

Full Length Research Paper

Agriculture agency, mass media and farmers: A combination for creating knowledgeable agriculture community

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Mass media power in disseminating agriculture information to the farmers is essential, but the main question now, does the Department of Agriculture Malaysia as one of the main agriculture agencies in Malaysia, wisely utilize all the mass media sources to disseminate the valuable agriculture information to the farmers and their officers? Data was gained through three 'focus group discussions'. The Department of Agriculture Malaysia has produced 20 types of printed publications and they are also one of the major sources for radio and television agriculture programs aired at Radio Television Malaysia and Selangor FM. Besides, the Department of Agriculture Malaysia also provides sources for agriculture newspaper insert for Utusan Malaysia and Berita Harian. The Department of Agriculture Malaysia has its own website which is www.doa.gov.my for the public and the Agris Geo Portal for their staff. Some of the printed publications that do not reach the grassroot level, finance and delayed information received are among the problems faced by the Department of Agriculture Malaysia. The Department of Agriculture Malaysia has yet to establish specific evaluation process for their printed and electronic publications, but for their website, they have internal and external evaluation. The Department of Agriculture Malaysia should encourage other daily newspapers such as Harian Metro, The Star, Sin Chew Jit Poh and Tamil Nesan to have their own agriculture newspapers insert. It is recommended that programs and publications on agriculture should be increased. The best way to make it is through cooperation between the Department of Agriculture Malaysia and giant agriculture based companies. The farmers should be provided with the schedule of the date of the Department of Agriculture Malaysia publications to be disseminated to the farmers, the air time of television and radio program and the list of agriculture agencies websites.

Key words: Agriculture community, mass media and agriculture information.

INTRODUCTION

Whether it is realized or not the agriculture sector remains as one of the pertinent sectors in many countries and its significant role in uplifting the economy of a nation can not be argued. Agriculture sectors ability in uplifting

the community socio-economic status and reducing the poverty problems in Malaysia cannot be argued (Hayrol et al., 2010). Malaysia has doubled its effort to ensure the success and sustainability of agriculture sector. For instance, in The Ninth Malaysian blueprint, this sector has been channeled as one of the mechanisms to boost the income of the country while recently in the 2010 budget; Malaysia has announced that more budgets has been allocated to further buttress this sector and the

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Table 1. Percentage of mass media information received by the Malaysian public.

Mass media/ ICT	2007/2008 (%)
Television	93.4
Radio	79.4
Daily newspaper	55.1
Magazine	31.7
Internet	17.6

Musa (2008).

farmers.

To ensure the success of the agriculture sector in Malaysia, the government has established a number of agencies. One of the prime agriculture agencies established by the government is the Department of Agriculture Malaysia (DOA). DOA has established nine main objectives which are to (1) evaluate, modify and formulate technology packages from research institutions to suit locations prior to its transfer to agricultural entrepreneurs, (2) provide consultancy and technical support services in a package to entrepreneurs, private sector and agricultural development agencies, (3) develop a National Source of Agricultural Information for the purpose of planning and development of agricultural projects, (4) conduct training at the Agricultural Institutes/Agricultural Training Centers to fulfill the demand for skilled manpower in the agriculture sector, (5) control the quality of seeds and planting materials produced and distributed in the country, (6) enforce the Pesticides Act 1974 to ensure that all pesticides imported, manufactured and sold in the country are of high quality and do not have adverse effects on human, animals, food crops and the environment, (7) enforce the Plant Quarantine Act 1976 to control the entry of foreign noxious pests and diseases and to facilitate the export of plant and plant products in order to fulfill the phytosanitary requirements of importing countries, (8) enforce the 'customs orders' (Prohibitions of Exports) 1988 and convention on international trade in endangered species of wild fauna and flora (CITES) agreement to prevent plant species of economic importance from being freely out of the country and prevent the extinction of endangered wild plants species and (9) establish linkage and cooperation with the public and private sectors involved in the development, enforcement and trade in Agriculture at both the national and international levels .

In order to achieve all of these objectives, it is wise for DOA to create a knowledgeable group of farmers (K-Farmers). One of the ways to create K-Farmers is to disseminate the valuable agriculture information to the farmers at the right time and at the right places. Before

creating K-Farmers, DOA should provide their officers and extension agents with adequate and viable information. By having their officers and extension agents that are well coped with all kinds of agriculture information, it is easier for DOA to create K-Farmers. Therefore, it is wise for the DOA officers and extension agents to be provided with adequate and valuable agriculture information. The question that can be raised now is; what is the best channel for DOA to disseminate all of their agriculture information to the farmers and their officers? One of the best answers is the mass media. The existing literatures identified have proved that mass media is one of the main choices of the farmers and can be the impetus to create K-Farmers.

THE MASS MEDIA IN MALAYSIA

Agriculture sector in the Ninth Malaysia plan is generated to be the third engine growth of economic sectors in Malaysia. The government has continuously put their effort in intensifying the agriculture sector. Recently, the government has announced that more than USD 8 billion will be allocated to initiate the mega agriculture projects called "Agropolitan" in Mukah, Sarawak. It is mainly initiated to enhance the socio-economic life of the local community. To further develop and strengthen the relevance of agriculture to this country, the role of mass media can be one of the main catalysts. Mass media is the main information seeking tool utilized by the Malaysians. According to Murphy (2008), on average, Malaysians spend one hour and 25 min to read the newspapers, magazines and other printed media a day, spend one hour and 33 min to listen to the radio in a day, spend one hour 50 min to watch television, VCD, DVD and other video sources in a day and spend 2 h 47 min surfing internet in a day. These statistics provide an indicator that mass media have the strength and ability in providing and disseminating valuable information to the community including the agriculture information. The percentage of mass media information received by the Malaysian public in the year 2007 is at an encouraging level. According to Musa (2008) in 2007, the percentage of television information received by the public is 93.4%, followed by radio (79.4%), daily newspaper (55.1%), magazine (31.7%) and internet (17.6%) (Table 1). Khan et al. (2010) and Md. Salleh et al. (2009) have supported Musa (2008) by emphasizing that farmers prefer to use traditional mass media such as television and radio compared to internet.

