



DeRISK SE Asia Report

Usability Assessment of the SESAME Application in Myanmar

Specialized Expert System for
Agro-Meteorology Early-Warning

Country partners:



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About DeRISK SE Asia

The project Applying seasonal climate forecasting and innovative insurance solutions to climate risk management in the agriculture sector in Southeast Asia, or DeRISK SE Asia, is led by the World Meteorological Organization (WMO) and co-implemented by the University of Southern Queensland (USQ) and the Alliance of Bioversity International and the International Center of Tropical Agriculture (Alliance Bioversity & CIAT). With funding support from the International Climate Initiative (IKI) of the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV), the project aims to develop climate risk management systems, best practices, and insurance products that will shield smallholder farmers and businesses across the agricultural value chain in key Southeast Asia countries from physical and financial disaster associated with climate change. It assists governments in developing national and regional adaptation and risk management strategies. To know more about our project, please visit: <https://deriskseasia.org/>.

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Abbreviations

CDZ	Central Dry Zone
DAR	Department of Agricultural Research
DMH	Department of Meteorology and Hydrology
DOA	Department of Agriculture
PP	Plant Protection
SEAD	Sustainable Enterprises and Agricultural Development
SESAME	Specialized Expert System for Agrometeorology Early-Warnings
UCD	User-Centered Design

Evaluation of Specialized Expert System for Agro-Meteorology Early-Warning (SESAME) application in Myanmar using User-Centered Design (UCD) approach

Objective:

This activity aims to define the potential entry points for intervention to improve quality of interaction with and perception of SESAME applications based on deep understanding of the users' needs, priorities and preferences. The SESAME app evaluation is divided into two phases: i) characterization of next- and end-users (Department of Agriculture extension workers and farmers leaders; and ii) content providers (DAR agronomic experts, DOA, DMH).

The results of this user-centered design assessment can provide inputs to the improvement of the system for upscaling in the dry zone.

I. General user information

The assessment was conducted with 15 farmers from Nyaung U township and five extension staff from public and private sectors. Age level of farmer respondents is between 34 – 62 years with an average of 47 year and that of extension officers is 23 – 37 with the average of 28 year. Only two farmer respondents graduated and the majority of others did not finish high school education. The extension officers are graduates with agricultural background and working in the fields of seed registration, micro-finance, marketing and extension, research and extension, and plant protection, respectively. Both groups are familiar with mobile phone and software applications. Groundnut and pigeon pea are the major crops commonly grown by farmer respondents while second most important crop is tomato, and other crops include black gram, soya bean and maize. The profile of the respondents can be seen in the table below

	Farmer respondents	Extension officers
Total number of respondents	15	5
Age: level/ average	34 – 62 / 47	23 – 37/ 28
Gender: ratio (M: F)	15:0 (100%: 0%)	2:3 (40%: 60%)
Experience with mobile applications		
• Social media	12 (80%)	5 (100%)
• agri apps. (Green Way/Htwet Toe/PP/fibre crops/SEAD)	9 (60%)	3 (60%)
• agri websites	0 (0%)	1 (20%)
• online meeting	0 (0%)	1 (20%)
• money transfer apps.	1 (7%)	3 (60%)
• language apps.	0 (0%)	1(20%)
Computer literacy		
• Microsoft package (word, excel, power point)	0 (0%)	4 (80%)
• Internet, email, cloud storage	0 (0%)	5 (100%)
Mode of communication with others		
• Mobile phone calls	15 (100%)	5 (100%)
• Video conferencing	0 (0%)	5 (100%)
• Voice notes	1 (7%)	5 (100%)
• Instant messaging (Messenger, Viber, Whatsapp, Telegram, etc)	4 (27%)	5 (100%)
• E-mail	0 (0%)	5 (100%)

II. Understanding User Experience (UX) of SESAME application



Figure 1. User Experience Honeycomb (Peter Morville, 2004)

Qualities of UX	Description
Useful	Content should be original and fulfill a need or purpose
Usable	Tool (website or an application) must be easy to use
Desirable	Image, identity, brand, and other design elements are used to evoke emotion and appreciation
Findable	Content needs to be navigable and locatable onsite and offsite
Accessible	Content needs to be accessible to people with disabilities
Credible	Users must trust and believe what you tell them

a. Useful

Both the farmer and extension officer respondents answered they know the overall purpose of the SESAME application. However, the answers to the follow up question show their different opinions. Some responded that the purpose of SESAME is to provide weather information while others answered that it is to support crop and livestock activities. If we divide their responses into three categories, it was found that 20% of both farmers and extension officers thought that SESAME is just to provide climate information only, while 20% of farmers and 40% extension officers viewed the purpose of SESAME is to provide agricultural related information only. 60% of farmers and 40% of extension officers' opinion on the SESAME is a tool to provide both climate and agricultural related information and technical advisories (Figure 2)

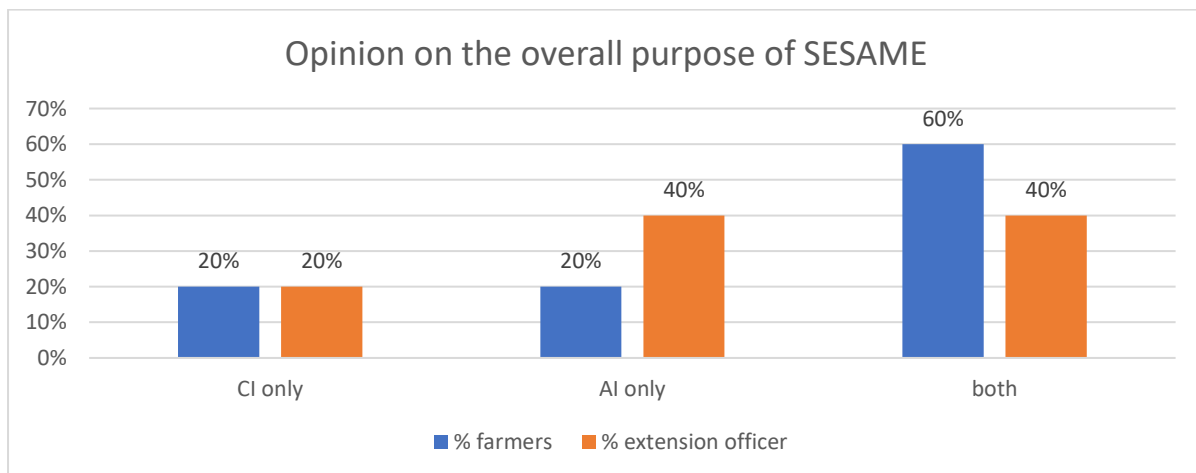


Figure 2. Opinion on the overall purpose of SESAME. CI: climate information; AI: agricultural related information.

