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Constraints Associated with the Adoption of Sustainable Cassava Weed Management Technology for Cassava Systems in Nigeria

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Abstracts:- The study investigated the constraints associated with the adoption of sustainable cassava weeds management technology for cassava systems (SCWMTCS) in Nigeria. Multistage was utilized in selecting 384 respondents for the study. Descriptive and inferential statistics were used to analyse the data collected. Results revealed that respondents have varied perceptions of the severity of constraints encountered in their process of adoption of SCWMTCS in the study area. Constraints comprising of frequent gluts in cassava market frustrates farmers, lack of processing equipment and poor value chain system for cassava products and frequent encroachments or destructive grazing of cassava farms by nomadic herders is very frustrating were rated high severity in the study area. Also, 17 constraints were rated to be moderately severe in the study area out of the 26 listed constraints encountered by cassava farmers.

Keywords:- *Constraints, Sustainable, Cassava, Weeds, Severity, Management, Technology, Rating.*

I. INTRODUCTION

Adoption of modern agricultural technology is expected to be an indispensable strategy and a driving force to achieve agricultural productivity, sustainability of rural development and accelerated economic growth in the country (0ruonye et al 2021). However, it is very crucial to note that there are myriads of constraints associated with the uptake of technologies by stakeholders. These constraints can be psychological in nature, institutional based hypothesis, socio-cultural, political or environmental factors. These often act as impediments having a counteracting effects on the ability of farmers and other stakeholders to totally and effectively uptake new technologies. Therefore, having a fore knowledge and understanding of these constraints is essential for inventing strategies to surmount the challenges and ensuring the successful dissemination and adoption of such technologies. In this situation, it is crucial to investigate the constraints associated with the adoption of sustainable cassava weeds management technology for cassava systems (SCWMTCS), in Nigeria and explore various ways to address them. The study intends to investigate the following specific objectives:

- Identify the various constraints associated with the adoption of SCWMTCS in the study area ;
- Ascertain the severity of the constraints associated with the adoption of SCWMTCS in the study area.

II. MATERIALS AND METHODS

➢ *Study Area;*

The study was conducted in the three cassava agro – ecological zones of Nigeria comprising of Humid forest zone in which Abia State was selected, Benue state was selected in the southern guinea savannah zone and Oyo State was selected in the forest –savannah transition of the country.

Sampling procedure and sampling size; Multistage sampling techniques was utilized in purposively selecting one state from each of the three zones. This was followed by randomly selecting eight local government Areas (LGAs) in each state giving a sum of twenty four LGAs. The next stage involved random section of four communities from each LGA which gives a total of thirty two communities. In each of the thirty – two communities, a farmers' field school (FFS) having twenty participating farmers were selected. Finally, twenty percent or four farmers were randomly selected and administered with an interview schedule. This gives a total of 38 respondents. A pre-survey of the farmers field school was conducted to compile a list of all the various constraints associated with the process of adoption of the SCWMTCS from all the field schools and twenty six (26) statements were listed in the questionnaire .

➢ *Measurement of Variables:*

A total of twenty – six (26) easily understandable statements (to the farmers) compiled from all the various farmers field schools were listed in the questionnaire. These were all the various constraints encountered by the respondents during the process of adoption of SCWMTCS .Respondents were asked to indicate the constraints using 3 points severity rating scale ranging from low severity,

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moderate severity and high severity. The mean score of the respondents were computed.

The minimum score of 0.49 and the maximum score of 3.00 were used in the categorization. Any score less or equal 0.49 was regarded as No constraint, any score that ranges from 0.50 to 1.49 were scored as low severity, any score that ranges from 1.50 to 2.49 were scored as moderate severity while any score from 2.50 and above were rated high severity.

III. RESULTS AND DISCUSSIONS

Table 1 shows the various constraints associated with the adoption of SCWMTCS in the study area. The results revealed that the respondents have varied assessments of the severity of the constraints confronting them in the process of adoption of SCWMTCS. Out of the twenty six constraints and their respective severity listed, twelve randomly picked constraints will be discussed.

The results revealed the constraints 'inaccessibility to processing equipment and poor value chain system for cassava products' that all the respondents in the study area rated this as very high with the mean score of 2.78. most of the respondents in the study area does not have access to processing equipment like peelers, graters, flash driers which can reduce the stress of cassava roots processing.

Also, stakeholders in the value chain system are very few giving those few undue advantage to exploit the situation. This reason makes cassava farmers not to be interested in adopting new technology. This result was corrugated by Oruonye et al (2021) on the cassava value chain and food insecurity in Nigeria.

