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Profile of Extension Professionals and their Perception of Agricultural Extension Service Delivery: A Case of National Agricultural Research and Extension Institute, British Guyana

R. Sukhna, O. Homenauth, Y.V. Zamora, Z.S. Rubio

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ABSTRACT

Background: Agricultural extension plays a critical role in amplifying agricultural productivity and profitability of farmers and improving the livelihoods of rural communities. In an agricultural dependent country like Guyana, effective agricultural extension service delivery is essential to reduce poverty and improve food security.

Methods: This study was carried out to determine the efficacy of the National Agricultural Research and Extension Institute agricultural extension service delivery as perceived by researchers and extension officers. During 2019-2020 data were collected from researchers and extension officers *via* questionnaires, group discussion and interviews. Percentage and chi-square analysis were used to analyze the collected data.

Result: The major findings of the study were that (45.8%) of researchers and (43.8%) of extension officers said they sometimes collaborate with each other whereas (29.2%) of researchers and (37.5%) of extension officers said they do not collaborate with each other. Extension professionals (42.5%) perceived that farmers were hesitant to adopt newly researched technologies because they preferred to continue with the practices they already know. In addition, (35%) of extension professionals perceived that more emphasis shall be placed on the number and quality of training programs offered to farmers in order to improve agricultural extension service delivery.

Key words: Agricultural, Extension, Farmers, Perception, Researchers.

INTRODUCTION

The Guyanese extension system has undergone many changes since it started with the founding of the Royal Agricultural and Commercial Society of British Guyana in March 1844 which was basically a cooperative effort by planters. Both prior to and after independence the extension services primary goal was producing enough to sustain the colony. In June 2011 the National Agricultural Research and Extension Institute, NAREI based at Mon Repos, took over the extension services and were responsible for all coordination of extension activities in the country.

The agricultural sector is crucial to rural development and contributes significantly to any initiative to alleviate poverty. For this reason, there is a great need for effective extension and advisory services. Agricultural extension has often been conceived as an education process which promotes learning and uses the combined findings of biological sciences and the principles of social science to bring about transformation in knowledge, skill attitude and practices in and out of school setting (Ileubaoje, 2004). Dissemination of the right information at the appropriate time among farmers is key to providing change in agriculture (Darko, 2013). Extension services can be organized and delivered in a variety of forms, but their ultimate aim is to increase farmers' productivity and income (Kassem, 2014). Among the various functions of extension, the dissemination of information is the most important. Knowledge gaps in turn lead to yield gaps (Morris *et al.* 1998 and Singh *et al.* 2001).

National Agricultural Research and Extension Institute, NAREI, Mon Repos, East Coast Demerara, Guyana, South America.

Corresponding Author: R. Sukhna, National Agricultural Research and Extension Institute, NAREI, Mon Repos, East Coast Demerara, Guyana, South America. Email: ramnarace_sukhna@yahoo.com

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According to Ajala, Ogunjimi and Farinde (2013) there are numerous problems facing the agricultural extension service such as high levels of illiteracy among farmers which sometimes make it difficult for them to comprehend all the ideas being communicated to them. NAREI's, Extension Professionals have often been criticized by farmers for lacking the technical competency in delivering efficient agricultural extension services.

Extension professionals perception regarding NAREI'S Agricultural Extension Service Delivery is yet to be established and it was against this background that this study was carried out to investigate Extension Professionals Perception of NAREI's Agricultural Extension Service Delivery.

MATERIALS AND METHODS

This study was conducted at the National Agricultural Research and Extension Institute, NAREI and in two selected administrative regions of Guyana, South America during 2020. Guyana is bounded by the Atlantic Ocean in the north, Suriname in the east, Brazil in the south and southwest and the Bolivarian Republic of Venezuela in the northwest. Region #3 Essequibo Islands-West Demerara and region#5 Mahaica-Berbice were selected because of the high proportion of farmers and agricultural activities in these regions.

