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ASSESSMENT OF FACTORS INFLUENCING FARMERS' PARTICIPATION IN THE COMPREHENSIVE AGRICULTURAL SUPPORT PROGRAMME IN TSHWANE METROPOLITAN MUNICIPALITY, SOUTH AFRICA

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ABSTRACT

The paper investigated farmers' participation in public extension service delivery in relation to selected farmer and farm-related variables. By means of a cross-sectional survey, semi-structured questionnaires were used to collect data from extension support recipients within the Comprehensive Agricultural Support Programme (CASP) between November 2014 and January 2015. Findings show that all respondents attended training sessions organised by local extension agents and were satisfied with the training. Another major finding was that the farmer and farm-related variables appear to be situation-specific regarding farmers' participation in public extension service delivery. Specifically, the findings showed no significant relationships between CASP enterprise type, farm distance from local extension office, farming type, and number of extension visits received. Similarly, satisfaction with CASP-Extension training received did not significantly differ between maize and non-maize producers. The findings are, however, of practical significance to extension programme managers in the Tshwane municipality that farmers, whether individuals or groups, far or near the local extension office receive farm visits, that irrespective of the crop farmers are cultivating, all producers are satisfied with the content of training programmes provided. It is recommended that extension practioners should, however, analyse their local situations for programme participation factors to enhance participation effectiveness.

Keywords: Comprehensive agricultural support programme, Land redistribution, Agricultural development, Extension, Participation, Apartheid

1. INTRODUCTION

Among the post-1994 government reforms in the South African economy to redress some of the imbalances of the Apartheid government was the introduction of the land reform programme. The latter was implemented through various initiatives such as the Land Redistribution for Agricultural Development (LRAD). Through CASP, the government strategy provides support services to facilitate agricultural development of LRAD beneficiaries and other farmers (Department of Agriculture, 2005:iv). The provision of public extension services to LRAD farmers within CASP in this study is hereafter referred to as CASP-Extension.

Much has been written about farmers' perceptions of public extension service in terms of its effectiveness, accountability to clients, its quality, impact on or contribution to farmers' production and adoption of agricultural innovations (Afful, Oluwatayo, Kyei, Ayisi & Zwane, 2015:210; Agholor, 2012:3; Davis *et al.*, 2012:407; Meijer, Catacutan, Ajayi, Sileshi &

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Nieuwenhuis, 2014:40). Among the various farmer and farm-related characteristics that influence participation in public extension service that have been researched extensively over the years are gender access to such services (Doss & Morris, 2001:27; Hart & Aliber, 2012:2; Owolabi, Abubakar & Amodu, 2011:87), age, farm size, group membership, time spent on the farm and access to fertilizers (Haile, 2016:69).

Knowler & Bradshaw's (2007:44) review of factors that influence the adoption of conservation agricultural practices and Habtemariam's (2004:49) compilation of various studies regarding the influence of farmer and farm-related variables on the adoption of farm innovations show inconclusive findings. Other studies that show similar inconclusive findings on the farmer and farm-related variables in relation to the adoption of agricultural innovations include Annor-Frempong (2013:42) and Benin *et al.* (2011: 80). For example, Benin *et al*. (2011:80), in their study of National Agricultural Advisory Services (NAADS) programme in Uganda, found that household size, farm size, source of income, as well as the length of time NAADS has been operating in an area influence farmer participation in the NAADS extension programme. In the same study, Benin *et al.* (2011:80) found that most of the variables influence the various farmer subgroups' participation in the NAADS extension programme differently, which they attributed to the different household capital resources in relation to their different levels of exposure or non-exposure to the programme. They also found a positive relationship between NAADS programme participation and length of the programme implementation in one area of Uganda, but found a negative relationship in another (Benin *et al.*, 2011:80). These inconclusive findings of the farmer and farm-related variables that influence adoption of agricultural innovations and participation in agricultural extension programmes by Benin *et al.* (2011: 80) are not isolated cases but rather corroborate other studies.

Community situations differ and what appears to be a problem in one area may not be a problem in another. It is therefore apparent that literature portrays general patterns, reasons or causes why situations exist. These causes may not be relevant or applicable in each and every situation. For example, Wordofa & Sassi (2014:3) found many factors that relate to the various capital assets that affect the different levels in which Ethiopian farmers participate in agricultural advisory services. There is therefore a need to identify the specific variables that relate to farmer participation in CASP-Extension service delivery in the Tshwane metropolitan municipality, the study area of this paper. This is essential for the identification of situation-specific solutions for CASP-Extension participation in terms of relevant variables. Studies on issues related to agents' visits to farmers' fields have been studied and are mostly limited to the percentage of farmers receiving visits, where visits are used as a channel by agents to provide extension services (Jona & Terblanché, 2015:107; Ministry of Agriculture, 2011:25; Shabangu, 2015:86). The relationship between farm visits and the variables investigated in this study appears to be limited. Such relationships, however, have important implications for extension programme management. It is for this reason that this approach uses inferential analysis to study these relationships.

