

Full Length Research Paper

Determinants of smallholder farmers' awareness of agricultural extension devolution in Kenya

Irene Teresia Muatha*, David Jakinda Otieno and Rose Adhiambo Nyikal

Department of Agricultural Economics, University of Nairobi, Nairobi, Kenya.

Received 20 July, 2017; Accepted 20 October, 2017

The devolved governance structure in Kenya places the provision of agricultural sector services such as extension at the local units. However, farmers' awareness on this aspect and where services are available remains limited and often, there is confusion. In order to provide clarity and enhance the understanding of extension service delivery, this study sought to characterize farmers' awareness of agricultural extension devolution and analyze factors that influence their awareness. Data was collected in Meru County using semi-structured questionnaires through face-to-face interviews on a representative multi-stage sample of 288 farmers. A binary logit model was applied to analyze the determinants of farmers' awareness. Slightly less than half of the respondents indicated that they were aware of agricultural extension devolution. The factors that were found to significantly enhance awareness are attendance to farmer field days, land tenure security, income and education.

Key words: Extension-devolution, farmers, awareness, Kenya.

INTRODUCTION

In most agricultural policy debates, a consensus exists that agricultural extension is a key component in enhancing agricultural productivity and profitability. The term 'agricultural extension' is contextualized here to mean the whole arrangement of organizations that facilitate agricultural stakeholders to obtain relevant information, skills and technologies to improve the livelihoods of farmers and others who depend on farming. In Kenya, agricultural extension dates back to the early 1900s and has undergone various reforms since then. The integrated policy approach of 1960s achieved remarkable success in the dissemination of hybrid maize technology although the policy suffered from ineffective

management, poor co-ordination and lack of community engagement. The training and visit system of agricultural extension that was implemented mainly in the 1980s to early 1990 succeeded in improving staff quality through training and the establishment of better extension linkages but there was no evidence of sustainable impact on agricultural productivity (Gautam and Anderson, 1999). Following liberalization and structural reforms in 1992, funding and delivery of agricultural extension services in Kenya became a mix of public and private arrangements.

The Government of Kenya (GOK) emphasizes the role of devolution in better service delivery. County

*Corresponding author. E-mail: muatha.irene@gmail.com.

governments are envisaged to be the primary centers for service delivery, economic expansion and good governance practices at the local level. Agricultural sector, particularly public extension service has been devolved to county government level in order to take the services closer to people and ensure they participate in improving the service delivery (Republic of Kenya, 2011). This presupposes that farmers at the county levels are aware of their responsibilities and expectations in the devolved extension system. Awareness means providing the public with detailed background information on policy issues regarding development. The aim is to empower the public to be aware of and understand global and national development concerns and the local and personal relevance of those concerns, and to enact their rights and responsibilities by effecting change for a just and sustainable world (Omolo, 2010). Thus, the right to information or the right-to-know enables citizens to make informed decisions on issues relating to their development.

Access to information has been widely recognized as a basic human right and an essential attribute of democracy. Meaningful public participation in development decisions requires that relevant information is provided in a timely manner, simple procedures and channels of access developed, cost to citizens be reasonable, and that it should be available across boundaries (Burton et al., 2006). Public demand for access to information is increasing, which is associated with use of freedom of information legislation and the revolution in information technology (O'Loughlin and Wegimont, 2007). In Kenya, articles 35(1&3) of the constitution recognize the right of every citizen to access information held by the state (Omolo, 2011).

The use of communication technology such as mobile phones, emails, satellite communications and geographic information systems has generated an extraordinary level of interconnectedness. This has helped to raise citizens' awareness of development issues such as climate change through presentations and dissemination of information. Media outreach, which is the main source of news and public information is a wide-reaching way to inform citizens on development matters. Public awareness and educational programmes have also been widely used to inform citizens. These approaches are considered to be more comprehensive and enable deepening of public awareness due to in-depth consultation (African Development Bank, 2007).

Among the objects and fundamentals of devolution in Kenya is enhancing participation of people in making decisions affecting them and the recognition of communities' rights to manage their own affairs (Republic of Kenya, 2011). This dimension of public participation is administrative centric and relates to the involvement of the public in decision making (Yang and Callahan, 2005). Existing literature show a considerable lack of awareness by farmers on various pertinent issues in developing

countries. In India, up to 60% of farmers had limited awareness about climate change phenomenon and its impacts (Chakravarty et al., 2012). In Ghana, Laary et al. (2012) observed that some farmers were unaware of hazardous and inappropriate agrochemical products banned by government authorities and continued to use them without protective measures. In addition, some people in Uganda were not aware of rules and regulations for use of wetlands for improved food security and wetland integrity (Turyahabwe et al., 2017).