The populations targeted for this study were researchers and extension officers of NAREI. Due to the finite number of extension officers in regions 3 and 5 and researchers of NAREI it was decided that all 16 extension officers (six from region 3 and 10 from region 5) and 24 researchers would participate in the survey.

In this study, questionnaires, focus group discussion, structured interviews and observations were used for data collections. The structured questionnaires were used to determine the technical competency and knowledge of extension officers and researchers and identify their perceptions and attitudes towards NAREI's agricultural extension service. The secondary data was procured from NAREI's database, internet, journals, textbooks and monthly and annual reports of researchers and extension officers.

Questionnaires were distributed to the respondents who responded by marking the most applicable answer with a tick mark (√) or writing in the space provided. In structured interviews and focus group discussions extension officers and researchers were asked probing questions to gather more precise information where it was absolutely needed. The personal data that were collected from the extension officers and researchers were analyzed using percentages. Chi-square analysis was used to test the significant relationship between extension officers and researchers. Tables and graphs were used to represent the data collected.

RESULTS AND DISCUSSION

Socio-economic attributes of extension professionals in the study area

The results of the socio-economic attributes of the respondents were captured in Table 1. The variables that were scrutinized were gender, age, level of education, highest tertiary qualification and area of specialization. Table 1 illustrated that (57.5%) of the respondents are females and (42.5%) are males. This is contrary to previous years when NAREI was completely dominated by male professionals. The age of the respondents is between 20 to 70 years. (47.5%) of them are less than 30 years old and 30% of them fell within the age of 31-40 years. This is a plus for the Institute since most of the officers are at their productive age hence tremendous benefits can be had if their skills are properly honed. According to Sennuga (2019), it is generally assumed that younger people tend to be more productive than their older counterparts.

Academically, the majority (90%) of respondents had received tertiary education with (58.33%) of them possessed a Bachelor's degree and only (22.22%) obtained a Master's degree. On specialization, (75%) of the extension professionals obtained tutelage in crop production technology with (25%) acquired teachings in both crops and livestock. In the focus group discussion, most of the respondents expressed that they did not receive any formal training in agricultural extension and are in receipt of less than three (3) agricultural extension training programs organized by NAREI in the past three years. Effective extension work depends upon competent and well-trained agricultural extension staff (Zahrani *et al.* 2017). The extension personnel should be competent and well informed as the national agricultural economic growth depends on them (Meena and Bangarva 2006). Extension workers must be professionals and have a professional approach to their work. This entails thorough training, adherence to high ethical standards and regular refresher courses to keep them abreast of new developments (Aremu *et al.* 2019). The impact of extension methodology courses created a significantly positive impact and the overall increase in knowledge level of the participants in different areas of extension methodology after the training was high (Singh *et al.* 2010). It is only when extension workers are given the opportunities to upgrade their current level of knowledge that they can be competent to train farmers. Apart from the technical competency, it is important that extension officers are formally trained in agricultural extension so as to help farmers in their decision-making and ensure that appropriate knowledge are disseminated to obtain the best results with regard to sustainable production and general rural development. Mokone (2004) indicated that the lack of extension qualification is a problem for extension officers to perform their extension work effectively once they are employed. In the focus group discussion, respondents requested specific and in-depth training of integrated pest and disease management, disaster risk management, pesticide usage *etc*. in order to improve the extension service delivery to farmers.

Collaboration between extension officers and researchers

Table 2, the findings revealed that (45.8%) of researchers sometimes collaborate with extension officers, (29.2%) do not collaborate with extension officers whereas (25%) of researchers do collaborate with extension officers to implement newly researched technologies on farmer's plot. In the structured interview, researchers claimed that they do not receive feedback from extension officers hence research projects carried out are not based on information received from extension officers. According to Smith (2020), feedback from extension officers is very important because that is what drives research and other activities. Close and reciprocal interaction among research, extension and farmers is mandatory which could lead to design and delivery

of appropriate technology (Kumar *et al.* 2001). Researchers also stated that because of lack of communication between researchers and extension officers and lack of competency and inability of extension officers to interpret scientific results most of the technologies researched by NAREI do not reach the farmers. The study results further revealed that extension officers (43.8%) of regions 3 and 5 said that they sometimes collaborate with researchers, (37.5%) do not collaborate with researchers and (18.8%) do collaborate with researchers to implement newly researched technologies on farmer's plot.

