

**SMALL AND MEDIUM-SCALE PRODUCERS' USE AND CREDIBILITY OF INFORMATION SOURCES: IMPLICATIONS FOR PUBLIC EXTENSION'S FINANCIAL SUSTAINABILITY**

Afful, D. B.<sup>4</sup> & Lategan, F. S.<sup>5</sup>

**Correspondence Author:** [david.afful@ul.ac.za](mailto:david.afful@ul.ac.za)

**ABSTRACT**

*Farm management information is vital for farm decision making. Identifying the dominant source of such information used by producers, its credibility and users' acceptance to contribute towards the operational costs of the delivery of services is important, considering the persistent financial problems facing public extension organizations world-wide, including South Africa. Governments have, therefore, embarked on many funding arrangements to ensure financial sustainability of public extension organizations.*

*This paper assesses the extent of farmers' use of the public extension service relative to other sources of farm management information and its perceived credibility on users' acceptance to pay for the delivery of public extension visits. The findings presented here are based on a non-probability survey of medium-scale commercial crop farmers conducted between 1 September and 7 October 2010 in three districts of the Free State Province, South Africa. The findings show that public extension was the dominant information source for most production activities for most farmers. In contrast, most farmers depended more on their own experience/records for information on marketing, financial and environmental decisions. This notwithstanding, most producers were willing to contribute financially towards the delivery of public extension visits; such contributions have implications for its financial sustainability.*

**Key Words:** Medium-scale commercial farmer, public agricultural extension, information source, financial sustainability

## **1. INTRODUCTION**

The calls for reduced role of the state in economic activities combined with unsatisfactory performance of public extension organizations have spurred on diverse institutional extension reforms since the mid-1980s. These reforms in many countries worldwide, both developed and developing, include extension funding and delivery (Rivera, Qamar & Crowder, 2001; Qamar, 2002). The number one factor in most cases of public extension reform is financial constraints arising from high recurrent costs (Umali & Schwartz, 1994: xii).

The effects of limited operational funds include a lack of capacity which translates into few extension visits to farms such as less than one to one visit per month (Ajayi, 2006; Oladele, 2008:168; Gebremedhin, Hoekstra & Tegegne, 2006:22) and irregular farm visits (Ulimwengu & Sanyal, 2011:11).

---

<sup>4</sup> PhD student, Department of Agricultural Economics and Extension, University of Fort Hare, Alice, 5700

<sup>5</sup> Associate Professor, Department of Agricultural Economics and Extension, University of Fort Hare, Alice, 5700

The positive effects of extension effort/contact on adoption and output are documented (Buyinza, Banana, Nabanoga & Ntakimye, 2008:11; Wilson and Gallup, 1955 citing Wilson, 1926; Kirsten, van Zyl & von Bach, 1993:54). Specifically, the positive influence of personal contact on the success of knowledge dissemination activities is a common and consistent finding in the literature of adoption (Hoag (2005: 11; Research Utilization Support and Help, 1996 citing David, 1991: 292, Huberman, 1990: 365, Hutchison, 1995: 100;). Increased visitation by extension agents is known to increase the effective price received by farmers/net return on production (Holloway & Ehui, 2001:766; Davis, 2008:18 citing Owens, Hoddinott, and Kinsey, 2003; Maheswari, Ashok & Prahadeeswaran, 2008:420).

Discussions on user contributions for public extension delivery in South Africa have been documented in government policy papers (Department of Agriculture, 2005:7). No empirical study with regard to charging for extension visits as a source of revenue to augment public extension operational funds has yet been conducted in South Africa. The study was motivated thus by the need to explore user contributions to support the provision of more public extension visits.

The objectives of this paper, therefore, were to investigate the extent of farmers' use of the public agricultural extension relative to other sources of information/services for farm management decision making and the effect of users' perception of the credibility of information source on willingness to pay for public extension visits. This background information could be used as a platform on which an argument could be presented for medium-scale commercial crop farmers' contribution to support the delivery of public extension visits.

It is hypothesized that the producers' perceived credibility of public extension positively influences their acceptance to pay for public extension visits.