In Kenya, the Institute of Economic Affairs noted that there was limited awareness on costs of projects and disbursed amounts by the Constituency development Funds (CDF) program in many parts of the country (IEA, 2006). Similarly, another study showed that the majority of the respondents were not aware of the Local Authority Service Delivery Action Plan (LASDAP) that required local authorities to constructively engage local communities on matters of planning and development (LRFT, 2009).

Other studies on farmer awareness have focused on issues such as climate change (Mandleni and Anim, 2011), crop insurance (Oyinbo et al., 2013) and agrochemical safety (Laary, 2012). However, in the case of Kenya's agricultural extension devolution, little is known about local communities' awareness and understanding. Awareness is pertinent in the realization of the benefits of devolution related to community participation and the establishment of appropriate agricultural extension institutions (Kukamba, 2010).

METHODOLOGY

Sampling procedure and data collection

This study was conducted in Meru County of Kenya, which was purposefully selected due to its wide range of climatic conditions that favor a variety of agricultural enterprises (Monda, 2003). The study employed multi-stage cluster sampling approach to select respondents for the survey. This approach was preferred to other methods such as simple random sampling because as sampling procedure moves from secondary to the primary sampling unit, the sampling unit becomes more homogenous and the sampling error is minimized (Allen et al., 2002). A total of 288 respondents were randomly interviewed.

The data was collected using semi-structured questionnaires through a face-to-face interview. Face to face interview has its strength in that, immediate follow-up and clarifications are possible unlike alternatives approaches such as mail and telephone surveys, which are ridden with the challenge of high non-response (Mertens, 2005). The questionnaire captured data on farmer characteristics such as age, education, gender and income; land assets; farm enterprises; farmer's knowledge of agricultural extension devolution; use of agricultural extension and; access to institutional services including credit, markets and community group membership.

Theoretical framework

Various factors have been shown to influence awareness. For

Table 1. Sample characteristics.

| Variable | Response (n = 288) |
|---|--------------------|
| Household size (average number of adults) | 3 |
| Gender (% of female farmers) | 58.3 |
| Access to extension services in the past year (% of farmers) | 72.9 |
| Use of crop extension services in the past year (% of farmers) | 68.4 |
| Use of livestock extension services in the past year (% of farmers) | 32.3 |
| Days of attending farmer field in the past year (% of farmers) | 54.9 |
| Farmer field days are held at experimental station (% of farmers) | 61.4 |
| Average farm size (acres) | 1.9 |
| Percentage of farmers with title deed for their farms | 55.9 |
| Commercial farming of tea and bananas (% of farmers) | 31.2 |
| Percentage of farmers who sold crop produce | 69.4 |
| Livestock keeping (% of farmers) | 84.7 |
| Percentage of farmers in dairy farming | 66.0 |
| Percentage of farmers who sold milk in the past year | 58.3 |
| Average monthly income of the respondent (Kshs) | 12,677 |
| Average age of the respondent (in years) | 41.2 |
| Percentage of farmers with secondary education and above | 55.2 |
| Main occupation is farming (% of respondents) | 86.1 |

Source: Authors' compilation from survey data (2013).

example in the studies of Bayard et al. (2007) and Mandleni and Anim (2011), education was found to negatively affect awareness on climate change. The reason given was that educated farmers had alternative income earning opportunities and thus are not concern much with agricultural issues. However, this was contrary to Deressa et al. (2009) who observed that education increased the probability of climate change awareness. Further, Okello et al. (2014) found the level of literacy to drive awareness of the ICT-based market information services.

Access to formal extension has also been found to positively influence awareness (Hassan and Nhemachena, 2008; Apata et al., 2009). Further, Kabubo-Mariana (2008) noted that married farmers and farmers who acquired land through inheritance have more knowledge on climate change. The possible influence of some of these variables on Kenyan farmers' awareness of extension devolution was explored in this study.

Given that the dependent variable in this study is discrete and dichotomous, aware of extension devolution or not, a binary logit model (Menard, 2002; Harrell, 2001) was considered to be most appropriate. The use of the log odds ratio provides a most simplistic description of the probabilistic relationship of the variables and hence more rich information can be drawn.

