Bridging the Gap between Old and New Technology: Consideration of Indigenous Knowledge in Maize Pests Management Practices in Nigeria

MELUDU NKIRU THERESA AND ADESINA JIMOH B.

Key words: Ecology, Indigenous, Knowledge, Organic, Food, Sustainability

Abstract

Effects of chemical based products on the environment and human health have been established. This study determined the perception of the effectiveness of indigenous and organic maize pest management practices among maize farmers in order to bridge the gap between the old and new technology. Farmers' level of awareness on indigenous and organic maize pests management practices was high (58%) and the respondents level of utilization was also high at (61.3%), with a favourable perception about the effectiveness of indigenous and organic maize pests management practices and some of these practices are; cultural practices of traps, practice of bush fallow, early planting, crop rotation, mixed cropping system and biological pest control. Improvement of information on indigenous best practices to merge with Ecological Organic Agriculture system for maize pest management through adequate extension services is eminent to enhance sustainable health of food and farmers.

Introduction

Maize is considered in this research because it is a very important crop in Nigerian. It is utilized mainly for human consumption and used as constituents of livestock feed. It is a staple food and is an important source of carbohydrate and if eaten in the matured state, it provides useful quantities of vitamins C. The yellow grain varieties have vitamin A. It is a source of income and maize leaves and stalks contain about 30% of the total nutrients in corn plants; hence it is utilized for pasture. Maize also occupies a central position in having a meaningful, workable and effective food security system in any society. Indigenous knowledge (IK) is the knowledge used by local people to make a living in a particular environment (Warren, 1991). This is often conceptualizing in the field of sustainable development to include indigenous technical knowledge, traditional environmental knowledge, rural knowledge, local knowledge and farmer's or pastoralist's knowledge. "A body of knowledge built up by a group of people through generations of living in close contact with nature" (Johnson, 1992). It is acquired through observation and the study handed down from generation to generation for sustainable development (Achim, 2008, Akinbile, 2006). Such practices help to protect the natural ecology. The issue of pest management has to be linked with ecological organic agriculture which is the practice of eco-friendly and organic agriculture that is strictly on production system that sustain the health of soil, ecosystem and people. It combines tradition, innovations and science to the benefits shared in environment and promotes fair relationships and a good quality of life for all involved and this is also what the indigenous knowledge highlights.

Therefore, traditional ecological organic agriculture is important for the identification of indigenous practices and for the formulation of sustainable pest management strategies relevant to ecological production management system that would promote and enhance biodiversity. In view of the above, an assessment of indigenous and organic maize pests' management practices in the study area will help to show how effective these practices are and guide us to provide a clear picture of what is needed to promote organic agriculture in order to ensure effective management of our natural resources.

Methods

The study was carried out in Oyo State. Oyo State is one of the food baskets of Nigeria. Beside Ibadan, there are four (4) big towns with large population; they are Ogbomoso, Oyo, Iseyin, and Saki. Other fairly big towns in the state are Igboho, Kishi, Okeho, Igboora, Ialupon, Ilero, Eruwa and Igbeti. Agriculture is the major source of income for the greater number of people in the state. Apart from providing food and shelter, employment, industrial raw materials, it remains an important source of internally generated revenue in the state. The climate favours the growth of food crops like yam, cassava, millet, maize, fruits, vegetables and plantains. Cash crops such as cocoa, Tobacco and Timber are also abound in the state. The state has two vegetation zones which are derived savannah and forest zones. The target population of the study includes all maize farmers in Oyo state. Purposive sampling method was used to select two Local Government Areas (LGAs) out of thirty three local government areas in the state where maize farming is the major activity of the

dwellers because of the focus of the study which is to determine the effectiveness of indigenous and organic maize pest's management practices in Oyo sate. The selected Local Government areas were Itesiwaju and Atisbo Local Government Area. Thereafter a systematic sampling technique was used to select 25 percent of the registered maize farmers from each of the Local Government area making a total of 150 (One hundred and fifty) respondents. The data for the study was collected using structured questionnaire combined with personal interview schedule to elicit information from maize farmers that cannot complete the questionnaire on their own.

