International Journal of Innovative Research and Advanced Studies (IJIRAS)
Volume 7 Issue 6, June 2020

ISSN: 2394-4404

Adoption Level Of Improved Cassava Production Technologies In Oke-Ogun Area Of Oyo State, Nigeria

Oyelere, G. O.

Department or Agricultural Extension and Management,
Oyo State College of Agriculture and Technology, Igboora, Nigeria

Abstract: ***Total national output from cassava in Nigeria comes from the aggregated efforts of smallholder/peasant farmers who depend largely on traditional farming system for their agricultural production activities. Interestingly, all these smallholder farmers are primarily enmeshed in using traditional methods of cultivation which ultimately result in low yield. This study had assessed the adoption level of improved cassava production technologies in Oke-Ogun area of Oyo State, Nigeria. Multistage sampling technique was used to select 165 cassava farmers. It was revealed that various improved cassava production technologies had been introduced and that the farmers were aware of such recommended improved technologies in the study area. Improved cassava production technologies such as ridging, harrowing, fertilizer application, use of 20cm length stem cutting and spacing of 1m x 0.8m were not well adopted by cassava farmers in the study area. Chi-square results revealed that unaffordable improved production technologies (χ^2 = 10.795; P = 0.029); low literacy level (χ^2 = 10.030; P = 0.040) were significantly related to adoption level of improved cassava production technologies, all at 0.05 level. It was recommended that extension services should be intensified so that farmers could embrace all the recommended improved cassava technologies in the study area.***

Keyword: Adoption level, improved cassava, production, technologies

I. INTRODUCTION

Cassava (Manihot Spp) has become one of the most popular and widely grown plant amongst arable crops, particularly in Nigeria in the recent time. The high tendency to serve as a relief crop to food insecurity because of its copious consumption in various forms by people and its ability to subsist and give appreciable yields on soils where many other crops fail to perform, has endeared its cultivation by many smallholder farmers (Anaglo, Antwi, Manteaw and Kwapong, 2020). This was further supported by the assertion of Anyeagbunam, Nwaekpe, Adiele-Ezekiel, and Ukeje (2015) that cassava has become a very popular crop in Nigeria and is fast replacing other traditional local staples in the country (Chi, Mformi, Wouapi, 2019) while FAOSTAT (2010) maintained that cassava has moved from minor crop to major crop in Nigeria and has gained industrial recognition and relevance (Saani, Alenkhe, Edosio, Patino and Dixon, 2007). This then presupposed that traditional use or utilization of cassava is changing from primarily human consumption to processing into industrial products as well as for exportation. However, Agwu and Anyaeche (2007) had posited that cassava is one of the most important staple food and cash crop that has played and continues to play remarkable roles in agricultural centre-stage in Nigeria. Currently, cassava has become one of the most important food crops in maintaining national food security (Echebiri and Nwaogwu, 2015). Furthermore, cassava has gained prominence as export crops because of its versatility in terms of supplying industrial starch, tapioca and some other important bye products. This is in line with Chinaka and Udemezue (2015) that cassava is very versatile crop with numerous uses. These numerous uses have made cassava very relevant and significant as economic crop both nationally and internationally.

Total national output from cassava, like most other arable crops being produced in Nigeria, come from the aggregated efforts of the smallholder/peasants who are indigent farmers that depend largely on traditional farming system for their

agricultural production activities (Ayedun, Abdoulaye and Okuneye, 2020). Majority of these smallholder farmers in Nigeria still make use of traditional method of cassava production which is responsible for their poor output. According to Ogunyinka, Martin, Wesley and Adebayo (2020) less-resource endowed farmers are vulnerable to cassava low yield significantly. However, variety of improved cassava production technologies that can increase yields per unit hectare have been developed and introduced to farmers in Oyo State, Nigeria. However, it has been noted by Ejechi, Tologbonse, Adeniji and Onu (2013) that adoption of improved production technologies by farmers lead to increased crop yields. According to Agberavo (2003) the yield of crop is influenced by the quality of planting material and management practices which are embedded in improved crop production technologies. Improved cassava production technologies as enunciated by Ejechi et al. (2013) comprised of herbicide application, use of hybrid cassava cuttings, use of insecticides, use of inorganic fertilizer, use of tractor, as well as appropriate spacing, planting date and tillage practices. As modern standard practices, if cassava farmers could embrace aforementioned improved technologies, all things being equal, bumper yields is guaranteed.

