



## Appropriate Extension Approaches in Disseminating Livestock Production Technology in Cambodia

**PUTHEANY UNG\***

*Centre for Livestock Development Studies, Royal University of Agriculture, Cambodia  
Email: vet\_theany@yahoo.com*

**MYRA E. DAVID**

*College of Public Affairs and Development, University of the Philippines Los Baños, Philippines*

**ROMMEL C. SULABO**

*Animal and Dairy Science Cluster, University of the Philippines Los Baños, Philippines*

**AMADO A. ANGELES**

*Animal and Dairy Science Cluster, University of the Philippines Los Baños, Philippines*

Received 15 December 2015 Accepted 29 April 2016 (\*Corresponding Author)

**Abstract** Understanding the current local livestock-disseminating approaches was very crucial for the study to present an extension work plan by a technical staff with specific discussion on the framework in identifying the appropriate extension approaches suitable to Cambodia's local situation. Primary data were collected using a structured, comparative criteria-guided questionnaire from 7 interviewees within 4 purposively-selected extension institutions. Regarding the comparative criteria for applicable and strongly applicable utilization of extension approaches, livestock technology extension approaches in Cambodia tended to range from the top-down general agriculture to more bottom-up, participatory approaches based on its frequency of all its characteristics. The most applicable livestock extension approach was participatory integrated with farming systems development, cost sharing, project, and education institution because the growth in overseas-donored development aids created a desire for more decentralized, participatory extension approach. Therefore, the diffusion of livestock technology from Cambodian local farmers increasing farmer livestock production perhaps thereby farmer livelihood would be increased using the participatory approach integrated with others. The planning key points for disseminating livestock technology was also based on the strongly applicable participatory approach.

**Keywords** extension approaches, livestock production technology, Cambodia

## INTRODUCTION

To increase livestock production, it seems to be extremely important to keep farmers in updated information regarding various production process and marketing practices. Inadequate access of developing-country farmers to relevant livestock information/technology has an effect on all livestock subsectors and different stages of livestock production. The livestock technology dissemination therefore is very important for improved smallholder farmer livestock production and consequently increased family income (Khan et al., 2014; Sani et al., 2014). In Cambodia, pluralistically-characterised agricultural extension (Mak, 2012; MAFF, 2015) is a key mean to increase farmer crop and livestock production thereby generating farmer income (Axinn, 1988; Touch, 2000; Millar, 2009; Christophlos, 2010; Mak, 2012; Khan et al., 2014; Sani et al., 2014). Many approaches to technology dissemination have also been developed and used in both public and private extension services, and

those run by non-governmental organizations in the developing countries (Davis, 2004; Lukuya et al., 2012; Mak, 2012; Khan et al., 2014; MAFF, 2015) such as Cambodia (Mak, 2012; MAFF, 2015). This effort could be contributed by technical personnel becoming the subject matter specialists of their own generated technologies (Blalock, 1963; Fetsch et al., 2010; Patil and Kokate, 2011; Kahan, 2013). However, if the new specific generated knowledge could not be diffused to the end consumers especially, livestock farmers without any appropriate, efficient extension approach and with insufficient combined efforts from all extension provider institutions despite many approaches used in those institutions (Axinn, 1988; Davis, 2004; Lukuya et al., 2012; Mak, 2012; Khan et al., 2014), such the technology is not practically applied and has no value. Consequently, one or more effective livestock extension approach (es) is required to deliver new technologies to farmers in Cambodia and thereby the considerable focus of currently local approaches/methods of disseminating the livestock information to Cambodian farmers is very important to determine if the information of improving livestock production will be able to be disseminated to the right farmers at the right time.

## **OBJECTIVE**

The study was conducted to present only an extension work plan by the technical staff affiliating to the livestock production institution with specific discussion on the framework in analysing the suitability of an appropriate extension approach in Cambodia's local situation.