## **2. RESEARCH METHOD**

This paper is based on a survey of medium-scale commercial crop farmers<sup>6</sup> in three of four districts of the Free State Province, South Africa. Convenience and purposive, non-probability sampling techniques were used to survey farmer respondents due to a lack of reliable sampling frame. A semi-structured, self-administered, pre-tested questionnaire was used to collect information from 97 farmer respondents between 1 September and 7 October 2010.

The questionnaire asked respondents amongst other things to indicate the sources of information used to make farm management decisions in the last three years preceding the survey. Respondents were also asked to indicate their perceptions of the credibility<sup>7</sup> of the

---

<sup>6</sup> The small/medium-scale farmer definition adopted for this study after careful study of the literature was "farmers who produce mainly for the market and LRAD beneficiaries who may have own consumption and the market in view as the ultimate purpose of production".

<sup>7</sup> Elements of credibility included accessibility of nearest public extension office, extension workers' expertise in production, marketing, financial issues, legal/environmental issues, new developments in farmers' enterprise, friendliness, cost of service, relevance of advice/information, and timeliness of advice/information/service.

public extension service relative to other sources of farm management information, as well as their acceptance to pay for the delivery of public extension visits/service.

The reliability of the measuring instrument was assessed for Information Source Index (which comprised the Production Source Index, the Marketing source index, the Financial Source Index and the Environmental Source Index) producing a Cronbach alpha value of .770. The data were analysed using the software Statistical Package for Social Science (SPSS) version 18. The main analysis of data comprised descriptive statistics.

### **3. FINDINGS AND DISCUSSION**

Farmers' financial contributions to secure more extension services in part, depends on their financial ability to do so; users' perception of the credibility of the source of the information/service in relation to their needs, however, is vitally important (Neuchatel Group, 2002:8; Rivera & Alex, 2004:4). The findings presented here, therefore, relate to producers' use of the public extension service relative to other information sources for farm management decision making, its perceived credibility on producers' willingness to financially support the public extension to provide more extension farm visits.

#### **3.1 Sources of information for production decision making**

The farm production decision activities surveyed include seed cultivar choice for the farmers' environment/climate, soil sampling testing and fertilizer recommendations, planting dates, seeding rates/planting distance, pests and disease control, irrigation issues like planning on-farm irrigation, land preparation issues, crop rotations that yield maximum returns, crop returns on per hectare of land. The results are presented in Table 1.

Information source	Respondents per production activity category															
	Seed cultivar choice		Soil sampling		Planting date		Land preparation		Pest and disease control		Irrigation issues		Crop rotations		Return on per hectare of land	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Own farm records/ experience	23	23.7	6	6.2	23	23.7	39	40.2	10	10.3	2	2.1	28	28.9	37	38.1
Consultant/ Accountant	2	2.1	6	6.2	2	2.1	2	2.1	13	13.4	1	1.0	2	2.1	2	2.1
Other farmers	2	2.1	0	0.0	11	11.3	10	10.3	0	0.0	0	0.0	0	0.0	1	1.0
Public Extension	41	42.3	42	43.3	31	32.0	24	24.7	40	41.2	3	3.1	32	33.0	21	21.6
Cooperative Agric.	7	7.2	15	15.2	2	2.1	4	4.1	6	6.2	1	1.0	0	0.0	0	0.0
Newsletter	2	2.1	0	0.0	1	1.0	1	1.0	3	3.1	1	1.0	3	3.1	0	0.0
Input/ Output	15	15.5	0	0.0	3	3.1	1	1.0	18	18.6	1	1.0	0	0.0	15	15.5
Salesperson	3	3.1	2	2.1	3	3.1	0	0.0	3	3.1	0	0.0	3	3.1	5	5.2
Study group	2	2.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Farmer mentor	0	0.0	2	2.1	8	8.2	1	1.0	0	0.0	0	0.0	14	14.4	0	0.0
Farmer partner	0	0.0	1	1.0	2	2.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ARC	0	0.0	2	2.1	3	3.1	2	2.1	2	2.1	0	0.0	2	2.1	2	2.1
Grain SA	0	0.0	2	2.1	3	3.1	2	2.1	2	2.1	0	0.0	2	2.1	2	2.1

**TABLE 1: DISTRIBUTION OF RESPONDENTS' MOST IMPORTANT SOURCES OF INFORMATION FOR PRODUCTION DECISION MAKING (N= 97)**

The results show that for most of the production activities surveyed except for land preparation and return on per hectare of land, the public extension agent was the dominant source of information. The public extension agent for example, was the source of information for soil sampling issues than other activities for slightly more producers (43%). This finding compares to that of Lodhi, Luqman & Khan (2006:198). Bembridge and Tshikolomo (1992) on the contrary showed concern for the limited use of extension workers in decision making in Venda (now part of Limpopo Province). Woodburn, Ortmann & Levin (1994:52) similarly found that overall farmers' own records/budgets were more important sources than public extension for production activities. Habtemariam (2004:118) however, found that fellow farmers were the number one source of information for maize producers (general decision making).