With regard to the usefulness of the app., all the farmer respondents said that the SESAME app. is essential to perform their crop production, while only one extension officer answered that the app. is

essential to perform her job function. Weather forecasts and climate outlook are relevant section of the SESAME for 93% of farmers, and crop data and crop advisory generation are relevant for 60% and 50% of farmers, respectively. Feedback system, such as a call center, is relevant for only 7% of farmer respondents (Figure 3). Feedback system in this case refers the call center through which users can get advice directly from the experts. Unfortunately, the contact numbers provided in the SESAME do not answer any query. There are two contact phone numbers and one of them replied she no longer with SESAME and refers to contact directly to the DOA while another one has no answer. However, the user think it is relevant having this section in the SESAME.

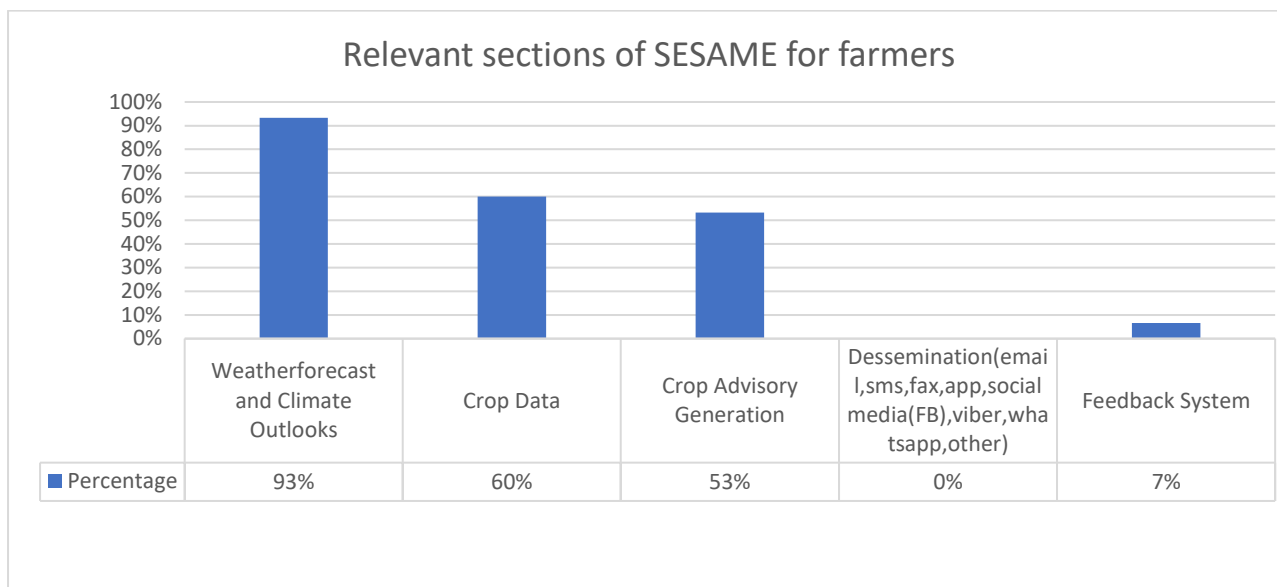


Figure 3. Relevant sections of the SESAME for farmers

Township level is the most important forecast resolution for both farmers and extension officers as 80% each from both groups preferred township level forecasts. The second most crucial forecast resolution is district level forecasts for above 50% both farmers and extension officers (Figure 4). The lead time to receive forecasts equally preferred from both groups is weekly basis, i.e., both farmers and extension officers preferred to receive all kinds of forecasts at least one week ahead.

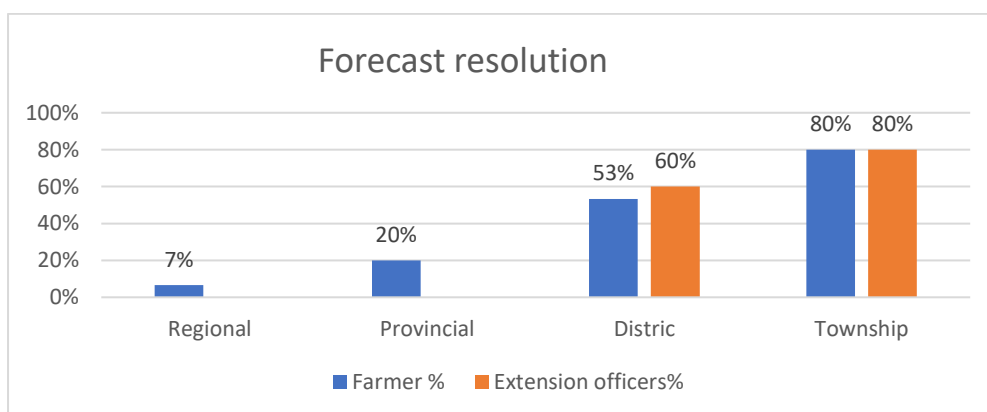


Figure 4. Preferred forecast resolution by the users

The weather and climate information from SESAME influence the timing and application of farming practices in both groups. For farmers, daily forecast is crucial for 27% – 40% farmers and, pentad (5-day) forecast is important for 33%-60% of farmers in the farming activities such as land preparation, variety selection, planting, pest management, fertilizer application and weeding. Weekly and decadal (10-day) forecasts are considered as less important in compare to daily and pentad forecasts (Figure. 5). For extension officers, the influence of pentad forecast is on all the farming activities mentioned above.

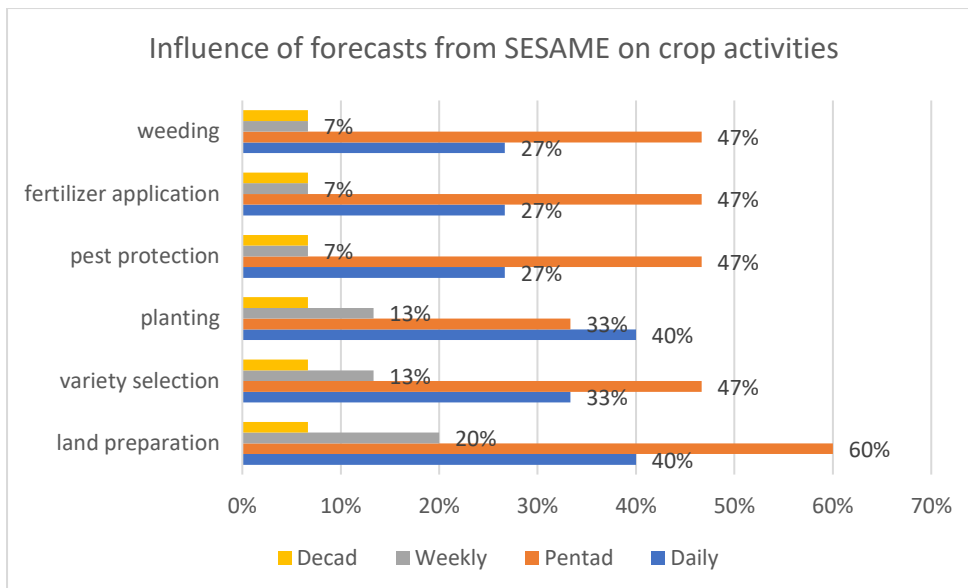


Figure 5. Influence of forecasts from SESAME on crop activities of farmers

For Myanmar, SESAME application only provides daily and pentad weather forecasts with township level resolution and, monthly and seasonal forecasts are not available yet for Myanmar. With regard to crop advisories, no advisory is available for some crops commonly cultivated in the township. In Nyaung U, tomato is widely grown across the township, but it was not included in the crop list of Nyaung U. Extension officers also pointed out that SESAME does not support the advisories for vegetables and perennial crops and post-harvest handlings. The responses also highlight that the crop recommendations are only for the normal condition and no advisory separately mentioned for wetter and drier than normal conditions. Based on the direct observation, it was learned that recommendations for wetter and drier than normal conditions are available in the English language version, but it could not be seen in Myanmar language. There are also lack of information for livestock, market information and space for direct consultation with crop experts.