## **METHODOLOGY**

**Data Collection:** Secodary and primary data were collected. The latter was collected at a period of April 2015 using a structured questionnaire from 7 key informants each of whom it took around 1 hour for interviewing, within purposively-sampled 4 extension institutions (Royal University of Agriculture, Department of Animal Health and Production, Centre for Livestock and Agricultural Development, and Centre for Study and Development in Agriculture) based on their most potential activities of livestock extension and availability in Cambodia. The questionnaire was guided by 6 of 7 comparative criteria introduced by Axinn (1988) in identifying the appropriate extension approach in Cambodia. The considered criteria with their individual indicators included program (C1), clientele (C2), field personnel (C3), financial requirements (C4), organizational structure (C5), and leadrship characteristics (C6); and 2 key important options (Applicable or Strongly Applicable) to be selected by the interviewee (Table 1 and Table 2).

**Data Analysis:** Using Axinn's (1988) comparative analysis as framework of the eight extension approaches (Table 3), analysis of responses indicated which approaches were most likely to fit the condition of Cambodia. For each comparative indicator (denoting contrasting local conditions), an interviewee responds by answering either, "Applicable" or "Strongly Applicable" which was counted and calculated as percentage. The analysis of the gathered information was based on the descriptive criteria given. The highest percentage for each criterion indicated the most likely appropriate extension approaches that could be used in disseminating the generated livestock technologies from the research studies.

## **RESULTS AND DISCUSSION**

Table 1 shows that all pairs of comparative indicators exception with a few pair of the Axinn's comparative criteria were practiced in Cambodia. Table 2 shows that best fit extension approach (es) based on the analysed indicators of each criterion should be noticeable in the study. At least the applicable indicator with higher percentage of the study can be considered as one indicator of each approach given (Axinn, 1988).

**Table 1 Analysed livestock extension approaches using Axinn's descriptive criteria considered**

	Descriptions of Criteria ( <i>with comparative sub-components or indicator</i> )	Informants' Responses (%)		
		Applicable	Strongly Applicable	
Program (C1)	Nationally oriented scope	42.9	42.9	
	Provincial oriented scope (including district, commune, or village)	14.3	85.7	
	Goal to increase livestock production for export	28.6	28.6	
	Goal to increase livestock production for farmer family and national consumptions	0.0	100.0	
	Change the extension messages in response to feedback from rural villages	28.6	71.4	
	Not Change the extension messages in response to feedback from rural villages	42.9	0.0	
	More focused on livestock technology than on lifting social standards of rural life	42.9	28.6	
	Prioritize on lifting social standards and livestock technology also	42.9	57.1	
	Technical information decided upon by people inside the local rural village	28.6	71.4	
	Technical information decided upon by people outside the local rural village	85.7	14.3	
	A simple standardized technical message	71.4	14.3	
	Wide-ranging extension message to meet local needs and interests	28.6	71.4	
Clientele (C2)	Focused on larger, commercial, single livestock producers	42.9	14.3	
	Focused on broader range of people including poor farmers	14.3	85.7	
	To likely deal primarily with male farmers	28.6	0.0	
	To most likely deal with male, female and youth farmers	0.0	100.0	
	Most likely focused on limited ethnic and social groups	28.6	28.6	
	Likely focused on different ethnic and social groups	28.6	71.4	
	Target clientele at national level	71.4	28.6	
	Target clientele in limited areas within Cambodia	14.3	71.4	
	Field personnel from outsiders	57.1	28.6	
	Field personnel from insiders	14.3	85.7	
	Central government pay the salary	57.1	28.6	
	Local government pay the salary	28.6	71.4	
Field personnel (C3)	High level of education of the field personnel	42.9	42.9	
	Lower level of education of the field personnel (under Bachelor's Degree)	28.6	71.4	
	Likely to include women and men as personnel	0.0	100.0	
	Not likely to include women as personnel	14.3	14.3	
	Extension personnel likely to transfer frequently from post to post	28.6	71.4	
	Extension personnel likely to remain at post for longer periods of time	57.1	28.6	
	Personnel with permanent status	42.9	57.1	
	Personnel with contractor/temporary status	57.1	42.9	
	Provide jobs for urban educated unemployed	28.6	71.4	
	Provide jobs for rural trained people	57.1	42.9	
	Incur high cost for information support	42.9	14.3	
	Incur low cost for information support	71.4	28.6	
Financial requirements criterion (C4)	Provide farmer family high cost for producing livestock	42.9	28.6	
	Provide farmer low cost for producing livestock	57.1	42.9	
	Incur high cost for transportation	57.1	28.6	
	Incur low cost for transportation	57.1	42.9	
	Major support from central government	85.7	0.0	
	Support from other sources	14.3	85.7	
	Organizational structure (C5)	Tends to fit centralization of control of organization	42.9	0.0
		Tends to fit decentralization of control of organization	14.3	85.7
		Emphasize the use of Subject Matter Specialists (SMS)	14.3	85.7
		Emphasize less the use of Subject Matter Specialists	42.9	0.0
		Require little participation of rural people to be served	14.3	0.0
		Require high participation of rural people to be served	0.0	100.0
Use prominently information media support		71.4	14.3	
Not use information media support		42.9	14.3	
Leadership (C6)	Leadership of organization to be part of central government/authority	42.9	42.9	
	Leadership of organization to be part of local government/authority	0.0	85.7	
	Leadership of organization to originate from professional	0.0	85.7	
	Leadership of organization to originate from clientele	57.1	14.3	
	To address a few technical fields	42.9	42.9	
To address broader rural development fields	28.6	57.1		

