Assessment of Linkages between Agro-input Dealers and Other Stakeholders in Rice Production in Ebonyi State, Nigeria

Nwobodo Cynthia Ebere[1*] and Ajah Okechukwu Elom[1]

[1]*Department of Agricultural Extension, University of Nigeria, Nigeria.*

Authors' contributions

This work was carried out in collaboration between both authors. Author ENC designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors AOE and ENC managed the analyses of the study. Author AOE managed the literature searches. Both authors read and approved the final manuscript.

Original Research Article

ABSTRACT

The study assessed the linkages between agro- input dealers and other stakeholders in rice production in Ebonyi State, Nigeria. Multistage sampling technique was used in selecting sixty (60) respondents used for the study. Data were collected using semi-structured interview schedule and were analyzed using frequency, percentage, and mean statistics. Findings revealed that majority (96.7%) of the respondents were male, the mean age of the respondents was 35.58 years, and majority (60%) was married. Findings show that majority (93.3%), of the input dealers, used mobile phone in interacting with farmers, 93.0% used office/home visit in interacting with fellow agro-input dealers, 83.3% used personal/one-on-one contact in interaction with agro-input manufactures, and 71.7% used personal/one-on-one contacts in interaction with extension. The majority (98.3%) of respondents indicated that the area of interaction with farmers was a business deal, 96.7% also

_____

Corresponding author: E-mail: cynthia.nwobodo@unn.edu.ng, cynthynice@yahoo.com;

indicated that area of interaction with fellow agro- input dealers were business deal, 73.3% indicated that area of interaction with extension was welfare. Also, results show that respondents had strong linkage with rice farmers (M= 1.90), and fellow input dealers (M= 1.7). It was recommended that linkages between agro-input dealers and relevant stakeholders should be mainstreamed. Policy makers, development agencies, research and extension should prioritize agro-input dealers as major players for the development of rice sub-sector in the area.

1. INTRODUCTION

Agriculture is the major source of livelihood for the majority of the population in sub-Saharan Africa. Agriculture development is therefore, fundamental for spurring growth, overcoming poverty, and enhancing food security in the sub-region [1]. Poor access to agro inputs has been the main cause of low agricultural productivity in most part of sub-Saharan Africa [2]. Compared to other developing regions of the world, the low use of farm inputs by smallholder farmers in SSA is responsible for the gap between potential farmers' yields and actual crop yields at farm level [3]. Linkage of agro-input dealers to relevant stakeholders in all the agricultural value chain commodities is sine qua non for sustainable agricultural and rural development of any nation more specifically to the developing countries. This is because according to Sanga et. al. [4], researching agricultural problems in a value chain manner makes it easy to rectify the complex problem in a holistic and sustainable manner since agricultural problems are rarely solved at single actor rather than in linkage with multi-actors. Thus, by so doing the problem is solved as a whole from production to consumption rather than solving it as a single entity [4]. Inputs are critical to agricultural productivity. These inputs including improved seeds, fertilizer and crop protection chemicals, machinery, irrigation and knowledge are very crucial for farm productivity and overall profitability [5]. Efficient input and outputs markets are crucial to ensure that the right products are delivered at the right time, in the right amount, at a convenient place, and for an affordable price [6].

In Nigeria, rice production contributes significantly to employment generation [7] as it is being produced in all the ecological zones of the country. Major agro-inputs especially improved rice seed, fertilizers, herbicides, and pesticides are necessary requirements for rice production. Therefore, agro-inputs should be available at the right time, in the right quantity and at an affordable price [8] to rice farmers. Agro dealers are the people involved in the sales and distribution of agricultural inputs to farmers. They are sometimes rural entrepreneurs who could be lead farmers themselves that have undergone basic business skills [8]. They play a major role in servicing farmers need as it relates to agricultural inputs [9].

Linking input-dealers with other stakeholders like farmers improves communication/interaction and consequently brings about more efficient collaboration among the stakeholders. For instance, a project that linked agro-input dealers to rice farmers in Ghana helped to double the number of farmers served from 200 to 400 thereby increasing the business volume of agro-input dealers while farmers reported high yields as a result of improved linkages with input dealers [10]. In order to ensure the development of rice sub-sector in Nigeria therefore, the importance of rice inputs and rice input dealers cannot be over emphasized. The need to link input dealers to relevant stakeholders in the rice sector becomes paramount. According to Sanga et. al. [4], a strong link between actors is essential hence the need for effective and efficiency communication in all stages, right from input supply, production, and delivery of outputs to ultimate consumers. It is very important to take critical measures to ensure that the input sub-sector is well integrated and linked to relevant stakeholders as it has a major role in the productivity and profitability of the rice sector in the Nigeria.

