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The U.S. Government's Global Hunger & Food Security Initiative



On-farm assessment of local neem oil against flowers thrips and cowpea pod borer *Maruca vitrata* Fabricius



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Legume Innovation Lab

Feed the Future Innovation Lab for Collaborative Research on Grain Legumes



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Problem

- Insect pests are one of the major constraints in the cowpea production.
- In Burkina Faso the most important pests in term of frequency are flowers thrips and *Maruca vitrata*.



- Chemicals are effective against these pests but are harmful to human and animals health

Problem

- Since that, bio-pesticide are used an alternative to chemicals because of their environment friendly effect.
- Among the bio-pesticides which lead to reduce pests' populations are the neem oils which have been used since long time.
- To date, it is locally produced with few information on its composition because not labelled

Objectives

1. Assess the neem oil against thrips and *Maruca* larvae in field conditions
2. The low concentration which lead to reduce pests' population

Methods

- Cowpea variety “tiligre” with 70 days of lifecycle was planted in the farmers’ fields.
- Local and cold-pressed neem oil was purchased and assessed.
- With this neem oil, four concentrations (1.25; 1.66; 2.5 and 5%) were made by diluting it into the water.
- The concentrations (%) respectively correspond to (oil volume/water volume): 1/80; 1/60; 1/40; 1/20
- Chemicals “Pacha” **Lambda-cyhalothrin (15g/l)/acetamiprid (10g/l)**



Methods

- Six treatments including control (untreated plot), chemicals and four concentrations of neem oil
- The spraying starts at the cowpea budding stage corresponding to the 40 DAP
- After spraying and at the flowering stage, the flowers were random collected twice a week. Flowers thrips and *Maruca* larvae were counted
- Data collected were subjected to an ANOVA using SAS software version 9 (2003). When ANOVAs were significant, the means were separated by the Student–Newman–Keuls test at the 5% level.

Means (\pm SE) of thrips and *Maruca* larvae/flower in cowpea field sprayed with neem oil

Treatments	Number of flowers thrips/flower	Number of <i>Maruca</i> larvae/flower
Control (unsprayed plot)	10.48 \pm 0.78 A	0.34 \pm 0.05 A
Chemicals	1.95 \pm 0.36 D	0.21 \pm 0.1 B
1.25 %	4.99 \pm 0.40 B	0.16 \pm 0.03 C
1.66 %	4.82 \pm 0.57 B	0.15 \pm 0.02 C
2.5 %	4.19 \pm 0.43 C	0.13 \pm 0.02 C
5 %	2.01 \pm 2.01 D	0.10 \pm 0.02 C
Probability	<.0001	0.013

Means within a column followed by the same letter (s) are not significantly different by a SNK test (P < 0.05)

Means (\pm SE) of pods and grains yields from cowpea field sprayed with neem oil

Treatments	Pods yield (kg/ha)	Grain yield (kg/ha)
Control (unsprayed plot)	1183.6 \pm 13.32 C	1034.5 \pm 21.32 B
Chemicals	2000.1 \pm 174.35 A	1624.1 \pm 61.93 A
1.25 %	2029.1 \pm 148.44 A	1620.4 \pm 26.80 A
1.66 %	1741.1 \pm 217.48 B	1442.8 \pm 74.07 A
2.5 %	1796.8 \pm 149.13 B	1511.4 \pm 102.73 A
5 %	1895.8 \pm 226.41 B	1556.3 \pm 99.47 A

Means within a column followed by the same letter (s) are not significantly different by a SNK test ($P < 0.05$)

Conclusion

- Local neem oil is effective in controlling thrips population in the field
- Need to further this study by combining local neem oil with *Maruca* virus.
- Neem oil can be the “**friend of the poor resources farmers**” specially the cowpea smallholders

Thank you for your kind attention !



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