International Journal of Agricultural Extension and Rural Development Studies
Vol.7, No.4, pp.27-35, December 2020
Published by ECRTD-UK
Print ISSN: ISSN 2058-9093, Online ISSN: ISSN 2058-9107

ATTITUDE OF FARMERS TOWARDS QUALITY DECLARED SEED PRODUCTION IN KILOMBERO DISTRICT, MOROGORO, TANZANIA

N. E. Lyimo,
Sokoine University of Agriculture, Tanzania
lyimonora@yahoo.com

ABSTRACT*:* *This paper assesses the attitude of farmers towards Quality Declared Seed (QDS) use in Kilombero District, Tanzania. Using data gathered through household survey from about 100 sample households of randomly selected villages from Kilombero District. Specifically, the paper answered the question on what are the attitude of farmers towards Quality Declared Seed (QDS) use in Tanzania. A cross-sectional research design was used, whereby a questionnaire was administered to 100 farmers. Focus group discussions and key informant interviews were also conducted to allow triangulation of data. while, qualitative data was analyzed using content analysis. Attitude was measured against 18 statements regarding attitude of respondents towards QDS following five-point Likert scale. The result show that majority of farmers had positive attitude towards the effectiveness of QDS. High technology cost in using QDS was found to be one of the barriers for many farmers to use QDS. To achieve increased production in rice QDS, the government should create mechanisms to improve access of farmers to QDS. Microfinance institutions and rural banks should be encouraged to reduce some of their restrictions to access to credit with emphasis on the complex and tiresome form filling procedures which discourage the majority of farmers from patronizing their products. More attention should be paid to access agriculture information and technology, improving extension advisory services, and then advising farmers on how to access information through the radio, television and the mobile phone platforms.*

KEY WORDS: Quality declared seed, adoptions, attitude

INTRODUCTION

Agriculture is a key feature in numerous policy documents of Tanzania together with the Agricultural Sector Development Programme (ASDP), the national agricultural policy (Massawe et al., 2019, URT 2013). An increased crop productivity (especially staple crops) could spur improved farmers welfare and food security especially in Tanzania where food crops accounts for about 65% of the agriculture gross domestic product (AGDP) (URT 2013).

Major constraint of agriculture production in Tanzania is improved seed availability. It is known that small scale farmers in Africa still use 90 – 95 % recycled seed for their crop production (Granqvist, 2006). The gap for additional use of improved seed cannot be solved by the seed trade only. QDS is a good way to minimize this gap and to improve the seed trade and food production in Africa. (FAO, 2006). An increased agricultural productivity could be attained is through ease of access for farmers to agricultural inputs such as quality declared seeds.

Improved varieties and quality seeds are so important in the lives of farmers worldwide. In 2050 the world's population will be more than 9 billion people. Population growth is mainly in developing countries. While the rural population remains stable or declines, the urban population will move up from 50% to 70% of the total population. As the acreage of arable land will not increase, the same fields must produce 70% more, not only to feed the growing population, but also to respond to agriculture production demands.

Agriculture production demands use of improved seed. According to TOAM (2015) agriculture production demands use of improved seed in Tanzania is also still very low. Analysis of the amount of seed planted in 2016/2017 season reveals that the contribution of QDS to overall seed basket in the country is very low. Research has shown that adoption and use of agriculture technologies enhances farm productivity (Simtowe *et al.*, 2011). However, currently in Tanzania, there is limited access to agriculture inputs such as quality declared seeds and fertilizers there by limiting the potential of the farmers (Mutanyagwa *et al.*, 2018) and low adoption of improved varieties including quality declared seeds prevails in the country.

Rice QDS production in Tanzania, provides income to small-scale farmers. However, it needs a better performance in production unless the government takes an appropriate action to rescue the prevailing challenges. The challenge facing rice QDS production in the study area includes lacks technological innovations such as improved seeds (Msangya, and Yihuan, 2016).

Agricultural Research Institutes (ARIs), which are strategically, located in the major rice production zones of the country. Nevertheless, only few of them have entered in to the seed production and overwhelming majority farmers still rely on recycled seeds which in turn reduces yield. (Kangile, et al., 2017).

It was expected that the introduction of QDS production system would greatly increase availability and use of quality seeds as QDS was expected to supplement the formal seed system, but although the system has been operational in Tanzania, the availability and use of quality seed has remained low (TOAM 2015). There is inadequate understanding of the reasons why such poor performance.

This study will be important as to examines the attitude of farmers towards Quality Declared Seed (QDS) use in Tanzania using data gathered through household survey from about 100 sample households of randomly selected villages from Kilombero District. This study will be very useful in explaining some of the bottlenecks to improved seed adoption in the study area. The findings have a potential to help increase awareness of the entire system of QDS seed production. Moreover, the findings are important to planners, policy makers and implementers towards the joint goal of improving small holder farmers' lives through emphasizing on rice QDS production.