1.1 Purpose of the Study

The broad aim of the study was to assess linkages between agro-input dealers and other stakeholders in the rice sector in Ebonyi State, Nigeria. The specific objectives were to:

1. ascertain medium of interaction/linkages between input dealers and other stakeholders;

2. ascertain areas of interaction/linkages; and
3. Determine the strength of interaction/linkages between input dealers and other relevant stakeholders in rice production in the area.

2. MATERIALS AND METHODS

The study was carried out in Ebonyi State Nigeria which lies approximately between latitude 6°15'00" N and longitudes 8°05'00" E [11]. Ebonyi State is located at the south Eastern part of Nigeria. The people of the State are predominantly farmers. Major crops produced in the State are rice, yam, palm produce, maize, groundnut, plantain, banana, cassava, melon, fruits and vegetables and major animals reared are goat, sheep, cattle, and poultry. The population of the study constituted all the agro-input dealers in Ebonyi State of Nigeria. Multistage sampling technique was employed in selecting respondents. In stage one, two agricultural zones (Ebonyi North and Ebonyi Central) were purposively selected based on the presence of a considerable number of agro-input dealers in the areas. In stage two, three blocks were purposefully selected from each zone based on their popularity in rice production giving a total of six (6) blocks. Stage three involved a random selection of two circles from each block giving a total of twelve (12) circles while stage four involved a random selection of five (5) agro-inputs dealers from each of the 12 circles giving a total sample size of 60 respondents. Data were collected using semi-structured interview schedule. Data on socio-economic characteristics were gotten by asking respondents to state their sex, (male or female), age (in years), and marital status (married, single, divorced/separated, and widowed etc.) etc. In order to ascertain the medium used for interaction/linkage, respondents were told to indicate the media they used in interacting with other stakeholders. A list of media such as meeting, one-on-one/personal contact, phone calls, workshops, partnership/collaboration, email/Internet, seminars, office/home visit etc was provided and respondents asked to tick as it applied to them. In order to ascertain areas of interaction/linkage between the respondents and other stakeholders, respondents were told to indicate areas they had interacted with other stakeholders. A list of possible areas of interaction/linkages such as business deal, welfare, loan/grants, climate change mitigation, innovation/technology development/transfer, agro-input subsidy, environmental conservation issues, policy/law/regulation, agro-input direction for use, agro-input specification etc. were provided. Respondents were also asked to specify others as it applied to them. To ascertain the strength of linkages, respondents were told to rate their perceived strength of linkages with other stakeholders on a three-point Likert-type scale of no linkage (0), weak (1), and strong (2). Data were presented using descriptive statistics.

3. RESULTS AND DISCUSSION

3.1 Socio-economic Characteristics of the Respondents

Table 1 shows that majority (96.7%) of the respondents were male while 3.3% were female. This is in agreement with the findings of Ogunlade et al. [12] who stated that majority (66%) of input dealers in Kwara State were male. A greater proportion (46.6%) of the respondents were aged between 31-40 years. The mean age was 35.58 years. This shows that most of the respondents were within the economic active age which could mean greater advantage to the development of rice sector in the area. The above result is in line with the findings of Martey et al. [13] who found that the average age of agro-input dealers in Northern Ghana was 39 years indicating the youthfulness of the agro-input dealers in northern Ghana. Normally people in such age bracket are energetic, innovative and adventurous which are essential to the operation of agro-business. The majority (60%) of the respondents were married, a greater proportion (48.3%) completed secondary education completed. This finding is an indication that input dealers in the area are literate and could understand input specifications more to be able to pass the right information to farmers. Results also revealed that a majority (81.7%) of the respondents had a household size of 1-5 persons.