The higher rate of responses on the strong applicable indicators of the C1 (Tables 1 2) indicated that PA would be commonly used for extension probably due to the limited funds and different projects of the institutions, and farmers' insufficient access to export business. It is also caused likely by the integration of the to-be-disseminated technologies generated by subject matter specialists (SMS) and the knowledge interest of farmers, and it requires the masses of extension messages (e.g. specific livestock knowledge with human health and farmer needs) without being so far from the planned goal.

Additionally, analyzing the indicators of the C2 and C3 (Tables 1 and 2), PA, FSD, T&V, PR, and/or CSH would be utilized within the studied institutions due to the more applicable tendency for the extension dealing with a multitude of stakeholders at limited areas; local insiders employed as field personnel; both gender, permanent personnel with low qualification; frequently personnel transferring; and the personnel salary from the local government (Table 1). This may be based on the extension consideration for poor smallholder farmers at specific areas as priority of projects funded by the jointly national and international supports.

The analyzed indicators of C4, C5 and C6 (Table 1) also referred the PA (as the most common), GA, T&V, FSD, CSH, CA, EI, and/or CS as the commonly used approaches (Table 2) explained by the strong applicable tendency for supports of extension finance from other sources (e.g. loans, international funds and projects), provision of more job opportunities for the urban educated students, decentralization control, SMS emphasis, high rural participation, local authority as leadership, professional organization, and solutions for broader rural development fields (Table 1). This would be also based on the more sufficient and efficient international funding projects jointly with the national funds which is not only extension supportive source, and the urban educational institutions with more available facilities produces the more qualified personnel for the extension. Being applicable was more likely for incurring the low cost for the information support and farmers producing livestock (Table 1).

Regarding the studied criteria, livestock technology extension approaches tended to range from the top-down general agriculture to more bottom-up, decentralized, participatory approaches in Cambodia. However, the latter was more applicably used to disseminate the knowledge to farmers because the extension supports and personnel payment were mostly from local government with other sources and the growth in development aids from oversea donors created a more desire for such the approaches (Touch, 2000; Race and Millar, 2008; Mak, 2012). The strongly-applicable livestock extension approaches also tended to be the agricultural extension participatory and the cost sharing (6 criteria), the farming systems development (4 criteria), the education institution (3 criteria); and the general agricultural extension project, the commodity specialized (1 criterion). This indicated that there were current combination of livestock extension approaches in Cambodia which was similar to the utilization of extension approaches in Ghana (DAES, 2011) and other studies (Quizon et al., 2000; Touch, 2000; Mak, 2012). Not only an approach can success in the livestock technology dissemination, but at least 2 various approaches are jointly used; the dissemination is for more than one specific circumstance; and the advantages of one extension approach in a circumstance could provide disadvantages in another (Axinn, 1988; Rivera et al., 2001; Rivera and Quamar, 2003).