Two production activity areas, however, where many respondents relied more on themselves (own farm records/experience) than the public extension agent were land preparation (40.2 percent compared with 24,7 percent) and return on hectare of land (38.1 percent compared with 21.6 percent). This finding corroborates the results of others in the literature (Yapa & Ariyawardana (2005:78). Lategan (2007:135) on the other hand, found fellow ranchers as most important source for production decision making among game ranchers. This difference might be due to the nature of the industry.

Other sources of information which were also important for farm management information next to the public extension agent were: consultants for pests/disease control and irrigation issues (13.4 and 18.6 percent respectively), other farmers for planting dates etc and land preparation issues (11.3 and 10.3 percent respectively), cooperatives/farmer associations for soil sampling etc. (15 percent), input/output salespersons for seed cultivar choice,

pest/disease control and return on per hectare of land (15.5, 18.6 and 15.5 percent respectively), farmer partner for crop rotations (14.4 percent) , television/radio reports for land preparation (13.4 percent).

### 3.2 Sources of information for financial decisions

Farmer respondents were surveyed on the following financial issues with regard to farm management: preparation of financial statements, preparation of farm budgets, where to obtain funds/credit. The results are presented in Table 2.

For financial decisions especially, preparation of financial statements and farm budgets, respondents (30.9% and 32% respectively) relied more on their own records/experience than the public extension agent (27.8% and 30.9% respectively). This finding is similar to that of Woodburn, Ortmann & Levin (1994:52). Respondents who could pay (16.5%) however, sought help from consultants in such matters. This might indicate that some medium-scale commercial farmers have the potential to pay for extension services. A few farmers (14.4%), however, received help from farmer partners in all three financial areas investigated.

Sustainable production and income generation depend on access to finance for production start-up inputs such as seed, fertiliser, and for fixed capital improvements. According to the 1998 Quality of Life report (Department of Land Affairs, 1998), few land reform beneficiaries had access to financial services because communities or their legal entities seldom met the conditions set by financial institutions. Securing credit from commercial banks involves the use of collaterals which are problematic for small-scale farmers while accessing the balance on land grant loans for purchasing land is said to be onerous they are however, potential sources of credit (Jacobs, 2003, citing Isaacs, pers. comm.). Spio (1992:98), however, observed that survey respondents in the Limpopo Province indicated the long processing period in securing a loan was a problem but not collateral. The Land Bank is the main financial institution to support land reform beneficiaries with credit but many are not accessing the credit service due to a combination of factors including not being unaware of opportunities for credit (Hall, Jacobs & Lahiff 2003:14). Other funding sources include grants from parastatal development financial institutions, and funds from other government departments such as the National Development Agency (Spio, 1992).

The public extension agent gave more help relative to the other sources, however, by pointing 29.9 percent of respondents to sources of financial assistance/credit (Table 2).

**TABLE 2: DISTRIBUTION OF RESPONDENTS' MOST IMPORTANT SOURCES OF INFORMATION FOR FINANCIAL DECISION MAKING (N=97)**

Information Source	Respondents per financial activity category					
	Preparation of financial statements		Where to obtain credit		Preparation of farm budgets	
	N	%	N	%	N	%
Own farm records/Experience	30	30.9	20	20.5	31	32.0
Consultants/ Accountants	16	16.5	0	0.0	16	16.5
Public Extension	27	27.8	29	29.9	30	30.5
Cooperative	1	1.0	0	0.0	0	0.0
University Specialists	1	1.0	0	0.0	0	0.0
Study group	4	4.4	1	1.0	2	2.1
Farmer partner	14	14.4	14	14.4	14	14.4
ARC	2	2.1	0	0.0	1	1.0
Grain SA	0	0.0	2	2.1	0	0.0

This shows that a large proportion of respondents relied on themselves to look for sources of credit. Lategan (2007:137) on the other hand, found that fellow game ranchers were the most important source of information for financial decisions.

