

Research Paper :

**Phytotoxic effect of neem based pesticides controller on seedlings of crucifer**

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**ABSTRACT**

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Investigation were carried out to scrutinize the effect of different neem based pesticides, viz., Neemazal, Bioneem, Neemgold, Nimbicide and Achook on germination of cabbage seeds at different concentrations. The effectiveness of the experimental pesticides in respect of seed germination could be arranged in following descending order. Nimbicide > Bioneem > Neemgold > Neemazal > Achook As regard the phytotoxic effect of neem-based pesticides due to seed treatment, it was found that no such symptom like chlorosis, yellowing, curling or burning of the leaves or other plant parts appeared. This clearly demonstrates that the tested neem based pesticides can safely be used for treating seeds of these crops except Achook.

**Key words :** Neem based pesticides, Germination, Phytotoxic effect.

Neem (*Azadirachta indica* A. Juss) product may be used in pest control. Neem is native to India. It belongs to the family Meliaceae, an attractive evergreen tree. Synthetic insecticides that are currently used to combat insect pests are dangerous due to toxic residues. Wide scale and indiscriminate application of these insecticides in pest control programmes have now led to the problems like resurgence, health hazards to environment, man and animals. Time has come to avoid the use of synthetic insecticides and opt for management of pest by the use of neem based pesticides. Properties and potential of natural pesticides from neem have been reviewed by Heyde *et al.* (1984) and (1990).

fresh samples and seeds of cabbage were contained from the vegetable farm of C.S. Azad University of Agriculture and Technology, Kanpur and local vegetable market, respectively. These seeds were fresh and free from diseases and pest infestation.

One hundred fifty seeds of cabbage were dipped in each concentration and soaked for 24 hours. Following this, the seeds were sown in the well manured and prepared field in Randomized Block Design. Each treatment was replicate thrice. The observations on germination were recorded after 10 days of sowing and per cent germination was worked out by counting the number of plants germinated.

**MATERIALS AND METHODS**

Various registered neem based pesticides viz., Bioneem, Neemgold, Nimbicide, Achook and Neemazal were obtained directly from their manufacturer to get the

**RESULTS AND DISCUSSION**

The results presented in Table 1 revealed that cabbage seedlings applied with neem based pesticides gave maximum seed germination under treatment of

**Table 1 : Total number of seeds germinated at different concentration under field conditions**

Sr. No.	Treatments	No. of seeds tested	Concentration (%)			Mean
			1.00%	2.00%	3.00%	
1.	Nimbicide	150	136	139	112	129.00
2.	Bioneem	150	120	125	100	115.00
3.	Neemgold	150	110	115	92	105.67
4.	Neemazal	150	95	90	80	88.33
5.	Achook	150	55	60	45	53.33
6.	Mean		103.20	105.80	85.80	98.27
7.	Control	150	Water Treatment			140.00
Source			S.E. (D)		C.D. (P = 0.05)	
Treatment			1.15		2.35	
Concentration			0.89		1.82	
Treatment x Concentration			1.99		4.07	
Control V/s Treatment			1.45		2.96	

**Table 2 : Per cent germination of seeds by various neem based pesticides at different concentrations**

Sr. No.	Treatments	No. of seeds tested	Concentration (%)			Mean
			1.00%	2.00%	3.00%	
1.	Nimbicidine	150	90.66	92.66	74.66	85.99
2.	Bioneem	150	80.00	83.33	66.66	76.66
3.	Neemgold	150	73.33	76.66	61.33	70.44
4.	Neemazal	150	63.33	60.00	53.33	58.89
5.	Achook	150	36.66	40.00	30.00	35.55
6.	Mean		68.79	70.53	57.19	65.50
7.	Control	150	Water Treatment			93.33
Source			S.E. (D)		C.D. (P = 0.05)	
Treatment			0.82		1.68	
Concentration			0.63		1.30	
Treatment x Concentration			1.43		2.92	
Control V/s Treatment			1.04		2.13	

**Table 3 : Per cent germination inhibition of cabbage seeds by various neem based pesticides at different concentrations**

Sr. No.	Treatments	No. of seeds tested	Concentration (%)			Mean
			1.00%	2.00%	3.00%	
1.	Nimbicidine	150	9.34	7.34	25.34	14.00
2.	Bioneem	150	20.00	16.67	33.34	23.34
3.	Neemgold	150	26.67	23.34	38.67	29.56
4.	Neemazal	150	36.67	40.00	46.67	41.11
5.	Achook	150	63.34	60.00	70.00	64.45
6.	Mean		31.20	29.47	42.80	34.49
7.	Control	150	Water Treatment			6.67
Source			S.E. (D)		C.D. (P = 0.05)	
Treatment			0.64		1.30	
Concentration			0.49		1.01	
Treatment x Concentration			1.10		2.25	
Control V/s Treatment			0.76		1.55	

Nimbicidine and Achook gave minimum seed germination under field conditions.

An experiment was laid out in a randomized block design with 3 replications of each treatment. The seeds were soaked in three concentrations (1.00, 2.00 and 3.00%) of each neem based pesticide and sown in the field. The data clearly demonstrate that 2.00 per cent concentration of each pesticide. The maximum seed germination of cabbage was 92.66 per cent in case of Nimbicidine. It was closely followed by Bioneem where the germination was 83.33 per cent in cabbage. The next in order of efficacy was Neemgold and Neemazal where the germination was recorded as 76.66% and 60.00%. The least effective pesticide recorded was Achook (40.00%).

The per cent germination (Table 2) was high in Nimbicidine (92.66%) than other treatment while inhibition of germination (Table 3) was high in Achook (60.00%) and least in Nimbicidine (7.34%). Dwivedi *et al.* (1995)

while studying the effect of six commercially available neem formulations also reported the adverse effect of Achook when the seeds of Okra were treated with 1.0% of its concentration, thus, the present finding appears to be in conformity with the observations of workers (Gupta and Kali Ram, 1981, Nandina *et al.*, 1985, Mojumder and Mishra, 1997).

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