Based on the encouraging percentage of mass media information received by the Malaysian public, it must be wisely used by the community especially the agriculture community in seeking valuable agriculture information.

Table 2. Mass media possession among Malaysian.

Mass media	2000 (%)	2002 (%)	2004 (%)
Television	84.3	93.8	95.2
Radio	78.8	87.5	84.5
Video/ VCD/DVD	53.5	71.0	77.4

Malaysian communication and multimedia commission, 2008.

Table 3. Numbers of broadcast minutes free to air television channels.

Year	Quarter	TV1	TV2	TV3	NTV7	TV8	TV9	Total
2007	1	111,901	130,019	115,310	96,904	110,338	87,546	652,018
	2	114,627	130,813	121,109	98,667	112,365	89,139	666,720
	3	118,794	130,889	130,631	101,695	111,972	100,689	694,670
	4	117,967	129,884	131,805	99,421	112,442	103,661	695,180
2008	1	113,101	130,608	130,461	94,607	110,197	104,906	683,880
	2	113,879	129,751	130,725	98,294	109,082	102,920	684,651
	3	121,350	132,073	131,071	116,118	110,780	113,574	724,966
	4	116,471	132,186	131,895	114,485	105,900	107,646	708,583

Malaysian communication and multimedia commission, 2008.

Mass media has been acknowledged to play a significant role in the developing process in Malaysia. When Malaysia got its independence in 1957, radio has been employed as the main channel in bringing the changes to the community. Now, that task is not only carried by the radio. Roles that are played by the traditional mass media such as television, radio and newspaper have been strengthened by the existence of the new media such as internet, computer, mobile phone, PDA and a number of new media known as Information and Communication Technology (ICT). Mass media and ICT are two correlated channels. Musa (2000) explains the relation between mass media and ICT, where he emphasized that internet and computer are always related to dissemination, producing, recording and managing information. Besides that, television, radio and printed media have almost the same ability. Due to communication functions, communication technology and information technology are always referred to the same thing, thus the concept of ICT is used.

Numerous activities done through mass media is an effective effort in developing the agriculture sector (Bauman et al., 2005). The utilization of mass media is one of the important mediums in agriculture extension processes to the farmers (Jain dan Gorla, 2006) and with the increasing percentage of mass media possession among the Malaysians (Table 2), it is predicted to facilitate the agriculture development processes

through mass media in Malaysia.

Mass media and agriculture sector are pertinent to each other. Mass media especially television, radio, printed media and internet have produced and disseminated a number of agriculture programs and information. Data portrayed in Table 3 demonstrate the strength and the ability of television as one of the potential catalysts to aid agriculture extension processes in Malaysia. A total of 708, 583 min of air time was recorded by six main free to air television stations in Malaysia at the fourth quarter of 2008. This provides an indicator that there are huge opportunities for more agriculture programs to be aired on television. As been depicted in Table 3, there are two prime television stations that own six free to air television channels in Malaysia. The government owned media channel, radio television Malaysia (RTM) owns two free to air television channels, TV1 and TV2 and 36 radio channels. Currently, RTM have three agriculture television programs and five agriculture radio programs. The giant media company in Malaysia, Media Prima owns four free to air television channels TV3, NTV7, 8TV and TV9. Even though 'media prima' is a private company, they also bear the responsibility in disseminating agriculture information to the agriculture community in Malaysia. Through their television channel, NTV7, they have produced an agriculture program called Seed while their famous documentary program "Majalah Tiga" had a couple of

Table 4. Ranking based of daily newspaper readers in Malaysia.

Ranking	Newspaper	Language	Number of distribution a day	Number of readers
1	Mingguan Malaysia	Malay	483,240	2,488,000
2	Metro Ahad	Malay	263,649	2,375,000
3	Berita Minggu	Malay	333,334	2,329,000
4	Harian Metro	Malay	249,575	2,077,000
5	Berita Harian	Malay	203,704	1,960,000
6	Utusan Malaysia	Malay	213,445	1,643,000
7	Sunday Star	English	230,964	1,491,000
8	The Star	English	310,008	1,456,000
9	Sin Chew Jit Poh	Mandarin	346,895	1,238,000
10	China Press	Mandarin	227,270	778,000

Audit Bureau Circulation and Media Atlas Malaysia, 2006.

times highlighted new agriculture technology and product. Media prima also has established a number of radio stations and among the top rated radio channels are Hot FM and Fly FM. The satellite television station Astro is also a media company that offers a huge number of media information, most of the programs are from outside sources.