### 3.3 Sources of information for marketing decisions

The farm marketing issues to which farmers were asked to respond include farm produce quality, where and when to sell produce and supply and demand of produce. The results are presented in Table 3. The results show that respondents relied more on their own records/experience than the public extension agent to make marketing decisions. This finding is similar to that of Woodburn, Ortmann & Levin (1994:52).

**TABLE 3: DISTRIBUTION OF RESPONDENTS' MOST IMPORTANT SOURCES OF INFORMATION FOR MARKETING DECISION MAKING (N=97)**

Information Source	Respondents per marketing activity category					
	Where/when to sell produce		Supply and demand issues about produce		Produce quality issues	
	N	%	N	%	N	%
Own farm records/experience	42	43.3	39	40.2	58	59.8
Consultants	0	0.0	0	0.0	2	2.1
Public Extension	28	28.9	14	14.4	14	14.4
Cooperative	3	3.1	1	1.0	2	2.1
Study Group	2	2.1	2	2.1	2	2.1
Farmer Partner	14	14.4	0	0.0	0	0.0
Grain S.A	2	2.1	0	0.0	2	2.1
Agric. Newsletters	1	1.0	5	5.2	0	0.0
Input/output Salespersons	4	4.1	15	15.5	5	5.2
Farmer Mentor	1	1.0	0	0.0	0	0.0
Other farmers	0	0.0	3	3.1	10	10.3
Radio/TV Reports	0	0.0	15	15.5	0	0.0

Other sources which were consulted on marketing matters (when/where to sell produce, produce demand and supply as well as produce quality issues) to a limited extent were Farmer Partners (14.4, 0.0, 0.0% respectively) and Input/Output Salespersons (4.1, 15.5, 5.2% respectively). This finding might indicate that marketing support to farmers in the Free State Province has not improved much since 2007 when a study commissioned by the Department of Agriculture made this finding: “in terms of support to farmers for marketing, all farmers noted that they received very little or no support from the department in this regard. Some farmers noted that a few years ago the department had provided information on where farmers could sell their stock. No information was provided on how to access or use markets to one’s advantage. A number of farmers undertake their own marketing, selling largely at auctions where they claim they receive good prices. In other cases farmers had received support from local Co-ops and Agri-SA,” (Umhlaba Rural Services, 2007:50).

Support to agricultural producers should not only be confined to production and finance, but should also be connected to finding potential markets (Anderson & Feder, 2003). These

markets can either be formal or informal local markets, agreements with retail chains, or agreements with commodity associations or processing plants (a common arrangement in out-grower schemes such as the sugar plantation subdivisions).

Many Provincial Department of Agriculture officials argue that it is not part of their mandate to assist communities to obtain access to markets or to arrange marketing contracts for projects (Jacobs, 2003). However, in Gauteng, where most production is for household consumption, extension officers inform communities about marketing opportunities, e.g. prices for the specific crops they farm. Assistance for the marketing needs of small-scale emerging farmers is also being provided through National Department of Agriculture's Broadening Access to Agriculture Thrust (Batat), and Agrilink II, a USAID initiative operating in the Eastern Cape and KwaZulu-Natal (Jacobs, 2003).

### **3.4 Sources of information for environmental and legal decisions**

Climate change and environmental issues have become very important worldwide in recent years. The effects of climate change on agricultural production and economic livelihoods are well documented (Chemnitz & Hoeffler, 2011:33). Among these effects are falling incomes from agriculture and the shortening of the vegetation period in parts of Western and Southern Africa by an average of 20 percent by 2050 (Chemnitz & Hoeffler, 2011:33). Reports by the Intergovernmental Panel on Climate Change (IPCC) suggest that agricultural yields will suffer the negative consequences of climate change if no serious intervention is carried out (Akom-Yamga G., Obiri, B. D., Boadu, P., Amoako, J. & Mboob, F.J., 2011:5 citing IPCC, 2007). The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as, "change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods" (Akom-Yamga et al., 2011:6 citing UN 1992). This definition attributes climate change to human causes among others. This requires that producers become knowledgeable about environmental issues that affect their production.