II. STATEMENT OF THE PROBLEM

With the trend in the Nigeria economy, cassava production, processing, utilization and exportation can aid economic growth of Nigeria and as well greatly contribute meaningfully to national food security. In order to make copious production of cassava that will give greater yield per traditional production unit, adoption of improved technologies is very germane. Farmers must shift from unproductive traditional practices that give very low yields all the time because of the crudeness and drudgery. Oyewole and Ojeleye (2015) had opined that over dependent on traditional technologies by smallholder farmers in Nigeria had continuously subjected them to poor yields and inefficiency. Nwachukwu (2013) had described Nigerian agriculture as being associated with drudgery in which farmers depend heavily on hand-tools in carrying out cultural operations on their farms manually. Hence, the adoption of improved cassava production technologies such as selection of suitable land, fertilizer application, use of improved varieties, use of 20cm cuttings, use of herbicides, mechanization, etc., is an assured way of progressively maintaining cassava bumper yields. The potentiality of improved cassava production technologies to enhance geometric increase in yield of cassava has necessitated the assessment of how much the farmers in Oke-Ogun area of Oyo State had adopted these improved cassava cultivation practices. Therefore, the general objective was to assess the adoption level of improved cassava production technologies in Oke-Ogun area of Oyo State, Nigeria. While the specific objectives were to: determine the awareness of improved cassava production technologies available in the study area; determine the adoption level of improved cassava production technologies in the study area; and identify the constraints of farmers to adoption of improved cassava production technologies in the study area. The only hypothesis was stated in null form that there was no significant relationship between constraints faced by respondents and adoption of improved cassava production technologies in the study area.

III. METHODOLOGY

Multistage sampling procedure was used to select sample size for this study. Stage one: Oke-Ogun area of Oyo State was selected purposively because of copious cultivation of cassava by local farmers in the area. Stage two involved random selection of 20% of the ten Local Governments that constituted Oke-Ogun area, resulting in choosing Kajola and Itesiwaju Local Government Areas. In stage three, Oyo State Agricultural Development Programme (OYSADEP) registered cassava farmers were randomly selected such that 16% of 525 and 510 gave 84 and 81 cassava farmers from Kajola and Itesiwaju Local Government Areas, respectively. Hence, 165 cassava farmers formed the respondents for this study.

IV. RESULTS AND DISCUSSION

A. AWARENESS OF VARIOUS IMPROVED CASSAVA PRODUCTION TECHNOLOGIES

Results in Table 1 showed the awareness of improved cassava production technologies available in the study area. It was revealed that 93.3% of the respondents were aware of improved varieties as one of the recommended cassava production technologies. Also, 92.1% of the were aware of selection of suitable land as part of improved cassava production technologies in the study area, 91.5% were aware of the use of herbicide, 90.9% were aware of ploughing, 53.9% were aware of disease and pest control, 47.9% were aware of fertilizer application/soil fertility management, 18.2% were aware of spacing of 1m x 0.8m while 13.9% aware of harrowing and 6.1% of the respondents were aware of ridging as part of recommendations for improved cassava production technologies in the study area. This implies that improved cassava production packages had been introduced in the study area and that the farmers were aware of these improved cassava production recommendations.