Empirical model estimation

The binary logit model for investigating factors that influence probability of farmers' awareness of extension devolution was modeled as follows:

$$Pr\{Aware_i = 1\} = \frac{\exp\{\beta_0 + \beta_i x_i\}}{1 + \exp\{\beta_0 + \beta_i x_i\}} \quad (1)$$

where *Aware* is the state of awareness of *i*th farmer (1 = aware, 0 = otherwise); *x* denotes a vector of farmer and farm characteristic that are hypothesized to influence farmers' awareness of extension

devolution; β represents the vector of parameters to be estimated. Marginal effects were estimated to measure the effects of changes in any explanatory variable on the predicted probability of awareness of agricultural extension devolution, *ceteris paribus*. The marginal effects for continuous variable and dummy-coded variables were computed following Equations 2 and 3, respectively.

$$\beta_m = [\partial(\beta_i x_i + \varepsilon_i) / (\partial \beta_i x_i)] \beta_i \quad (2)$$

$$\beta_m = Pr[Awaredvl_n_i = 1] - Pr[Awaredvl_n_i = 0] \quad (3)$$

The estimations were done using the NLOGIT version 4.0.

RESULTS AND DISCUSSION

Farmer characteristics

The socio-economic, demographic and institutional characteristics of the respondents are presented in Table 1. About 58% of the respondents were female and the mean age was 41 years, which shows that most of farmers are within the active and productive group in the community. Average farm size ranged between 0.25 and 20 acres with a mean of about 1.9 acres. This is consistent with the estimates of the African Development Bank Group that smallholder farming accounts for over 75% of agriculture production in Kenya (Salami et al., 2010).

The mean monthly income of the respondents is approximately Ksh 12,677 with about 55% of the

Table 2. Description of variables used in the binary regression model.

| Variable | Expected signs |
|---|----------------|
| Attendance of farmer field days (1=yes, 0=no) | + |
| Farm size in acres | +/- |
| Title deed (1=yes, 0= otherwise) | + |
| Monthly income (Ksh) | + |
| Level of education (1=secondary level and above, 0=primary and below) | + |
| Gender (1=male, 0=female) | +/- |
| Age in years | +/- |

Source: Survey data (2013).

respondents having attained secondary level education and above. Perhaps, the low level of income among the farmers is due to low level of commercial farming as noted by Omiti (2006). In terms of tenure rights, 56% have land title deeds that signify security of land ownership and is a possible motivation for long term investment since the land can be used as collateral to access credit. Two-thirds of the farmers had access to crop extension services, while one-third had access to livestock advisory services.

Awareness of agricultural extension devolution

Although more than 60% of Kenyans voted for the devolved government system (IEA, 2010), less than half of the respondents were aware agricultural extension matters are expected to be handled at the county level. In order for the devolved governance system to achieve its objective, participation of the locals and accountability of the leaders is needed. Therefore, it is important to sensitize farmers on their role in achieving agricultural development.

The variables hypothesized to influence awareness of agricultural extension devolution and their expected signs are presented in Table 2. Most of the researches on awareness demonstrate that variables capturing access to extension service, farm size, tenure rights, income and education are expected to positively influence awareness. Simtowe et al. (2012) reported that farmers with larger land holdings have a higher chance of being exposed to improved varieties than those with smaller land holdings. On the other hand, it is possible that smaller land holdings mostly found in high potential areas are more productive, hence farmers may be more aware of agriculture related issues.

Tenure security may have a positive effect on awareness. This is supported by the findings of Asrat et al. (2004) who reported that tenure insecurity had a negative effect on awareness and willingness to pay for soil conservation measures. It has also been found that people with higher income and education are more likely to be aware and express a positive attitude towards

organic product (Gracia and Magistris, 2007; Aryal et al., 2009). Further, Simtowe et al. (2012) showed that women had more awareness on improved pigeon pea varieties due to their higher propensity to being exposed to improved agricultural technology than men. Although, older farmers may be more experienced, which could have a positive effect on access to information, younger farmers may have a longer planning horizon, hence vibrant in searching for information (Faye and Deininger, 2005).