Results show that majority (98.3%) of those respondents belongs to one or more social organizations and majority 76.7% of those that belonged to social organizations were members of religious groups. Being a member of social organizations could enhance access to rice-related information by agro-input dealers in the areas. A Greater proportion (33.3%) of the respondents had a monthly household income of ₦10,001- ₦ 20,000. The mean monthly household income was ₦ 46,800. This revealed that majority of the respondents were engaged in small-scale business unit with low household income earnings. Findings show that the majority

(68.3%) of the respondents deal on herbicides while 35.0%, 31.7%, 16.7%, and 8.3%, deal on fertilizers, insecticides, rice seed, and fungicides respectively. These findings imply that agro-input dealers in the State were low-income earners who operate on a small scale and therefore need their business to be improved in order to increase their income and consequently enhance their living standard.

3.2 The Medium of Interaction/Linkages between Agro-input Dealers and other Stakeholders

Entries in Table 2 reveal that majority (93.3%) of the input dealers indicated that they used phone call in interacting with rice farmers, 90.0% used home/office visit, 88.3% used personal/one-on-one contact, while 50.0% used seminars in

Table 1. Socio-economic characteristics of respondents

Socio-economic characteristics	Frequency	Percentage	Mean
Sex			
Male	58	96.7	
Female	2	3.3	
Age			
≤ 20	1	1.7	
21-30	18	30	
31-40	28	46.6	35.58
41-50	11	18.2	
51-60	2	3.3	
51-60			
Marital status			
Married	36	60	
Single	24	40	
Educational level			
Secondary school attempted	2	3.3	
Secondary school completed	29	48.3	
Tertiary education	25	41.7	
Higher education (MSc/PhD)	4	6.7	
Household size			
1-5 persons	49	81.7	
6-10 persons	11	18.3	
Belonging to social organization			
Yes	59	98.3	
No	1	1.7	
Type of social organization belonged to			
Religious group	46	76.7	
Co-operative group	7	13.3	
Political party	6	10.0	
Social club	5	8.3	
Agro-input dealers association	1	1.7	
Monthly household income			
≤ 10000	2	3.3	
10001-20000	20	33.3	46800
20001-30000	14	23.3	
30001-40000	13	21.7	
40001-50000	9	15.1	
50001 and above	2	3.3	
Type of agro-input sold*			
Rice seed	10	16.9	
Fertilizer	21	35.0	
Herbicide	41	68.3	
Fungicide	5	8.3	
Insecticide	19	31.7	

Multiple responses, Source: Field survey 2016

interacting with rice farmers. Data in Table 2 also show that majority (93.0) of the respondents indicated that they used office/home visit in interacting with fellow agro-input dealers, 90.0% used phone call, another 90.0% used personal/one-on-one contact, 83.3% used meeting, 70.0% used partnership/ collaboration, 55.0% used training, and 43.35 used seminar, in interacting with fellow input dealers. On the other hand, entries in Table 2 reveal that majority (83.3%) of the respondents indicated that they used a personal/one-on-one contact in interaction with agro-input manufactures, 80.0% used a phone call, while 40.0% used office/ home visit in interaction with agro-input manufactures.

Findings in Table 2 show that greater proportion (40.0%) of respondents indicated that they used a personal/one-on-one contact in interacting with research, while 15.0% used seminar, and another 15.0% used phone call in interacting with research. Results in Table 2 reveal that majority (71.7%) of respondents indicated that they used personal/one-on-one contacts in interaction with extension, 68.3% used workshops, 68.3% used seminar, 51.7% used phone call, and 35.0% used training in interaction with extension.

It is interesting to find that respondents used a variety of communication channels in reaching out to other stakeholders. However, most of those channels are based on physical contacts and group methods with a few done through phone calls. Other information communication channels including internet and emails were not yet being deployed in communication between input dealers and other stakeholders in the rice sector. According to Sanga et al. [4], achieving effective and efficiency communication among actors requires effective and efficiency communication channels too. It is important that agro-input dealers should improve their linkage with other stakeholders through the use of modern ICT tools in order to enhance the efficiency of their interaction with those actors.

3.3 Areas of Interaction/Linkages between Agro-input Dealers and other Stakeholders

Data in Table 3 show that majority (98.3%) of the respondents indicated that their area of interaction with farmers was a business deal, 96.7% indicated an agro-input direction for use, 91.7% indicated welfare, another 91.7% indicated agro-input specification, and 76.7% indicated environmental conservation issues. On the other hand, Table 3 reveals that majority (96.7%) of the respondents indicated that the area of interaction with fellow agro- input dealers were business deal, 76.7% indicated welfare, 75.0% indicated agro-input direction for use, 66.7% indicated environmental conservation issues, 63.3% indicated agro-input specification, and 46.7% indicated loan/grants.