As depicted in Table 2, Chi-square analysis was used to test the significant relationship between extension officers and researchers. The results revealed that there was no statistically significant relationship between extension officers and researchers. This may be because of the ineffectiveness of the agricultural extension service delivery in the study area. Farmers can benefit tremendously from effective communication and collaboration between extension officers and researchers because issues facing them can be related to researchers by the extension officers and proper investigation can be conducted to resolve the same. Whether the agricultural research succeeds or fails as a catalyst to any nation's development depends largely on how well researchers and extension personnel communicate and cooperate with each other (Kumar *et al.* 2001).

Table 1: Demographic depiction of the socio-economic attributes of extension professionals. (n= 40)

Variables	Percentage
Gender	
Male	42.5
Female	57.5
Age	
<30	47.5
31-40	30
41-50	7.5
51-60	12.5
>60	2.5
Level of education	
Primary	-
Secondary	10
Tertiary	90
Highest tertiary qualification	
Certificate in agriculture	8.33
Diploma in agriculture	8.33
Bachelor's degree	58.33
Master's degree	22.22
PhD degree	2.7
Area of specialization	
Crops	75
Livestock	-
Crops and livestock	25
Agricultural extension	-

Hesitation to adopt newly developed technologies

There is a long history of efforts by scientists to research and develop technologies aimed at increasing farm production which are then transferred by extension agents to farmers for adoption (Swanson and Rajalahti, 2010, Koutsouris, 2012). Some of the reasons for poor adoption by farmers can be attributed directly to challenges with funding, capacity building and high cost of technology, all of which hinder service delivery (Davis, 2008, Mugwisi *et al.* 2012). Adoption of any technology in agricultural extension can help to improve agricultural productivity and increase farmer's income, especially in developing economies (Kant *et al.* 2013).

Extension Professionals of NAREI were asked what are the major reasons farmers are hesitant to adopt newly researched technologies. In Fig 1, (42.5%) of extension professionals indicated that farmers preferred to continue with the practices they already know, (32.5%) said that farmers are not sure about the end results of the technologies promoted while (12.5%) said farmers lack trust in the competence of extension professionals. This suggests that extension professionals did not utilize the ideal extension methods (farmers field day, result and method demonstration) to communicate the benefits of the new technologies to farmers. Farmers tend to believe when they see the results, it inspires and encourages them to try it for themselves. Generally, farmers are keen on seeing how a new idea works and how it might affect their crop production (Food and Agriculture Organization of the United Nations n.d.).

Extension professional's perception of the issues to be addressed to improve NAREI's agricultural extension service delivery

During the survey, extension professionals were asked to identify the main issues they think shall be addressed to improve agricultural extension service delivery in their district. Fig 2 below showed that of the six issues mentioned,

Table 2: Chi-square analysis of collaboration between researchers and extensionist.

Do extension officers collaborate with researchers and vice versato implement newly researched technologies	Researcher n=24	Extensionist n=16	Chi-square	p-value	df
Yes	25	18.8	0.38	0.82	2
No	29.2	37.5			
Sometimes	45.8	43.7			