To ascertain the absence of multicollinearity between the explanatory variables used in the binary logit regression, variance inflation factors (VIF) were computed for each of the variables. The VIF was calculated as:

$$VIF_i = \frac{1}{1 - R_i^2} \quad (4)$$

Where, VIF_i is the variance inflation factor for the i^{th} explanatory variable and R_i^2 denotes the R^2 of the regression with i^{th} independent variable as a dependent variable. The VIF results are shown in Table 3 and according to Maddala (2000), variables that have $VIF < 5$ are considered to have no multicollinearity.

Determinants of farmers' awareness on agricultural extension devolution

The parameters of binary logit regression were estimated using NLOGIT software and the results are shown in Table 4. The Chi square statistic of 219.38 ($p < 0.1$) showed that the model fitted the data well. The coefficients indicate the effect of each variable on the likelihood of a farmer being aware of agriculture extension devolution. On the other hand, the marginal effects show how a change in each variable influences the farmers' awareness.

The result shows that attendance to farmer field days is significant in influencing farmers' awareness of the

Table 3. Variance inflation factors.

| Variable | VIF |
|--------------------------|------|
| Farm size | 1.30 |
| Possession of title deed | 1.21 |
| Education | 1.16 |
| Income | 1.15 |
| Farmer field days | 1.12 |
| Age | 1.12 |
| Gender | 1.09 |
| Mean VIF | 1.15 |

Source: Survey data (2013).

Table 4. Binary logit estimates of factors influencing farmer's awareness on extension devolution.

| Variable | Coefficient (β) | β p-value | Marginal effect (β_m) | β_m p-value |
|------------|-------------------------|-----------------|-------------------------------|-------------------|
| Constant | -1.34 (0.16)*** | 0.00 | -0.33(0.04)*** | 0.00 |
| Field days | 0.46(0.07)*** | 0.00 | 0.11(0.02)*** | 0.00 |
| Farm size | -0.01(0.03) | 0.84 | -0.001(0.01) | 0.84 |
| Title deed | 0.33(0.08)*** | 0.00 | 0.08(0.02)*** | 0.00 |
| Income | 0.0003(0.00005)*** | 0.00 | 0.00008(0.00001)*** | 0.00 |
| Education | 0.22(0.08)*** | 0.00 | 0.05(0.12)*** | 0.00 |
| Gender | -0.02(0.07) | 0.77 | -0.01(0.12) | 0.77 |
| Age | -0.002(0.004) | 0.61 | -0.0005(0.0009) | 0.61 |

***Indicate that the variable is statistically significant at 1%. Corresponding standard errors are shown in parentheses. Source: Survey data (2013).

extension devolution. More than two-thirds of farmers had access to extension services mostly from sources such as public agent, company agents and media. Farmers have also participated in Government spearheaded extension program such as Smallholder Horticulture Marketing Program (SHOMaP) (Republic of Kenya, 2007). Hence, this result can be explained by exposure to extension agents who might have played a role in informing farmers about agricultural extension devolution. Previous research on awareness (Hassan and Nhemachena, 2008; Apata et al., 2009) indicated that access to extension services had a strong positive influence on awareness on climate change. Further, attending agricultural technology lectures was found to influence the level of awareness of circular agriculture in China (Yang and Pan, 2014). Extension service forums appear to be a good tool for enhancing awareness on farming aspects.

Ownership of the farm with title deed increases the probability of farmers being aware of extension devolution. The literature shows that farm title deeds motivate farmers to do more permanent farm enterprises. Majority of the farmers in the survey were engaged in commercial farming of tea and bananas. These are more permanent investments which might have made the

farmers to follow up with the updates and new issues concerning agricultural enterprises. This result agrees with the findings of Hassan and Nhemachena (2008) and Mandleni and Anim (2011) who reported that farmers with tenure security were more aware of climate change and invested in climate change adaptation methods.

Household income was found to have a significant positive effect on farmers' awareness on agricultural extension devolution. Majority of the respondents (86%) are farmers by occupation who grow crops and keep livestock for both domestic and commercial purposes (average quantity of milk sold per month is 127 L). It is therefore possible that a good percentage of respondent's income came from farm related enterprises hence expect them to be more aware of issues concerning their source of livelihood (agriculture). This is consistent with the observation of Munyua and Stilwell (2009) that people with higher income are likely to be more aware of new developments in different economic sectors. Formal education was found to have positive effect on farmers' awareness on the extension devolution. A higher level of education is expected to increase farmers' ability to process and use information (Turyahabwe et al., 2017; Saikia et al., 2013).