Apart from the climate information available in SESAME application, the demand for additional climate information was also accessed with both respondent groups. It was found that 40% to 60% of farmers and extension officers want to know about past weather information for the last week and last month and nowcasts. 40% of farmers also demanded the 24-hour forecasts and monthly forecasts, and 60% of extension officers are interested in bi-weekly forecasts (Figure 6).

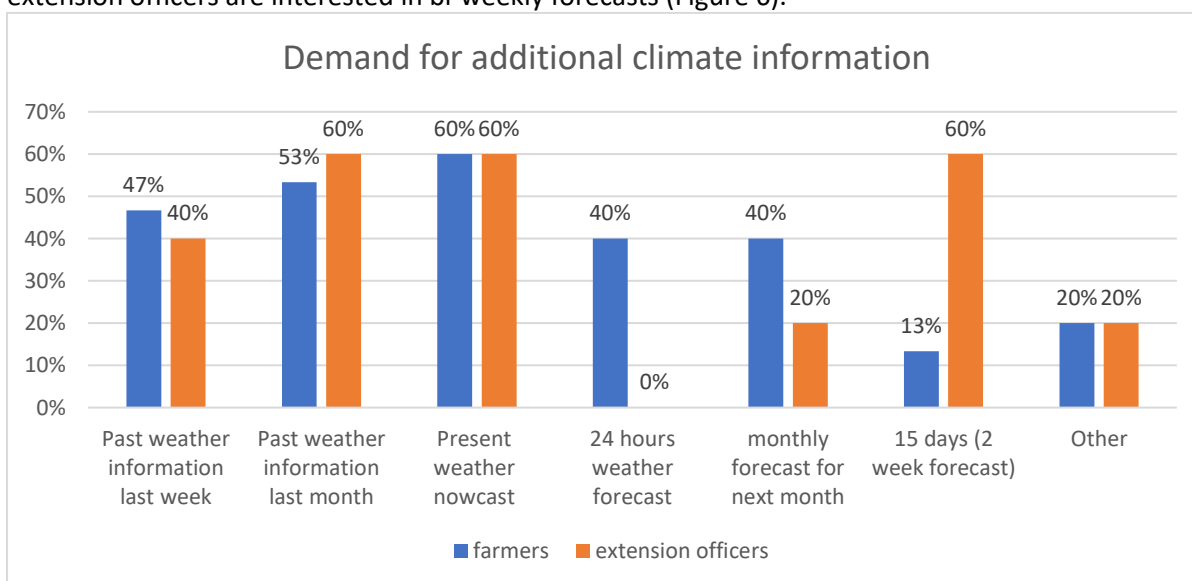


Figure 6. Demand for additional climate information

In addition to the information available in SESAME, more than 80% of farmers and extension officers want to know more about the crop preparation and maintenance practices such as planting and harvesting date recommendations, crop and variety selection and, the timing and amount of the application of fertilizers and pesticides. Information related to irrigation timing, crop market, step-by-step preparation for crop activities and articles for crops are also demanded by some farmers and extension officers as well.

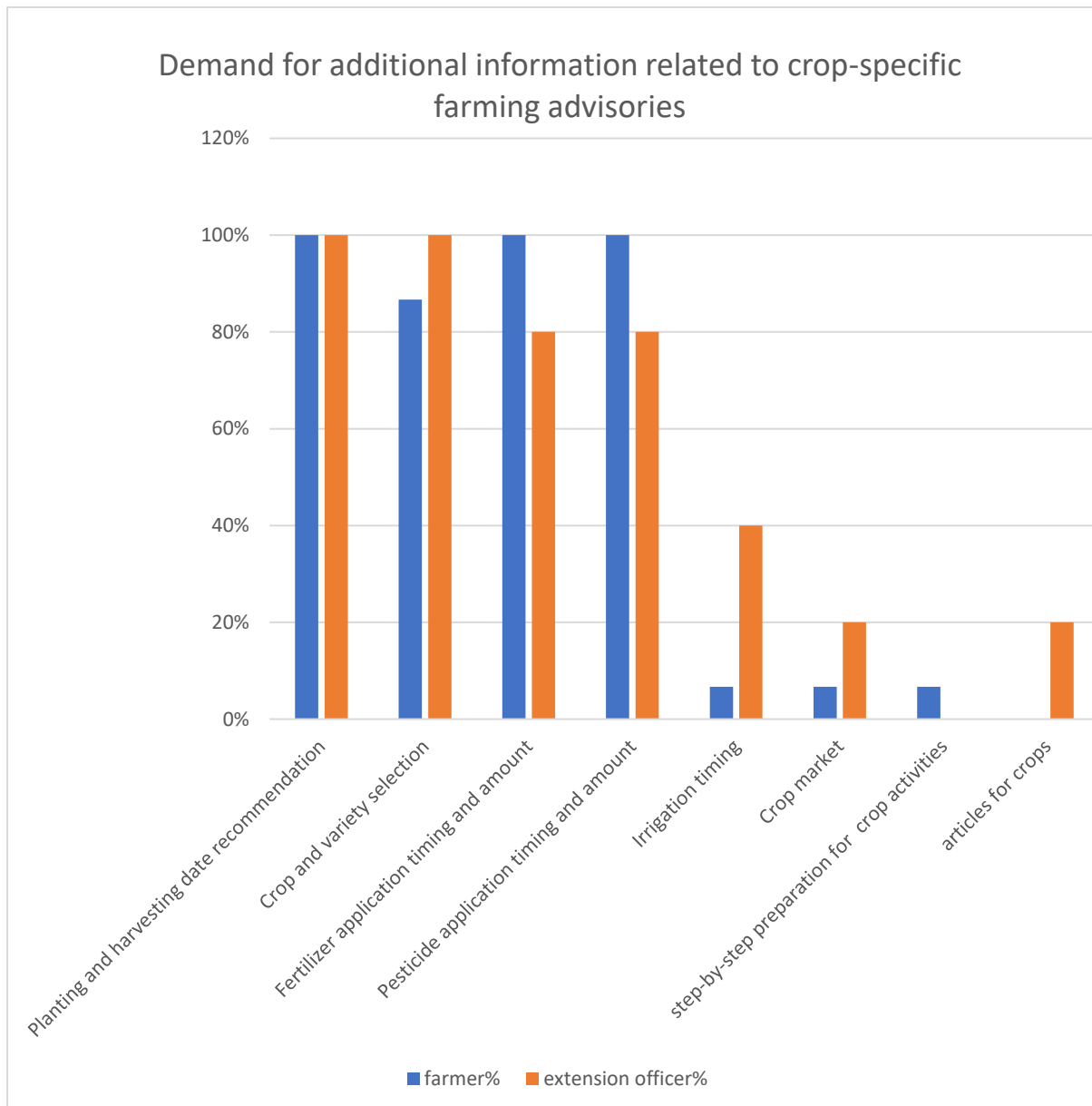


Figure 7. Demand for additional information related to crop-specific farming advisories

