<b>0.24</b>	<b>0.22</b>	<b>0.03</b>	<b>0.01</b>	<b>0.23</b>	<b>0.28</b>
<b>N</b>	<b>P<sub>2</sub>O<sub>5</sub></b>	<b>K<sub>2</sub>O</b>												
<b>0</b>	<b>0</b>	<b>0</b>	4.39	4.40	47.69	48.51	0.525	0.519	10.11	10.18	1.81	1.78	12.45	12.49
<b>10</b>	<b>10</b>	<b>20</b>	4.43	4.46	48.51	50.06	0.545	0.553	10.45	10.24	1.96	1.92	12.96	12.71
<b>20</b>	<b>20</b>	<b>40</b>	5.08	5.16	50.53	53.71	0.575	0.587	13.34	13.89	2.95	2.92	16.86	17.29
<b>40</b>	<b>40</b>	<b>80</b>	4.38	4.46	48.16	50.97	0.545	0.571	10.34	10.68	1.94	2.06	12.92	13.45
<b>L.S.D. (0.05)</b>			<b>0.07</b>	<b>0.03</b>	<b>0.30</b>	<b>0.07</b>	<b>0.017</b>	<b>0.012</b>	<b>0.27</b>	<b>0.25</b>	<b>0.03</b>	<b>0.02</b>	<b>0.26</b>	<b>0.32</b>

**Table 9.** Effect of interaction between biopesticides and NPK levels on yield and its components of potato.

Biopesticides	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	No. tubers/ plant		Average weight of tubers (gm)		Yield of small tubers/ faddan (ton)		Yield of medium tubers / faddan (ton)		Yield of large tubers/ faddan (ton)		Total yield / faddan (ton)	
				2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008
<b>Control</b>	0	0	0	4.29	4.28	47.15	48.06	0.540	0.517	9.010	9.060	1.770	1.756	11.320	11.335
	10	10	20	4.32	4.35	47.87	48.25	0.527	0.527	9.052	9.089	1.961	1.913	11.541	11.530
	20	20	40	4.54	4.46	49.16	49.16	0.539	0.549	10.653	10.492	2.381	2.288	13.574	13.331
	40	40	80	4.28	4.30	47.22	47.22	0.539	0.537	10.833	10.124	1.929	2.108	13.301	12.770
<i>Tricoderma harzianum</i>	0	0	0	4.57	4.57	48.63	49.13	0.523	0.523	11.839	11.993	1.905	1.820	14.267	14.337
	10	10	20	4.61	4.62	49.53	53.28	0.581	0.583	11.999	12.013	1.985	1.940	14.566	14.537
	20	20	40	6.35	6.48	53.32	61.53	0.629	0.675	15.630	17.553	3.893	3.854	20.152	22.083
	40	40	80	4.54	4.65	49.14	53.41	0.580	0.617	10.498	11.678	1.957	1.978	13.036	14.274
<i>Bacillus thuringiensis</i>	0	0	0	4.30	4.35	47.28	48.32	0.513	0.517	9.488	9.618	1.778	1.780	11.781	11.797
	10	10	20	4.35	4.41	48.12	48.65	0.527	0.549	10.291	9.500	1.959	1.915	12.779	12.084
	20	20	40	4.43	4.52	49.10	50.42	0.557	0.36	13.797	13.637	2.580	2.637	16.882	16.477
	40	40	80	4.31	4.42	48.11	51.24	0.518	0.559	9.970	10.265	1.956	2.119	12.445	13.330
<b>L.S.D(0.05)</b>				<b>0.14</b>	<b>0.33</b>	<b>0.24</b>	<b>0.15</b>	<b>0.035</b>	<b>0.025</b>	<b>0.560</b>	<b>0.512</b>	<b>0.067</b>	<b>0.033</b>	<b>0.535</b>	<b>0.661</b>

**Table 10.** Effect of biopesticides and NPK levels on tuber quality of potato.

Parameters	N %	P %	K %	Starch	Carbohyd- rates	Total sugars
<i>Treatments:</i>						
Control	1.46	0.250	1.398	70.03	75.70	4.61
<i>Tricoderma harzianum</i>	1.51	0.293	1.455	70.62	75.64	4.80
<i>Bacillus thuringiensis</i>	1.48	0.272	1.434	70.52	75.74	4.65
<b>L.S.D(0.05)</b>	<b>0.01</b>	<b>0.010</b>	<b>0.010</b>	<b>0.05</b>	<b>0.20</b>	<b>0.14</b>
<b>N P<sub>2</sub>O<sub>5</sub> K<sub>2</sub>O</b>						
0 0 0	1.34	0.241	1.391	70.03	75.21	4.50
10 10 20	1.47	0.263	1.413	70.29	75.75	4.72
20 20 40	1.57	0.303	1.465	70.66	76.01	4.91
40 40 80	1.54	0.271	1.431	70.59	75.81	4.78
<b>L.S.D. (0.05)</b>	<b>0.02</b>	<b>0.010</b>	<b>0.010</b>	<b>0.05</b>	<b>0.23</b>	<b>0.05</b>

**Table (11):** Effect of interaction between biopesticides and NPK levels on tuber quality of potato.

Biopesti-cides	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	N %	P %	K %	Starch	Carbohyd rates	Total sugars
Control	0	0	0	1.32	0.23	1.36	69.86	75.46	4.62
	10	10	20	1.45	0.25	1.38	69.94	75.72	4.75
	20	20	40	1.55	0.26	1.43	70.22	75.88	4.86
	40	40	80	1.51	0.25	1.41	70.11	75.67	4.79
<i>Tricoderma harzianum</i>	0	0	0	1.36	0.24	1.48	70.30	74.64	4.66
	10	10	20	1.50	0.29	1.44	70.47	75.78	4.83
	20	20	40	1.60	0.34	1.48	70.87	76.24	4.93
	40	40	80	1.56	0.29	1.46	70.84	75.90	4.80
<i>Bacillus thuringiensis</i>	0	0	0	1.35	0.24	1.40	69.94	75.53	4.63
	10	10	20	1.47	0.26	1.43	70.46	75.76	4.79
	20	20	40	1.57	0.31	1.46	70.88	75.90	4.9
	40	40	80	1.58	0.27	1.44	70.83	75.77	4.8
<b>L.S.(0.05)</b>				<b>NS</b>	<b>0.02</b>	<b>NS</b>	<b>0.11</b>	<b>0.47</b>	<b>0.03</b>