1.1. Study objective

The main objective of this paper was to investigate farmers' participation in public extension service delivery in the Tshwane Metropolitan Municipality in relation to some selected farmer and farm-related variables.

Specific objectives to be achieved include the determination of relationships between the following variables:

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1. The number of farm visits received and type of CASP enterprise.
2. Distance in kilometres the farm is located from local extension office and the number of extension visits received.
3. Farming type and the number of extension farm visits received.
4. Satisfaction with the training provided by local extension agent and type of CASP enterprise.

1.2. The research hypotheses

The research hypotheses to be tested are:

1. The number of farm visits received is significantly related to CASP enterprise type.
2. Farms located 30 or more kilometres away from the local extension office will receive less extension visits.
3. Farming type has a significant influence on extension farm visits received.
4. Satisfaction with the training provided by local extension agents is significantly related to CASP enterprise type.

2. METHODOLOGY

By means of a cross-sectional survey, semi-structured questionnaires were used to collect data through personal interviews from respondents between November 2014 and January 2015 in the Tshwane Metropolitan Municipality. Semi-structured questionnaires were prepared guided by the framework proposed by Bennett (1975:8). The framework provided for the essential factors in the analysis of respondents' perceptions of CASP-Extension, participation in CASP-Extension delivery, which was assessed in terms of extension visits by the local extension officer, perceptions of farm management training by the local extension officer, and whether the skills and information received from the farm management training could be applied on their farms.

Survey respondents consisted of the entire population of CASP-Extension beneficiaries in the study area (N=30). The survey instrument was pre-tested on a group of farmers to check for clarity of questions in order to improve validity.

Data collected were subjected to descriptive and inferential statistical analyses. The N-1 Chi-Square test for independence was used to test the influence of independent variables on the dependent variables because of the small sample size (N=30), the binary nature of the variables, and the fact that some expected cell counts fell below one (Campbell, 2007). The 'N -1' chi-square value is provided by Linear-by-Linear Association Chi-Square test in the Statistical Package for Social Sciences (SPSS). SPSS was used to analyse the data.

3. RESULTS AND DISCUSSION

The results of the hypotheses tested in relation to the main objective of the study are provided in this section.

3.1. Participation in terms of attendance at training sessions organised by the local extension officer

Farm-management training sessions organised by extension personnel provide producers avenues through which they acquire knowledge and skills to be applied on their own farms and

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by which they grow intellectually and are able to be efficient farm managers. Respondents (individual and group farmers) answered various questions including whether they had attended (1=Yes) or not attended (0= No) any farm-management training sessions organised by the local extension officer in the last 1-5 years of the survey. The results (Table 1) reveal that both groups of farmers attended some farm management training offered by the local extension officer. This suggests that the extension support to farmers' crop-production system is taking place.

Table 1: Distribution of respondents and farm management training attended according to farming type (N = 30)

Attended Training	CASP group farmers	%	CASP individual farmers	%	Total	%
Yes	6	100	24	100	30	100
No	0	0	0	0	0	0
Total	6	100	24	100	30	100

3.2. CASP-Extension support recipients' satisfaction with content-relevance of extension training support

Respondents' satisfaction with the relevance of the content of the extension training programmes for their crop production system was also used as a measure of the quality of CASP-Extension provided. The Null hypothesis of no significant relationship between CASP enterprise and satisfaction with relevance of the content of training provided was tested by the N-1Chi–Square test for independence. The results are presented in Table 2. Overall, most maize and non-maize farmers were satisfied with the relevance of the content of the training received for their farm work. The findings of the N-1 Chi-square test showed no association between type of CASP enterprise and satisfaction with training received at the 5% level (2-sided test). The Null hypothesis was thus accepted.