Improved technologies	Frequency	Percentage
Selection of suitable land	152	92.1
Ploughing	150	90.9
Harrowing	23	13.9
Ridging	10	6.1
Improved varieties	154	93.3
Use of 20cm length cutting	27	16.4
Use of herbicide	151	91.5
Disease and pest control	89	53.9
Spacing of 1m x 0.8m	30	18.2
Fertilizer application/soil fertility management	79	47.9

Source: Field Survey, 2019

Table 1: Distribution of respondents by awareness of improved cassava production technologies

ISSN: 2394-4404

B. ADOPTION LEVEL OF AVAILABLE IMPROVED CASSAVA PRODUCTION TECHNOLOGIES

Data in Table 2 has shown the adoption level of available improved cassava production technologies in the study area. It was revealed that selection of suitable land was ranked 1st, use of herbicide was ranked 2nd while ploughing was ranked 3rd and the use of recommended improved varieties was rank 4th. However, ridging was the least adopted technology with the rank of 10th. It should be noted that technologies with weighted mean score (WMS) of less than 1.5 were those that were least adopted. On the other hand, practices that have WMS of 1.5 and above were those that were adopted and usually practiced by the respondents. This implies that technologies such as selection of suitable land, use of herbicide (weed management), ploughing, use of recommended improved varieties and disease and pest control were highly adopted in the study area.

However, ridging as part of improved recommendations was not so much adopted and practised by the respondents. This confirms the *a priori* expectation that cassava farmers often regard ridging operation as further incurring additional cost on their farms, that was not necessary, especially when the land has been ploughed in the study areas. Furthermore, improved cassava production technologies such as harrowing, fertilizer application, use of 20cm length stem cutting and spacing of 1m x 0.8m were not well adopted in the study area. These poorly adopted technologies are, however, very germane to profitable cassava production as they enhance rapid growth and vigorous development of cassava that would bring about higher yields.

Improved technologies	Fully adopted	Partially adopted	Never adopted	WMS	Ranks
Selection of suitable land	120 (72.7)	36 (21.8)	9 (5.5)	2.7	1st
Ploughing	65 (39.4)	85 (51.5)	15 (9.1)	2.3	3rd
Harrowing	6 (3.6)	18 (10.9)	141 (85.5)	1.2	8th
Ridging	3 (1.8)	13 (7.9)	149 (90.3)	1.1	10th
Improved varieties	49 (29.7)	104 (63.0)	12 (7.3)	2.2	4th
Use of 20cm length stem cutting	19 (11.5)	10 (6.1)	136 (82.4)	1.3	6th
Use of herbicide	115 (69.7)	37 (22.4)	13 (7.9)	2.6	2nd
Diseases and pest control	23 (13.9)	77 (46.7)	65 (39.4)	1.7	5th
Spacing of 1m x 0.8m	12 (7.3)	21 (12.7)	132 (80.0)	1.3	6th
Fertilizer application	25 (15.2)	69 (41.8)	71 (43.0)	1.2	8th

WMS = Weighted Means Scores
Source: Field Survey, 2019.

Table 2: Distribution of respondents according to adoption level of improved cassava production technologies

C. CONSTRAINT OF FARMERS TO ADOPTION OF IMPROVED CASSAVA PRODUCTION TECHNOLOGIES

Table 3 has depicted the constraints faced by farmers in adopting improved cassava production technologies in the study area. The study revealed that lack of funds was ranked 1st as the most severe constraint being encountered by cassava farmers. This has reflected the poorness the farmers contend with in rural areas in Nigeria. This was well documented by Onyebinama (2013) who asserted that lack of adequate and inappropriate agricultural credit is one of the fundamental constraints to agricultural production in the country. Even when credits were made available to these subsistence farmers, the amount are so meagre and does not, in any way, enable farmers adopt modern technologies needed to increase production in order to earn more income through increased crop yield. Also, unaffordable production technologies ranked 2nd. This implies that, in the perception of the farmers, improved cassava technologies were expensive for them to afford. However, low literacy level ranked 3rd. Low literacy level usually have negative effect on the rate of adoption of innovation. This conforms with Oyelere et al. (2016) that high level of education is advantageous as education hastens the process of adoption of innovation. Furthermore, non-availability of improved production facilities was ranked 4th. This implies that facilities that will enhance the adoption of improved cassava production technologies such as tractor and its implements were not always readily available to the farmers in the study area. Poor and inadequate transport system was ranked 5th. Complexity of operation was ranked 6th. This implies that the intricacies of carrying out the operation using improved recommendations was seemed to be complex to the farmers. This then alludes to the fact that low literacy level was a major constraint confronting the farmers in adopting improved cassava production technologies in the study area. Lack of awareness was ranked 7th. It should be noted that improved technology with the weighted mean scores (WMS) of 1.5 and above were the major constraints hindering adoption of improve cassava production technologies by the respondents in the study area.

