

An Assessment of Early Adoption of Improved Cassava Varieties in Bo District, Southern Sierra Leone

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Abstract

The phenomenon of cassava production cannot be over emphasize, therefore tremendous efforts have been made in recent times to developed, release and disseminate improved cassava varieties in Sierra Leone. However few results are available as to the status and adoption of these varieties. This study presents an assessment of early adoption of improved cassava varieties in Bo District Southern Sierra Leone. A survey research design and structured questionnaire was utilized to elicit information from a total number of three hundred (300) farmers from selected Chiefdoms in Bo District. The data collected was analyzed by descriptive analytical techniques and probit regression. Findings show that male farmers dominate farming activities in the study area, between age range of 25-54 years which indicate their active age, with an average household size of 8.81 persons. Majority belongs to associations, had extension contacts mainly from government sector. Main source of improved varieties was from extension agents and 88.2% adopted these varieties, with adoption dominated by young male farmers with no formal education. SLICAS IV is the most adopted variety. Results showed that food, disease resistant, early maturing, high yielding and good market prices as reasons why farmers grow improved cassava. Major factors influencing adoption of improved cassava varieties include; marital status, membership of association, contact with extension and participation in cassava related activities. The major constraints of farmer in cassava production are non availability of cassava cuttings when needed and inadequate access to credit facility for cassava production. It was therefore recommended that: Government should encourage young farmers as well as women participation in farming in

order to create gender equality among the farming population viz a viz increase in extension contact.

Keywords: Early adoption, Cassava, Sierra Leone, Bo District, Agricultural Technologies

1. Introduction

The role of cassava as food and cash crop, has contribution to the employment opportunity and also the economic development of the sub Sahara African countries. Despite its importance and tremendous contribution its production is faced with several constraints. Some constraints to cassava production in Sierra Leone are; usage of low yielding varieties, untimely and inadequate weeding, low and unsteady rainfall, soil infertility, sloping grounds, improper planting, handling and storage of planting materials, pests and diseases incidence such as cassava mosaic, cassava blight, cassava anthracnose and weed infestation. There is also inadequate accessibility of knowledge and/or skills for utilization of the available resources and equipment which could add value to harvesting and marketing operations. Small holder and other aspects of its production and use often create problems, including unreliability of supply, uneven quality of products, low prices and costly marketing activities associated with development of cassava products and markets. In spite of the efforts to introduce improved cassava varieties in Sierra Leone, the yield in Sierra Leone is still the lowest in the world compared to other sub Sahara African countries (Jalloh et al., 2000). IITA Sierra Leone, through UPoCA project is also currently involved in rapid mass propagation of improved and multiple pest and/or disease resistant varieties of cassava with on-farm yield potential at least 30% greater than existing varieties (James, 2008). Multiplication and disbursement are still ongoing for use by farmers. Ten innovation platforms were also established in Northern, Southern and Eastern regions of Sierra Leone by SLARI through a project called DONATA to facilitate farmers' access to improved cassava varieties otherwise known as SLICAS. Despite all these activities by UPoCA project and SLARI, there is no information on the level of adoption of these improved cassava varieties in the target area. This study therefore tried to find out the level, pattern and factors influencing the adoption of these improved varieties.

The broad objective of this study is to evaluate the adoption rate of improved cassava varieties in the study area. The specific objectives are to determine the level and pattern of adoption, factors influencing adoption rate and also to identify the constraint associated with the adoption of these varieties in the study area.

2. Methodology

This study was carried out in Bo District of the Southern Province of Sierra Leone. Sample was collected from four (4) chiefdoms (Valunia, Kakua, Jaama Bongor and Lugbu). Its population is estimated to about 561,524 with total land area of 5473.6 km² (Statistics Sierra Leone, 2006). Purposive sampling technique was used in

selection of project area where UPoCA project has been implemented to promote improved cassava technologies and also simple random sampling technique in selection of respondents. A total number of 300 farmers were interviewed for this study. Structured questionnaire was used to elicit information from the farmers and the questionnaire was adapted from earlier similar studies on maize (Yanguba, 2005), soybean (Kamara, 2009) and cassava (Mbavai, 2013) with slight modification. The data collected was analyzed using descriptive analytical techniques to analyze the socio economic characteristics such as age, marital status, gender, annual income, level of education, members of association, year of farming experience etc and probit analytical model using SPSS (version 16) to determine factors influencing the level of adoption of improved cassava technologies.