On the constraint 'frequent encroachment or destructive grazing of cassava by nomadic herdsmen is very frustrating. The mean score of 2.67 indicating high severity in the study area was obtained. This problem is often rampant during the dry season. Farmers thus, think adopting any technology that can improving their production efficiency is not worthwhile. This result was confirmed by Obaniyi et al. (2020) on the assessment of crop farmers coping strategies to pastoralism/nomad activities in Nigeria. Frequent gluts in cassava markets, fluctuations of prices of cassava due to excess production make the prices unpredictable hence farmers were discouraged by the situation making them to shun any new technology. This result was corrugated by Lamboll et al. (2018) which identified prices of cassava roots as one of the major sources of uncertainty in the cassava value chain system. 'Unavailability of transportation infrastructure (e.g poor road networks and transport vehicles) to hull cassava roots to the market'. The mean score in the study area was 2.28 implying moderate severity. Farmers explained that the fare of few available transport vehicles were very expensive couple with the problem of poor road networks 'There is chaotic supply or inaccessibility to quality input (knapsack sprayer, chemical herbicides)' the mean score for the study area was 2.13 indicating moderate severity. Respondents explained that they can only obtained inputs like knapsack sprayers and herbicides from far away distances at exhorbitant prices 'Poor market infrastructure' was rated moderate severity with mean score was 2.28. Oruonye 92021) obtained similar result in his work that identified lack of support for the marketing components.

'Inadequacies in extension intervention to assist cassava farmers to develop a sustainable cassava value chain in my area'. This was rated moderate severity with mean score of 2.06

This result corroborated Obaniyi(2018) that explained that extension services are both constrained by collapsed system , inadequate finance, equipment and logistics.

'The effect of the chemical on the health of farmers and consumers is hazardous'. This was rated moderate severity with mean score 2.26 in the study area. This explains that farmers are aware of implication of chemicals as hazardous to their health hence their reluctance to accept the SCWMTCS as a technology to boost there cassava productions.

'The total cost of production using SCWMTCS vis-a-vis profits realizable from cassava sales is not reasonable' this constraint was rated moderate severity with mean score 2.25 in the study area.

'Lack of entrepreneurial skill to overcome fluctuation of prices of cassava'. This mean score for the study area was 2.04 indicating moderate severity. This emphasized the crucial need of entrepreneurial skill in evaluating the benefits derivable from cassava farming after the adoption of SCWMTCS.

'There are not enough tractors to prepare the land for cassava farming using SCWMTCS'. The mean score for the study area was 1.93 indicating moderate severity. The constraint 'No support from the government to use SCWMTCS' the mean score for the study area was 1.17 indicating moderate severity. This constraint underscore the need by the government to support valuable technologies like SCWMTCS in form of promotion or provision of incentives like inputs to farmers to encourage its uptake by farmers.

Table 1 Distribution of Respondents by the Severity of Constraints to their Adoption of SCWMTCS

S/N	Statements of Constraints	Total (n = 384)	
		Mean	Remark
1.	SCWMTCS is complex or difficult to comprehend.	0.92	LS
2.	Result of SCWMTCS is not visible or clear.	1.07	LS
3.	Financial cost of SCWMTCS is unaffordable.	1.08	LS

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4.	SCWMTCS is not reliable.	1.16	LS
5.	No support from the government to use SCWMTCS.	1.17	LS
6.	SCWMTCS is not really different from the existing weed control methods we knew.	1.40	LS
7.	SCWMTCS is for the literate farmers in the city and not for local farmers who cannot easily understand it.	1.29	LS
8.	The shelf life of cassava product harvested from SCWMTCS is too poor.	1.68	MS
9.	There is not enough information on how to use SCWMTCS.	1..57	MS
10.	There is not enough land to practice SCWMTCS.	1.60	MS
11.	Competent labor like spray service providers are not readily available to assist in the accurate application of herbicides.	1.71	MS
12.	There is not enough tractors to prepare the land for SCWMTCS.	1.97	MS
13.	There is chaotic supply or inaccessibility to quality inputs (e.g. knapsack sprayer, chemical herbicides).	2.13	MS
14.	Unavailability of transportation infrastructure (e.g. poor road networks and transport vehicles) to haul farm products to the market.	2.28	MS
15.	Inadequacies in extension interventions to assist cassava farmers to develop a sustainable cassava value chain in my area.	2.06	MS
16.	Our culture does not tolerate the use of chemical or toxic chemicals in our community because of the hazardous effects on humans, domestic, and wild animals.	1.54	MS
17.	Unpredictable intruders such as wild animal hunters destroying crop farms with bush burning during the dry seasons.	1.63	MS
18.	Poor government policies to regulate cassava farming and farmers' economic growth.	1.66	MS
19.	We are not trained enough on the use of chemicals and how to maintain equipment involved in the application of SCWMTCS.	1.75	MS
20.	Lack of entrepreneurial skills to overcome fluctuation of prices of cassava.	2..04	MS
21.	Poor market infrastructure.	2.28	MS
22.	Total cost of production using SCWMTCS vis-a-vis profits realizable from cassava sales is not reasonable.	2.25	MS
23.	The effect of the chemical on the health of farmers and consumers is hazardous.	2.26	MS
24.	Frequent glut in cassava market frustrates farmers.	2.63	HS
25.	Processing equipment and poor value chain system for cassava products.	2.78	HS
26.	Frequent encroachment or destructive grazing of cassava farms by nomadic herders is very frustrating.	2.67	HS

Source: Field Survey, 2021

Key

Mean Score	Remark
0 – 0.49	No Constraint (NC)
0.50 – 1.49	Low Severity (LS)
1.50 – 2.49	Moderate Severity (MS)
2.50 and above	High Severity (HS)

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