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Comparative Assessment of the Insecticidal Potency of Tobacco Leaves Extract (Nicotiana Tabacum), Black Pepper Seeds (Uziza) Extract (Piper Guineense) and African Pepper Seeds (Uda) Extract (Xylapia Aetiopica)

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Abstract
The biological insecticide was produced with the extract of *nicotiana tabacum* (tobacco leaves) extract *xylopia actiopica* (African pepper (uda) seeds extract and *piper guineense* (Black pepper seeds (uziza)). These extracts were prepared from three different species of plants indigenous to Nigeria and they were tested for their insecticidal activity against *sitophilus zeamais* and *sitophilus oryzea* (weevils) under laboratory conditions at 30^{o}c: 24 hour light/dark regimes (methods / systems). The extracts *of xylopica aetiopics* and *piper guineaense* had the highest percentage of mortality (88% and 84%) respectively) when compared with the other treatments. *Nicotiana tabacum* has the least percentage of morality (70%). When the three extracts were combined at the same ratio it was observed that the percentage of morality of the mixture was significantly higher due to the high frequency of the properties of the three different plants extracts.
Keywords: Nicotiana tabacum xylopia actipica and piper guineense, insecticide, morality.

INTRODUCTION

Biological insecticides are gotten directly from plants or plants products. With the exception of sulphur, these have been the oldest used insecticide. Many of these insecticides are of great interest to organic gardeners because they are “natural products”. Because they are expensive to extract, they are generally unpracticeable in commercial agriculture (Larry, 1996).

The control of storage insects like zeammais and sitophilus oryzea centres mainly on the use of these synthetic insecticides. However, the use of these insecticides are hampered by many problems like development of insect resistant strains, prevention of the toxic residues from getting into man and animals’ food; workers safety and high cost of procurement (Sighamony, 1990).

These problems necessitated research on the use of alternatives eco-friendly cheaper insect pest control methods amongst which are the use of powdered plants parts and their extracts (Jembere, 1995).
In this particular study, various parts of indigenous plants species reputed to have both medicinal and insecticidal properties in Nigeria were tested as possible insecticides against the weevils.

Years, before the advent of synthetic insecticides materials gotten from natural sources provides means for controlling pests affecting the human population both directly and indirectly (Soloway, 1990).

Some of the biological insecticides include pyrethrins, ryania, rotenone, sabadilla, nicotine, citrus oil extract and neem extract. These insecticides rapidly degrade in the environment and are less threat to other organisms. Most of them may be applied to flood crops closer to harvest than other insecticides. Extracts of plants have been used as insecticides by humans from time of he ancient Romans, and continues till present with many of the 2000 species of plants known to have insecticidal properties (Harborne, 1982).

The aim of this research study is to determine the insecticidal activity of these three plants extracts and to determine the potency of the insecticide produced.

MATERIALS AND METHODS:

The plants materials were collected from Owerri main market in Imo state and authenticated by a crop scientist. The plant materials were air-dried in a well ventilated area in the laboratory for one week before grinding into fine powdered using electric blender (type-27B).

The powders were stored in polyethylene bags. Ethanol was used for extractions of the plants extracts 40g of the powdered plants materials each and a soxhlet extractor was used for the extraction. The extraction was continued for 3 hours. After the extraction, the extract was separated from the solvent by distillation and collected with a specimen bottle and refrigerated. This process was carried out for the three plants materials. (AOAC, 1996- American Organization of Analytical Chemistry).

30g of each of the plant material was also weighed and putter into separate beakers. 200ml of sterile hot water was used to soak each of the samples for 25hours and filtered using whatman filter paper. The filtrates

were put into different specimen bottles and refrigerated until they were used.

RESULTS AND DISCUSSION

Results: When the morality of maize and beans weevils are compared in the treatment with the four extracts: All the plants extracts had above 50% morality when compared with the control which recorded no morality at time interval.

However,xylopia aetiopica (uda), piper guineense extracts had the highest percentage morality when compared with other treatments as they caused 88% and 84% respectively; their effect was significantly better than the other treatments, effect of plant products on the mortality of plants &. Zeamais and S. oryzae adults. The various plants extracts used in the study significantly suppressed the emergency of adult S. zeamais and &. Oryzea.

When compared with the control at ration 1:1 when two different plant extracts (piper guineense and Nicotiana tabacum) are mixed at the same ratio and used to treat beans and maize weevils, the percentage adult emergence of these weevils was significantly lower than the other treatment. When compared with xylopia aetiopica and Nicotiana tabacum at the same ratio, it was significantly lower than other plant treatment. But when treated with xylopia aetiopica and piper guineense at the same ratio also, it was because the level of damage was more than that of xylopia aetiopica and Nictiana tabacum, piper guineense and Nicotiana tabacum and control.

When the three extracts mixture was compared with the control treatment than in the mixture of three plants extracts where few maize and beans were damaged by weevils.

DISCUSSION

The above results showed that all the plants products had varying degrees of insecticidal activities. The ability of theses plants extracts to cause morality of S. zeamais and S. oryzea adults on maize gr4ain and beans can be attributed to contract toxicity of te extract n the weevils.According to larry(1996), it is best ti make dust applications early in the day, while the plants are covered with dew, so that greater amount of dust will adhere.
Spray application will require the use of heavy equipment. Application of insecticides should be properly correlated with the occurrence of the most susceptible stage of life cycle of the pest involved.
However,proper timing of insecticides applications is important in obtaining satisfactory control. Dusts are more easily and rapidly applied than sprays.

According to Palmer, (2007), these insecticides can be used as a larricide against a wide variety of caterpillars because it has little effect on other organisms, it is considered more environmentally friendly than synthetic pesticides.

The treatment with the three different plants extracts combination at the ratio of 1:1:1 had the highest percentage mortality as well as reduced the number of adult emergence than any of the treatment.
Insecticidal property of any plant material depends on the active constitutes of the plant material. P. guineense contains piperine and chavicine which is insecticidal active ingredient; piperidine and alkaloids are the major active components in P. guineense seed. The reduction in adult emergence and seed perforation of the treatment with xylopia aetiopica and P. guineese extracts suggest that S. oryzea and S. zeamais development was adversely affected on grains treated the control more than those treated with these extracts.
The active components in these plants materials appear to be responsible for their insecticide properties against weevil.

The potency of the formulated insecticides was tested based on the time it takes to kill the pest organisms on a close contact. The insecticide was of different plant extract killed the pests at different time interval but the least time was spent with that of xylopia aetiopica (at 53 seconds).The control (termicot called chlorpyriphod 20%) did not kill the pest after 10 minutes.

CONCLUSION

Results obtained from this study demonstrated an attractive potential of these plant products a plant derived insecticides against weevil in Nigeria. These multiple effects of the extracts and their local availability make them attractive for the traditional up grading of post-harvest protection practices.

The effectiveness in reducing damage and control of S. zeamais and S. oryzea (weevil) infestation in maize grain and bean during storage could be encouraging and also a possible means of ensuring a steady supply of good and quality food.

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