The information for natural disaster early warning and responses are not currently available in the SESAME. There are some important information regarding the natural disaster demanded by the users. According to the results on the interviews with both groups, 100% of farmers as well as extension officers want to see drought warnings in the SESAME, while more than 60% of both users demand for the early warning related to heat damage. The demand for information related to natural disaster early warning can be seen in Figure 8.

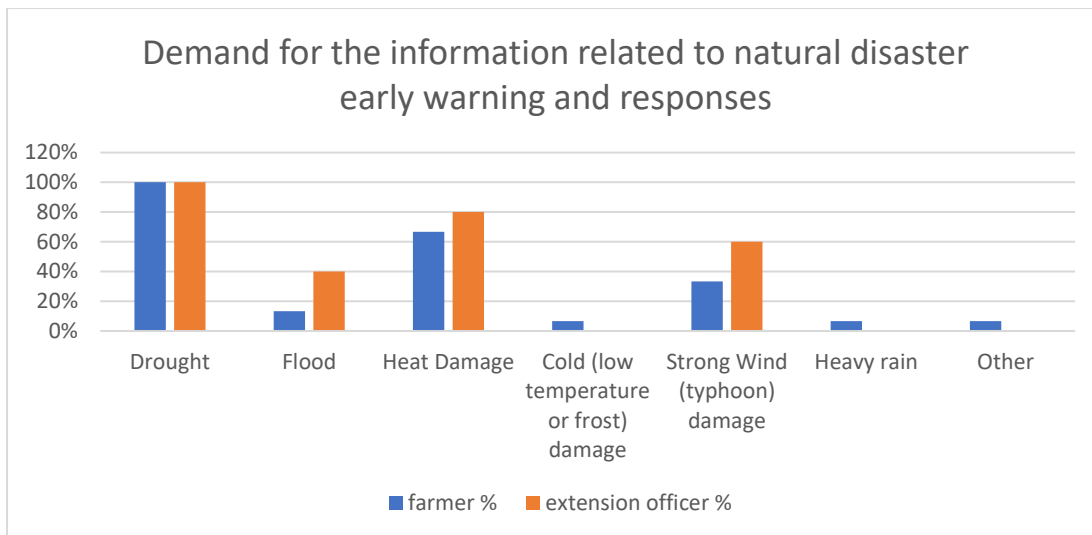


Figure 8. Demand for information related to natural disaster early warning and responses

Other additional information needs from farmer respondents include market price information, market place for selling and buying of products, space for consultation with experts and, those from extension officers include Q&A section and advisories for vegetables, horticulture and perennial crops.

The reason for using SESAME application by the farmers differ from that by extension officers. The reasons in this case refer the users' expectation from the SESAME. Majority of farmers (87 – 100%) use SESAME app. to access weather and climate forecasts for planning and decision-making purposes and weather-based crop advisories for their farm management activities. More than 53% of farmers expected to get additional information related to weather/climate, business purposes and social networking from the SESAME. For the extension officers, 80% are using the app. for additional weather and climate information while less than 50% use the app. for other purposes like accessing weather and climate forecasts for cropping purposes, receiving the weather-based crop advisories, etc.