Table 2: Distribution of respondents on satisfaction with training content according to CASP enterprise (N = 30)

Opinion	Non-maize farmers	%	Maize farmers	%	Total	%
Disagree	3.7	31.3	3.3	14.3	7	23.3
Agree	12.3	68.8	10.7	85.7	23	76.7
Total	16	100	14	100	30	100

$X^2 = 1.161$; $p = .281$; $df = 1$

The finding that there is no significant difference in satisfaction between maize and non-maize farmers and that most farmers were satisfied with the relevance of the training content for their farming situation runs contrary to literature. In Namibia, however, farmers ranked the relevance of the public extension service in fifth position and its overall quality in fourth place compared with other advisory providers (Jona & Terblanché, 2015:110). The positive picture in our study of the public extension service in South Africa finds a possible explanation in the improved technical competencies of agricultural advisors due to the implementation of the Extension Recovery Plan (ERP). In 2014, 70% of agricultural advisors in Limpopo had at least a 4-year Bachelor's degree compared with only 20% in 2007 (Department of Agriculture, Forestry and Fisheries, 2014:24). This has been achieved as a result of the government ERP that was

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implemented in 2008. The ERP, amongst other things, encourages agricultural advisors to upgrade their technical qualifications to at least a 4-year Bachelor's degree, and thus improve their technical competency.

Further probing into the training respondents received from CASP-Extension revelaed that all respondents agreed that the knowledge and skills received could be applied on their farms (Table 3).

Table 3: Distribution of respondents on the applicability of information and skills gained from training attended (N = 30)

Applicability of training	Frequency	%
Yes	30	100
No	0	0
Total	30	100

Similar to the other issues surrounding CASP-Extension training, all respondents indicated that their expectations for attending the training sessions were met. This again suggests that CASP-Extension is contributing to building respondents' capacity to be self-reliant in successfully managing their farming businesses.

3.3. Factors which lead to dissatisfaction with CASP-Extension

Farmers were asked about issues that cause dissatisfaction with CASP-Extension support and which might lead to reduced participation of farmers in CASP-Extension. Even though respondents said that CASP-Extension was useful and applicable, a few of them registered some dissatisfaction with the training provided. These are grouped under three main themes in Table 4.

Table 4: Respondents reasons for dissatisfaction with CASP-Extension Support (N = 5)

Reasons	No	%
Training	1	20
Resource and production inputs	3	60
Study group	1	20
Total	5	100

One respondent indicated a dissatisfaction with the CASP-Extension support provided in the area of farm management training. The respondent indicated that the training was not linked to infrastructure provided by the provincial Department of Agriculture. Another respondent had a problem with the organisation of the study groups. One area of dissatisfaction was about the timing of the study group meetings which sometimes happens very early in the morning while farmers are busy with other farming activities. Another area of dissatisfaction was that farmers were not grouped according to their educational levels; this was in light of the fact that in most cases extension officers use English in their training sessions, whereas some of the farmers did not understand the English.

Most respondents who had a problem with the CASP-Extension support were not satisfied with the provision of resources and production inputs by government. They indicated that they do not have water, which is one of their basic farming needs. Farmers also bemoaned that the

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production inputs from the Department of Agriculture were sometimes provided late, which delayed the time of crop planting. This invariably has a negative effect on their production.

3.4. CASP enterprise type and participation in CASP–Extension

Farmers' participation in CASP-Extension service delivery, and thus its quality, was assessed by the intensity of face-to-face contacts with the local extension officer. This contact was assessed by how often respondents received farm visits in a month in the year before the survey. This was investigated among the two major groups of CASP enterprise type (maize farmers and non-maize farmers such as vegetable growers) in the study area. Respondents were required to answer whether or not they disagree (0) or agree (1) with the statement that the extension officer visited their farms at least once a month to provide farm-management support in the year before the survey. The Null hypothesis that farming enterprise type is not significantly related to farm visits was tested by N-1 Chi–Square test for independence. The results of this test (Table 5) indicate that almost all respondents in both groups of CASP enterprise type said that the extension officers visited their farms as indicated in the questionnaire. The test showed that there were no differences in opinion of maize and non–maize producers regarding extension visits at the 5% level (2–tailed test) and thus supporting the Null hypothesis.

Table 5: Distribution of respondents' views on extension visits according to CASP enterprise type (N = 30)
$X^2 = 2.367$; p= .124; df= 1

Opinion	Non-maize farmers	%	Maize farmers	%	Total	%
Disagree	0	0	2	14	2	7
Agree	16	100	12	86	28	93
Total	16	100	14	100	30	100

In Haiti, however, the opposite was the case in which coffee producers receive more extension services including visits than other crop farmers (Arias, Leguía & Sy, 2013:2). These different findings appear to reflect the different circumstances in which public extension services operate. In the current economic and political situation in South Africa, for example, where service delivery is a crucial issue, government mandate to public extension is to ensure that all farmers, especially small-scale and subsistence producers, are provided with extension service to help achieve household food security (Department of Agriculture, 2002:29). This appears to play a significant role in our findings.

