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Farmers' Response to Stem Borer Control Adoption Trials in Three Local Government Areas of Abia State, Nigeria

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Abstract

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Maize stalk borer is an indigenous African moth that has larvae that bore into grasses with thick stem. It is a pest of maize, which has the tendency of reducing production by 10 - 12 percent. This study analyzed farmers' response to adoption of stem borer resistance varieties as a complementary crop management practice in three local government areas of Abia State, Nigeria. Specifically the study examined the socio-economic characteristics of farmers cultivating maize who were involved in the trials. It described the seasonal cultivation of maize by the farmers and investigated colour preference of stem borer resistance open pollinated maize varieties. A total of one hundred and fourteen maize farmers were randomly sampled for this study. Interview schedule was used to elicit information from the respondents. Data were analyzed by using frequency count and percentages. The result showed that 52.6% of the farmers were females, 45% of the farmers in Umuahia North cultivated more of early maize while 52% of their counterpart from Umuahia South cultivated late maize. About 85% used NPK fertilizer to boost maize yield and used seeds from previous harvest to plant, 72.8% preferred while maize which they put into various uses. The study concluded that farmers have positive response to the adoption trials. It suggested a gender free program for maize farmers in the area with intensive education or the importance of yellow maize and method of preserving seeds for further productions.
Key words: farmers, stem-borer resistant maize varieties, adoption trials, Abia State, Nigeria

Introduction

Maize production has continued to witness rapid expansion in the Nigerian Savanna due to the cultivation of improved varieties in conjunction with adoption of tices compatible with the existing cultural practices in the study area. However, the

situation is different in the degraded forest soils of the south eastern Nigeria due to the destructive feeding activities of Lepidoptorous Stem-borers among others. It was reported by Iziko museum, of Cape (2004) and Mugo (2005) that stem-borer has the ability to reduce maize production by 10-12 percent.

Breeding efforts of scientists at the International Institute for Tropical Agriculture (IITA), Ibadan in Nigeria have resulted in the development of stem-borer (sb) resistant maize varieties. Such varieties have produce acceptable yields on fields known to be highly infested by sb especially in the Eco-regional Program for Humid Tropical Africa (EPHTA) designated bench mark degraded soils of the south eastern Nigeria. Ekop and Osuji (2003) observed that the level of farmers adoption of new technologies with great potentials to better yields than existing ones have been quite low which have aggravated food security problems in Sub Sahara Africa. They suggested that studies of the methodologies for dissemination of these technologies is crucial to the much needed increase production rate to meet the needs of the ever growing population.

Witcombe (1996) reiterated that the involvement of farmers in the selection of the finished products is very cost-effective. He argued that when participatory varietals selection succeeds, the farmer preferred cultivators are the ideal parents for participatory plant breeding (PPB) program.

This study assessed: • The socio-economic characteristics of farmers who participated in the Sb adoption technology;

• Pattern of maize cultivation in the study area and criteria for variety preference.

Methodology

The project started in the year 2000 with planning meetings to intimate participating farmers with the scope and content of the project. This was followed by training participating farmers on specific aspects of the complementary crop management practices such as planting arrangement, method of achieving desired population, fertilizer application, timeliness of operation, weed control etc). An experimental site, which was centrally located, was established for training and demonstrations. Two stem borer resistant varieties developed at IITA were introduced to the area. (TZBR Eldanas or Ama-TZBR-W). Each participating farmer set aside small plot on his/her farm for trials of the technology under close supervision of coordinating and collaborating scientists. The project ended in March 2002.

South Eastern Nigeria is made up of Abia, Akwa Ibom, Anambra, Cross Rivers, Ebonyi, Enugu, and Imo States. Abia State was purposively sampled for this study because of the prevalence of sb in the area. Also the three local governments where maize is in high production were selected for the study. One hundred and fourteen maize farmers were randomly sampled from Umuahia North, Umuahia South and Ikwuano local governments areas. Interview schedule was used to elicit information from farmers who participated in the adoption trials. Descriptive statistics such as frequency count and percentages was used to analyze the data.

Results and Discussions

Gender and season for maize production

Table 1 shows that 52.6% of the participating farmers were female while 47.4% were male. This shows that female farmers participated more in the adoption trials than male. On the seasonal cultivation of maize, 62.9% of the females plant early maize while 84.0% of the males' plant late maize. Any programmer, which attempts to increase production of maize in any of the season, should take care of gender.

Local government and seasonal distribution of maize:

Late maize is planted more by 52% of farmers in Umuahia south while Umuahia North plant early maize with 45% of her farmers. Farmers planted more of early maize is then late maize. Demand for seed and other inputs may be higher during the early planting.

Soil management practices used by farmers to ensure good yield

Table 3 shows that majority (74.6%) of the farmers use inorganic fertilizers to enrich the soil for maize production while 25.4% use organic fertilizers. 75% of the farmers who plant early maize and 78.8% of those who plant late maize uses N.P.K fertilizer. Early harvesting and continuous cropping were used by 23.8% of the farmers in early maize production. In order to ensure regular production of maize, farmers will need inorganic fertilizers as aid at when due. The high cost of inorganic fer-

Table 1

Distribution of respondents according to Gender and season of maize production

Gender	Early maize		Late maize		Pooled analysis	
	Freq	%	Freq	%	Freq	%
Male	33.0	37.1	21.0	84.0	54.0	47.4
Female	56.0	62.9	4.0	16.0	60.0	0.5
Total	89.0	100.0	25.0	100.0	114.0	100.0

Table 2

Distribution of respondents according to their local government areas and season of maize production