3. Results and Discussion

3.1. Distribution of respondents based on Adoption of Improved Cassava Varieties and sources of cassava cuttings

Table 1 show that 82.2% of the respondents plants improved cassava varieties which shows positive relationship between rate of adoption and awareness level. 33% of the respondents acquired their cassava cuttings from Ministry of Agriculture while 37.9% respondents acquired their own from friends/relatives. There are four technologies introduced and were highly adopted with cutting length being the highest, followed by plant spacing, weeding time and bed preparation.

Table 1. Adoption of Improved Cassava Varieties and sources of cassava cuttings

Variables	Frequency	Percentage
Planting Cassava		
Yes	300	100
No	0	0
Planting of improved Cassava		
Yes	266	88.2
No	44	11.2
Total	300	100
Source of Cuttings		
IITA/UPoCA	7	2.6
Ministry of Agriculture	87	33
NGOs	23	8.5
Friends/Relatives	101	37.9
Trade-fare	19	7.1
Other farmers	23	8.5
SLARI	7	2.6
Total	266	100

Source: Field survey (2014)

3.2 Distribution of Respondents based on Challenge of cassava production

Table 2 shows that 88% of farmers are faced with the challenge of non availability of cassava cuttings when needed while all the respondents indicated that there is no access to credit facility for cassava production.

Table 2. Challenge of cassava production

Challenge	Frequency	Percentage
Non-availability of cassava cuttings when needed	263	88
No access to credit for cassava production	300	100

Source: Field survey (2014)

3.3 Factors influencing adoption of improved cassava varieties

Table 3. shows the factors influencing adoption of improved cassava varieties, which are; marital status, membership of association, contact with extension and participation in cassava related activities were found to be significantly influencing adoption at 1%, 5% and 10% respectively in line with the study of Mosera, and Barrett, (2006) who found that extension contacts played a major role in the adoption of agricultural technologies and were all significant to technology adoption (Yanguba, 2005, Kamara, 2009 and Mbavai, 2013), disseminated through the radiotional activities to enhance technology adoption (Agwu, Ekwueme and Anyanwu, 2008).

Table3. Factors influencing adoption of improved cassava varieties

Variable	Degree of Freedom	Parameter Estimate	Standard Error	t Value	Pr > t
Intercept	1	1.19144	0.15653	7.61	<.0001
Age of Respondent	1	-0.07058	0.04322	-1.63	0.1070
No of Person in Household	1	0.00682	0.00787	0.87	0.3890
Level of Education	1	0.01235	0.02585	0.48	0.6345
Marital Status	1	0.12337	0.06570	-1.88	0.0646**
Membership of Association	1	0.23135	0.08125	2.85	0.0058***
Farming Experience	1	0.00020368	0.00532	0.04	0.9696
Contact with Extension workers	1	0.14500	0.09145	-1.59	0.1174*
Participation in training	1	0.17429	0.09257	1.88	0.0639**

* Significant @10%, ** Significant @ 5%, ***Significant @ 1%

4. Conclusion

Findings show that male farmers dominate farming activities in the study area, between the active age range of 25-54 years, belongs to associations, had extension contacts mainly from government sector. Main source of improved varieties was from extension agents and 88.2% adopted these varieties, with adoption dominated by young male farmers with no formal education. SLICAS IV is the mostly adopted. Results showed that food, disease resistant, early maturing, high yielding and good market prices as reasons why farmers grow improved cassava. Major factors influencing adoption of improved cassava varieties include; marital status, membership of association, contact with extension and participation in cassava related activities. The major constraints of farmer in cassava production are non availability of cassava cuttings when needed and inadequate access to credit facility for cassava production.

Therefore the following recommendation was made;

1. Extension contact should be increased and high participation of young farmers as well as women in farming in order to create gender equality among the farming population.
2. Government and other development partners should promote more of farmers' choice to increase and sustain the adoption level.
3. Researchers should focus on some traits that are desired by farmers in their breeding programmes.
4. Organizations promoting agricultural technologies especially create awareness for farmers to belong farmer groups and other associations as it is a medium for spreading information.
5. Government and others agencies involved in agricultural activities should embark on massive sensitization telling farmers to access improved cassava cuttings as well as loan.