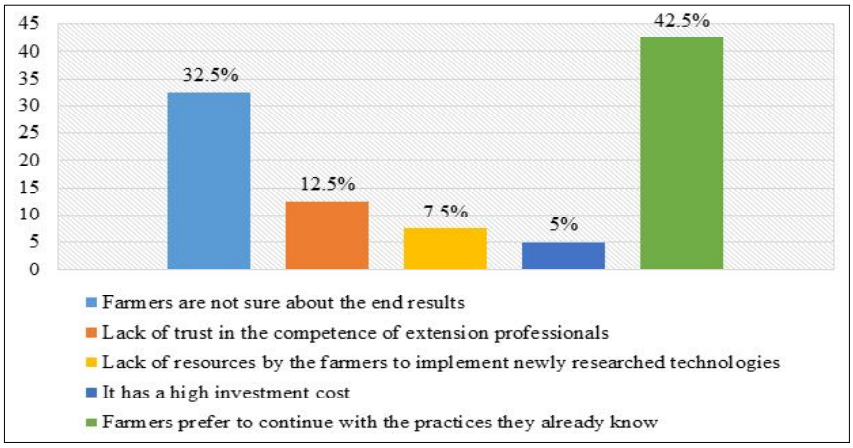

Fig 1: Hesitation of farmers to adopt newly researched technologies. Source: Field Survey, 2020: n=40.

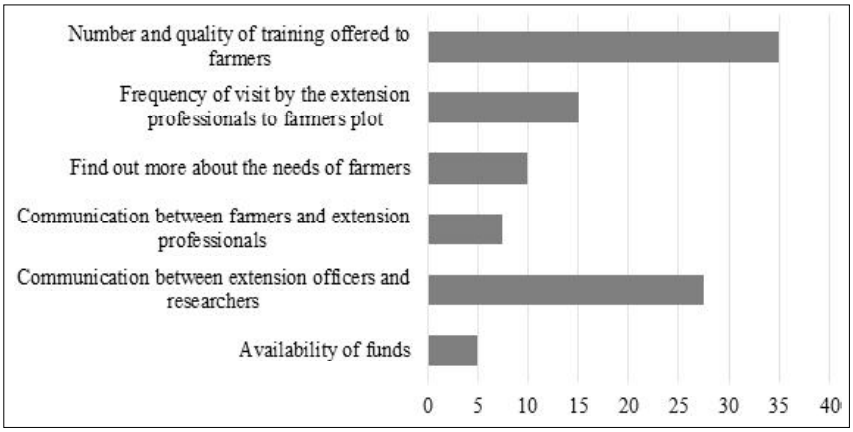

Fig 2: Issues to be addressed to improve agricultural extension service delivery. Source: Field Survey, 2020: n=40.

all of them need to be addressed. However, the two most noteworthy issues identified by the extension professionals were the number and quality of training programs offered to farmers (35%) and communication between extension officers and researchers (27.5%). Availability of funds and communication between farmers and extension professionals were among the least important issues pinpointed.

Training assists farmers to add the newest scientific advances and technology instruments into their daily operations. Training of farmers should not be confined to classroom only, it must include practical and demonstration sessions for maximum comprehension. Training farmers in the correct time and proper way is essential in the development of the agricultural sector. If farmers are to be more successful and live better lives, they must benefit from quality training programs and newly developed technologies. Training provided to the farmers has not only helped them improve their individual capabilities, but more importantly, boost their morale and motivation that clearly contributed to their positive performance level (Noor, 2011). It must be highlighted that more focus shall be placed on improving the communication between the extension and research department which is pivotal in improving agricultural service delivery to farmers.

CONCLUSION

The result of the study divulged that extension professionals do not have commendatory perception concerning the effectiveness of NAREI's agricultural extension service delivery. Variables such as age, gender, education, tertiary qualification and area of specialization are key contributing factors for this study. Results revealed that farmers were hesitant to adopt newly researched technologies because they preferred to continue with the practices they already know, they are not sure about the end results of the technologies being promoted and they lack trust in the competence of extension professionals. However, the most noteworthy issues extension professionals highlighted must be addressed in order to improve NAREI's agricultural extension service delivery were the number and quality of training programs offered to farmers and communication between extension officers and researchers. The chi-square analysis results showed that there was no statistically significant relationship between extension officers and researchers. Sincere and honest collaboration and communication between researchers and extension officers will ensure appropriate technologies are transferred to farmers for adoption which will enhance farm productivity and household income.

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