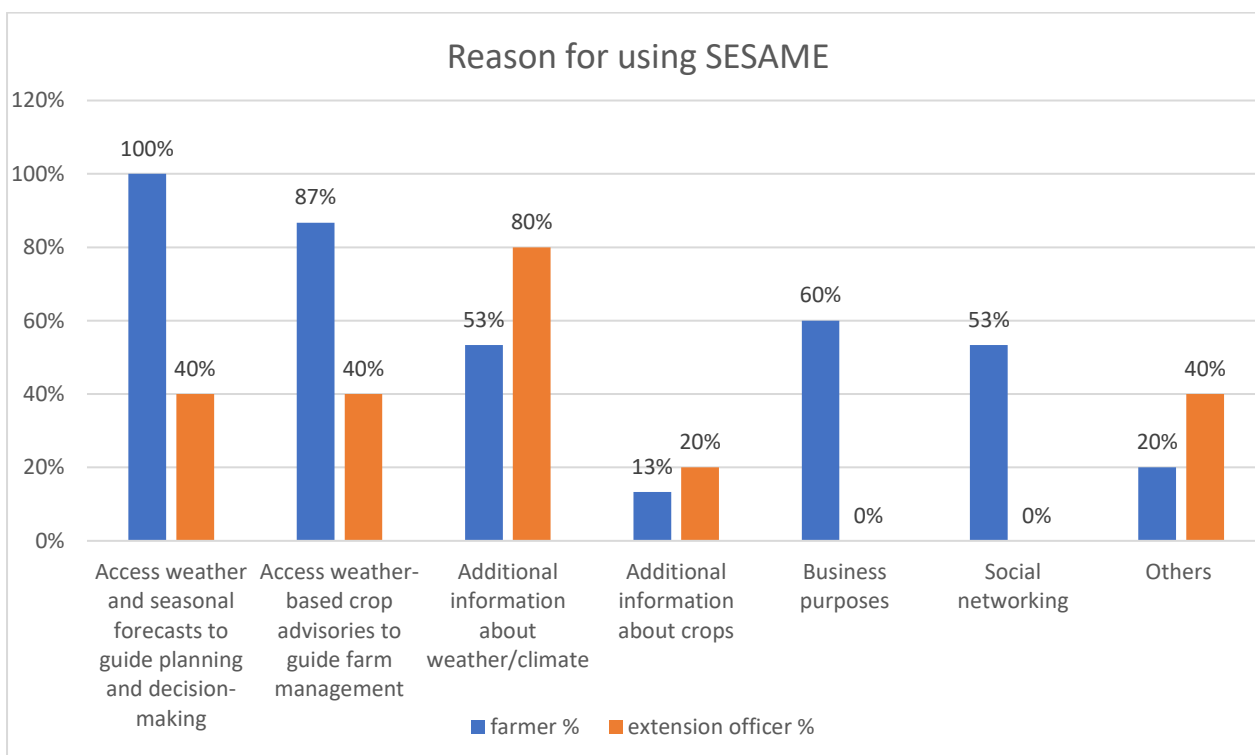


Figure 9. Reason for using SESAME by farmers and extension officers

In addition to SESAME, both the farmers and extension officers use other sources of information for weather/climate forecasts and crop advisories. The most common source is the Facebook page of Su Su San to which 73% of farmers and 80% of extension officer relying for climate and weather forecasts. Other sources for climate and weather information being used by farmers are TV (67%), radio (47%). Regarding the weather-based crop advisories for farmers, 40% use Htwet Toe and 13% use Green Way and SEAD apps. SEAD application is an online platform providing technical inputs to farmers, agriculture and livestock advisories and weather forecasts. The SEAD is developed by the technical cooperation of the Department of Agriculture, Department of Agricultural Research, Livestock Breeding and Veterinary Department and Department of Meteorology and Hydrology, under the project Sustainable Enterprises and Agricultural Development – SEAD funded by UNDP and Ooredoo Myanmar Company. Other online platforms providing agricultural advisories are Shwe Thee Hnan (golden paddy) and PP (plant protection) apps. developed by the department of agriculture and, Yetagon (water fall) farmer extension services of Proximity Design.

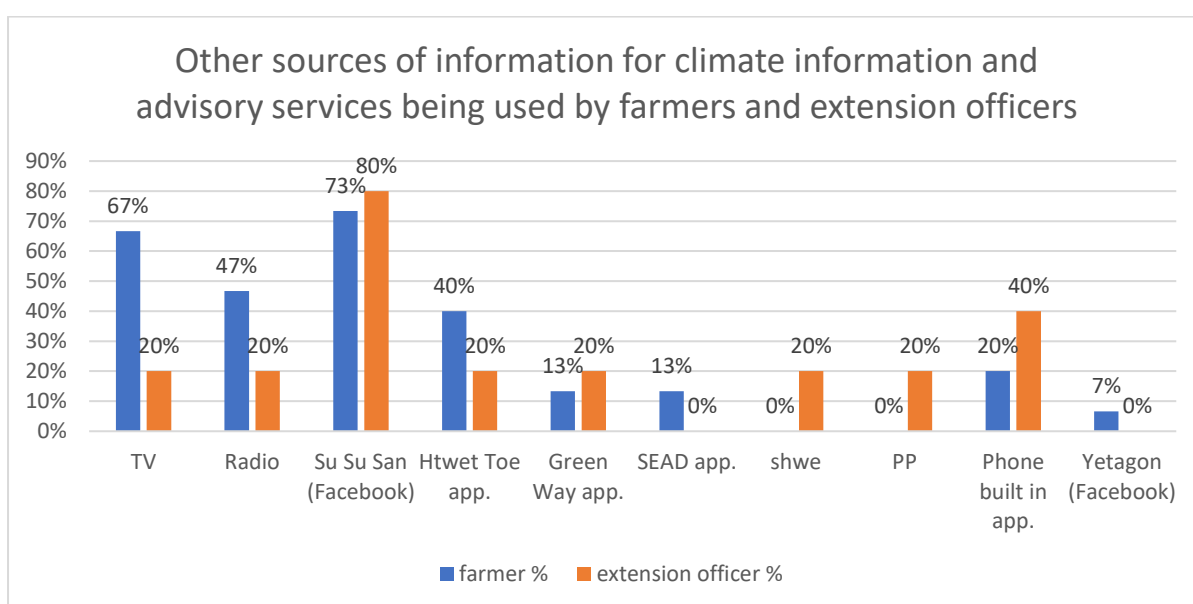


Figure 10. Other sources of information for climate information and advisory services being used by farmers and extension officers

b. Usable

Usability is assessed through investigating the reasons why people do not use the app, how often people use the app., based on the ease of access to the information. The opinion of farmers and extension officers almost the same on the reason why other people do not use the app. The reason for those who are not using the app. could be due to the weaknesses in advertisement and promotion of the apps, because most of the people do not know about the application according to the farmers and extension officers. Other causes are the limited accessibility to internet and compatibility of the devices. The opinions of farmers and extension officers on why other people not using the SESAME app. are mentioned in the table below

Respondents' opinion on people do not install the SESAME	do not know about the app.	accessibility to the internet	device compatibility	design complicated	not necessary to install	elderly persons not able to use the app.
Opinion of farmers	67%	60%	33%	27%	7%	7%
Opinion of extension officers	80%	40%	20%	0%	0%	0%

It was found that the frequency of using the SESAME app. by both respondent groups is good enough to catch up the update information of the app. Even the least frequent farmer user checks the information in the app. at least once a week. 50% of farmers use the app. at least once every day and 80% of extension officers use three times a week (Figure 11).

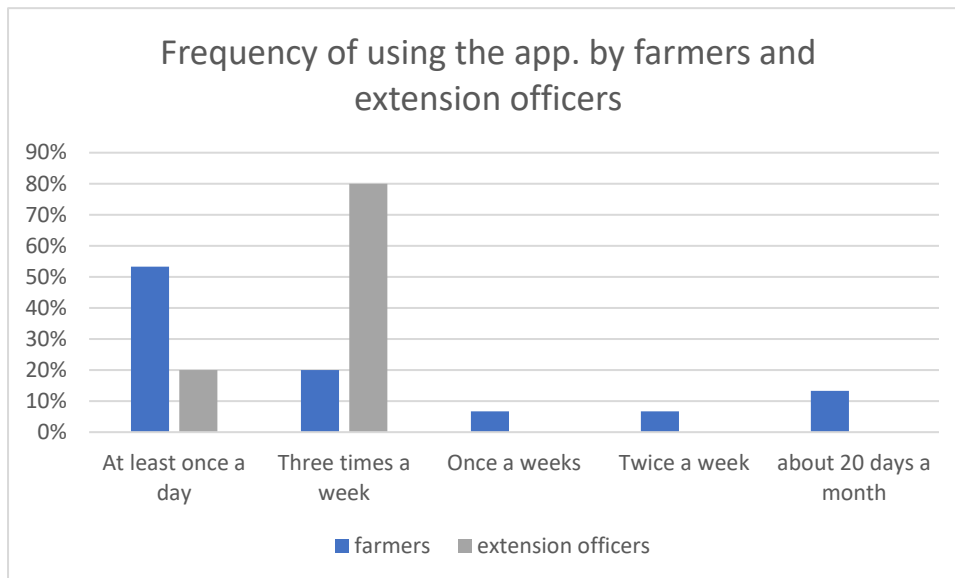


Figure 11. Frequency of using the SESAME app. by farmers and extension officers

Ease of access to the information in the SESAME is much better for extension officers than farmers. Extension officers need less than a minute to get or download the specific information they need from the app. For farmers, only 47% can access the required information within a minute. 20% of farmers need 2-5 minutes, 27% need at least five minutes and 7% need between 10 to 15 minutes to get the information they need from the app. depending on the internet connectivity. Loading time variations are probably depending on the internet speed of the location (rural vs urban) and the specification of the mobile devices that the different users are using.