The spate of labour unrests in South Africa in recent years requires also that agricultural producers become knowledgeable with regard to farm labour laws as well. Respondents were thus surveyed on the sources they receive information about soil, water and air pollution issues as well as farm labour issues. The underlying assumption of these survey questions was that if respondents could mention sources from which they received information in the last three years prior to the survey on environmental/legal and farm labour matters, it meant they were aware of the problems surrounding these issues, their impact on their production and might want to do something about them. The results of this investigation are presented in Table 4.

**TABLE 4: DISTRIBUTION OF RESPONDENTS' MOST IMPORTANT SOURCES OF INFORMATION FOR ENVIRONMENTAL/LEGAL DECISION MAKING, (N=97)**

Information source	Respondents per environmental/legal activity category			
	Soil, air and water pollution issues		Farm labour issues	
	N	%	N	%
Own farm records/experience	19	19.6	11	11.3
Consultants	2	2.1	0	0.0
Other farmers	12	12.4	0	0.0
Input/output Salesperson	8	8.2	0	0.0
Study Group	2	2.1	2	2.1
Grain S.A	2	2.1	0	0.0
Public Extension	12	12.4	28	28.9
Department of Labour	0	0.0	22	22.7
Agric. Newsletters	0	0.0	1	1.0
Radio/TV Reports	0	0.0	4	4.1

The results indicate that respondents (19.6%) relied more on themselves (own records/experience) than the public extension agent (12.4%) to make environmental decisions with regard to soil, air and water pollution but received more help (28.9%) from their public extension agent on matters of farm labour. The Department of Labour was next (22.7%) to public extension in providing information on farm labour issues. Other farmers (12.4%) and Input/Output Salespersons (8.2%) were the other two role-players as information sources for respondents regarding soil, air and water pollution albeit to a smaller degree.

### 3.5 Credibility of public extension service provider and payment for extension visits

What the farmers' say is, perhaps, the most valid assessment of the importance of the extension service insofar as their needs are concerned. Gautam (2000:15) noted in his beneficiary assessment of the Kenya Public Extension that unlike those who did not have access, those who had access recognized the quality of the advice rendered.

The overall credibility of the public extension agent/service relative to all other sources from which respondents received farm management information was assessed regarding respondents' views on: access/distance to the extension office, expertise in production, marketing, financial issues, legal/environmental issues, new developments in farmer's enterprise, friendliness, cost of service, relevance (usefulness/applicability), timeliness of service.

The results of the investigation regarding respondents' assessment of the public extension agents' overall relative credibility and its influence on respondents' acceptance to pay for public extension visits are presented in Table 5. There is evidence from the results that respondents' opinion of their assessment of the overall credibility of the public extension relative to other sources of farm management information/advice/service has a positive effect



on their acceptance to pay for the delivery of public extension visits. This is shown by a significant chi-square test for independence at 1 percent level ( $X^2 = 7.955$ ,  $df = 1$ ,  $p = .005$ ) and supported by a significant Cramer's V (.286,  $p = .005$ ). This finding corroborates the finding of Ajayi (2006:106).

**TABLE 5: DISTRIBUTION OF RESPONDENTS' ASSESSMENT OF THE CREDIBILITY OF THE PUBLIC EXTENSION SERVICE AND THEIR DECISION TO PAY FOR THE DELIVERY OF PUBLIC EXTENSION VISITS (N=97)**

Decision to pay	Respondents per overall credibility category					
	Less credible		More credible		Total	
	N	%	N	%	N	%
No	20	45.5	10	18.9	30	30.9
Yes	24	54.5	43	81.1	67	69.1
Total	44	100.0	53	100.0	97	100.0

The results indicate that overall, of the 53 respondents, 43 respondents found the public extension agent more credible (81.1%) and accepted to pay for the delivery of more public extension visits. In view of the fact that most respondents in this survey relied more on themselves than the public extension agent for decisions on marketing, financial and environmental issues, their acceptance to pay for more public extension farm visits could be due a perception that it would relatively cheaper than private extension visits.