Printed media has its own strength to disseminate valuable information. Printed media especially newspaper has been published in Malaysia since 1805. Currently there are more than 40 daily newspapers available for the readers (Amira, 2006). Among the popular daily newspapers are Mingguan Malaysia, Metro Ahad, Berita Minggu, Harian Metro, Berita Harian, Utusan Malaysia, Sunday Star, The Star, Sin Chew Jit Poh and China Press (Table 4). Utusan Malaysia as an example, through its press issue known as Mega, has its own agriculture newspaper insert known as "Agrobiz" while Berita Harian has its own agriculture segment that focuses on Palm Oil and this segment is sponsored by Malaysian palm oil board (MPOB) and it is published once a month. Besides television, radio and printed media such as newspaper, internet cannot be denied its importance in disseminating agriculture information. Internet nowadays is indeed important for the community especially farmers in seeking information, education and to fulfill their leisure time. Its attractive background and frequent updates resulting the public nowadays prefer to use internet as their main channel in seeking information. Table 5 portrays the profile of internet users in Malaysia. Based on Table 5, it can be concluded that if agriculture information wishes to be effective it must be disseminated to those who live in urban areas, male and age range between 15 to 44 years old. This doesn't mean that the rural community, women and older people are ignored by the government; this can be proved through the establishment of universal service provision (USP). The main objective of USP is to ensure

internet and telephone access to the community. Besides USP, the National Information Technology Agenda (NITA) was launched to cultivate and raise consciousness among community regarding the importance of the ICT usage especially the internet.

Despite the great and significant availability of data in the mass media in Malaysia, does the DOA as the main agriculture agency in Malaysia wisely utilize all the mass media sources to disseminate the valuable agriculture information to the farmers and their officers? What are the types of mass media used? Are the mass media used by DOA evaluated? To whom does the mass media agriculture information being disseminated? Are there any other parties that collaborate with DOA to disseminate the agriculture information? Are the target audience received and use the agriculture information disseminated to them? Based on these specific questions, it will construct and fulfill the main aim of this study which is to reveal the role of DOA in intensifying the agriculture sector in Malaysia through the usage of mass media.

METHODOLOGY

The research approach for this study was a qualitative case study that provided an in-depth description on the role of DOA in disseminating the agriculture information to the farmers and DOA officers. Besides, this paper would also like to discover the type of agriculture information received by the farmers and do they use the agriculture information that is disseminated and available to them. To collect the data needed, three FGDs were conducted; the first FGD was conducted among 10 officers from DOA headquarters in Putrajaya. All of the first FGD participants were the staff of the Communication Section of DOA. The staffs selected were the Deputy Director, Assistant Director, Assistant Officers and support staff of the Communication Section of DOA. The first DOA was held at the Institute for Social Science Studies Meeting Room at Serdang, Selangor and was conducted for 2 h and 15 min. Questions pertaining to types of printed publication produced by DOA took the longest time and was discussed intensely.

Table 5. Usage of internet based on factors.

Factors	Percentage of internet usage in 2006	Percentage of internet usage in 2008
Locality		
Urban	82.0	86.0
Rural	18.0	14.0
Gender		
Male	53.3	51.9
Female	46.7	48.1
Age group		
< 15	7.3	6.8
15-19	18.7	17.9
20-24	16.3	15.7
25-29	11.3	11.9
30-34	12.3	11.7
35-39	10.4	11.2
40-44	10.6	9.3
45-49	6.1	6.1
≥50	7.1	9.4
Number of usage in a week		
<4 h	25.7	28.0
4 but less than 8 h	22.3	23.2
8 but less than 15 h	20.3	19.3
15 but less than 22 h	10.3	8.4
22 but less than 28 h	5.8	5.2
More than 28 h	15.7	16.0
Purpose of internet usage		
Seeking information	84.5	94.4
Communication through text	80.7	84.7
Education	52.6	64.5
Leisure time	45.9	63.5
Financial purpose	23.6	31.8
Public services	12.0	29.2
e-government transaction	-	19.8
Online share transaction	-	5.9
Others	0.2	0.7

Malaysian communication and multimedia commission, 2008.

The second FGD was conducted among 10 DOA state and districts officers from Selangor. All the respondents selected were Assistant Agriculture Officers from the Communication Section of DOAs and selected districts in Selangor namely Hulu Langat, Kuala Langat, Kuala Selangor, Kelang, Shah Alam, Hulu Selangor and Sabak Bernam. This second FGD was conducted at DOA Meeting Room at Shah Alam, Selangor and took 1 h and 25 min to be completed. Questions pertaining to usage of internet for agriculture information

took the longest time and were discussed intensely among the FGD respondents.

Questions asked to the respondents for the first and second FGD were as follows:

- (1) What type and name of the printed publications produced?
- (a) Who is the target of each of the printed publications?
- (2) How DOA got the sources for the printed publications?

- (3) What type of relationship and cooperation established between DOA and mass media such as newspaper, television, radio and other media?
- (4) How is the process of dissemination being done?
- (5) How are the publications produced being evaluated?
- (6) Are research been done to gain the feedback on the publications disseminated?
 - (a) Elaborate on the method and please clarify the results
- (7) What are the types of websites prepared?
 - (a) What are the purposes of each website?
 - (b) Who are the target users?
 - (c) What are the content of the websites?
 - (d) Is there any evaluation made on the websites from the users' perspective?
- (8) What are the problems faced in term of
 - (a) Publication process?
 - (b) Dissemination process?
 - (c) Feedback?
 - (d) Other problems?

The third FGD was conducted among farmers in paddy development areas in Tanjung Karang Selangor. This third FGD was conducted at DOA meeting room in Tanjung Karang Selangor. This third FGD took 46 min to be completed. The questions pertaining to types of printed publication disseminated to them took the longest time and were discussed intensely.