Local government	Early maize		Late maize		Pooled analysis	
	Freq	%	Freq	%	Freq	%
Umuahia South	26.0	29.2	13.0	52.0	39.0	34.2
Umuahia North	40.0	45.0	7.0	28.0	47.0	41.2
Ikwuano	23.0	25.8	5.0	20.0	28.0	24.6
Total	89.0	100.0	25.0	100.0	114.0	100.0

Table 3

Distribution of respondents according to soil management practices by season of maize production

Soil management practices	Early maize		Late maize		Pooled analysis	
	Freq	%	Freq	%	Freq	%
(a) Inorganic fertilizer						
(i) N.P.K	52.0	76.5	16.0	94.1	67.0	78.8
(ii) Urea	6.0	8.9			7.0	8.3
(iii) No response	10.0	14.6	1.0	5.9	11.0	12.9
Total	68.0	100.0	17.0	100.0	85.0	100.0
(b) Organic fertilizers						
(i) Farm yard manure	2.0	9.5	2.0	25.0	4.0	13.8
(ii) Land follow/rotation	1.0	4.8	2.0	25.0	3.0	10.4
(iii) Shifting cultivation			1.0	12.5	1.0	3.5
(iv) Continuous cropping	5.0	23.8			5.0	17.2
(v) Early harvesting	5.0	23.8			5.0	17.2
(vi) No. Response	8.0	38.1	3.0	37.5	11.0	37.9
Total	21.0	100.0	8.0	100.0	29.0	100.0

tilizer may necessitate the need to educate farmers on the use of organic fertilizer such as animal waste, which is unpopular in the area.

Sources of maize seed planted by farmers

The quality of variety of seed planted by farmers will determine the productivity. Majority (46.1%) of farmers sourced seed from own saved seeds, 30.7% obtained their seeds from the open market while 16.7% and 3.5% got seeds from government establishment and neighbors respectively (Table 4). Farmers' knowledge of effective seed preservation methods may help in ensuring the quality of seeds of Sb resistant varieties used in future cultivation.

Farmers' Preferences

The pooled analysis in Table 5 shows that majority (72.86%) of farmers preferred white maize, to yellow maize grain type (18.4%). This implies that maize breeders need to produce Sb resistant varieties that have white seeds for subsequent planting in order to further increase adoption rate in the study area. Though, the added advantage of carotene in yellow maize may serve as good in extension message, it is only importance to poultry feed.

Farmers in Abia State cultivated maize mostly for home consumption (41.2%) with 22.8% used for pap and 18.4% eaten fresh. 26.3% cultivate maize for sale, while negligible number used maize for combination of purposes. In order to get market

Table 4

Sources of seeds planted and season of maize products

Source	Early maize		Late maize		Pooled analysis	
	Freq	%	Freq	%	Freq	%
Open market	28	31.5	7	28	35	30.7
Government establishment	9	10.1	10	40	19	16.7
Own seeds from post harvest	50	56.2	6	24	56	49.1
Neighbours	2	2.2	2	8	14	3.5
Total	89	100	25	100	114	100

Table 5

Farmers preference for stem borer resistant maize varieties

Preference	Early maize		Late maize		Pooled analysis	
	Freq	%	Freq	%	Freq	%
(a) Colour						
Yellow	17.0	19.1	4.0	16.0	21.0	18.4
White	66.0	74.1	17.0	68.0	83.0	72.8
Either of the two	6.0	6.8	4.0	16.0	10.0	8.8
Total	89.0	100.0	25.0	100.0	114.0	100.0
(b) End uses						
(i) Eaten Fresh	16.0	18.0	5.0	20.0	21.0	18.4
(ii) Processed into pap	19.0	21.4	6.0	28.0	26.0	22.8
(iii) For sales	22.0	24.7	7.0	32.0	30.0	26.3
(iv) Eaten Fresh and preserved same for pap						
(v) Eaten fresh and part for sale	9.0	10.1			9.0	7.9
(vi) Preserved for pap and sale	6.0	6.7			6.0	5.3
(vii) Eaten fresh, for pap and sales	6.0	6.7	5.0	20.0	11.0	9.7
Total						
	11.0	12.4			11.0	9.6
	89.0	100.0	25.0	100.0	114.0	100.0

for maize produced by these farmers, the colour which attracts more customers has to be planted.

Findings

• There were more female farmers cultivating maize than male in the study area.

• Umuahia North produced more of early maize while late maize could be found in Umuahia south.

• N.P.K compound fertilizer is a major soil-enriching nutrient used for maize production in the study area.

• Farmers use maize preserved from their previous harvest for subsequent planting.

• Farmers preferred to plant white maize seed and used the products mostly for home consumption.

Conclusion

Farmers had positive response to stem borer control maize varieties. They preferred to plant white maize which is mainly for family consumption. Increase in their production may lead to increase in farmers income to the left over was often for sale.

Recommendation: The following recommendations are important for continuous success of the project:

• Extension message to maize farmers in Abia State should be gender free as majority of the farmers were women.

• Make production of maize an all season project for the farmers especially through sb resistant varieties in late season.

• N.P.K fertilizers should be made available to farmers.

• Farmers are to be taught on seed preservation for subsequent planting.

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References

Iziko Meiseums of Cape, 2004. *Buseola fusca* (African Stem Borer, Maize Stalk Borer) Biodiversity explorer.

Ekpo, O. E. and E. E. Osuji, 2003. Participatory methodology in information Dissemination: A case study of Oyo State Agricultural Development Projects in Ogbomoso Zone (Internet forum Of food Africa http://foodafrica.nri.org)

Mugo, S., 2005. Bug Havens Keep Maize Pestproof. *CIMMYTE-news*, **vol. 2** (12).

Witcombe, J. R., 1996. Participatory Approaches to Plant Breeding and selection. Biotechnology and Development Monitor, No. 29 p.26.

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