Table 3 also shows that majority (90.0%) of the respondents indicated that the area of interaction with agro- input manufacturers were a business deal, 71.7% indicated welfare, 68.3% indicated an agro-input direction for use, 68.3% indicated agro- input specification, and 58.3% indicated environmental conservation issues. Results in Table 3 reveal that majority (100%) of the respondents indicated that the area of interaction with research institutes was loan/grants, and 18.3% indicated environmental conservation while majority (73.3%) of indicated that area of interaction with extension was welfare, 68.3 indicated agro-input direction for use, 66.7% indicated environmental conservation issues, 61.7% indicated climate change mitigation, 60.0 indicated agro-input specification, and 46.7% indicated innovation/technology development/ transfer.

These findings reveal that input dealers in the area engaged in a number of areas of interaction with other stakeholders including business deal, welfare, loans and grants, climate change conservation issues among others. It is however important to note that little or nothing is happening in the areas of innovation and technology transfer. This shows that the input dealers were not yet being targeted by both research and extension in terms of dissemination of innovations and technologies. Blum [14] noted that advisers in official extension services had in the past viewed input dealers and private sector generally as competitors, who had only their narrow business interests in mind. The result of this will be that input dealers will lack the requisite knowledge of appropriate rice inputs which will definitely impact on the farmers who are their direct customers.

Table 2. Medium for interaction/linkages between rice input dealers and other stakeholders

Medium used for interaction	Farmers		Fellow input dealers		Input manufacturers		Research institutes		Extension	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Meetings	10	16.7	50	**83.3**	14	23.3	1	1.7	20	33.3
Trainings	18	30.0	33	55.0	15	25.0	6	10.0	21	35.0
Personal contacts	53	**88.3**	54	**90.0**	53	**88.3**	24	**40.0**	43	**71.7**
Partnerships/collaborations	19	31.7	42	**70.0**	9	15.0	2	3.3	9	15.0
Workshop	13	21.7	21	35.0	11	18.3	6	10.0	41	**68.3**
Seminar	30	50.0	26	43.3	20	33.3	9	15.0	41	**68.3**
Phone call	56	**93.3**	54	**90.0**	48	**80.0**	9	15.0	31	**51.7**
Email/internet	2	3.3	3	5.0	3	5.0	3	5.0	5	8.3
Office/home visit	54	**90.0**	56	**93.0**	24	**40.0**	4	6.7	6	10.0

Multiple responses
Source: field survey, 2016

Table 3. Areas of interaction/linkages between agro-input dealers and other stakeholders

Medium used for interaction	Farmers		Fellow input dealers		Input manufacturers		Research institutes		Extension	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Business deal	59	**98.3**	58	**96.7**	54	**90.0**	10	16.7	3	5.0
Welfare	55	**91.7**	46	**76.7**	43	**71.7**	7	11.7	44	**73.3**
Loans/grants	4	6.7	28	46.7	8	13.3	60	**100**	1	1.7
Climate change adaptation	23	38.3	23	38.3	10	16.7	5	8.3	37	**61.7**
Innovation/technology development/transfer	18	30.0	15	25.0	10	16.7	5	8.3	28	46.7
Agro-input subsidy	8	13.3	11	18.3	6	10.0	2	3.3	2	3.3
Environmental conservation issues	46	**76.7**	40	**66.7**	35	**58.3**	11	18.3	40	**66.7**
Policies/laws/regulation	58	**96.7**	16	26.7	8	13.3	3	5.0	7	11.7
Agro-input directions for use	10	16.7	45	**75.0**	41	**68.3**	9	15.0	41	**68.3**
Agro-input specification	54	**91.7**	38	**63.3**	41	**68.3**	10	16.7	36	**60.0**