Results

The general objective of the study was to determine the effectiveness of indigenous and organic maize pest management practices in Oyo state. The specific objectives however include to ascertain sources of information on indigenous and organic maize pests management practices, to identify knowledge of prevalent maize pests and the damage caused in the study area, to ascertain farmers level of awareness on indigenous and organic maize pests management practices, to determine farmers level of utilization of indigenous and organic maize pests management practices and to determine farmers perception about the effectiveness of indigenous and organic maize pests management practices. Result of analysis on selected socio- economic characteristics showed that the respondents have the mean age of 49.97 years. Majority (62%) had formal education while few (38%) had no formal education. Majority (64.7) of the respondents had between 1–30 years farming experience while (35.3%) had 31 and above years farming experience. The farmers had an average farm size of nine (9), with average monthly income of $150, majority (57.3%) of the respondents used both family labour and hired labour while (38%) of the respondents used hired labour and very few (4.7%) used family labour, the sources of land acquisition are mainly on inheritance with majority (78.7%) of the respondents farming on inherited family land.

On sources of information on indigenous and organic knowledge of maize pests' management, majority had access to information on a regular basis through the following sources, fellow farmers (72%), relatives (66%) and radio (65.3%) respondents. It was also noted that most of the information sources provided farmers with useful information on ecological knowledge of pests' management practices but not on a regularly. The farmers knowledge of prevalent maize pests and the damage caused by the pests was very high with majority (87.3%) of the total respondents had high knowledge of the prevalent pests and the damage caused to the maize both on the field and in storage house, while (12.7%) of the respondents had low knowledge of maize pests and their damage caused to the maize plant. Moreover, the result of the study also revealed that majority (58%) of the respondents had high awareness of indigenous and organic maize pests' management practices, while 42% of the respondents had low awareness level of indigenous and organic maize pest management practices. The high awareness implies that respondents are fully aware of what indigenous and organic maize pest management practices entails. Besides, farmers' utilization level of indigenous and organic maize pest management practices was also high at 61.3% level. Their high level of utilization was as a result of the high awareness level of indigenous and organic maize pest management practices in the study area. The result of the analysis also showed that more than half (58%) of the respondents had favourable perception towards the effectiveness of indigenous and organic maize pests management practices, while less than half (42%) of the respondents had unfavourable perception.

The study also revealed that, there was no significant relationship between socio – economic characteristics such as age ($r = 0.091$, $p = 0.270$), year of formal education ($r = 0.010$, $p = 0.903$), farming experience ($r = 0.128$, $p = 0.120$), family size ($r = 0.072$, $p = 0.380$), average income per month ($r = 0.056$, $p = 0.499$) and respondents perception of the effectiveness of indigenous and organic maize pest management practices. The implication of these results is that age, years of formal education, farming experience; family size and average income per month do not necessarily vary with the respondents' perception of the effectiveness of indigenous and organic knowledge of maize pest management practices. This implies that farmer's perception of the effectiveness of indigenous and organic maize pest management practices is not influenced by the respondent's those variables. However, It was revealed form the findings that there is no significant relationship between sources of information ($r = .036$, $p=0.663$), awareness ($r = -.039$, $p=0.637$), knowledge ($r = -.083$, $p= 0.311$) and respondents' perception of the effectiveness of indigenous and organic maize pest management practices in the study area. This implies that farmer's perception is not influenced by the sources of information, awareness and knowledge.

Discussion

Based on the result of this study, the respondents' level of awareness towards the effectiveness of indigenous and organic knowledge of maize pest management practices was high, the utilization of these management practices was also high and their perception was also favourable. Many respondents still were not awareness, had low utilization and unfavourable perception to some indigenous and organic maize pest management practices. The farmers perceive indigenous knowledge and organic system to mean the same and better option for against conventional farming system.

Suggestions to tackle with the future challenges

Based on the result of this study, the respondents' level of awareness towards the effectiveness of indigenous and organic knowledge of maize pest management practices was high, the utilization of these management practices was also high and their perception was also favourable. Many respondents still were not awareness, had low utilization and unfavourable perception to some indigenous and organic maize pest management practices. The farmers perceive indigenous knowledge and organic system to mean the same and better option for against conventional farming system.

References

Akinbile LA (2006). Indigenous pest management and the future of sustainable farming. Department of Agricultural extension and rural development. University of Ibadan. Pp 269 -273

Johnson, M. (1992): Capturing Traditional Environment Knowledge. IDRC: Ottawa, Canada

Warren, D.M. (1991): Using Indigenous Knowledge for Agricultural Development. World Bank Discussion Paper 127, Washington, D. C.