References

- [1] A E Agwu, J N Ekwueme and A C Anyanwu (2008), Adoption of improved agricultural technologies disseminated via radio farmer programme by farmers in Enugu State, Nigeria. Department of Agricultural Extension, University of Nigeria, Nsukka, Enugu State, Nigeria. *African Journal of Biotechnology*. **7**, 9, Pp 1277-1286, 2 May, 2008
- [2] A Jalloh (2000), Promoting Appropriate Intercropping Technologies for Sustainable Agricultural Production in Africa: a farmer centered approach Institute of Agricultural Research, PMB 540, Freetown, Sierra Leone
- [3] A Langyintuo and M Mekuria (2005), Modeling Agricultural Technology Adoption Using the Software STATA. Presented at a Training Course Organized by CIMMYT-ALP for its NARS Partners in Southern Africa on: "Econometric Application to Modeling the Adoption of Agricultural Technologies". 21 – 25 February, 2005, Harare, Zimbabwe International Maize and Wheat Improvement Center (CIMMYT)

- [4] A Vessia (2007), Cassava: the food of the poor for future food security
- [5] A Yanguba (2005), Agricultural technology adoption by small-scale farmers: The case of extra-early maize varieties in the Sudan savannas of Katsina State, Northern Nigeria. [Unpublished M.Sc. Thesis]: University of Ibadan, Nigeria.
- [6] B Chiputwa, A S Langyintuo and P Wall (2011), Adoption of Conservation Agriculture Technologies by Smallholder Farmers in the Shamva District of Zimbabwe: A Tobit application. Paper accepted for the 2011 meeting of the Southern Agricultural Economics Association (SAEA) in Texas, USA, Feb 5-8
- [7] D Spencer (2012), Issues in Food Security and Cash Crop Production in Sierra Leone. Enterprise Development Services LTD, Freetown, Sierra Leone.
- [8] FAO, 2003, The State of Food Insecurity in the World, 2003, Rome, 2003. 2006/7. In Press.
- [9] F G Masuki, K D Mutabazi, S D Tumbo, F B Rwehumbiza, A Z Mattee and N Hatibu (2006), Determinants of farm-level adoption of water systems innovations in dryland areas: the case of Makanya watershed in the Pangani River Basin, Tanzania. Pp 330-337 in Proceedings of the East Africa Integrated River Basin Management Conference (Lankford BA and Mahoo HF, eds.). Sokoine University of Agriculture, Tanzania
- [10] IAR. (2001). Adoption of Improved Cowpea Technologies in the Savanna Ecology of Nigeria. A Report of Survey Conducted On Pedune/Pronaf Project in Nigeria Institute For Agricultural Research Ahmadu Bello University Samaru - Zaria, Nigeria.
- [11] J J Mbavai (2013), An Assessment of the Effectiveness of the Sudan Savanna Taskforce Project in the Adoption and Diffusion of Improved Cowpea Varieties in Selected Communities in Musawa Local Government of Katsina State. [Unpublished M.Ed. Thesis]: Bayero University, Kano, Nigeria.
- [12] J S Yaninek (1991), Cassava plant protection in Africa. In: Proceedings of the Fifth. Triennial Symposium of the International Society for Tropical Root Crops-Africa Branch, October, 1991 Accra, Ghana. Ofori, F. and Hahn, S.K. (Eds.), Pp.26-34. IITA, Ibadan, Nigeria. 1994.
- [13] M J Cohen (2010), Food supply, factors affecting production, trade and access Elsevier Ltd/Inc/BV DOI: 10.1016/B978-0-7020-3118-2.00032-2
- [14] M T Ajayi and O Solomon (2010), Influence of Extension Contact and Farmers' Socio-economic Characteristics on Adoption of Oil Palm Technologies in Aniocha North Local Government, Delta State, Nigeria. *JAGST* 12, 2,
- [15] S M Kamara (2009), Factors influencing the adoption of Soybean Production among male and female farmers in Borno State: Implications for Community Development. Unpublished M.Ed. Thesis, Kano, Bayero University, Kano, Nigeria.
- [16] Statistics Sierra Leone, (2006). Population and Housing Census. Analytical Report on the Mortality and Disability Status of the Population.