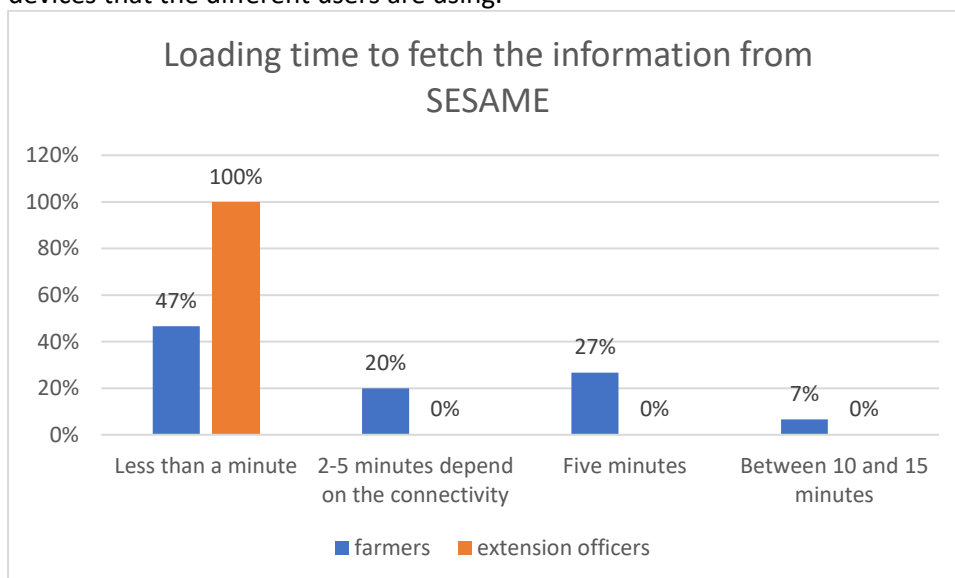


Figure 12. Loading time to fetch the required information from SESAME

Currently, SESAME app. cannot be used offline. Except two respondents from farmers who thought SESAME could be used offline, all the respondent groups prefer to get offline access for some information.

c. Desirable

SESAME produces daily weather forecasts for next 7 days and 5-day forecasts for next 10 days. These information products are available at the township level in the application while using the app. online. 73% of farmers and 60% of extension officers are fine to receive daily forecasts while using the app, but it was also learned by the assessment that 80% of farmers and 60% of extension officers prefer to receive the daily forecast via SMS. 7% and 20% each from both groups preferred to receive daily forecasts for 7 days in the form of smart phone pop-up alarm and video with explanation. 7% and 0% each from both groups preferred to receive daily forecasts for 7 days in the form of smart phone pop-up alarm and video with explanation.

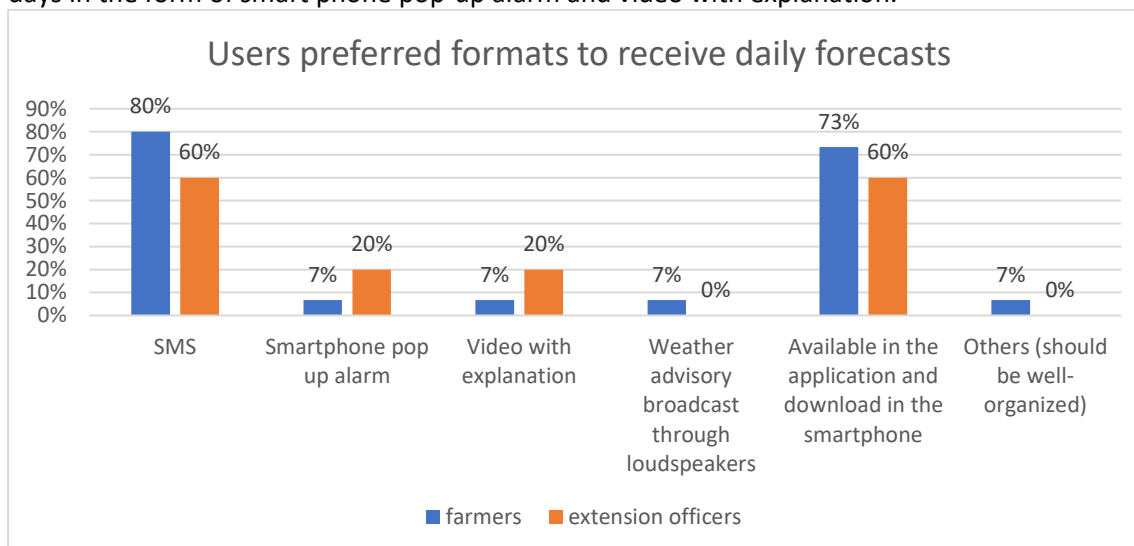


Figure 13. Users preferred formats to receive daily forecasts

In the case of 5-day forecasts, 13% of farmers want to receive 5 days forecast in the form of printed bulletin while 40% of extension officers want it via SMS. 93% of the farmers and 60% of the extension officers prefer the 5-days forecasts for next 10 days available in the application and download in the smart phone while 7% of farmers and 20 % of extension officer wants to receive the information as a video clip with explanation.

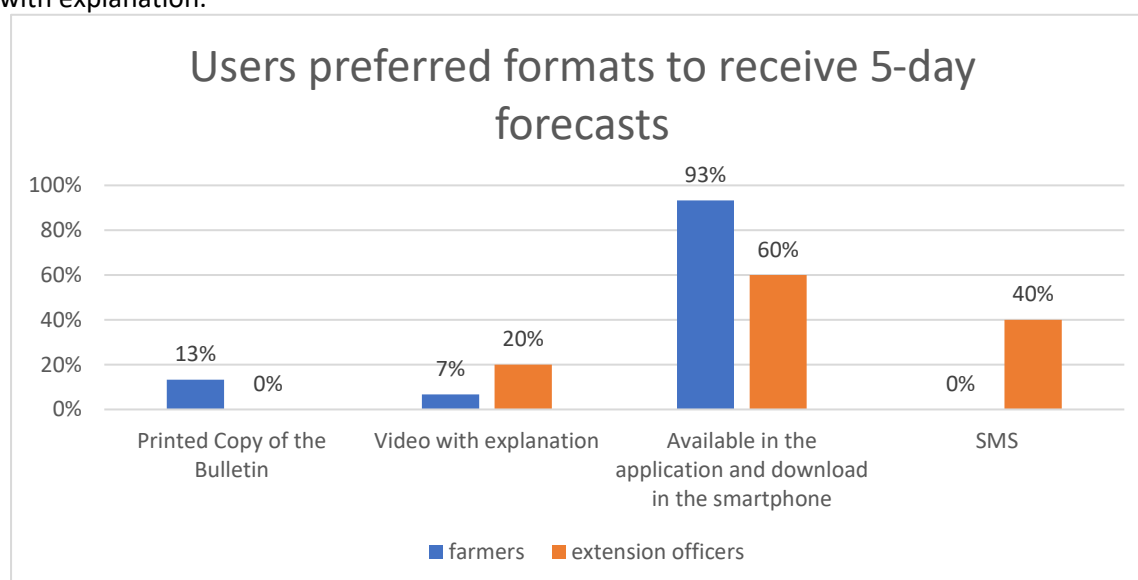


Figure 14. Users preferred formats to receive 5-day forecasts

With regard to the provision of clear and straightforward message of forecasts and agro-advisories, majorities of the respondents (93% of farmers and 60% of extension officers) show their satisfaction, but some feedbacks should be considered important. One of the extension officers remarked that she does not understand about the meaning of ideal condition. In fact, in English version, Ideal conditions mean the most suitable climatic condition for a particular growth stage in terms of pentad forecast only. But in Myanmar language version, the ideal conditions are provided not just in terms of pentad forecast, but

also for daily, monthly and seasonal forecasts but with no data for the latter ones. Another comment from extension officer is “advisories should be improved for better user experience”. It should also be considered important although the meaning of the comment is a bit broad.

