

Information Sources to Cocoa Farmers on Integrated Pest Management (IPM) in Edo State, Nigeria

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Abstract: Nigeria was among the leading cocoa producing nations until oil discovery in early 70's. This trend changed due to over dependence on this oil and effect of insect pests and diseases which have largely contributed to the declining productivity of cocoa in Nigeria. This study ascertained the selected personal characteristics of the respondents, investigate their information sources, find out respondents access to sources of information and determined the respondents' level of IPM utilisation. This study was carried out in Edo state where 60 cocoa farmers were randomly selected and questionnaire was administered to elicit information from the farmers. The results revealed that Most (90.0%) of the farmers were males who were in their prime age and 73.3% had formal education. Their main sources of information were Farmers Field School (FFS) (100.0%) and ADP extension agents (35.0%). Majority of the respondents belong to different farmers association. Extension agent's visit to the farmers was low as they mostly visit once a month (23.0%) and once a year (21.0%). Utilization of IPM was high (75.0%) which signifies that some of the farmers have adopted the technique. There was significant relationship between sex ($X^2=5.4545$, $p<0.05$), Education ($X^2=11.4190$, $p<0.05$), cocoa farmers membership of association ($X^2=7.2163$, $p<0.05$) and IPM utilisation. Cocoa farmers in the study area need to be encouraged in the use more of cultural practices as they are still active in farming. Also, Cocoa Research Institute of Nigeria and ADP Extension agents should increase their contact with these farmers to enhance their knowledge in IPM utilization.

Key words: Integrated pest management • Cocoa farmers • Knowledge • Utilisation

INTRODUCTION

Nigeria was among the leading cocoa producing nations until oil discovery in early 1970s. This trend changed when oil was discovered in the early 70s and till date, attention given to agricultural sector and cocoa industry in particular is grossly inadequate. Cocoa production over the years has declined due to neglect suffered by agricultural sector. Decline in cocoa production especially in Nigeria is due to the incidences of pests and diseases among other factors [1].

Pests and diseases have largely contributed to the declining productivity of cocoa in Nigeria. It was also reported that in Nigeria, the brown cocoa mirid, *Sahlbergella singularis* Haglund (Hemiptera: Miridae) remains the major insect pest of cocoa capable of reducing yield by a minimum of 30% in a season [2] while black pod caused by *Phytophthora megakarya* is the major

disease. Concerted research efforts have been made to develop various control techniques (cultural, biological and chemical) which could be harnessed for integrated pest management of the important pests and diseases of cocoa in Nigeria. However, an effective process for the transfer of technologies to cocoa farmers that will enable them to understand and adopt these more ecological approaches has been lacking. The extension of these technologies to the farmer would need to be pursued vigorously to increase the effective hectares of established cocoa in Nigeria.

In response to this development IITA/STCP established Farmers Field School in the 14 cocoa producing area using Cocoa Research Institute of Nigeria (CRIN) subject matter specialist to train trainers on Integrated Pest Management of cocoa. Umar *et al.* [3] posited that, communication is significant to any teaching it is vital tool for promoting knowledge flow, information

dissemination and delivery of learning content in extension services. He further stated that, communication in extension is defined as a process of interaction to transmit information, ideas, technology and feelings etc from extension agents to the farmers which result in a changed situation.

...[4] opined that information on new technologies and innovations reaches a larger proportion of farmers through personal contacts such as visits from extension agents while electronics and other mass media methods are scarcely used. The high cost of print media and time slots through electronic and other mass media methods are inappropriate and inconsistent government policy could be identified as reasons for the high reliance on personal contact especially in developing countries [5].

[4] stated that interpersonal communication is regarded to be an effective but not sufficient method of bringing about change especially among the rural poor. [6] opined that some other functional qualities in personal communicative intervention strategy include the following amongst others - In-depth dialogue, Tailor-made small group meetings, Interpersonal contact which promote flexibility in time during interaction with farmers, thus can be adjusted to suit different groups of individuals, High spatial flexibility, meetings can take place in diverse environment such as farmers' field, farmers' homestead, markets and community centres. These findings indicate that no single extension method is sufficient in the training of farmers. A combination of two or more methods produces positive effects on farmers' acceptance of information than only one technique [7].

[8], equally noted that the knowledge and information accessibility of farmers about some aspects of agricultural practices usually pose problems to farmers as there is inadequacies in their knowledge of certain basic practices with reference to social, legal and marketing of agricultural information.

Information transfer of technologies always assists farmers or other end users to have access to developed technologies which would have been wasted if left on shelf. Hence the development of cultural practices by CRIN to be used by farmers will be a wasted effort if these techniques do not get to cocoa farmers' farms. Hence this study assessed the information sources to cocoa farmers on pest control in the study area.

The specific objectives are to:

- Ascertain the personal characteristics of cocoa farmers in the study area,

- Investigate the information sources to cocoa farmers in the study area,
- Find out respondents access to sources of information in the study area and determine the respondents' level of IPM utilisation

Hypothesis 1: There is no significant relationship between sources of information and IPM utilisation.

