Bioefficacy of some botanicals and in combination with insecticide against Leucinodes orbonalis (Guenee) in brinjal under Allahabad agro-climatic condition

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Summary

In order to determine the bioefficacy of some botanicals (NSE 5%, BLE 5% Neem oil 2%) and in combination with Endosulfan 0.035% and alone 0.07%, against brinjal shoot and fruit borer, Leucinodes orbonalis, field trial was conducted during Kharif season 2009-10 at Allahabad (U.P.). The insecticides were used at their field recommended doses along with an untreated control. The effective treatment was Endosulfan (0.07%) followed by NSE (5%) + Endosulfan (0.035 %), Neem oil (2 %) + Endosulfan (0.035), BLE (5%) + Endosulfan (0.035) were found effective in reducing shoot and fruit borer whereas NSE 5%, BLE 5% and Neem oil 2 % existed in middle order. The maximum yield was obtained in Endosulfan (0.07%), followed by NSE + Endosulfan, (0.035), BLE (5%) + Endosulfan (0.035), Neem oil (2%) + Endosulfan0.035, whereas all the treatments were significant to over control.

Results and Discussion

The data presented in Table 1 reveal that, all the treatments were significantly superior over control (plot T0). The minimum infestation was recorded 9.66 treated with Endosulfan 0.07% on shoot, 17.24 on number basis and 16.59 on weight basis and it was significantly superior over all the treatments. Temurde et al. (1992) reported that Endosulfan treatment gave better performance against the shoot and
fruit borer infestation than Neem product. The next better treatment was of combination of botanicals and Endosulfan. \( T_4 \) (NSE 5% + Endosulfan 0.035%), \( T_6 \) (Neem oil 2% + Endosulfan 0.035%), \( T_7 \) (BLE 5% + Endosulfan 0.035%). The treatment were followed to these were \( T_1 \) (NSE 5%), \( T_3 \) (Neem oil 2%), \( T_2 \) (BLE 5%). The effectiveness of Endosulfan against the borer might be due to the quick knock down effect and it was a relevant from the present result that in general all the three botanicals provided satisfactory control of \( L.\ orbonalis \).

**Benefit cost ratio:**

The effect of pest control in crop by the pest agents are known to ensure higher crop yields by reducing the yield losses exhibiting in additional monitory benefit (Table 2). In the present investigation, considering the fruit yield of brinjal recorded in Endosulfan which was the most effective against \( L.\ orbonalis \) as the maximum yield (325.33). The application of botanicals in combination was from 266.33-317.33 q/ha and from alone botanicals 248.86-261.83 q/ha.

The cost benefit analysis of different insecticidal application relevant the highest monitory benefit (Rs. 88114.00/ha) with maximum (BCR 1:41.01 was of NSE 5% + Endosulfan) which was followed by all other treatments and were significantly superior and effective in suppressing the incidence shoot and fruit borer and significantly increase yield as compared to untreated control of both the parameters of number and weight.

**Conclusion:**

Considering all the above parameters together, on the basis of overall performance of botanicals and

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Approximate cost of insecticides + Labour (Rs.)</th>
<th>Average yield (q/ha)</th>
<th>Increased yield over control</th>
<th>Approximate sale price (Rs./q)</th>
<th>Value of increased yield/ha</th>
<th>Approximate net profit (Rs./ha)</th>
<th>Incremental cost benefit ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neem seed extract 5%</td>
<td>2775</td>
<td>261.83</td>
<td>49.33</td>
<td>800.00</td>
<td>39464.00</td>
<td>36689.00</td>
<td>1:13.22</td>
</tr>
<tr>
<td>Beshram leaf extract 5%</td>
<td>900</td>
<td>252.16</td>
<td>39.66</td>
<td>800.00</td>
<td>31728.00</td>
<td>30828.00</td>
<td>1:34.25</td>
</tr>
<tr>
<td>Neem oil 2%</td>
<td>6900</td>
<td>248.86</td>
<td>36.36</td>
<td>800.00</td>
<td>29088.00</td>
<td>22188.00</td>
<td>1:3.21</td>
</tr>
<tr>
<td>NSE 5% + Endosulfan 0.035%</td>
<td>2900</td>
<td>317.33</td>
<td>104.83</td>
<td>800.00</td>
<td>83864.00</td>
<td>80964.00</td>
<td>1:27.91</td>
</tr>
<tr>
<td>BLE 5% + Endosulfan 0.035%</td>
<td>1025</td>
<td>266.33</td>
<td>53.83</td>
<td>800.00</td>
<td>43064.00</td>
<td>42039.00</td>
<td>1:41.01</td>
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<tr>
<td>Neem oil 5% + Endosulfan 0.035%</td>
<td>7025</td>
<td>294.48</td>
<td>81.98</td>
<td>800.00</td>
<td>65584.00</td>
<td>58559.00</td>
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<tr>
<td>Endosulfan 0.07%</td>
<td>2150</td>
<td>325.33</td>
<td>112.83</td>
<td>800.00</td>
<td>90264.00</td>
<td>88114.00</td>
<td>1:40.98</td>
</tr>
<tr>
<td>Control</td>
<td>-</td>
<td>212.50</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Rate of insecticide:
1. Labour charge Rs 150/day
2. spray pump charge Rs 30 / day
3. Cost of Endosulfan 35 EC 250Rs/ lit
4. Cost of Neem seed 15 kg
5. Cost of Neem oil 120Rs/ lit

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\( \ast \)Figure in parenthesis are square root transform value.

\( \ast \)Mean data are from all five pickings

\( **\)Mean fruit damage on weight basis

\( \pm \)C.D (P=0.05)

![](image-url)
Endosulfan in management of *L. orbonalis*, Endosulfan alone followed by combination of botanicals + Endosulfan were more effective and economical treatment and were as compatible as the use of recommended chemical insecticide in combination with Endosulfan 0.07 per cent for the management of shoot and fruit borer (*L. orbonalis*) on brinjal.

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