Theoretical Framework

This paper is guided by the theoretical framework of technology adoption. Following Vabi *et al.*, (2019), the determinants of adoption of agricultural technologies can be explained using three model as follow: First is through innovation-diffusion model. The innovation diffusion assumes that improved innovations are needed to improve crop yields and rural livelihoods, meaning that access to information about innovations plays an important role in farmers' decision to adopt and use agricultural technologies. Another one was economic constraints model. The basic assumption

of the economic constraint model is that resources such as credit and land that are important factors influencing decisions to either adopt or dis-adopt farm technologies while the user's context model assumes that the adoption of technologies is influenced by socioeconomic, institutional contexts of potential users, as well as agro-ecological factors. These models have been applied in empirical research either in combination or singly. However, Nordin *et al.,* (2017) stated that the adoption process is best understood through a combination of adoption model as technologies can be more complex and requires more than just diffusion.

METHODOLOGY

The data used for this study is obtained through a field survey using structured questionnaires administered in 2019. This study used a multi-stage simple random sampling technique to select the respondents. First, Kilombero district was purposively selected because of highly rice production in the region. After that, four villages were selected at random based on productivity. The selected villages were Ligongole, Lupangalala, Nkula and Kiberenge. Next, the study selected at random twenty-five farmers from each of the selected village, using a proportionate stratified sampling approach based on the village household register.

The study used a semi-structured questionnaire to solicit responses related to household and farm-level characteristics, Quality Declared Seed (QDS) production, access to QDS, use of QDS, input and output quantities and prices. In order to validate the questionnaires, a pilot testing was done in selected villages and the questionnaire was thereafter revised. Focus group discussions and key informant interviews was also done in other to supplement the information gathered through the questionnaire.

RESULTS AND DISCUSSION

Table 1 present a proportion of the farmers, and the higher proportion were male (52%). Most of the farmers (68%) had primary education. Married people account for (64%) of the respondents while (19%) are single. (46%) of the farmers has household sizes ranging between 1-5persons and 54% had household sizes ranging between 6-10persons.

Table 1: Descriptive statistics

Variable	Frequency	Percentage
Age of respondents		
18-24	8	8.0
25-34	22	22.0
35-44	25	25.0
45-54	28	28.0
55-60	13	13.0
61 and above	4	4.0
Gender of Respondents		
Female	48	48.0
Male	52	52.0
Education level of Respondent		

No formal education	14	14.0
Primary education	68	68.0
Secondary education	17	17.0
College education	1	1.0
Marital Status of Respondent		
Married	64	64.0
Single	19	19.0
Widow/Widower	12	12.0
Separated	5	5.0
Household size		
1-5	46	46.0
6-10	54	54.0
Occupation of Respondent		
Farmer	100	100.0

Source: Field Data, 2019

Farm ownership

Analysis of the farm ownership structure was carried out in this study and results are presented in Table 2. The results show that 100% of the respondents owned farms. Of these respondents, 35% acquired their farm by buying, 32% rented, while 33% inherited their farm.

Table 2: Farm ownership

Variable	**Frequency**	**Percentage**
Farm Ownership		
Yes	100	100.0
No	0	0.0
How farm was obtained		
Bought	35	35.0
Rented	32	32.0
Inherited	33	33.0
Farm sizes (acre)		
I don't know	5	5.0
0-1.9	58	58.0
2-3.9	23	23.0
4-5.9	10	10.0
6-10.9	4	4.0
11 and above	5	5.0

Source: Field Data, 2019

The distribution of the farm sizes shows that 5% of the respondents do not know the size of their farms, 58% have farm size in the range between 0-1.9 acres, while 23%, 10% and 4% have farm sizes ranging from 2-3.9 acres, 4-5.9 acres, and 6-10.9 acres respectively. Only 5% of the respondents had farm size within the range of 11 acres and above. This implies that the farmers are smallholders.

Attitude towards QDS

Table 3 presents the responses of the farmers to the individual statements eliciting their attitudes towards quality declared seeds (QDS). Majority of respondents (95%) strongly agreed to the statement that yields are important when choosing QDS, this is in line with findings from previous study by Kangile *et al.* (2017) which identified yield as a perceived utility driver in farmer's choice of improved varieties in Tanzania. However, majority (58%) strongly disagree that taste and grain quality are more important when choosing QDS than the yields obtained.