#### 4. SUMMARY AND CONCLUSION

The picture that emerges from the findings is that the public extension service is the dominant source of production information relative to other sources of farm management information or service for most farmers in the three districts surveyed. On the other hand, most farmers in the survey relied more on their own experience/records than the public extension services for information/services that relate to marketing, financial and environmental issues. A possible reason for this could be that they thought they knew better than their public extension agent. Another reason could be that the extension agent was not available to help them. Either case could be a potential constraint to user contribution to support the public extension visits for marketing, financial and environmental issues.

This notwithstanding, a major finding of this study was that most respondents have a favourable perception of the overall credibility of the public extension service relative to other sources of information and, therefore, would like to pay for more public extension visits. This finding supports the study hypothesis.

In order to alleviate some of public extension's financial problems, especially operational funding that could ensure delivery of more visits to farmers, user contributions could be considered. There is need, however, for an improvement in the technical competency of field-level extension workers that will motivate farmers to pay. The issue of inadequate marketing expertise of field level extension workers for example, has been documented in all nine provinces of South Africa (Mmbengwa, Gundidza, Groenewald & van Schalkwyk, 2009:8).

The findings presented in this study are significant and show that producers are willing to make the financial sacrifice in support of the public extension service. These contributions could contribute to the financial sustainability of the public extension service. The non-probability sampling approach adopted for this study requires a further replication of the study for further validation of the results, though.

## REFERENCES

- AJAYI, A. O., 2006. An Assessment of Farmers' willingness to pay for extension services using the Contingent Valuation Method (CVM): The case of Oyo State, Nigeria, *The Journal of Agricultural Education and Extension*, 12(2): 97-108.
- AKOM-YAMGA, G., OBIRI, B. D., BOADU, P., AMOAKO, J. & MBOOB, F.J., 2011, *Agricultural Innovations for Climate Change Adoption and Food Security in Africa: The cases of Ghana and the Gambia*. African Technology Policy Studies Network, Nairobi.
- ANDERSON, J. & FEDER, G., 2003. *Rural Extension Services*. Washington DC: World Bank.
- BEMBRIDGE, T. J. & TSHIKOLOMO, K. A., 1992. Characteristics, decision-making and information sources of rural households in Venda, *S. Afr. J. Agric. Ext.*, 21: 76-82.
- BUYINZA, M., BANANA, A. Y. NABANOGA, G & NTAKIMYE, A., 2008. Socio-economic determinants of farmers' adoption of rotational woodlot technology in Kigorobyia Siu-County, Hoima District, Uganda. *S. Afr. J. Agric. Ext.*, 37:1-16.
- CHEMNITZ, C. & HOEFFLER, H., 2011. Adapting African Agriculture to Climate Change, *International Journal of Rural Development*, 45(11):32-35.
- DAVIS, K., 2008, Extension in Sub-Saharan Africa: Overview and Assessment of Past and Current Models, and Future Prospects, *Journal of International Agricultural and Extension Education*, 15: 15-28.
- DEPARTMENT OF AGRICULTURE, 2005. *Norms and Standards for Extension and Advisory Services in Agriculture*. Pretoria: Scientific Research and Development Directorate.
- DEPARTMENT OF LAND AFFAIRS. 1998. Annual Quality of Life Report. Pretoria: Monitoring and Evaluation Directorate.
- GAUTAM, M., 2000. Agricultural Extension: The Kenya Experience: An impact Evaluation. Washington, DC.: World Bank.
- GEBREMEDHIN, B., HOEKSTRA, D. & TEGEGNE, A., 2006. Commercialization of Ethiopian agriculture: Extension service from input supplier to knowledge broker and facilitator. Addis Ababa: International Livestock Research Institute (ILRI).
- 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, Pretoria, South Africa.
- HALL, R., JACOBS, P. & LAHIFF, E., 2003. Evaluating Land and Agrarian Reform in South Africa. An Occasional Paper Series 10. Cape Town: Program for Land and Agrarian Studies, University of Western Cape.
- HOAG, D., 2005. Economic principles for saving the Cooperative Extension Service. Presidential Address, Western Agricultural Economics Association.
- HOLLOWAY, G. J. & EHUI. S. K., 2001. Demand, supply and willingness-to-pay for extension services in an emerging market setting, *American journal of Agricultural Economics*, 83:764-68.
- JACOBS, P., 2003. Evaluating Land and Agrarian Reform in South Africa. An Occasional Paper Series 4. Cape Town: Program for Land and Agrarian Studies, University of Western Cape.