MATERIALS AND METHODS

Edo state was purposively as it is one of the cocoa producing states in Nigeria. In the state a systematic random sampling technique was used by picking respondents at intervals of 3, 4, 5 to select sixty (60) farmers out of 100 IPM trained farmers of Farmers Field School (FFS) organised by STCP and IITA. Structured questionnaire was used to elicit information from the respondents which were presented with charts, frequency, percentages and analysed with Chi-square

RESULTS AND DISCUSSION

Respondents' Years of Experience in Cocoa Farming: Data presented in Table 1 showed that more of the trained 55.0% have longer years of experience than untrained 33.3%. The overall picture indicates that 44.2% had above 30 years experience which shows that the farmers have moderate years of experience in cocoa farming. This could have positive effect on IPM practices. This means that some might be expected to have considerable knowledge about insect pest and disease control of their cocoa trees. The old age of the farmers translates to high farming experience as majority could have started farming at an early age. This is in agreement with those obtained by Amos (2007) that farming experience is important for day-to-day running of the farming activities including IPM practices, as cocoa cultivation is very tasking.

Respondents' Farm Size: Fig. 1 shows that 51.7% of the trained had farm size between 6 and 10 ha, 43.3% had 1-5 ha while only 5.0% had farm size greater than 10 ha. For the untrained 85.0% own 1-5 ha while only 15.0% own farm size between 6 and 10 ha and none of them have farms above 10 ha. The overall picture shows that 64.2% of the respondents own 1-5 ha.

This implies that majority of the farmers own small farm, which may make it easy for them to adopt IPM technologies. However, cultural practices such as manual weeding which is labour intensive will not be a stress for

Table 1: Distribution of respondents by years of farming experience

Farming Experience in ((Years)	Trained		Untrained		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
10-Jan	3	5	3	5	6	5
20-Nov	10	16.7	20	33.3	30	25
21-30	14	23.3	17	28.3	31	25.8
>30	33	55	20	33.3	53	44.2
Total	60	100	60	100	120	100

Source: Field Survey, 2008

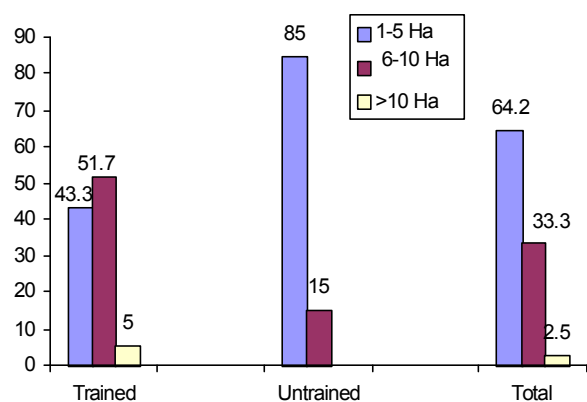


Fig. 5.2: Frequency distribution of respondents' farm sizes. Source: Field Survey, 2008

the respondents. This finding is in agreement with those reported by Amos (2007) who observed that farmers own an average farm size of six hectares that are scattered in different locations in the locality. This farm size led to an average output of 1348.1kg. This is relatively small compared to potential figures of over two tonnes obtainable elsewhere. This may be related to the age of the farms as most farms in Ondo State are bedeviled by old age.

Also, some studies had reported that farm size has been variously found to be positive to adoption (Zilberman, 1985; Feder, *et al.*, McNamara, *et al.*, 1991; Abara and Singh, 1993; Just and Fernandez-Cornejo, 1996; Kasenge, 1998) while Yaron, *et al.*, 1992; Harper *et al.*, 1990 found out that age is negative to adoption and Mugisa-Mutetikka *et al.*, 2000 reported that farm size was neutral in their findings. Farm size affects adoption costs, risk perceptions, human capital, credit constraints, labor requirements as well as tenure arrangements. With small farms, it has been argued that large fixed costs become a constraint to technology adoption (Abara and Singh, 1993)

RMDRC (2004) observed in the commodity survey in Nigeria on cocoa that cocoa farmers had approximately 54.4%, 27.5% and 18.1%, representing small, medium and large holdings respectively (in terms of cocoa hectareage).

This is in line with the findings of this study that majority of the respondents are small scale farmers which will favour IPM adoption.

Respondents' Sources of Information: Table 2 shows that all the respondents (100.0%) obtained information from Farmers Field School, 5.0% from newspaper, 35.0% from ADP extension agents, 5.0% from both radio and CRIN. Lack of information on IPM practices could affect its adoption as farmers would practice what is at their disposal.

....[9] found out that acquisition of information about a new technology demystifies it and makes it more available to farmers. He further stated that information reduces the uncertainty about a technology's performance hence may change individual's assessment from purely subjective to objective over time.