The questions that were asked to the respondents in the third FGD were as follows:

- (1) What type of publications gained from DOA?
- (2) How was the publications gained?
- (3) Have you watched agriculture programs on television? Please give the name of the television stations and the name of the programs
- (4) Have you listened to agriculture programs on radio? Please give us the name of the radio stations and the name of the programs
- (5) Have you read any articles on agriculture programs on the newspaper? Please give us the name of the newspaper and the name of the article
- (6) Have you surfed any agriculture websites? Please give us the name of the websites
- (7) Among the sources mentioned, what are your main choices in getting the agriculture information?
 - (a) Why you choose it?
 - (b) What type of information that you searched through it?
 - (c) Are the content/information gained enough?
- (8) What are the problems you faced in getting the agriculture information?
 - (a) Time (limited time, unsuitable air time, duration of the programs)
 - (b) Difficulties in getting the agriculture information
 - (c) Information received cannot be understood (language problems)

RESULTS

Type of publications and media program

Printed materials besides newspaper

As depicted in Table 6, DOA has produced 20 types of printed publications to be disseminated to their target

readers which are the farmers and their officers. Besides these two target groups, the publications are also targeted at entrepreneurs, other agriculture agencies under Ministry of Agriculture and Agro Based Industry, school and university students. All of these publications are free except for the several books such as Book on Plant Technology Package which is sold if there are asked by the DOA customers at the price of RM10 (USD 3.3), Planting Manual which is sold at the price of RM3 (USD 1), Guide on the Agriculture Activities on Hilly and Slope Land at the price of RM 5 (USD 1.60), Natural Farming at the price of RM10 (USD 3), Land technical information at the price of RM 15 (USD 5), Fruit Crops Statistics at the price of RM40 (USD 13), Vegetables, Spices and Cash Crops Statistics at the price of RM40 (USD 13) and the book Industrial Crops and Herbs Statistics at the price of RM 40 (USD 13). Generally, the printed materials published described things regarding DOA services, products, technical information, planting method, courses offered, DOA objectives, vision and mission and stories on successful agro-entrepreneurs.

Newspaper

DOA has cooperated with the local newspaper "Utusan Malaysia". Every Monday, Utusan Malaysia, through its press issue "Mega" will publish agriculture newspaper insert "Agrobiz". Agrobiz is a newspaper insert that focuses on the agriculture invention, technology and products. One of the information sources for this newspaper is DOA. DOA will provide the agriculture information weekly to Utusan Malaysia.

Other printed media

DOA also has sent a number of articles to be published in other magazines (Table 7). Besides that, DOA has produced a number of billboards along the PLUS highway (northern and southern highway) and also at every eleven big cities in Malaysia that advertised the 10 tone club and Scheme on good agriculture practice and Agriculture organic scheme (SALM and SOM). DOAs also has produced bunting that promotes the paddy plantation and it has been distributed in districts such as Tanjung Karang, Kuala Selangor and Sabak Bernam. DOAs is also in the process of producing their own video corporate that focuses on how to achieve 10 tone of paddy production per acre, the video is in the editing process and will be distributed to the farmer groups in Selangor.

Table 6. Printed materials besides newspaper.

Name of publication	Frequency	Content and purpose	USD3
Book on plant technology package	Annually	To educate specifically and in detail the planting process to the officers and DOA customers on Agriculture	
Book on planting manual	Based on the DOA top management demands	Summarization of the planting process	USD1
“Info Tani” leaflet	15 times a year	Basic information on DOA program planning guide	Free
Tekno Tani booklet	Annually	Information on simple technology or translation into Malay language from the Food and Fertilizer Technology Magazine	Free
Poster	Every month	To inform the farmers about current agriculture issues and new agriculture information	Free
Annual report	Annually	Report on annual activities done by DOA	Free
Journal of Agriculture Extension	Annually	Compilation of the articles published related to agriculture	Free
Handbook on recognition of series of land in Peninsular Paddy Bulletin	Annually	Land technical information	USD5
Book on Agro-based entrepreneurs profile	Annually	Paddy technical information	Free
Handbook on disease control	Annually	Story of successful agro-based entrepreneurs	Free
Handbook on the agriculture development in hilly and slope land	Annually	Information on specific disease, how to prevent and control the disease	Free
Agriculture news (magazine)	6 times a year	Guide on the agriculture activities on hilly and slope land	USD1.6
		Agriculture News is to record DOA major events that occurred in certain periods	Free
Plants calendar	Annually	Gantt Chart, summarized from book on Manual Planting	Free
Booklet on clones plant	Annually	Information on clone plants	Free
Booklet on natural farming	Annually	Information on good Agriculture practices and foods safety	USD3.3
Book on agriculture extension manual	Annually	Information on Agriculture extension	Free
Fruit crop statistic book	Annually	Contain statistic on crop production	USD13
Vegetables, spices and cash crop statistics	Annually	Contain statistic on crop production	USD13
Industry crops and herbs statistics	Annually	Contain statistic on crop production	USD13

Table 7. Articles sent by DOA to selected magazines.

