**PERCEPTION OF LEAFY VEGETABLE FARMERS TO NEEM EXTRACT FOR THE CONTROL OF INSECTS IN AKINYELE LOCAL GOVERNMENT AREA OF OYO STATE, NIGERIA**

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The environmental injustice inherent in conventional pests management practices are perpetrated mainly through widespread exposure to chemicals used in agricultural production. The overall ill effect of this chemical based product to the environment and human health are some of the challenges which called for search of efficient and effective alternatives that are capable of replacing chemical pesticides in agricultural production. Thus, this study investigated the perception of leafy vegetable farmers to use of neeem extract for insect control in Akinyele Local Government Area of Oyo State. Sampling random sampling was used to select 60% of registered leafy vegetable farmers form Akinyele Local Government Area of Oyo state to give a total of 93 respondents. Interview schedule was used to obtain information from the respondents. Descriptive and inferential statistics were used for the data generated from the field.

The result showed that majority (59.9%) of the respondents were within the age range of 30-40 years with the mean age of 40.5. Majority (92.5%) of the respondents had formal education and majority (47.6%) of the respondents had mean household size of 5. High proportion (76.3%) of the respondents had between 5-10 years of farming experience and the mean farm size in the study area was 2 acres. Majority (58.1%) of the farmers used family labour while majority of the respondents had their average monthly income ranging from 21,000-30,000 naira. The result also revealed that the most utilized source of information about organic pesticide was through the radio (77.4%). The respondents’ level of knowledge on neem extract was high (84.9%), benefits derived from utilization of neem extract such as prevention of pest and diseases ranked highest (95.7%) and the constraint associated with the utilization of neem extract was also high (50.5%). Chi square test of relationship revealed that there was significant relationship between socio economic characteristics such as: Age (χ2= 26.668, p= 0.009), level of education (χ2 = 66.351, p = 0.007), income (χ2 =27.443, r= 0.007), major occupation (χ2= 28.592, r= 0.005), farm size (χ2=71.001, p= 0.000) and the vegetable farmers’ perception of neem extract. The study further revealed that respondents sources of information on neem extract (p= 0.001), benefits derived from application of neem extract (p= 0.029), and constraints associated with the utilization of neem extract (p= 0.000), had significant relationship with respondents’ perception of neem extract. The respondents had favourable perception of neem extract for the control of insects. Therefore, to sustain farmers’ interest in organic farming, the farmers should be motivated through training on application of neem extract and there should also be documentation of effectiveness and correct quantity of neem extract to use.

**Keywords**: Neem extract, perception, leafy vegetables, insects

**INTRODUCTION**

Pesticides are substances or mixture of substances used for preventing and controlling pest (FAO, 2002).The term pesticide includes insecticides, herbicides, nematicides, rodenticides, and fungicides (Gilden, Huffling, and Sattler, 2010). The council on scientific affairs, American Medical Association (1997) grouped pesticides based on chemical structure. The active ingredients are either inorganic or organic. Inorganic pesticides do not contain carbon and are usually derived from mineral ores which is extracted from the earth. Examples include copper sulphate, ferrous sulphate, copper and sulphur. Organic pesticides have carbon as the basis of their chemical structure. Inorganic pesticides have active ingredients that operate faster in preventing and controlling insects which in turn helps in increasing the yield of crops; Deedat, (1994). This has over time caused a lot of damage by harming beneficial organisms, affecting biodiversity, increasing insect resistance, depletion of essential nutrients like Nitrogen and phosphorus in the soil as well as causing severe health problems such as cancer in humans (FAO, 2007). However natural organic pesticide is safer for humans and non -target organism such as earthworm and fishes. Hence, there is a need to develop a safer, more environmentally friendly and efficient alternatives that have the potential to replace synthetic pesticides and are convenient to use (Tapondjou, 2005). In recent decades, research on the interactions between plants and insects has revealed the potential use of plant metabolites for the purpose of killing or repelling insects Pavela, (2004). With respect to this, Neem an example of such plants is the focus of this study.

Neem’s unique feature in terms of its insecticidal properties; has over 100 compounds with pesticidal properties which are used for damaging over 500 types of insects such as ticks, whiteflies, thrips, leafminers, caterpillars, aphids, scales, beetles, true bugs, mealy bugs and nematodes (Thacker 2002, Copping 2001). Neem acts as a broad spectrum repellent and insect regulator which causes deformities in the insect offspring; as an insect growth regulator, it prevents insects from molting by inhibiting production of ecdysone an insect hormone (Weinzierl and Henn, 1991). Neem also discourages feeding by making plants unpalatable to insects Sarode, Deotale and Thakure, (1995) or suppresses the insects’ appetite (anti fedant effects) and if the insects still attack it limits their ability to moult and lay eggs. The use of these plants for insecticidal purposes in storage pests control has been documented (Dike and Msheila, 1997). The active insecticidal compounds in neem include Azadirachtin, Nimbin, Salannin and Meliatriol (Vietmeyer, 1992) which are concentrated more in the seed and tree bark. Neem leaf extract have also been reported to be very effective in the control of insects of leafy vegetables in Nigeria; Aderolu, Omoloye and Ojo (2012); Okunlola and Akinrinola (2013). Therefore, an assessment of the perception of vegetable farmers on neem extract will help to determine how effective neem extract is in controlling insects of leafy vegetable crops.