* Multiple responses
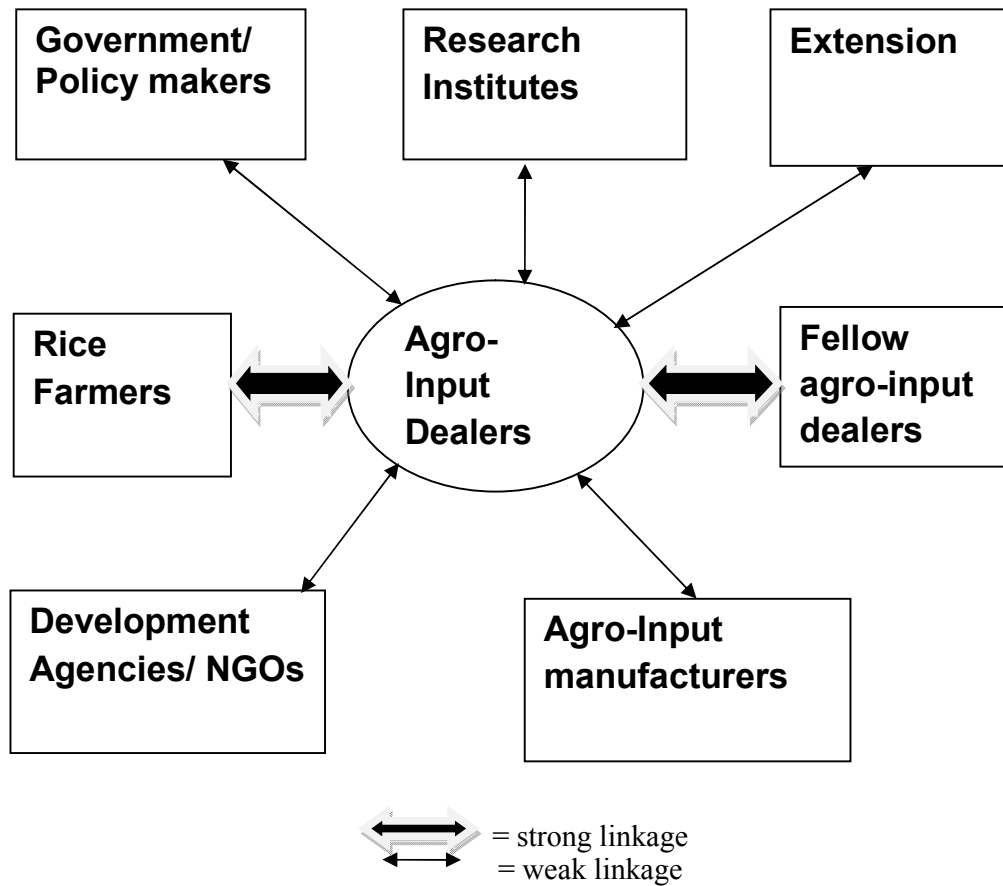*Source: field survey, 2016*

6

Fig. 1. Linkage chart of strength of linkage between agro-input dealers and other stakeholders in the rice sector

3.4 Strength of Interaction/Linkage between Agro-Inputs Dealers and other Stakeholders

Results in Table 4 reveal the strength of linkage between agro- input dealers and other stakeholders in the rice sector. From the Table 4, agro-input dealers had strong linkage with rice farmers (M= 1.90), and fellow input dealers (M= 1.78) only. Fig. 1 reflects the strength of linkages. Looking at the arrows, it can be deduced that the input dealers had strong linkage with only rice farmers and fellow agro-input dealers while they had weak linkages with agro-input manufacturers, research institutes, extension, development agencies/NGOs, and government/policy makers. The implication of this is that agro-input dealers in the area cannot rely on these weak linkages to make any substantial progress in rice development in the area. This finding is in agreement with that of [15] who found that none of the local seed dealers in

Guinea, West Africa ever collaborated with a seed project even though on average they had spent 14 years selling rice seed.

Table 4. Mean distribution of perceived strength of linkage between agro-input dealers and other stakeholders in the rice sector

Stakeholders	Mean	Std. Deviation
Fellow input dealers	**1.78***	0.418
Rice farmers	**1.90***	0.303
Input manufacturers	1.26	0.444
Research institutes	1.07	0.254
Extension	1.25	0.437
Development agencies/NGOs	1.05	0.223
Government/Policy makers	1.05	0.294