Understanding the mentioned extension approaches, prior to dissemination of the survey and experimental-generated livestock technology/knowledge to specific local Cambodian farmers, the key points to be considered and planned were (Rivera et al., 2001; Millar, 2009; Mak, 2012; MAFF, 2015) 1) conducting pre-study (feasibility study) on a specific areas (national, provincial, district, commune or village levels) to understand mainly key needs and interests of local farmers; 2) using livestock technology extension participatory approaches combined with others; 3) specifying livestock knowledge for the respectively specific livestock farms/groups (e.g. associations or community-based organizations) in the specific areas with sufficient availabilities and resources for livestock production; 4) conducting the dissemination with supports from external donors or projects especially in a large scope of the extension; and 5) employing the qualified local or outside field personnel with communication skills and close relationship with farmers.

**Table 2 Matrix of Axinn's descriptive criteria for the 8 extension approaches**

Criteria for Extension Approaches ( <i>with indicators</i> )		Extension Approaches *							
		GA	CS	T&V	PA	PR	FSD	CSH	EI
<b>Program (C1)</b>	Life quality focus				X			X	
	Responsive to feedback				X		X	X	
	Flexible message				X	X	X	X	X
	Goal to increase farmer family consumption				X				
	Production goals	X	X					X	
	Outside information				X	X		X	X
	Area or provincial scope		X		X	X	X		
	National scope	X							
<b>Clientele (C2)</b>	Spread status				X		X	XX	
	Men, women, youth				X		X	X	X
	Narrow focus				X		X	X	X
	Area target		X	X	X	X	X	X	X
<b>Field Personal (C3)</b>	Broad staff base				X				
	Temporary	X	X				X	X	
	Frequent transfer	X		X		X	X		X
	High training	X		X				X	
	Local salary				X			X	
	Outside origin	X		X				X	
<b>Financial Requirement (C4)</b>	Low information	X	X		X		X	X	
	Low transport	X	X		X		X	X	
	Urban source	X	X	X			X		
	Low cost				X			X	X
	Other funds	X	X	X	X	X	X	X	X
	Central funds	X	X	X	X	X	X	X	X
<b>Structure (C5)</b>	High participation				X		X	X	
	Media prominent				X				X
	Specialists emphasized	X	X	X			X		X
	Decentralized				X			X	X
<b>Leadership (C6)</b>	Professional origin	X	X	X					
	Broad representation				X		X	X	X
	Local origin				X			X	

\* Eight extension approaches identified by Axinn (1988) including General Agriculture (GA), Commodity Specialized (CS), Training & Visit (T&V), Extension Participatory (PA), Project (PR), Farming System Development (FSD), Cost Sharing (CSH), and Educational Institution (EI). Additionally, "XX" is strongly applicable and "X" is applicable.

## CONCLUSION

Livestock production can increase as farmers adopt and practice the new introduced knowledge. In livestock extension organizations, at least 2 different extension approaches were used concurrently to disseminate new knowledge and technology generated by researchers to Cambodian farmers while using the participatory approach would be optimum.

## ACKNOWLEDGEMENTS

My sincere thankfulness is expressed to IDRC-SEARCA, for the scholarship and supportive funds; my advisory committees for giving their precious time, encouragement, and all-out support; and the study institutions for supporting valuable time and information.