Farmers all over Nigeria especially the resource poor ones have been using botanicals successfully for protecting their crops against insect pests, nematode, fungal and bacterial diseases either on the field or in the store (Anjorin, Salako and Ndana, 2004). Several scientists and farmers have reported the use of crude or formulated bioactive plant pesticide in Nigeria (Anjorin *et al.,* 2004). Salako (2002) stated that the use of *A. indica* on the farm for the control of insectshas obvious advantages; it is relatively cheap and easily available, its complex mixture of active ingredients which function differently on various parts of the insects life cycle and physiology makes it difficult for pests to develop resistance to it. Schmutterer, (1990) opined that neem products are suitable for integrated pest management because of their low toxicity to non- target organisms, easy preparation and compatibility with other bio-products. Aderolu, Omoloye and Ojo (2012); Okunlola and Akinrinola (2013) reported that Neem extract is effective in controlling insects of leafy vegetables than other botanical pesticide. Despite the various importance of neem in controlling insects, its potential has not been fully utilized due to numerous social reasons that are yet unknown; hence it becomes imperative to carry out a research on the perception of vegetable farmers to neem extract for the control of insect.

 **Objectives of the study**

1. identify the socio economic characteristics of the farmers;
2. determine the farmers sources of information on neem extract;
3. ascertain the farmers’ level of knowledge on neem extract;
4. determine the farmers perception of neem extract;
5. find out the benefits derived from utilization of neem extract and,
6. identify the constraints associated with the utilization of neem extract during vegetable production.

**METHODOLOGY**

The study area of this research is Akinyele Local Government area of Oyo State, Nigeria. A list of registered leafy vegetable farmers was obtained from leafy vegetable farmers association located in the study area. Multistage sampling technique was adopted in which three villages were purposively selected out of the twelve wards which are; Ajibode, Ojoo, and Elekuru and this is because of the high population of leafy vegetable farmers in the villages; simple random sampling was used to select 60% of the estimated number of vegetable farmers in the local government to give a total number of 93 vegetable farmers. The use of descriptive and inferential statistics was used to the analysis the data.

**RESULTS AND DISCUSSION**

The result depicted in table 1 shows that majority (78.5%) of the respondents are married, above average, (52.7%) had secondary education, about half (50.5%) of the respondents earn between 21-30 thousand naira per month and that majority (58.1%) of the population made use of family labour.

**Table 1: Distribution of respondents by socio- economic characteristics**

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| --- |
| **Variables Frequency Percentage Mean value** |
| **Marital status**Single 16 17.2Married 73 78.4Widowed 4 4.4**Educational attainment** Non- formal education 8 8.6Primary education 29 31.2Secondary education 49 52.7  |

 Tertiary education 7 7.5

 **Income**

 10000-20000 16 17.2

 21000-30000 47 50.5

 31000-40000 24 25.8

 >40000 6 6.5

 **Household Size**

 >3 13 14.0 5

 5-10 71 76.3

 11-15 9 9.7

 **Sources of labour**

 Family 54 58.1

 Hired labour 22 23.7

 Family and hired labour 13 13.9

 Communal labour 4 4.3

|  |  |  |
| --- | --- | --- |
| Results further shows majority (84.9%) of the respondents had a high level of knowledge on application of neem extract on the farm, majority (68.8%) of the respondents opined that neem extract to a lesser extent kills all insects present on the vegetable farm after infestation. However, majority (38.7%) of the respondents considered inadequate knowledge of the correct measurement of neem extract solution to apply on the farm as a serious constraint which shows that inadequate knowledge and information on measurement can affect the efficacy of neem extract. However, the perception of the respondents on neem extract was favourable (52.7%)**Table 2: Distribution of respondents on perception of neem extract**