Name of publication
Article in "Dewan Masyarakat" magazine
Article in "Garden Asian" magazine
Artikel in "Ehwal Pertanian" magazine
Malaysia Airline System magazine "Going Places"

Television

DOA has cooperated with RTM in producing a number of agriculture programs. Currently, RTM has three agriculture television programs, namely Agro Journal, Agro Tech and Our Earth. These three agriculture television programs are aired on TV1 and TV2. Besides an agriculture television program, DOA also has advertised their products in the private television channels such as TV8 and TV9. DOA also has a slot on a program called "Selamat Pagi Malaysia" aired on TV1. The Selangor government has its own streaming television channel known as TVS (TV Selangor). In this online television channel some of the agriculture SME products are advertised, promoted and informed to the public.

Radio

DOA has provided information sources for agriculture programs aired on radio channels. All of the agriculture radio programs aired on government owned radio channels such as Klasik Nasional FM and four states FM namely Selangor FM, Pahang FM, Kedah FM and Perlis FM. DOA is one of the major information sources for a program called "Best Tani" aired in Klasik Nasional FM. Before, Asyik FM, a radio station which its target audience is the aborigine people have their own agriculture program called "Bicara Semasa". It was aired weekly, 10.00 am till 10.30 am, but since 2008 the program was stopped and agriculture programs are only aired as a capsule program. At the state level, in 2009, DOA Selangor (DOAs) has collaborated with Selangor FM in producing a drama series entitled "A Drop of Sweat a Grain of Diamond" that focused on paddy plantation. It is interesting to know that the drama series produced was copied into CD and the CDs were distributed to the farmers around selected districts in Selangor. In 2010, DOAs has been given a total of 9 slots in Selangor FM and each slot is allocated for 20 min. In these slots, the recent products and technology of DOA are informed to the public.

Internet

DOA has its own website www.doa.gov.my or called by the name of interactive website 2.0 where DOA can communicate with the public. The synchronized communication is practiced in the website where the DOA website visitors can interact with the DOA officers at real time. DOA also will introduce their mobile web systems. For their officers, DOA has a system called AGRIS geo portal where it can be used by their officers to seek information, to interact and gather information. AGRIS geo portal is supervised under Department of Planning and Information Technology. Agri Bazaar is one of the popular websites developed by DOA. Agri Bazaar is established to disseminate information regarding agribusiness, increase the business opportunity, widen their business networking, and offer products and technology.

In terms of Agri Bazaar surfing, the farmers in Selangor recorded the highest level of surfing which is 26%. DOAs also have their own website <http://pertanian.selangor.gov.my> which is linked to the website of DOA headquarters. Respondents have informed that some of the agro-entrepreneurs have developed their own blogs such as Northern Selangor Club Blog (padiksu.blogspot.com). It is interesting to discover that DOA at the state level are active in using some selected blogs (either free or paid) to disseminate the agriculture information.

The dissemination process of the agriculture information to the farmers and officers by DOA

For the printed materials, based on the FGD conducted, it can be concluded that DOA has their own committee to decide what is to be published. The committee is called committee on media extension (CME). Before the materials are brought to CME, the materials will be internally evaluated by the experts at DOA communication sections. Interestingly, DOA also published materials based on the request of the farmers. The farmers request will be discussed at the CME meeting. DOA also has a committee called DOA-MARDI technical cooperation, under the committee, DOA has five technical working groups based on specific agriculture areas. DOA has a systematic flow of agriculture information dissemination (Figure 1). The printed materials will be distributed from the DOA headquarters to the state level to the district level and to the area level. At the state level, the printed materials will be controlled and distributed by the technical unit. At the district level, the printed materials will be given to the assistant agriculture officer who is responsible to disseminate the printed materials at the area level. At the area level, the printed materials will be

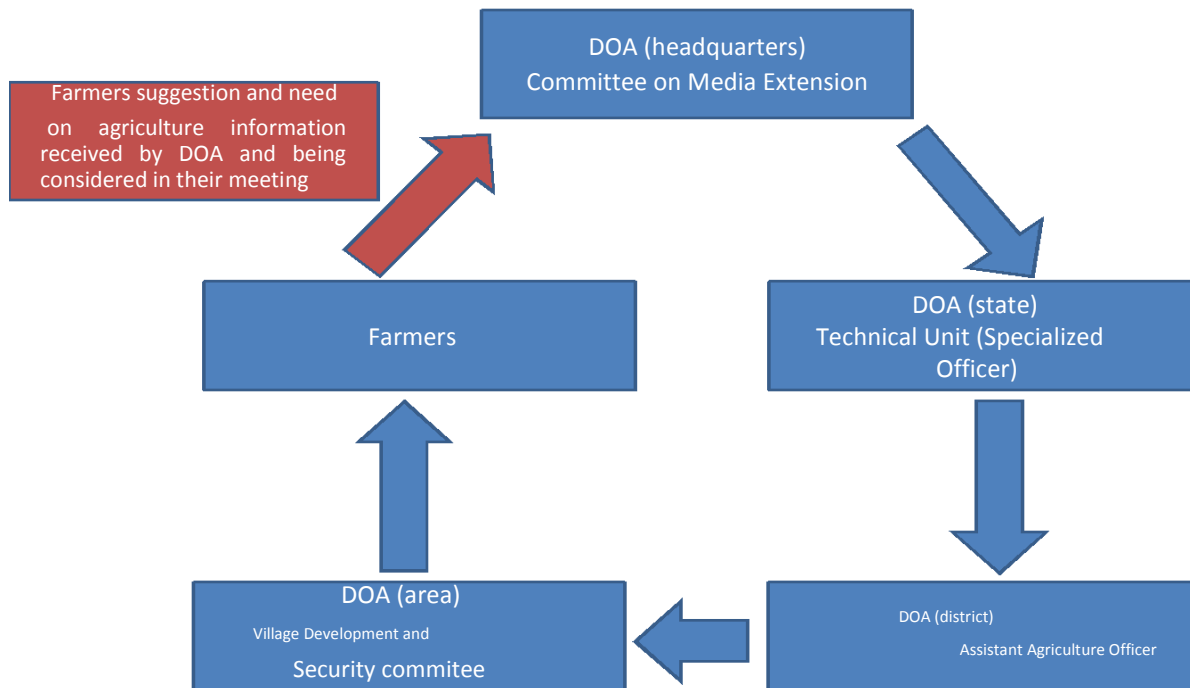


Figure 1. The flow of agriculture information dissemination.