3.5. Farm distance from extension office and participation in CASP–Extension

Another way in which participation in the delivery of CASP-Extension support to respondents was assessed was with respect to whether distance of farm from the local extension office disadvantaged farmers in terms of the number of farm visits by extension agents. The methodology for this assessment was the same as the one used for CASP enterprise type and participation in CASP-Extension as previously described. The results (Table 6) indicate that a large majority of the respondents (70%) whose farms were located more than 30 km from the extension office said that the extension officers visited their farms. The Null hypothesis that extension visits are the same whether farms are located 30 kilometres more or less from the local extension office was subjected to N-1 Chi–Square test for independence. The test results

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revealed that there were no differences in opinion of farmers located more or less than 30km from the local extension office regarding extension visits at the 5% level (2-tailed test). The Null hypothesis was thus accepted against the research hypothesis.

Table 6: Distribution of respondents' views on extension visits according to distance of farms from extension office (N = 30)

Opinion	Less than 30 km from extension office	%	30 km or more from extension office	%	Total	%
Disagree	0	0	2	30	2	7
Agree	7	100	21	70	28	93
Total	7	100	23	100	30	100

$X^2 = .630$; $p = .427$; $df = 1$

This assessment of the relationship between farm distance from the local extension office and extension visits received, like all the others investigated in this study, is particularly important in view of the criticism against the public extension service in the discriminatory manner in which services are provided to farmers (Haile, 2016: 69) and the difficulty of reaching farmers due to poor quality of roads (Evenson & Mwabu, 1998:4). Qamar (2005), World Bank (2010) and Ghosh (2012) indicated that poor transportation facilities and infrastructure (road system and office buildings) as well as poverty are understood to further aggravate the dissatisfaction of farmers with agricultural extension service delivry. It is easy to see why this dissatisfaction negatively influences the visits extension agents make to farmers' farms. A number of studies indicate that distance from the local extension office negatively affects request for extension visits (Arias *et al.*, 2013:22; Dinar, 1989:300; Haq, 2011:731). Furthermore, the positive influence of extension visits in association with distance from the local extension office on the probability of growing a particular crop has been documented. For instance, Beyene, Verkuijl & Mwangi (1998:21) found that the probability of growing improved wheat varieties increased from 36% to 80% when farmers received an extension visit and lived near Holetta Research Center (HRC), compared with an increase from 6% to 32% for farmers living far from the HRC. Our finding that distance does not influence extension visits runs contrary to literature. A plausible explanation is that general service delivery, including extension services, is a burning issue currently in South Africa. Some of these service delivery issues are causing street protests on a daily basis. Provincial Departments of Agriculture and extension agents are therefore careful to ensure that distance does not become a barrier in servicing farmers.

3.6. Group and individual producers and participation in CASP-Extension

Finally, the way in which delivery of CASP-Extension support to respondents was assessed was with respect to extension farm visits and whether such visits discriminated between respondents operating as groups or individual producers (farming type). The approach used here for this assessment is similar to the one indicated for CASP enterprise type and participation in CASP-Extension. The Null hypothesis of no significant difference in the number of extension visits of at least one visit per month according to farming type was tested by the N-1Chi–Square test for independence. The results (Table 7) are similar to the two previous assessments. Most respondents in both groups of farming type agreed that they received at least one visit a month. The N-1Chi-Square test for independence indicated no differences in visits between group and individual producers at the 5% level (2–tailed test). Thus, the Null hypothesis was accepted.

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Table 7: Distribution of respondents on extension visits according to farming type (N = 30)

Opinion	LRAD group farmers	%	LRAD individual farmers	%	Total	%
Disagree	0	0	2	8	2	7
Agree	6	100	22	92	28	93
Total	**6**	**100**	**24**	**100**	**30**	**100**

$X^2 = .518$; $p = .472$; $df = 1$

Previous research shows that extension agents sometimes have preferential treatment for farmers, contacting mostly the relatively educated, large and better off producers (Muneer 2014:179). Most less educated or illiterate farmers, with small land parcels and low incomes, are likely to operate as individual producers. This might be due to the fact that they have no extension support to help them operate in groups. Group farming among small-scale farmers has been encouraged in South Africa since the initiation of the government's land reform programme. The grant structure to acquire land and other production resources requires recipients of government support to form groups (Hall, 2007:73). It was thus expected that group producers would receive more public extension visits than individual farm operators. Our findings, however, show no significant difference between the two groups. Our explanation for this result is similar to the results of testing the two previous hypotheses.