The marginal effect estimates reported in Table 4 show

that attendance to field days has the highest influence (11%) on farmers' awareness on extension devolution, while possession of title deeds and formal education, respectively contributed to 8 and 5% influence on awareness. In Kenya, extension information is usually passed to farmers through on-station field demonstrations and information and communication technologies such as radio, mobile phones and television (Republic of Kenya, 2012).

CONCLUSION AND POLICY IMPLICATIONS

Considering the low level of awareness, there is need to develop more effective strategies to ensure that farmers understand how the decentralized extension system works. In addition, increased exposure of farmers to extension field demonstrations is essential in dissemination of agricultural information. Results show awareness level to be directly related to education, meaning that farmers who had attained a higher level of education were more aware of extension devolution. Considering that farmers and particularly small scale farmers generally have low levels of education (about half of the respondents had attained primary education at most), they may not be able to synthesize extension devolution from the broad information on devolution presented in unfamiliar languages. Hence, it may appear reasonable for the county governments to promote policies on publishing and airing extension devolution information in languages easily understandable by less literate farmers, particularly vernacular. Public and private investors could consider provision of incentives to radio and television channels that air information in vernaculars to slot in more programs on agricultural extension devolution. Land tenure security was as well found to significantly influence extension devolution awareness. Exclusive rights to access and use of farm lands may encourage more permanent investments in agricultural enterprises. Ultimately, improving awareness and understanding agricultural extension devolution would enable farmers to exercise their roles and rights in shaping extension service system, which could possibly contribute to development of the agriculture sector.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

- African Development Bank (2007). Main streaming sectoral statistical system in Africa.
- Allen M, Kilpatrick D, Armstrong M, Briggs R, Course G, Perez N (2002). Multistage cluster sampling design and optimal sample sizes for estimation of fish discards from commercial trawlers. *Fish. Res.* 55(1):11-24.
- Apata T, Samuel K, Adeola A (2009). Analysis of climate change perception and adaptation among arable food crop farmers in South West Nigeria. International Association of Agricultural Economists conference, Beijing, China.
- Aryal K, Chaudhary P, Pandit S, Sharma G (2009). Consumers' Willingness to Pay for Organic Products: A Case from Kathmandu Valley. *J. Agric. Environ.* 10:12-22.
- Asrat P, Belay K, Hamito D (2004). Determinants of farmers' willingness to pay for soil conservation practices in the southeastern highlands of Ethiopia. *Land Degradation Dev.* 15:423-438.
- Bayard B, Jolly CM, Shannon DA (2007). The economics of adoption and management of alley cropping in Haiti. *J. Environ. Manage.* 85:62-70.
- Burton P, Goodlad R, Croft J (2006). How would we know what works? Context and complexity in the evaluation of community involvement. *Evaluation* 12(3):294-301.
- Chakravarty R, Upadhyay R, Singh S, Ranga J, Ashutosh (2012). Farmers' awareness program on climate change. National Initiative on Climate Resilient Agriculture (NICRA) project. National Research Institute (Deemed University) ICAR, Karnal-132001, India.
- Deressa T, Hassan R, Ringer C, Alemu T, Yesuf M (2009). Determinants of farmers' choice of adaptation methods to climate change in the Nile Basin of Ethiopia. *Global Environ. Change* 19:248-255.
- Faye I, Deininger K (2005). Do New Delivery Systems Improve Extension Access? Evidence from Rural Uganda. American Agricultural Economics Association Annual Meeting, Providence, RI, US.
- Gautam M, Anderson J (1999). Reconsidering the evidence on returns to Training and Visit extension in Kenya. Policy Research. Working Paper (WPS2098).
- Gracia A, Magistris T (2007). Organic food product purchase behavior: a pilot study for urban consumers in the South of Italy. *Spanish J. Agric. Res.* 5(4):439-451.
- Harrell F (2001). Regression modeling strategies: with applications to linear models, logistic regression, and survival analysis. Springer Verlag, New York.
- Hassan R, Nhemachena C. (2008). Determinants of African farmers' strategies for adaptation to climate change: Multinomial choice analysis. *Afr. J. Agric. Resour. Econ.* 2(1):83-104.
- Institute of Economic Affairs (IEA) (2010). Devolution in Kenya: prospects, challenges and the future. IEA research paper. series No. 24.
- Institute of Economic Affairs (IEA) and Kenya National Commission on Human Rights (2006). Kenyan's Verdict: A Citizens Report Card on the Constituencies Development Fund (CDF). IEA Research Paper No. 7.
- Kabubo-Mariara J. (2008). Climate change adaptation and livestock activity choices in Kenya: An economic analysis. *Nat. Resour. Forum* 32:131-141.
- Kukamba U (2010). Local government citizen participation and rural development: reflection on Uganda's decentralization system. *Int. Rev. Administrative Sci.* 76(1):171-186.
- Laary J (2012). Dry-season farming and agrochemical misuse in Upper Region of Ghana: Implication and way forward. *J. Agric. Food Environ. Sci.* 5(1):1-10.
- Maddala G (2000). Introduction to Econometrics. third edition. Prentice-Hall Inc., Upper Saddle River, New Jersey.
- Mandleni B, Anim F (2011). Climate change awareness and decision on adaptation measures by livestock farmers. 85th Annual Conference of the Agricultural Economics Society, Warwick University.
- Menard SW (2002). Applied logistic regression analysis. second edition. Sage.
- Mertens D (2005). Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods. Second edition.
- Monda EO (2003). French beans production constraints in Kenya. *Afr. Crop Sci. Conf. Proc.* 6:683-687.
- Munyua H, Stilwell C (2009). A mixed qualitative-quantitative-participatory methodology: A study of the agricultural knowledge and information system (AKIS) of small-scale farmers in Kirinyaga District, Kenya. *Library Manage.* 31(1):5-18.