- KIRSTEN, J. F., VAN ZYL, J., & VON BACH, S., 1993. The role of Extension in Traditional Agriculture: Evidence from the Farmer Support programme, *S. Afr. J. Agric. Ext.* 22:47-54.
- LATEGAN, F. S., 2007. 'Towards a framework for assessing risk perception concerning commercial Springbuck (*Antidorcas marsupialis*) ranching and its influence on management decision making'. PhD thesis, Nelson Mandela Metropolitan University, Port Elizabeth.
- LODHI, T. E, LUQMAN, M. & KHAN, G. A., 2006. Perceived effectiveness of Public Sector Extension under decentralized Agricultural Extension System in the Punjab, Pakistan, *Journal of Agricultural and Social Sciences*, 2(3).
- MAHESWARI, R., ASHOK, K. & PRAHADEESWARAN, M. 2008. 'Precision farming Technology, Adoption Decisions and productivity of Vegetables in Resource-Poor Environments', *Agricultural Economics and Research Review*, 21:415-424.
- MMBENGWA, V., GUNDIDZA, M., GROENEWALD, J. A., & VAN SCHALKWYK, H., 2009. Factors affecting Extension Workers' in their rendering of effective service to pre- and post-settled farmers in Government initiated and supported farming small, micro and medium enterprises. *S. Afr. J. Agric. Ext.*, 38:1-14.
- NEUCHÂTEL GROUP. 2002. Common framework on financing agricultural and rural extension. Switzerland: Neuchatel Group.
- OLADELE, O. I., 2008. Factors determining farmers' willingness to pay for extension services in Oyo State, Nigeria, *Agricultura Tropica et Subtropica*, 41(4):165-169.
- QAMAR, M. K., 2002. Global trends in agricultural extension: challenges facing Asia and the Pacific Region, paper presented at the FAO Regional Expert Consultation on Agricultural Extension, Research-Extension –Farmer Interface and technology Transfer, held in Bangkok; 16-10 July, 2002.
- RIVERA, W. M. & ALEX, G., (Eds). 2004. Privatization of Extension Systems, Vol.2: Case Studies of International Initiatives. Washington, D.C: International Bank for Reconstruction and Development/World Bank.
- RIVERA, W. M., QAMAR, MK. & VAN CROWDER, L., 2001. Agricultural and Rural Extension Worldwide: Options for Institutional Reforms in the Developing Countries. <http://www.fao.org/docrep/> (Accessed: 05/11/2011).
- RESEARCH UTILIZATION SUPPORT AND HELP. 1996. A review of the literature on dissemination and knowledge. [www.researchutilization.org/matrix/resources/review](http://www.researchutilization.org/matrix/resources/review) (Accessed: 10 November 2011).
- SPIO, K., 1992. 'The impact and accessibility of agricultural credit: A case of small-scale farmers in the Limpopo Province of South Africa'. PhD thesis, University of Pretoria, Pretoria.
- ULIMWENGU, J. & SANYAL, P., 2011. Joint estimation of farmers' stated willingness to pay for agricultural services', International Food Policy Research Institute, Discussion paper 01070.
- UMALI, D. L. & SCHWARTZ, L., 1994. Public and Private Agricultural Extension: Beyond Traditional Frontiers. World Bank Discussion paper 236. Washington, D.C: World Bank.
- UMHLABA RURAL SERVICES, 2007. National Review of the Comprehensive Agricultural Support Programme. [www.participation.org.za/docs/CASPREviewMarch2007.pdf](http://www.participation.org.za/docs/CASPREviewMarch2007.pdf) (Accessed 20 October 2010).
- WILSON, M. & GALLUP, G., 1955. Extension Teaching Methods and factors that influence the adoption of agricultural and home economics practices. Circular No. 459. Washington, DC.: United States Department of Agriculture.

S.Afr. Tydskr. Landbouvoorl./S. Afr. J. Agric. Ext.,  
Vol. 42, 2014: 27 – 38

Afful & Lategan

ISSN 0301-603X

(Copyright)

WOODBURN, M. R., ORTMAN, G. F. & LEVIN, J. B., 1994. Use of information Sources  
by Commercial Farmers in Natal, *S. Afr. J. Agric. Ext.* 4: 49-61.