4. CONCLUSION AND RECOMMENDATIONS

The positive findings that all respondents attended training sessions organised by local extension agents and were satisfied with the training, with the exception of a few who are dissatisfied with CASP-Extension service delivery, are signs that public extension service delivery is on the right path to ensuring farmer empowerment.

The small number of participants involved in this study as well as the findings of no significant relationships as shown in the hypotheses tests between the selected variables regarding the farmer, farm-related variables, and farmer participation in extension service delivery add to the existing literature that the farmer and farm-related variables appear to be situation-specific as far as they relate to farmers' participation in public extension service delivery. The findings are important and have decision-making value for extension programme management in the study area. Extension managers and field-level practitioners could use the findings for public relations to drum home the point that extension service delivery in the Tshwane Municipality is addressing farmers' farm management needs. This is borne out of the fact that farmers, whether individuals or groups, far from or near to the local extension office, are being visited by extension agents irrespective of the type of crop that farmers are cultivating.

It is recommended, however, that extension agents elsewhere will be more effective in delivery of services to farmers in their communities by a careful, local situation analysis including the policy environment under which the extension organisation operates. Extension visits and quality of training provided depend on availability of resources. Extension programme managers in the Tshwane Municipality should, therefore, ensure that the current level of resources does not drop, but are maintained or improved.

REFERENCES

AFFUL, D. B., OLUWATAYO, I. B., KYEI, K. A., AYISI, K. & ZWANE, E. M. 2015. Contribution of Public Extension to Food Security of Smallholder Farmers in Limpopo Province, South Africa, in an era of Climate Change. *J. Hum. Eco*., 50(3):205-212.

AGHOLOR, A. I. 2012. The quality of extension education delivery among livestock farmers in Central Eastern Cape: A case study of Nkonkobe Local Municipality. MSc Diss., Dept. Agric. Econs. & Ext., Univ. Fort Hare, Alice, South Africa.

ANNOR-FREMPONG, C. 2013. The influence of intervening variables and subjective norms on the adoption behaviour of small-scale farmers in South Africa and Lesotho. PhD theses, University of Pretoria, Pretoria, South Africa.

ARIAS, D., LEGUÍA, J. S. & SY, A. 2013. Determinants of Agricultural Extension Services: The Case of Haiti. LCSSD Food Papers Series, World Bank, LCSAR. Retrieved 10 March, 2015 from: https://www.google.com/search?q=Determinants+of+Agricultural+Extension+Services%3A+The+Case+of+Haiti.&ie=utf-8&oe=utf-8&client=firefox-b).

BENIN, S., NKONYA, E., OKECHO, G., RANDRIAMAMONJY, J., KATO, E., LUBADDE, G., KYOTALIMYE, M. & BYEKWASO, F. 2011. Impact of Uganda's National Agricultural Advisory Services Program. Washington DC: International Food Policy Research Institute.

BENNETTE, C. 1975. Up the hierarchy. Retrieved 10 January 2017 from: https://www.joe.org/joe/1975march/1975-2-a1.pdf

BEYENE, H., VERKUIJL, H. & MWANGI, W. 1998. Farmers' Seed Sources and Management of Bread Wheat in Wolmera Woreda, Ethiopia. Mexico, D.F.: CIMMYT and IAR.

CAMPBELL, I. 2007. Chi-squared and Fisher-Irwin tests of two-by-two tables with small sample recommendations. *Stat Med*., 26(19):3661-3675.

DAVIS, K., NKONYA, E., KATO, E., MEKONNEN, D.A., ODENDO, M., MIIRO, R. & NKUBA, J. 2012. Impact of Farmer Field Schools on Agricultural Productivity and Poverty in East Africa. *World Dev.*, 40(2):402–413.

DEPARTMENT OF AGRICULTURE. 2002. *Integrated Food Security for South Africa*. Department of Agriculture, Pretoria.

DEPARTMENT OF AGRICULTURE. 2005. *Norms and Standards for Extension and Advisory Services in Agriculture*. Pretoria: Scientific Research and Development.

DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES (DAFF). 2014. A six-year review on the implementation of the Extension Recovery Plan. Pretoria: DAFF.

DINAR, A. 1989. Provision and request for agric. Extension services. Retrieved 22 September, 2014 from: http://ajae.oxfordjournals.org/content/71/2/294.full.pdf+html.