Table 3: Statement of attitudes towards rice QDS production

Statement	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly Disagree n (%)
Yields are important when choosing QDS	95(95.0)	5(5.0)	-	-	-
Taste and grain quality are more important when choosing QDS than the yields obtained	5(5.0)	2(2.0)	1(1.0)	34(34.0)	58(58.0)
Early maturity is a more important factor when choosing rice QDS than yield	2(2.0)	-	2(2.0)	34(34.0)	68(68.0)
Price is not a limiting factor for use of QDS	82(82.0)	15(15.0)	1(1.0)	2(2.0)	-
Smallholder farmers access improved rice seeds because of the availability of information in their area	77(77.0)	15(15.0)	3(3.0)	5(5.0)	-
High rate of use of improved rice seeds among smallholder farmers is attributed to availability of agro-input dealers in farmer's areas	40(40.0)	54(54.0)	4(4.0)	2(2.0)	-
Smallholder farmers adopt QDS because of their value markets	31(31.0)	4(4.0)	3(3.0)	62(62.0)	-
QDS reach smallholder farmers in time	76(76.0)	7(7.0)	8(8.0)	9(9.0)	-
QDS present too complex task to implement in the farm	47(47.0)	8(8.0)	1(1.0)	44(44.0)	-
QDS present the superiority in terms of yield than local variety	99(99.0)	1(1.0)	-	-	-
QDS need technologies which are more profitable than local seed varieties	93(93.0)	6(6.0)	1(1.0)	-	-

QDS will help me get a better price for produce by examining prices at different markets	86(86.0)	8(8.0)	2(2.0)	4(4.0)	-
Young people prefer to use QDS more than old people	60(60.0)	6(6.0)	4(4.0)	23(23.0)	7(7.0)
I do not have the education needed to use a QDS	11(11.0)	54(54.0)	2(2.0)	27(27.0)	6(6.0)
My husband will not allow me to use a QDS	14(14.0)	4(4.0)	1(1.0)	21(21.0)	60(60.0)
If I will get a credit, I will be able to buy QDS	97(97.0)	2(2.0)	-	-	1(1.0)
It is expensive to use the QDS	43(43.0)	12(12.0)	45(45.0)	-	-
Forming farmers' groups will give us a better market of QDS	48(48.0)	51(51.0)	1(1.0)	-	-

Source: Field Data, 2019

Further analysis in Table 3 reveal that, more than half (66.5%) of respondents strongly agreed to the statement that QDS present the superiority in terms of yield than local variety. This means that QDS is important to the life of farmers in Kilombero district. Although the available evidence indicates that the overall participation of farmers in QDS production is very low. Farmers reported that they are not able to get credit to buy QDS even though they know that improved seed has a trait of producing more than local variety this shows positive attitude towards QDS production.

Moreover, taste and grain quality are more important when choosing QDS than the yields (67%) agreed with this. Farmers in the study area prefer taste, aroma and grain quality rather than the output of the produce that's why many of the farmers who really grow QDS must have an area plot for their local variety. Their local variety has taste and aroma which are stronger to them than of improved variety. During key informants' interview, some farmers remarked that local variety strengthen their relations. This was beefed up by the following quote "*Husband and wife eat together variety strengthen husband and wife relations because of the taste and aroma*", (A female participant, QDS producer at Ligongole village, Kilombero District, Morogoro 20/10/2019. This name quote means" seat with me my husband and eat together". This situation favour relations in the study area but the truth remains the same that improved variety produce more than local variety which help the country to fight against hunger. The study is in line with Sustainable Development Goal (SDG number 2). This goal emphasizes on ending hunger, achieve food security and improve nutrition promote sustainable agriculture (FAO, 2015).

Another point was grain quality, Grain quality of QDS is not strong like grain of local variety it breaks easy when processing, that's why even the processor prefer local variety because their grain is strong and not easily broken. Another key informant during key informants' interview, remarked that local variety has strong grain than of local variety. This was beefed up by the following quote "*I prefer local variety because their gain is strong and not broken easy during processing which preferred by business people and also fetch higher price in the market that we normally get higher price for local variety than QDS and we sell first local variety then QDS*", (A Male rice processor, at Mangula A village, Kilombero District, Morogoro 20/10/2019. This quote

in one way or another give strength to local variety but the harvest from QDS fetch higher output than local variety such that one acre of QDS produce 20 to 30 bags of 10 tin per bag while one acre of local variety produces 3 to 5 bags of 10 tin per bag. That's why those who grow QDS will use them for business and get higher income compere to those of local variety which will fetch low produce, low income and will be just for eating and few for business.

About (82%) of the respondents strongly to the statement that price is not a limiting factor for use of QDS. A high proportion of the respondents (77% who strongly agreed and 15% who agreed) are of the opinion that smallholder farmers accessed improved rice seeds because of the availability of information in their area. This implies that farmers have a positive attitude towards QDS and the information QDS is available in the study area.