In relation to attractiveness of the overall color palette of the SESAME application and website attractive, it was found that all the farmer respondents thought it is attractive while 80% of extension officers thought not. Major comments highlights on the logos of crops in the crop advisory section and suggestion to make them green (or) replace the symbol or photos of respective crops. Another comment is the overall internal color of the app. is light or dominated with white and suggested to be green or darker color. The comments from extension officers are mentioned in the table below.

Comments	frequency	%
logos of crop in the advisory section should be green,	1	20%
To use crop symbol and image related to the mode of action and damage due to pests	2	40%
Internal color is dominated with white or a bit light, should be dark color	2	40%
for farmers, it would be good if the app. name is a local name	1	20%

Concerning the attractiveness of the typography of the app., the farmers and extension officers feedbacks are mentioned in the table below.

	farmers		extension officers	
	frequency	%	frequency	%
Font style				
fine	8	53%	1	20%
fare	4	27%		0%
font size small	3	20%	4	80%
alignment				
fine	10	67%	2	40%
fair	4	27%	2*	40%
narrow	1	7%		0%
poor	0		1	20%
Color				
fine	9	60%	1	20%
fair	2	13%	1	20%
light	2	13%	1	20%
prefer black	2	13%	0	0%
dislike red	0	0%	1	20%
not match	0	0%	1	20%

*one respondent comments that the font size in the crop list uneven

With regard to the overall map visualization of weather and climate data, 80% of extension officers can easily understand the information on the map whereas, 20% prefer to see the information by words. For farmer respondents, 40% of them can easily understand the information on the map and another 40% do not understand the information, while the rest 20% prefer to get the information in different format. One farmer prefers to highlight his township in the map, another one suggested to express the boundaries of states, regions and townships clearly and, the last one prefers to see the information by words.

d. Findable

It was learned that 73% of farmers and 20% of extension officers can easily navigate through the SESAME mobile application and find the information that they are looking for and 23% of farmers and 80% of extension officers cannot easily access the information easily. However, 80% of extension officers thought that SESAME application is efficient to use in terms of fast navigation, practical and organized content. With regard to the improvement of navigation of the app., one of the extension officers suggested to add a section to express the major climate risks commonly occur in townships in relation to crops. 23% of farmers also thought the application is not efficient for fast navigation, practical and organization of contents. Their suggestions include to use local language as much as possible, to add separate sections for Q & A and market information and to complete the missing information in each section.

e. Accessible

It was found that all the respondents from both groups can understand the wording and terminologies used in the mobile application except one respondent from farmers. All the farmers normally use the app. at home and some 40% of them also use the app in any place where the internet connectivity is good. The use of SESAME application in terms of users' preferred places is expressed in the figure below.

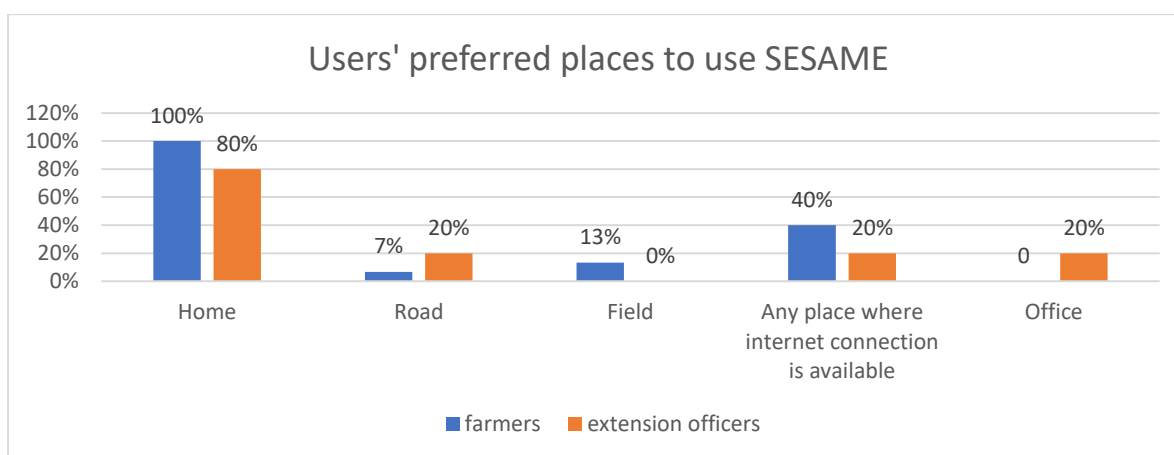


Figure 15. Users' preferred place to use SESAME

The device commonly used by both farmer and extension officer respondents is smart phone and 60% of farmers do not have stable internet connectivity when using the SESAME application. This is due to the compatibility of phones for some 27% of farmers, expensiveness of mobile data for 53% and unfamiliarity with the app. for 33%. For extension officers, only 20% has the internet connectivity problem with the reason of data package prices. However, all of those having poor internet connectivity responded that they do not think the cost of internet data to connect to the SESAME application is a problem.

All the users of SESAME do not need to ask other people's approval or permission for you to log in on SESAME application, but there are some difficulties that the users experienced in signing up for the SEAME application. The level of difficulty experienced by the proportion of farmer and extension staff users are expressed in the table below.

Level of difficulty	Farmers		Extension officers	
	#	%	#	%
Easy	1	7%	4	80%
Not so easy	3	20%	1	20%
Difficult	11	73%	0	0%

According to the table above, majority of farmers experienced difficulty in signing up to use the app. after installation. There are two things, one thing is due to language as the registration can be done only in English, and another thing is the complexity of steps in the registration process.

f. Credible

It was supported by the farmers and extension officers on the fact that SESAME could be more effective if the tool is accompanied by a technical training like Farmers' Field School (FFS). By doing this, farmers and extension officers can integrate the information from the app. into the FFS curriculum and establish a locally adapted mechanism for the best use of climate information and advisory products with best practices of crop activities through experiential learning process. For this purpose, the users should have the reliable resource to address their problems experienced in using the SESAME. The following are the findings on the assessment on how the users try to cope with their difficulties experienced while using the app.