## REFERENCES

- Axinn, G.H. 1988. Guide on alternative extension approaches. Agricultural Education and Extension Services. Human Resources Institutions and Agrarian Reform Division. FAO, Rome, Italy.
- Blalock, T.C. 1963. Role of the subject-matter specialist. *Journal of Extension*, 1 (2), 93-100.
- Christoplos, I. 2010. Mobilizing the potential of rural and agricultural extension. Office of Knowledge Exchange, Research and Extension. Food and Agricultural Organization of the United Nations (FAO) and Global Forum for Rural Advisory Services, Rome, Italy.
- Davis, K.E. 2004. Technology dissemination among small-scale farmers in Meru Central district of Kenya: Impact of group participation. Dissertation in PhD. University of Florida, USA.
- DAES. 2011. Agricultural extension approaches being implemented in Ghana. Directorate of Agricultural Extension Services (DAES). 2011, Ministry of Food and Agriculture (MOFA). <http://mofa.gov.gh/site/wp-content/uploads/2011/03/Extension-approaches-in-Ghan-pdf>. Retrieved from [www.worldwide-extension.org/africa/ghana](http://www.worldwide-extension.org/africa/ghana) on Jun 23 2015.
- Fetsch, R., Holtzer, T., Johnson, J., Kendall, P., McDonald, S. and Newman, S.E. 2010. Colorado State University extension specialist roles and responsibilities. CSUE Specialists Association. SpecRole, Rev. Retrieved from <http://facultyouncil.colostate.edu/faculty-manual-section-e/> on Jun 25 2015.
- Kahan, D. 2013. The role of the farm management specialist in extension. Farm management extension guide. FAO, Rome, Italy.
- Khan, G.A., Muhammad, S. and Chaudhary, K.M. 2014. Role of electronic media in disseminating information for livestock/poultry production. *The Journal of Animals and Plant Science*, 24 (3), 961-964.
- Lukuya, B., Place, F., Franzel, S. and Kiptot, E. 2012. Disseminating improved practices: Are volunteer farmer trainers effective? *The Journal of Agricultural and Extension Education*, 18 (5), 525-540.
- MAFF, 2015. The policy in agricultural extension in Cambodia (In Khmer). Ministry of Agriculture, Forestry, and Fisheries (MAFF), Cambodia.
- Mak, S. 2012. Overview of agricultural extension system in Cambodia. Réseau Far, Atelier Yaoundé. 20-22 Nov, 2012. Retrieved from <http://daecambodia.org/index.php/en/> on Mar 18 2015.
- Millar, J. 2009. Adapting extension approaches to cultural environments in Southeast Asia: Experiences from Laos and Indonesia. *Extension Farming Systems Journal*, 5 (1), 143-148, Industry Forum.
- Patil, S.S. and Kokate, K.D. 2011. Training need assessment of subject matter specialists of Krishi Vigyan Kendras. *Indian Res. J. Ext. Edu*, 11 (1), 18-22.
- Quizon, J., Feder, G. and Murgai, R. 2000. A note on the sustainability of the farmer field school approach to agriculture extension. The World Bank, Development Economics Group. Washington, DC.
- Race, D. and Millar, J. 2008. Social and community dimensions to ACIAR projects. ACIAR Training Manual 4. ACIAR. Cambodia.
- Rivera, W.M. and Quamar, M.K. 2003. Agricultural extension, rural development and the food security challenges. Extension, Education and Communication Services. Research, Extension and Training Division. Sustainable Development Department. FAO, Rome, Italy.
- Rivera, W.M., Quamar, M.K. and Crowder, L.V. 2001. Agriculture and rural extension worldwide: Options for institutional reform in the developing countries. Extension, Education and Communication Services. FAO, Rome, Italy.
- Sani, L.I., Boadi, B.Y., Oladokun, O. and Kalusopa, T. 2014. The generation and dissemination of agricultural information to farmers in Nigeria (A review). *IOSR Journal of Agriculture and Veterinary Science*. 7 (2), Ver. I, 102-111.
- Touch, V. 2000. Agriculture education in Cambodia. Visiting Research Fellow of the International Cooperation Centre for Agriculture Science (ICCAE), Nagoya University, Japan.