Very high proportion of the respondents equally (93%) strongly agreed to the statements that QDS need higher technologies than local seed varieties. Moreover, overwhelming majority of the farmers (62.8%) indicated that if they will get a credit, they will be able to buy QDS. This reflects the fact that farmers in the study area have low access to farm credit needed to effectively adopt and use improved varieties such as QDS.

CONCLUSION AND RECOMMENDATION

The results of the analysis as discussed in this paper revealed that farmers' shows a positive attitude towards QDS but are limited in their use of QDS due to severally reason and majorly lack of credit as revealed in the analysis. Moreover, the number of farmers presently using QDS seeds in the study area is still below half of the farmers' population. The study therefore concludes that there is a viable opportunity to enhance farmers' adoption and use of QDS in the study area through proper information dissemination and provision of support and training needed by the farmers to maximize their use of QDS. It is therefore recommended that all stakeholders concerned especially the government, seed institutions and extension agent should synergize and collaborate more effectively in promoting adoption and use of QDS in Kilombero District and across the nation.

REFERENCES

Ayenew, W., Lakew T. and Kristos E. H., (2020) Agricultural technology adoption and its impact on smallholder farmer's welfare in Ethiopia. Vol. 15(3), pp. 431-445, DOI: 10.5897/AJAR2019.14302 *African Journal of Agricultural Research*

Awotide, B. A., Karimov, A. A., and Diagne, A. (2016). Agricultural technology adoption, commercialization and smallholder rice farmers' welfare in rural Nigeria. *Agricultural and Food Economics*, *4*(1), 3.

FAO (2015). Seventeen sustainable development goals. [http://www.fao.org/3/a-i4997e.pdf] site visited on 30/8/2020.

Granqvist, B., (2006) Is Quality Declared Seed Production an effective and sustainable way to address Seed and Food Security in Africa? Lead Consultant, BriAgri ApS Consultancy Company, Toldbodgade 19 B, 2nd, 1253 Copenhagen K, Denmark. briagri@briagri.dk or granqvistbritt@privat.dk.

Kangile, Rajabu Joseph, Setegn Gebeyehu, and Herman Mollel. (2016)"Improved rice seed use and drivers of source choice for rice farmers in Tanzania." *Journal of crop improvement* 32.5 (2018): 622-634.

Massawe B. H. J., Kaaya A. K., and Slater B. K., (2019). Involving small holder farmers in the agricultural land use planning process using Analytic Hierarchy Process in rice farming systems of Kilombero Valley, Tanzania.The Ohio State University, 210 Kottman Hall, 2021 Coffey Road, Columbus, OH 43210, USA. African Journal of Agricultural Research Vol. 14(7), pp. 395-405,

Msangya, B., and Yihuan, W., (2016); Challenges for Small-Scale Rice Farmers: A Case Study of Ulanga District Morogoro, Tanzania. College of Humanities and Development Studies. International Journal of Scientific Research and Innovative Technology ISSN: 2313-3759 Vol. 3 No. 6,

Mutanyagwa, A. P., Isinika, A., and Kaliba, A. R. (2018). The factors influencing farmers' choice of improved maize seed varieties in Tanzania. *International Journal of Scientific Research and Management*, *6*(04).

Nordin, S. M., Redza, A., and Saad, M. S. M. (2017). Innovation Diffusion: Farmers' Perception towards New Green Fertilizer in Granary Paddy Fields in Malaysia. *Global Business & Management Research*, *9*.

Sime, G., and Aune, J. (2018). Sustainability of Improved Crop Varieties and Agricultural Practices: A Case Study in the Central Rift Valley of Ethiopia. *Agriculture*, *8*(11), 177.

Simtowe, F., Kassie, M., Diagne, A., Asfaw, S., Shiferaw, B., Silim, S., and Muange, E. (2011). Determinants of agricultural technology adoption: The case of improved pigeonpea varieties in Tanzania. *Quarterly Journal of International Agriculture*, *50*(892-2016-65202), 325-345.

TOAM (2015). BACAS_TOAM Final Report Study of farmer managed seed systems in Tanzania - their operation, benefits, successes, challenges & support. TOAM-Seed -Report-Online Prof Hella site visited on 29January 2020

United Republic of Tanzania (URT), (2013). National Agricultural Policy 2013, MAFC, Dar es Salaam Tanzania

Vabi, M. B., Sadiq, S. A., Mustaph, A., Suleiman, A., Affognon, H. D., Ajeigbe, H. A., and Kasim, A. A. (2019). Patterns and drivers of the adoption of improved groundnut technologies in North-western Nigeria. *African Journal of Agriculture*, *6*(1), 1-16.