distributed through the village development and security committee or locally known as JKKK. Through JKKK, the printed materials will be distributed at the mosques and “Balai Raya” (Village hall). To ensure all of these publications are received at the grass root level, DOAs has decided that assistant agriculture officer must be placed at all districts in Selangor.

“In terms of the dissemination process, the published materials, we will disseminate it to our officers; our officers will disseminate it to the State Agriculture Department. From there we ask them to disseminate it to the district level and from the district level to the area level. We also ask the district level disseminate it to the JKKK...”

“...The pamphlets, we will distribute during the course and our customer day. During our meeting with JKKK, during that time we will distribute the pamphlets”

DOA also will distribute their printed materials during major events such as Malaysian agriculture horticulture and agrotourism (MAHA) exhibition, Day with DOA customers, and Day with Leaders. Besides these events, the printed materials are distributed through the websites. The printed materials are also placed at the state and district offices. DOA also has established one stop center

where the printed materials are available.

“We will distribute the published materials directly to the farmers, another method we will search a place which can attract a lot of people, in our specific events such as National Customer Day, a lot of people there, this year we conducted it at MAEPS, last year we conducted it at Malacca. Another major event we call it MAHA, once in two years, these kind of events will attract a lot of people to come”

“We will distribute it during our Customer Day and our Farm Day. Like the Farm Day we will distribute the information we have at our department such as courses offered, products, our services, our objectives, our vision and our achievement at the state level such as the 10 tone club”

Regarding distribution of the printed materials to the DOA officers, DOA will directly disseminate the related printed materials to the specific DOA officers. During the courses sponsored by DOA, book, bulletin, pamphlets and brochure also will be distributed to the course participants. It is interesting to know that some private companies such as the pesticide companies also play their role in distributing agriculture information to the farmers. Their role in distributing the agriculture information is indeed important in districts such as

Tanjung Karang, Kuala Selangor and Sabak Bernam.

In other media channels, such as television, either DOA or the RTM producers will approach each other. Before publishing the program, DOA and RTM will hold a meeting to discuss what is to be broadcasted. DOA will guide RTM on the content, places and personalities to be interviewed. The same case also occurs with radio and newspaper. Usually the DOA officers have to prepare the suitable agriculture programs and segments before they contact the producer and editor to request the segments. For the website, all the information to be published in the website will be monitored by a private company called SKALI. To prepare the content, it will be prepared by the technical divisions within the DOA. Currently, there are eleven technical divisions within the DOA. For example, Unit of Extension will prepare information regarding methods on fruit planting and Unit of Horticulture will prepare information on plant protection.

Evaluation of the agriculture information contents disseminated to the farmers and officers

For printed materials, basically there are no technical or periodical evaluations set by DOA to evaluate their printed materials. The same case also occurs for the program that DOA cooperates with RTM aired on television and radio. There are three types of informal evaluation that DOA get for their printed publication. Firstly, is through DOA officers' interpersonal communication with the farmers during events such as Customer Day. Secondly, DOA also receive the evaluation from e-mail and thirdly through the suggestion box.

"We get the feedback during our customer day; they took advantage of such events"

For DOA website, they have specific evaluation that is conducted quarterly. DOA has coordination committee to evaluate their website and AGRIS geo portal. Based on the evaluation they will rate the website. Regarding the publication that is available online, the communication section also will monitor it.

"Communication section will monitor the information, it is right or not, if not we will directly meet the person in charge to inform them, we ask them to change it, or if there is any delay in updating the required information, we will inform them on that problems"

Besides internal evaluation, there is also external evaluation by MAMPU (Malaysian Administrative Modernization and Management Planning Unit)

"MAMPU is the government agency given the tasks to evaluate this website, the star rating just been submitted last month. We don't know how many star we get, maybe three star (out of five star)"

Problems in the publication and dissemination process

Sometimes, the printed materials that are distributed did not reach the grassroots level. The printed materials might get lost or stuck somewhere at the state level caused by several problems such as miscommunication.

"In terms of the dissemination process, sometimes the published materials did not reach the grassroots level it stuck somewhere, in the state and we have monitored this problem"

Moreover, there is no specific time on how long the distribution process should take and as far as DOA is concerned there is no specific research done on that area. The numbers of printed materials (brochures) are still not sufficient. For example, even though 15,000 brochures were published yet it is not enough especially at the district level.

"We cannot print a lot, like brochure we printed 15,000 copies. In a year our events are about 60 events, the copies are not enough..."

In terms of publication content there was delay on receiving the information. Delay in receiving this information means that DOA has to reorganize their content of publications. At the state and district level the financial factor has limited the number of publication.

"We cannot get the information on time..... like the technical information, every year it changes, when we want to publish it, we cannot do it because the delay in receiving the information, we have to update back the materials, problems like that we have to face"

At the district level, they could not afford to produce any publication because no allocation was given to them.

