

RESEARCH REPORT

Comparative Evaluation of Citronella Flowers and Neem & Citronella in Relation to Environmental Conditions

Overview

- **Title of the Report:**
Testing Efficacy of Citronella Flowers and Neem & Citronella against adult mosquitoes in relation to Environmental conditions in Greater Noida.
- **Principal Investigator(s):**
Dr Anushrita
- **Affiliation:**
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- **Date of Submission:**
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Objective

This study aimed to evaluate and compare the efficacy of two mosquito repellents—"Citronella Flowers" and "Neem & Citronella"—by assessing adult mosquito catch rates during specified time intervals under semi-field conditions. Environmental variables such as temperature and humidity were recorded alongside mosquito catch counts to assess their influence.

Summary

The experiment was conducted in semi-field conditions – testing room (12*12 m), (inside GN premises) where adult mosquitoes were allowed to enter naturally. This study aimed to compare the effectiveness of Citronella Flowers and Neem & Citronella mosquito control products under varying environmental conditions (temperature and humidity) during different night-time intervals.

Methodology

- **Location:** Dish TV
- **Observation Period:** From 07:00 PM (30 July, 2025) to 04:05 AM (31 July, 2025).
- **Approach:**
 - Mosquitoes were captured using standardized traps in both treatment setups (with Citronella Flowers and Neem & Citronella) and control setups (without any product).
 - Each product was tested during four hourly intervals, with one period serving as the control (no incense sticks used). For treatment periods, 6 incense sticks were used consistently. Adult mosquitoes were

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monitored using human landing catch methods. Ambient temperature and relative humidity were recorded concurrently.

- Environmental parameters such as temperature (°C) and humidity (%) were recorded during each time slot.

Results

Citronella Flowers (30 July, 2025)

Time Period	Incense sticks used	Mosquito Catch	Temperature (°C)	Humidity (%)
07:00 PM – 08:00 PM (Control)	0	17	29.5	82
08:05 PM – 09:05 PM	6	6	29.1	82
09:30 PM – 10:30 PM	6	0	29	80
10:35 PM – 11:35 PM	6	0	27.2	79

- During the control period, a high catch of 17 mosquitoes was recorded in the absence of incense.
- After introducing 6 Citronella Flowers sticks, mosquito catch significantly dropped:
- 6 mosquitoes were caught in the first treatment hour.
- Zero catches were observed in the subsequent two hours, indicating a strong repellent effect with continued usage.

Neem & Citronella (31 July, 2025)

Time Period	Incense sticks used	Mosquito Catch	Temperature (°C)	Humidity (%)
11:50 PM – 00:50 AM (Control)	0	4	28.8	80
00:55 AM – 01:55 AM	6	0	28.3	79
02:00 AM – 03:00 AM	6	0	28.6	80

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03:05 AM – 04:05 AM	6	0	27.9	81
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- During the control period, 4 mosquitoes were caught.
- Upon application of 6 Neem & Citronella sticks, there was a consistent zero catch across all treatment periods, suggesting immediate and sustained repellency.

Discussion:

- Citronella Flowers demonstrated delayed but complete efficacy. While the mosquito catch reduced to 6 in the first treated hour, full suppression was achieved within 1.5 hours of incense application.
- Neem & Citronella showed instant and consistent repellency, with zero mosquito catch from the first hour of treatment and sustained throughout the testing duration.
- Environmental conditions during both tests were comparable, with slight variation in temperature and humidity:
- Humidity ranged from 79% to 82%
- Temperatures declined steadily through the night in both cases.
- The observed variation in mosquito activity is therefore more likely attributed to the efficacy of the repellent products rather than external weather factors.

Conclusion:

The findings suggest that both Citronella Flowers and Neem & Citronella incense sticks are effective in repelling mosquitoes under field conditions.

- Neem & Citronella displayed immediate and consistent repellency, maintaining a zero mosquito catch across all three treatment intervals.
- Citronella Flowers, though slightly delayed in action, ultimately provided complete repellency with continued exposure.

Both Citronella Flowers and Neem & Citronella performed better than their respective controls. However, Neem & Citronella showed faster onset of repellency, making it a potentially more suitable choice for rapid protection.

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