Rate of Extension Agent Visit to Respondents: Table 3 shows that 23.3% of the respondents were visited by ADP extension agents once in a month, 11.7% twice in a month, 21.7% once a year and 16.7% once in a year. The result shows that farmers are not visited regularly which could affect information about IPM practices. It has been reported that communication media have been successfully applied to change rice farmers' pest management practices in the Mekong Delta . It is well recognized that pesticide sellers have a stronger presence than extension agents in many farming communities and are sought by farmers for advice because of their accessibility [10]. It is imperative that participatory research and mass media campaigns be commenced to show farmers that alternative to pesticides and more sustainable approaches for pest and disease management are possible.

Level of Ipm Utilisation by Respondents: The level of IPM utilisation was categorized by assigning scores to each IPM technique based on the number of times such practice is carried out in a year and all the scores were cumulated to get the mean which was used to categorise

Table 2: Frequency distribution of respondents' sources of information on IPM techniques

Sources of information	Frequency	Percentage
ADP Extension agent	21	35
Farmers field school (STCP)	60	100
Radio	3	5
CRIN	3	5
Newspaper	1	1.7

Source: Field Survey, 2008. Multiple responses

Table 3: Frequency distribution of extension agents' visit. (n=60)

Number of visits	Frequency	Percentage
Once a month	14	23.3
Twice a month	7	11.7
Once a year	13	21.7
Twice a year	10	16.7

Source: Field Survey, 2008

Table 4: Respondents' level of IPM utilisation

Number of visits	Frequency	Percentage
Once a month	14	23.3
Twice a month	7	11.7
Once a year	13	21.7
Twice a year	10	16.7

Source: Field survey, 2008 Mean = 39.4

Table 5: Chi-Square showing significant relationship between sources of information and IPM utilisation

Sources of information	X ²	df	CC	P	Decision
CRIN	1.45	2	0.13	0.58	NS
Radio					
Newspaper	0.38	1	0.07	0.63	NS
Farmers Field School	0.57	3	0.08	0.44	NS
ADP Extension agents	10.7	2	0.75	0.03	S
	8.42	4	0.47	0.05	S

Source: Field survey, 2008

Significant at *0.05 level of probability

the respondents into high user and low users. The result on Table 4 reveals that most (75.0%) of the respondents were high users and 25.0% were low users. This implies that some of the respondents have more information on IPM techniques by using more cultural practices than use of pesticides. Ojelade *et al.* [11] reported that the advantages of cultural control include its low cost and it is within the reach of farmers. Also, with flexible extension support, it can be adopted by farmers with no drastic change in production system and it can also favour other control measures.

Hypothesis 1: There is no significant relationship between respondents' sources of information and IPM utilisation

Table 5 is the relationship between sources of information and IPM utilization in the study area. Farmers Field School (FFS) ($X^2 = 10.7, p = 0.03$), ADP Extension agents ($X^2 = 8.42, p = 0.05$) were found to be significantly associated with the IPM utilization in the study area. The significant association between FFS and IPM utilization could be attributed to the fact that the farmers interviewed were candidates of FFS in most rural communities, men have more freedom to move about to get information and this may likely affect their sources of information. On the association between age and information sources, the younger farmers would most likely be willing to spend more to obtain information on improved technologies compared to the old farmers. Hence age may have effects on the information sources on a particular technology. Lastly, the level of education usually affects individual eagerness to learn about new things and to adopt them; consequently the educational status of people could have an influence on their willingness to learn about new things. This study is in agreement with Alfred S. D. and Fagbenro (2007) who reported that level of education and experience in fisheries business of the respondents are significantly related with their perception on the availability and the affordability of the information sources; while Adeogun (2010) reported that age also significantly relate with the affordability of the sources of information.

...[12] reported that the social participation of cocoa farmers through their involvement in farmers' co-operatives will enhance diffusion of information among the farmers, which is a positive development. Also their involvement in social organisations will enhance their access to government assistance in form of loan and other inputs.

Also, this result is similar to the study of ...[13] where Age, Level of Education and Family size are the major determinants of efficiency of Cocoa farmers in Ondo State.

CONCLUSION AND RECOMMENDATIONS

Most of the farmers were males who were in their prime age and some had formal education that will be ready to find information on IPM as they are still active farmers. Their main sources of information were Farmers Field School (FFS) and ADP extension agents. Majority of the respondents belong to different farmers association. Extension visit to the farmers was low as they mostly visit once a month and once a year. Utilization of IPM was high which signifies that some of the farmers have adopted the

technique. There was significant relationship between sex, education and membership of association and IPM utilization.

Cocoa farmers in the study area need to be encouraged as they are still active in farming. Cocoa Research Institute of Nigeria should increase their contact with these farmers in order to discourage farmers from using banned pesticides. Extension regular visits to farmers should be stressed in ADP and these Extension agents should be given all logistics to enhance their working ability.

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