Constraints	Severe	Mild	Never	WMS	Ranks
Non availability of production facilities	98 (59.4)	62 (37.6)	5 (3.0)	2.56	4th
Lack of fund	161 (97.6)	2 (1.2)	2 (1.2)	2.96	1st
Unaffordable production technologies	131 (79.4)	28 (17.0)	6 (3.6)	2.75	2nd
Complexity of operation	45 (27.3)	96 (58.2)	24 (14.5)	2.29	6th
Poor and inadequate transport system	89 (53.9)	61 (37.0)	15 (9.1)	2.45	5th
Lack of awareness of improved cassava technologies	25 (15.2)	96 (58.2)	44 (26.6)	1.88	7th
Low literacy level	126 (76.4)	23 (13.9)	16 (9.7)	2.66	3rd

WMS = weighted mean score; parentheses are in percentages
Source: Field Survey, 2019

Table 3: Distribution of respondents by constraints to adoption of improved cassava production technologies

D. HYPOTHESIS

Table 4 showed the relationship between constraints faced by cassava farmers and adoption level of improved cassava production technologies in the study area. It was revealed, in

the study area, that unaffordable improved production technologies ($\square^2$ = 10.795; P = 0.029); low literacy level ($\square^2$ = 10.030; P = 0.040) were significantly related to adoption level of improved cassava production technologies all at 0.05 level. This implies that unaffordable improved cassava production technologies were factors that hindered the respondents in adopting the improved cassava production technologies in the study area. This could be in the form of high cost of specialized inputs required to carry out the recommended technologies. Also, low literacy level that was significant may not appreciably influence the respondents to adopt the new technologies because education enhances adoption of innovations. This was upheld by Oyewole and Ojeleye (2015) who maintained that high levels of educational attainment readily influence the adoption of new innovative practices.

Constraints	$\square^2$	df	p-value	Remark
Non-availability of production facilities	8.046	4	0.090	NS
Lac k of capital	4.539	4	0.339	NS
Unaffordable production technologies	10.795	4	0.029	S
Complexity of operation	6.227	4	0.183	NS
Poor and inadequate transport system	3.862	4	0.425	NS
Lack of awareness of improved technologies	4.145	4	0.387	NS
Low literacy level	10.030	4	0.040	S

NS = not significant; S = significant
Source: Field Survey, 2019

Table 4: Result of Chi-square analysis showing relationships between constraints and adoption level of improved cassava production technologies

V. CONCLUSION AND RECOMMENDATION

The farmers were aware of various improved cassava production technologies in the study area. Ridging, harrowing, fertilizer application, spacing of 1m x 0.8m and use of 20cm length stem cutting as recommended production technologies were not well adopted in the study area. Lack of fund, expensive production technologies and low literacy level were prime constraints hindering farmers in the adoption of improved cassava technologies in the study area. It was hereby recommended that extension services should be intensified so that cassava farmers could adopt all the recommended improved cassava technologies in the area. Also, adult education should be given much attention to improve educational ability of farmers to enhance the adoption process of innovative practices.

REFERENCES

[1] Agbarevo M. N. (2003): Practical Guide to Crop Production, Soga Printers, Ogoja.

[2] Agwu, A. E. and Anyaeche, C. L. (2007): Adoption of Improved Cassava Varieties in Six Rural Communities in Anambra State, Nigeria. Academic Journal (African Journal of Biotechnology) 6(2):090 – 098.

[3] Anaglo, J. N., Antwi, G., Manteaw S. A. and Kwapong N. A. (2020): Influence of Agricultural Information Sources on the Practices and Livelihood Outcome of Cassava Farmers in Eastern Region of Ghana. In: Redefining Research for Sustainable Development and Livelihoods in Nigeria. Proceedings of the 6th National symposium of the Sustainable Livelihoods and Development Network for Africa Held at the Virginrose Resort, Victoria Island, Lagos, Nigeria April 6th - 9th, pp.16-25.