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| --- |
| **Perception of Neem Score range Frequency Percentage (%) Mean** |

|  |
| --- |
| Unfavourable 6- 36.5 44 47.3 36.6 |

 Favourable ≥ 36.6 49 52.7 Total 93 100Source: Field survey, 2014 The study further revealed that respondents’ sources of information on neem extract (p= 0.001), benefits derived from application of neem extract (p= 0.029), and constraints associated with the utilization of neem extract (p= 0.000), had a significant relationship with their perception of neem extract. **REFERENCES**Aderolu, I. A., Omoloye, A. A., Ojo, J. A. (2012).Comparative Evaluation of Modified Neem Leaf, Wood Ash and Neem Leaf Extracts for *Hymenia recurvalis* control on *Amaranthus* spp. in Ibadan Southwest Nigeria. *Journal of Horticultural & Crop Science Research.* Vol.2, No 01 pp. 27-35Aderolu, I. A., Omooloye, A. A., Okelana, F. A. (2013). Occurrence, Abundance and Control of the Major Insect Pests Associated with Amaranths in Ibadan, Nigeria. Retrived from <http://dx.doi.org/10.4172/2161-0983.1000112>. Date assessed 13-12-14 Anjorin S. T., Salako, E. A., and Ndana, R.W. (2004). “In vitro assessment of some plants leaf extracts for the control of Meloidogyne spp” and Rhizoctonia solani Zuma. *Journal of Pure Appllied Science.* Vol7 No 1.57pBonner M. R., Hoppin J. A., Sandler D. P, Lubin J. H. and Freeman L. E. (2005). Pesticide Exposure and Cancer Incidence in Agricultural Health Study. Published by Elsevier Inc. Deedat, Y. D (1994). Problems associated with the use of pesticides: An overview. *Journal of* Insect Science. Vol 15, No 12, pp 247-251.Dike, M. C. and Msheila, G. B. (1997). Laboratory asses sment of the efficacy of *Eucalyptus* leaf and stem powders in the control of *Callosobruchus maculatus* (F.) on stored cowpea. *Samaru Journal of Agricultural Research* Vol 14: pp 11 – 18.Food and Agriculture Organization of the United Nations (2002), [International Code of Conduct on the Distribution and Use of Pesticides](http://www.fao.org/WAICENT/FAOINFO/AGRICULT/AGP/AGPP/Pesticid/Code/Download/code.pdf), Date assessed 15/7/2014FAO (2007). Designing National Pesticide Legislation. Food and Agriculture Organization of the United Nations, Rome.Gilden., R. C, Huffling., K. and Sattler, B. (2010). "Pesticides and health risks". *J Obstet Gynecol Neonatal Nurs*. Vol 39 . No 1: pp 103–10Okunlola,s A. I. and Akinrinnola, O. (2013). Effectiveness of botanical formulations in vegetable production and bio-diversity preservation in Ondo State, Nigeria. Academic Journals http://www.academicjournals.org Vol. 6 No1, pp. 6-13,. Olonibua, O. O. (2012). Consumers’ willingness to pay for organically grown leafy vegetable by residents of Bodija area in Ibadan North local government area of Oyo State, Nigeria a B. Agric Thesis in the department of Agricultural Economics, University of Ibadan, Nigeria. 4pp. Pavela, R., Pimentel, D., Hepperly, P., Hanson, J., Douds, D. and Seidel R. (2005). Insecticidal activity of certain medicinal plants. *Journal of Bioscience* Vol 75: pp 745–749. Rajiv K. Sinha and Sunil Herat (2012). Organic farming: producing chemical-free, nutritive and protective food for the society while also protecting the farm soil by earthworms and vermicompost *Agricultural Science Research Journals Vol*. 2(5); pp. 217-239 Salako E.A., (2002) Plant protection for the resource-poor farmers. A keynote address at Nigerian Society for Plant Protection. 30th Annual conference. UNAAB, Abeokuta Sept. Sarode, S.V., Deotale, R. O and Thakure, H. S. (1995). Evaluation of neem seed kernel extract for the management of *Helicoverpa armigera* on pegion pea. *Indian Journal of Entomology.*Vol57 No 4: pp 385-388.Satti, A. A., Mohamed, E. E and Abdin, E. M. (2010) Insecticidal activities of neem (*Azadirachta indica* A. Juss) seeds under laboratory and field conditions as affected by different storage durations. *Agriculture and biology journal of north america*. pp 2151-7517Schmutterer, H. (1990). Properties and potential of natural pesticides form the neem tree, Azadirachta indica. Ann. Review of Entomol. Vol 35 pp 271-297Tapondjou A.L, C. Adler, D.A. Fontem, H. Bouda, C. Reichmuth (2005). “Bioactivities of cymol and essential oils of *Cupressus sempervirens* and *Eucalyptus*  *saligna* against *Sitophilus zeamais* Motschulsky and *Tribolium confusum* du Val”. *Journal of Stored Products Research*, 41 pp. 91–102Thacker, J. R. M. (2002). An Introduction to Arthropod Pest Control. Cambridge University Press Vietmeyer, N. D. (1992). Neem: A tree for solving global problems. Report of an Adhoc Panel of the Board of Science and Technology for International Development,Ed. : National Research Council, Washington D.C. USA, N*ational Press,* pp. 141Weinzierl, R. and T. Henn. (1991) Alternatives in Insect management:Biological and Biorational Approaches. North Central Regional Extension, Publication 401 |