"... because we at the district level we do not have the financial allocation for the publication, we collect the printed publication and then we disseminate it, our tasks at the district is only to disseminate it".

The radio drama series produced by DOAs according to the respondents require a high budget which can affect the continuity of the drama.

“... in term of the radio drama publication, actually it involves a high cost, however in term of cost we sometimes don't have enough allocation to continue”

Farmers: Do they use the agriculture information disseminated to them through the mass media?

Although there is a lot of agriculture information produced by DOA, the issue now at stake is whether the agriculture information produced by the DOA is received and used by the farmers? In this part, we will discover whether the farmers do use or not the information given and disseminate to them. If they do not receive or use the information we will discover what the causes of the problems are.

Television and radio

Television is one of the main preferences among the farmers interviewed and there are a number of reasons for this as the respondents informed us.

“On TV we can easily understand (the agriculture information), they will clarify it, on the newspaper sometimes we cannot understand it (the agriculture information), and they use scientific language”

“Because on TV we can watch a lot, if the newspaper, we can only read, that's all”

“TV is easy for us to watch, we can spend our leisure time while watching TV, but the newspaper we seldom read it, we only read it at the coffee stall”

For television programs, the farmers interviewed did not have any problems in watching the available programs. The air time especially for the agriculture television programs according to the farmers should be changed to a more appropriate slot. The respondents have informed us on this

“The agriculture programs on TV right now, for me the air time is not suitable”

“TV is good, but the air time should be suitable, we seldom watch TV in the evening, very seldom”

According to them the current air time of the television agriculture program is between 6.00 pm to 7.00 pm and this is not suitable because they are still working. The best air time according to them is between 12.00 pm till 1.00 pm and at night during the prime time and the respondent has agreed on this by saying

“Like Agro Journal, the air time is at the evening (6.30 pm to 7.00 pm), it should be aired on night because in the evening all of us are very busy”

One of the farmers has suggested that agriculture programs from foreign countries especially from the developed countries should be aired. According to them by having this type of program they will be exposed to new and modern agriculture technology and products.

“Technology information is the most important because we are developing day by day, we want that technology to ease us. If possible we want to use the plane to spray the fertilizer, they can show us the foreign countries technology on agriculture, they spray the fertilizer using the remote, and their robot is doing the job for the farmers”

The number of agriculture television and radio programs are lacking according to the respondents. According to them, the content of the programs also was insufficient for them as one of the respondents claimed that:

“RTM which at TV1 is the recent one, but the number of agriculture programs at the mass media (TV and radio) are not sufficient, there a lot of entertainment programs but not on agriculture”

One of the respondents claimed that the recent programs and the duration of the agriculture television program is important to attract them to watch the program by stating:

“The duration should be considered, if usually the program is half an hour, we want the program to be an hour program. If the program is half an hour, deducted by the advertisement period, 15 min, not much left... Besides, a lot of the TV programs are not the latest one; it is the repeated program...”

Promotion on radio agriculture program should be intensified since very few farmers know that there are agriculture programs available on radio.

Print media and the internet

Even though the respondents like to watch agriculture television programs, it seemed that they also relied more on printed materials such as brochure and pamphlet in getting agriculture information compared to radio and internet. However, they do stress on the importance of local language to be used in the publication. They do receive a number of printed publications disseminated by DOA extension agents and also the pest control companies. DOA strategy in disseminating some of their

publications during events such as courses conducted by DOA, DOA Customer Day and Leaders Day proved to be an effective strategy. Majority of the farmers admitted that they received a lot of DOA printed materials during the events.

“If they (DOA) have functions (DOA Customer Day and Leaders Day), they will bring together (the brochure and pamphlets), in their office, if we want to ask the something on the disease, they have the pamphlets, if you come to the DOA district office they have the pamphlets and brochure” need the DOA officers advice

“Usually they want information on agriculture and the also they want our advice”

Besides, the role of private companies in disseminating the agriculture information especially on their latest product and technology helped farmers a lot in getting the valuable information. Promotion should also be done to inform people that newspapers such as Utusan Malaysia and Berita Harian do have specific agriculture newspaper inserts and segments. As predicted the farmers still did not use the internet in their agriculture activities. Even though the majority of them knew that the agriculture based websites do exist but they did not surf these available websites. To overcome these problems, one of DOA initiatives is through the establishment of Agri Bazaar website, in which farmers are highly encouraged to use this website for information dissemination and sharing and also widening their business networking. The respondents have agreed on this by saying

“...Agri Bazaar is a website made by the headquarters.... We are encouraging our farmers to use the Agri Bazaar for disseminating information related to agriculture which can provide them with business opportunity and widening their networking”