[4] Anyeagbunam, H. N., Nwaekpe, J., Adiele-Ezekiel, C. and Ukeje, B. (2015): Spatial Price Variation of Selected Cassava Root Markets in South-Estern Nigeria. In Agriculture: The Nigerian Economy Beyond Oil. Proceedings of 49th Annual Conference of Agricultural Society of Nigeria. Held in Delta State 9th – 13th November, 27 – 30.

[5] Ayedun, B., Abdoulaye, T. and Okuneye, P. A. (2020): Effects of Adoption of Cassava Technologies on Farmers from Southern Zones of Nigeria. Acta Scientific Nutritional Health 4(1):152-164

[6] Chi, Z. I., Mformi, M. I. and Wouapi, H. A. N. (2019): Adoption and Impact of Improved Cassava (Manihot esculenta Grantz) Production Technology on Farmers Welfare in Medam Division of the North West Region of Cameroon. International Journal of Innovation and Scientific Research Vol. 46 No. 1, pp.60-73.

[7] Chinaka, E. C. and Udemezue, J. C. (2015): Adoption Rate of Improved Cassava Production Technologies in Anambra State, Nigeria. In Agriculture: The Nigerian Economy Beyond Oil. Proceedings of 49th Annual Conference of Agricultural Society of Nigeria. Held in Delta State 9th – 13th November, pp.321 – 323.

[8] Echebiri, R. N. and Nwaogwu, D. C. (2015): Consumption Preference Analysis of Cassava Derivatives in Urban and Rural Areas of Abia State. In Agriculture: The Nigerian Economy Beyond Oil. Proceedings of 49th Annual Conference of Agricultural Society of Nigeria. Held in Delta State 9th – 13th November, pp.200 – 203.

[9] Ejechi, M. E., Tologbonse, E. B. Adeniji, O. B. and Onu, A. D. (2013): Gender Analysis of Adoption of Recommended Cassava Production Practices in Nasarawa State. Nigerian Agricultural Journal, 44 (1&2):155 – 163.

[10] FAOSTAT (2010): Food and Agriculture Organization Statistical Year Book.

[11] Nwachukwu, I. (2013): Youth Programmes in Extension and Rural Development: Promoting Indigenous Knowledge. Lamb House Publications, Umahia, p.157.

[12] Ogunyinka, O. M., Martin, A. M. Westby, A. and Adebayo, K. (2020): Monitoring and Evaluation of Large, Multinational Projects: Lessons from The Second Phase of the Cassava: Adding Value for Africa (C:AVA2) Project. In: Redefining Research for Sustainable Development and Livelihoods in Nigeria. Proceedings of the 6th National symposium of the Sustainable Livelihoods and Development Network for Africa Held at

the Virginrose Resort, Victoria Island, Lagos, Nigeria April 6th - 9th, pp.16-25.

[13] Onyebinama, U. A. U. and Udensi, E. I. (2013): Impact of Credit on Income of Cassava-Based Crop Farmers Under the National Special Programme for Food Security (NSPFS) in Abia State, Nigeria. Nigerian Agricultural Journal, 44 (1&2):111 – 117.

[14] Oyelere, G. O., Adisa, J. O., Alabi, A. F., Omisore, O. A., Popoola, O. M., Olabimisi, A. D. and Okunade, O. A. (2016): Benefits of Fadama III Project to Arable Crop Farmers in Surulere Local Government Area of Oyo State, Nigeria. International Journal of Agriculture and Development Studies 1(2):6-11.

[15] Oyewole, S. O. and Ojeleye, O. A. (2015): Factors Influencing the Use of Improved Practices among Small-Scale Farmers in Kano State of Nigeria. Net Journal of Agricultural Science, 3(1):1-4

[16] Sanni, L, Alenkhe, B., Edosio, R., Patino, M. and Dixon, A. (2007): Technology Transfer in Developing Countries: Capitalizing on Equipment Development. Jounal of Food, Agriculture and Environment 5(2):88-91.