- Okello JJ, Kirui OK, Gitonga ZM, Njiraini GW, Nzuma JM (2014). Determinants of Awareness and Use ICT-based Market Information Services in Developing-Country Agriculture: The Case of Smallholder Farmers in Kenya. *Q. J. Int. Agric.* 53(3):263-282.
- O'Loughlin E, Wegimont L (2007). Global education, public awareness-rising and campaigning on development issues. Informal experts' workshop, March 19-20, Bonn, Germany.
- Omiti J (2006). Participatory prioritization of issues in smallholder agriculture commercialization in Kenya. KIPPRA discussion paper no.64.
- Omolo A (2010). Devolution in Kenya: A Critical Review of Past and Present Frameworks in Devolution in Kenya, Prospects, Challenges and the Future. Mwenda (ed). IEA Research Paper No. 24.
- Omolo A (2011). Policy proposal on citizen participation in devolved governance in Kenya. The Institute for Social Accountability (TISA), Nairobi.
- Oyinbo O, Abdulmalik RO, Sami RA (2013). Determinants of crop farmers' participation in agricultural insurance in the federal capital territory, Abuja, Nigeria. *Green. J. Agric. Sci.* 2(3):21-26.
- Republic of Kenya (2007). Smallholder horticulture marketing program. Ministry of Agriculture. Government Printers.
- Republic of Kenya (2011). Interim report of the task force on devolved government: A report on the implementation of devolved government in Kenya.
- Republic of Kenya (2012). National agricultural sector extension policy (NASEP). Government printers.
- Saikia P, Krishnan M, Ananthan PS, Immanuel S, Hazarika D (2013). Delivery Competence and Penetration of Extension Services among Fish Farmers of Assam. *Indian J. Agric. Econ.* 68(3):402-411.
- Salami A, Kamara AB, Brixiova Z (2010). Smallholder agriculture in East Africa: Trends, constraints and opportunities. African Development Bank Working Paper no. 105.
- Simtowe F, Muange E, Munyua B Diagne A. (2012). Technology awareness and adoption: the case of improved pigeon pea varieties in Kenya. International Association of Agriculture Economists (IAAE) triennial conference, Brazil.
- Turyahabwe N, Tumusiime D M, Yikii F, Kakuru W Barugahar V (2017). Awareness, perceptions and implementation of policy and legal provisions on wetlands in Uganda. *Afr. J. Rural Dev.* 2(2):161-174.
- Yang Y, Pan X (2014). Farmers' cognition of Circular Agriculture and its influencing factors: A case study of Wannian County in Jiangxi Province. *Asian Agric. Res.* 6(2):27-34.
- Yang K, Callahan K (2005). Assessing Citizen Involvement Efforts by Local Governments. *Public Performance Manage. Rev.* 29(2):191-216.