Source: field survey, 2016

4. CONCLUSION

Based on the findings of the study, it is concluded that agro-input dealers who are one of the major actors in the rice sub-sector in the State had strong linkages among themselves and with rice farmers only. However, there is a clear indication of weak linkages between the agro-input dealers and other very important stakeholders including input manufacturers, research, extension, NGOs/development agencies, and the government. It therefore shows a big lacuna in the rice value chain in the area as it is very clear that the input sector is not being prioritized by other major stakeholders in the rice sector in the area. It is then recommended that as Nigeria is currently adopting the value chain approach to agricultural development, policy makers and other relevant stakeholders including: research, extension, and development agencies should place emphasis on integration of the input sub-sector sector in order to ensure the improvement of the rice sector in the area.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Awotide BA, Awoyemi TT, Diagne A. Access to certified, improved rice seed and farmers' income in Nigeria. Journal of Crop Improvement. 2012;26:558-579.
2. Sanches PA, Jama BA. Soil fertility replenishement takes off in Easy Africa. In: Vanlauwa B, Diels J, Sanginga N, Merckx R. (Eds). Integrated plant nutrient management in sub-Saharan Africa: From concept to Africa. CABI: New York. 2002; 23-45
3. Chianu JN, Mairura F, Ekise I, Ans Chianu JN. Farm input marketing in western Kenya: Challenges and opportunities. African Journal of Agricultural Research. 2008;3(3):167-173.
4. Sanga C, Tumbo S, Mlozi MKS, Kilima F. Stakeholders' analysis using value chain analysis: AHP in action Interdisciplinary Studies on Information Technology and Business (ISITB). 2013;1(2). Available:http://www.academia.edu /4874819/Stakeholders_Analysis_Using_V alue_Chain_Analysis_AHP_in_action_P(4 7-661)48
5. Sahel Capital Partners and Advisory Limited. Why are agricultural inputs important? 2014;6. Avaiable:http://www.sahelcp.com/files/Sah el%20 Newsletter %20 Volume%206.pdf
6. Salami A, Kamara AB, Brixiova Z. Smallholder agriculture in East Africa: Trends, constraints and opportunities. Working paper Series no. 105. African Development Bank, Tunis, Tunisia; 2010.
7. Ogundele OO, Okoruwa VO. Technical efficiency differentials in rice production technologies in Nigeria. AERC Research Paper 154. Nairobi Kenya: African Economic Research Consortium; 2006.
8. Ogundele I, Atibioke OA, Ladele AA, Adumadehin GS. Capacity of agro-input dealers in advisory service delivery to maize farmers in Kwara State, Nigeria. International Research Journal of Agricultural Science and Soil Science. 2012;2(10):426-435.
9. Adetunbi JA, Omodele T, Akintoye NA, Amusat AS. Spatial distribution of agro dealers in peri-urban area of ibadan and its implication on seed distribution system. Global Journal of Science Frontier Research: D Agriculture and Veterinary. 2014;14(1):1-7.
10. Dogbe W, Sogbedji J, Mando A, Buah SSJ, Nutsugah SK, Kanton RAL, Atokple IDK, Amankwah A, Wiredu AN, Karikari AS, Djamon K, Osei C, Ajayi O, Ndiaye K. Partnership for improved access to agro-inputs and technology: Some experiences from the emergence rice initiative project in Ghana. African Journal of Agricultural Research. 2012;7(34):4790-4802.
11. Geographic. Ebonyi State: Nigeria; 2012. Available:http://www.geographic.org/geogr aphic_names/name.php?uni=9114362&fid =4309&c=nigeria
12. Ogunlade I, Atibioke OA, Ladele AA, Adumadehin GS. Capacity of agro-input dealers in advisory service delivery to maize farmers in Kwara State, Nigeria. International Research Journal of Agricultural Science and Soil Science. 2012;2(10):426-435.
13. Martey E, Ahiabor BDK, Buah SSJ, Kusi F. Assessment of agro-input dealers' willingness to invest in legume inoculants in Northern Ghana. Asian Journal of Agricultural Extension, Economics and Sociology. 2016;8(3):1-13.

14. Blum A, Lowengart-Aycicegi A, Magen H. The role and function of agricultural Extension. The International Potash Institute Research Findings. E-ifc No. 2010;25.

15. Okry F, Van Meles P, Nuijten E, Struik PC, Mongbo RI. Organizational analysis of the seed sector of rice in Guinea: Stakeholder, perception and institutional linkages. Expl. Agric. 2011;47(1):137-157.