DOSS, C. R. & MORRIS, M. L. 2001. How does gender affect the adoption of agricultural innovations? The case of improved maize technology in Ghana. *J. Agric. Econ.*, 25:27-39.

EVENSON, R. E. & MWABU, G. 1998. The effects of agricultural extension on farm yields in Kenya. Retrieved 10 December, 2014 from: http://ageconsearch.umn.edu/bitstream/28509/1/dp980798.pdf

GHOSH, S. 2012. Innovations in public sector led agricultural extension. *Sci. Res. Essays*., 7(49):4170-4175.

HABTEMARIAM, A. G. 2004. The Comparative Influence of Intervening Variables in the Adoption Behaviour of Maize and Dairy Farmers in Shashemene and Debrezeith, Ethiopia, PhD thesis, University of Pretoria, South Africa.

DOI: http://dx.doi.org/10.17159/2413-3221/2018/v46n2a465

HAILE, F. 2016. Factors affecting women farmers' participation in agricultural extension services for improving the production in rural district of Dendi West Shoa Zone, Ethiopia. Retrieved 10 November, 2014 from: www.impactjournals.us/download.php?Factors%20Affecting%20Women%20Farme.

HALL, R. 2007. Land reform and poverty alleviation in search of solid ground, in S. Brown (ed.), Leadership and Legitimacy 2007 Transformation Audit. Wynberg, Cape Town: The Institute for Justice and Reconciliation.

HAQ, A. Z. M. 2011. Effect of extension contact on rice productivity in some selected sites of Gazipur District. *Bangladesh J. Agril. Res.*, 36(4):723-732.

HART, T. & ALIBER, M. 2012. Inequalities in agricultural support for women in South Africa, Human Sciences Research, Council Policy Brief. Retrieved 10 May, 2014 from: www.hsrc.ac.za

JONA, C. N. & TERBLANCHÉ, S. 2015. Farmers' perception on contact frequency, adequacy,relevance and quality of agriculture support services (ASS) in Oshikoto region in Namibia, *S. Afr. J. Agr. Ext*., 43(1):107-121.

KNOWLER, D. & BRADSHAW, B. 2007. Farmers' adoption of conservation agriculture: A review and synthesis of recent research. *Food Policy.*, 32:25–48.

MEIJER, S. S., CATACUTAN, D., AJAYI, O. C., SILESHI, G. W. & NIEUWENHUIS, M. 2014. The role of knowledge, attitudes and perceptions in the uptake of agricultural and agroforestry innovations among smallholder farmers in sub-Saharan Africa. http://www.tandfonline.com/doi/pdf/10.1080/14735903.2014.912493?needAccess=true

MINISTRY OF AGRICULTURE. 2011. Assessment of the public agricultural extension system of Palestine & recommendations for improvements. Retrieved 15 September, 2014 from: http://www.ershad.moa.pna.ps/downloads/reports/20120717112803.pdf).

MUNEER, S. 2014. Agricultural extension and the continuous progressive farmers' bias and laggards blame: The case of date palm producers in Saudi Arabia. Retrieved 11 March, 2017 from: https://www.researchgate.net/publication/271429316_International_Journal_of_Agricultural_Extension

OWOLABI, J. O., ABUBAKAR, B. Z. & AMODU, M. Y. 2011. Assessment of Farmers' (Women) Access to Agricultural Extension, Inputs and Credit Facility in Sabon-Gari Local Government Area of Kaduna State. Retrieved 10 June, 2013 from: http://www.ajol.info/index.php/njbas/index.

QAMAR, M. K. 2005. Modernizing National Agricultural Extension Systems: A Practical Guide for Policy-makers of Developing Countries, United Nations.

SHABANGU, R. G. 2015. Evaluation of Masibuyele Emasimini programme with reference to food security at New Forest irrigation scheme in Bushbuckridge municipality of Ehlanzeni district in Mpumalanga province. Master's Dissertation, University of Limpopo, Sovenga, South Africa.

WORDOFA, M. G. & SASSI, M. 2014. Examining Smallholder Farmers' Intensity of Participation in On-farm Agricultural Advisory Services: A Case Study in Haramaya District, Eastern Ethiopia. Natural Resources, Agricultural Development and Food Security, International Working Paper Series, Paper No. 14/9.

WORLD BANK. 2010. Extension and Advisory Systems: Procedures for Assessing, Transforming, and Evaluating Extension Systems, Washington, D.C.