

# Nano Capsules of Nske (Neem Seed Kernel Extract) On *Solanum Melongena* ---A Promising Organic Pesticide

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## Abstract

Pests are a new sense to all the farmers being a vegetable/fruit crop. A natural pesticide is more promising than a chemical one. Neem seed kernel Extract (NSKE) is a potential pesticide currently used at a dosage of 1 litre/sqhectar. Silver nanocapsules of NSKE is far better than NSKE at a dosage of 250 ml/ sqhectar. The brinjal plant when sprayed with nanosolution is more efficient than the normal NSKE(Neem Seed Kernel Extract)..

**Keywords:** Brinjal plant, nanosolution, NSKE. Nanoparticle, Nanosolution, Organic pesticide

## Introduction

Organic farming is an agricultural system that uses fertilizers of organic origin such as compost manure, green manure (Neem kernel). It originated early in the 20th century in reaction to rapidly changing farming practices. Organic farms provide a “win-win” (high yield and low variability) for environmental sustainability, while conventional farming provided a high crop yield with low variability.

The sale of organic crops is highly regulated and controlled. The environmental impact of organic farming is low and can be seen as a way of cleaning up and improving degraded agricultural land. The concepts of organic agriculture were developed in the early 1900s by Sir Albert Howard, F.H. King and Rudolf Steiner who believed that the use of animal manures (often made into compost), cover crops, crop rotation, and biologically based pest controls resulted in a better farming system.

Howard, an agricultural researcher, gained knowledge from the traditional and sustainable farming practices he encountered there and advocated for their adoption in the West [1].

Brinjal or aubergine or eggplant is famous for its culinary and medicinal uses. *Solanum melongena* purple vegetable is grown worldwide for its edible fruit. Although it is a native to south Asia it has now been widely naturalized in India; Himachal Pradesh is the primary producer. As the vegetable not commonly available in the local markets, it remains in high demand [2].

## Materials And Method

### Preparation Of Neem Seed Kernel Extract -Nske

5 kilogram of the kernel is pounded in a mortar and pestle and soaked in 10 liters of distilled water for one day. After 24 hours the solution becomes milky white then detergent soap from Khadi 200g is added stirred with a wooden Planck. Filter through double layer of muslin cloth and make the volume to 100 liters. Finally filtered and stored for further use. The shelf life of this Neem Kernel Extract is one week or seven days (Figure 6). The precautions are the Neem fruits are collected during bearing season and shade dried, the seeds over eight months of age are not used. The seeds stored over and above this age lose their activity and hence not fit for NSKE preparation.

## Pesticide Science and Pest Control

Always use freshly prepared Neem seed kernel extract (NSKE). The solution is sprayed after 3.30 pm to get effective results [4]. Extract preparation

NSKE was stirred with the solvent water, 2:1 v/v.

Nano capsules was prepared by dissolving in 10ml of silver nitrate solution.

### Experimental plant: *Solanum melongena* L

Leaf spot is caused by *Cercosporamelongenae* which is currently controlled by a chemical agent: Ridomet 1 gm/L applied at 4- 5 days after germination. This NSKE controls not only the leaf spot but also the yield is increased.

### Application method

It is applied as a foliar spray on the plant. Various concentrations such as 1, 10, 100, 1000 µg/L with the stock solution having NSKE: water, 2:1 v/v

The spray of NSKE on Brinjal plant at time intervals of 24 hours, 48 hours and 72 hours showed effective results. The results are shown in Tables 1.

### Results

The infected plants were controlled by the Neem seed kernel extract within 24 hours interval and at 100µL. Hence the efficacy of Neem seed kernel extract on the *Solanum melongena* is effective on fungus. (Table1).

**Table1:** Efficacy of Nske Nanocapsule on Brinjal Plant Affected by Cercospora Melongenae

S.No	Concentration of the extract µL	Time Interval (Hours)	Rate of control%	Positive Control Ridomet 1gm/1Stock%
1	100	24	95	100
2	100	48	90	100
3	1000	48	85	100
4	100	72	80	100
5	1000	72	85	100



**Fig 1:** Infected plant with *Cercosporamelongenae*



**Fig 2:** Preparation of Nske

## References

1. Ramesh, P., Singh, M., & Rao, A. S. (2005). Organic farming: Its relevance to the Indian context. *Current science*, 88(4), 561-568.
2. Yeh, E. Y. Y., & Davis, D. W. (2008). Re-nationalizing China's film industry: case study on the China Film Group and film marketization. *Journal of Chinese cinemas*, 2(1), 37-51.
3. Bhowmik, P. K., Matsui, T., Ikeuchi, T., & Suzuki, H. (2002). Changes in storage quality and shelf life of green asparagus over an extended harvest season. *Postharvest Biology and technology*, 26(3), 323-328.
4. Ley, S. V., Denholm, A. A., & Wood, A. (1993). The chemistry of azadirachtin. *Natural Product Reports*, 10(2), 109-157.