DISCUSSION

Based on the results gained, it seems that mass media offers huge benefits for DOA in disseminating the valuable agriculture information. FGD's done have proved that mass media is a useful tool to assist the DOA in disseminating the valuable agriculture information to the farmers and the DOA offices... As been mentioned earlier, the farmers and officers interviewed admitted that the agriculture information disseminated and received are very useful and relevant to them in term of educating them on the new agriculture technology, innovation and informed them on the success of their colleagues. They do use a lot and prefer to watch agriculture programs

aired on TV especially if the information is related to their agriculture activities. They also rely a lot on print media such as pamphlets and brochures to gain information on new technology and fertilizer. However, they do not rely on newspaper to gain the agriculture information due to the fact that they didn't know that such agriculture information are available on the newspaper. Farmers seem not to rely on the internet and radio to gain the information needed due to their preference to the “traditional media” such as television and print media. As have been deliberated, DOA has produced 20 types of printed publications. DOAs also produced some printed publications such as bulletin, brochure and pamphlet. Majority of the publication are published annually. To increase the frequency of the publication disseminated to the farmers indeed can enhance understanding on agriculture knowledge (Machila et al., 2006). Furthermore, if it is always updated with current information, this will enhance the development of knowledgeable farmers (Nielsen and Heffernan, 2006). The printed materials produced by DOA are not just as information for farmers but also to educate them on something specific. Books on planting manual, books on plant technology package and handbook on the agriculture development in sloping land are made specifically to educate and give guidance to the farmers and DOA officers on new agriculture technology or planting method. DOA also has sent their articles to international magazines such as Garden Asian, besides DOA also has a column in MAS Airlines magazine “Going Places”. The magazine is placed in the MAS plane for passengers to read. This can be one of the ways for DOA to disseminate agriculture information such as local agriculture products internationally.

The current agriculture television programs are aired through programs such as Agro Journal, Agro Tech and Our Earth where the role of DOA here is to provide the sources needed while in the TV8 and TV9, DOA has paid for their advertisement to be aired. Once a year, officers from DOA are invited to a meeting in RTM to share their ideas with RTM on what kind of agriculture program they want to produce. TVS owned by the Selangor government is an online television channel that advertises, promote and inform the viewers about agriculture SME products. DOA through Klasik Nasional FM, produces an agriculture program known as Best Tani and it is aired every Wednesday and Thursday, from 12.30 to 1.00 pm. DOA Selangor with the cooperation of Selangor FM has produced a radio drama series that focused on paddy plantation entitled “A Drop of Sweat a Grain of Diamond”. Television and radio are indeed significant tools in disseminating agriculture information to farmers and officers. Previously, studies done by Opara (2008) and Aina (1986) have demonstrated the effectiveness of these two media in disseminating and enhancing the

farmers' and officers' understanding on agriculture.

The relationship between agriculture and internet has promised to have significant impacts on the economic and social welfare of the farmer as well as agriculture marketing and agriculture input firms (Goe and Kenny, 2005). In parallel with this, DOA seems to use the advantage that internet has to offer for the purpose of disseminating agriculture information, educating the farmers and offer online services. At the state level, DOAs has its own website and their officers are active in using blogs to disseminate agriculture information. Among the active blog is padiksu.blogspot.com. Besides, DOA has started to introduce the mobile web service which has proved to be a successful method in disseminating agriculture information in the country such as China. Frequent evaluations by DOA coordination committee and also MAMPU mean that the information that is provided in the website are always updated and ensured its quality. Having all of this updated information will aid the farmers in seeking valuable information. Furthermore, attractive website design can be one of the ways to attract more youth to be involved in agriculture (Hughes-Hassell and Miller, 2003).

CONCLUSION AND RECOMMENDATION

Based on the number of printed materials produced, DOA has a good number of printed publications. However, it is suggested that the DOA at the district level can be allocated some budget to produce their own publications. This can overcome the problems of printed materials not reaching at the grassroot level. From the results gained it can be observed that the majority of the printed materials are published annually, perhaps the frequency of some DOA publications can be increased. To cooperate with local newspapers such as Utusan Malaysia is seen as a wise step of DOA in disseminating agriculture information. This is because Utusan Malaysia is one of the main daily newspapers in Malaysia. Nevertheless, DOA should encourage other daily newspapers such as Harian Metro, The Star, Sin Chew Jit Poh and Tamil Nesan to have their own agriculture newspaper inserts. The evaluation system on the publications that are produced can be initiated by DOA and this will increase the quality of the publications.

The mobile system is seen as a significant system for agriculture information seeking in the future, as the mobile phone users are increasing day by day and the mobile system has a huge potential to be further improved. From this study it is recommended that the mobile web started by DOA should be also practiced by other government agriculture agencies. Till now there are only five agriculture agencies that have this system. DOA themselves can produce their own television and radio

programs. Besides, the number of agriculture radio program should be doubled, till now there are only Klasik Nasional FM and four States FM radio that have agriculture programs. In this case, DOA can provide more sources for RTM. Attractive agriculture media programs can be a main medium of DOA to promote agriculture industry and products to the public. It is suggested that the media programs on agriculture should be increased, to produce more, it is suggested that DOA can cooperate with giant agriculture based companies such as Sime Darby and Bio Tech Corp.

It is important to ensure that the farmers receive and use the agriculture information provided by DOA. It is suggested that DOA can produce brochures or pamphlets that would inform farmers regarding the dates of DOA's printed publications. In the brochure or pamphlet, the schedule of air time of television and radio agriculture programs can be included along with a list of agriculture agencies websites.

Abbreviations: **DOA**, Department of agriculture; **CITES**, convention on international trade in endangered species of wild fauna and flora; **RTM**, radio television Malaysia; **MPOB**, Malaysian palm oil board; **USP**, universal service provision; **NITA**, national information technology agenda; **SALM and SOM**, scheme on good agriculture practice and agriculture Organic Scheme; **DOAs**, department of agriculture selangor; **CME**, committee on media extension; **JKKK**, village development and security committee; **MAHA**, Malaysian agriculture horticulture and agrotourism exhibition; **MAMPU**, Malaysian administrative modernization and management planning unit; **TVS**, TV selangor.

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