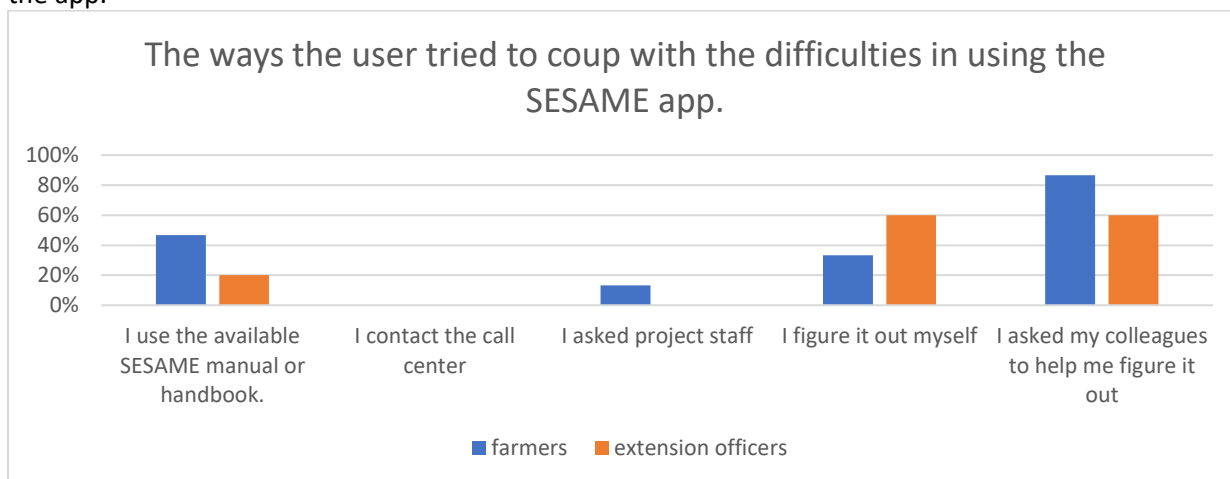


Figure 16. The ways the user tried to cope with the difficulties in using the SESAME app.

The figure shows that most of the users asked their colleagues to help for their difficulties in using the app and, some of them try to resolve by themselves.

It was also found that 100% of both farmers and extension officer used to share the information from SESAME via people's network. A few farmers share in meetings, online messaging, mobile phone calls and in trainings.

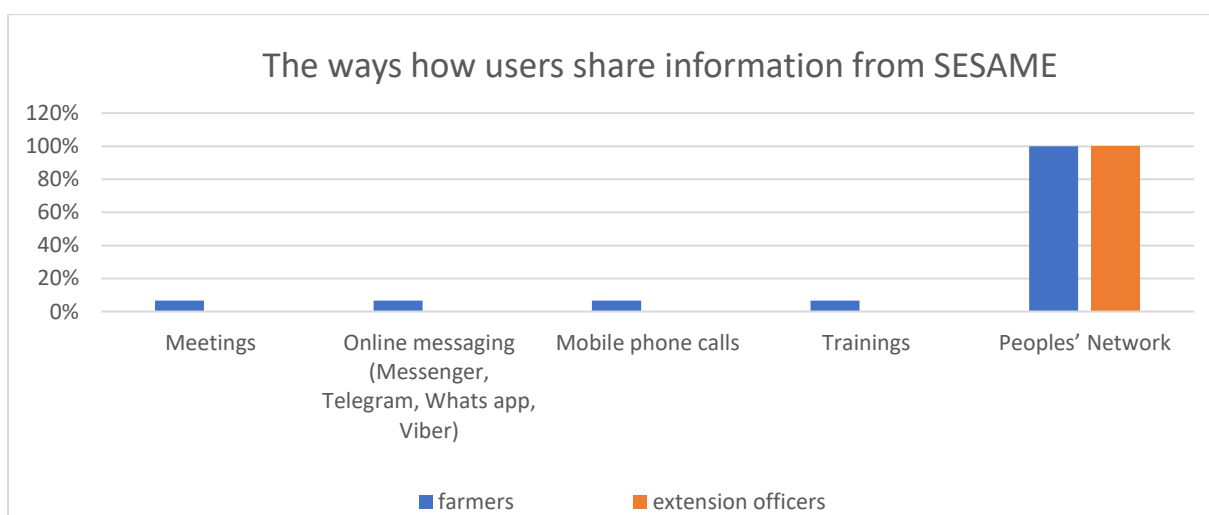


Figure 17. the way how people share information from SESAME

In relation to the better use of SESAME application, all the farmer and extension officer respondents suggested to provide additional training on the use of the application. Again, 80% of farmers also wish to have step-by-step manual on the use of the application.

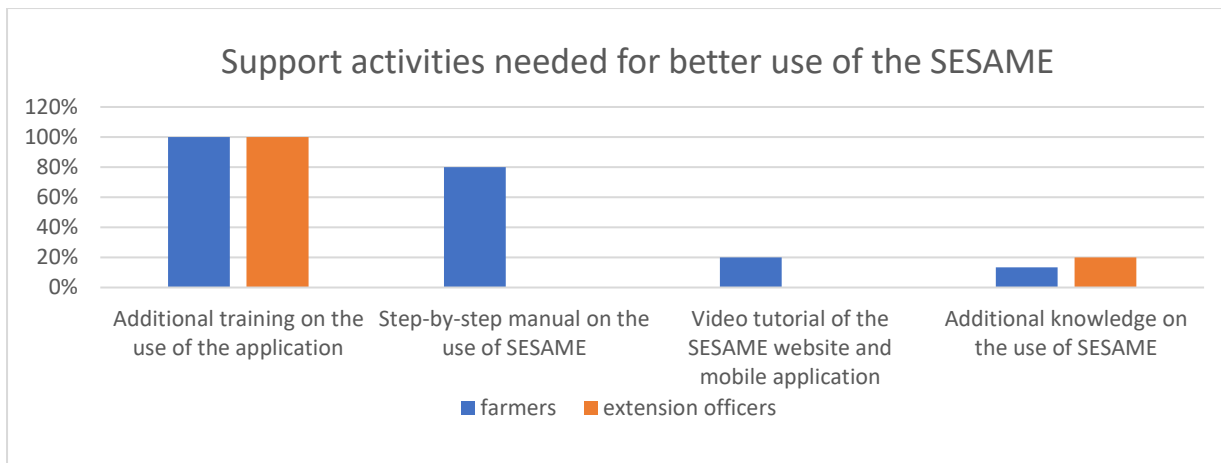


Figure 18. Support activities needed for better use of the SESAME application

It was learned that farmers have less access to extension officers and crop experts to discuss about the information received from the SESAME. 93% of farmers discuss the information from the app. among themselves, and 60% for farmers discuss with their family members and relatives. 40% of farmers discuss with neighbors and colleagues. Extension staff normally discuss with farmers, crop experts and friends.

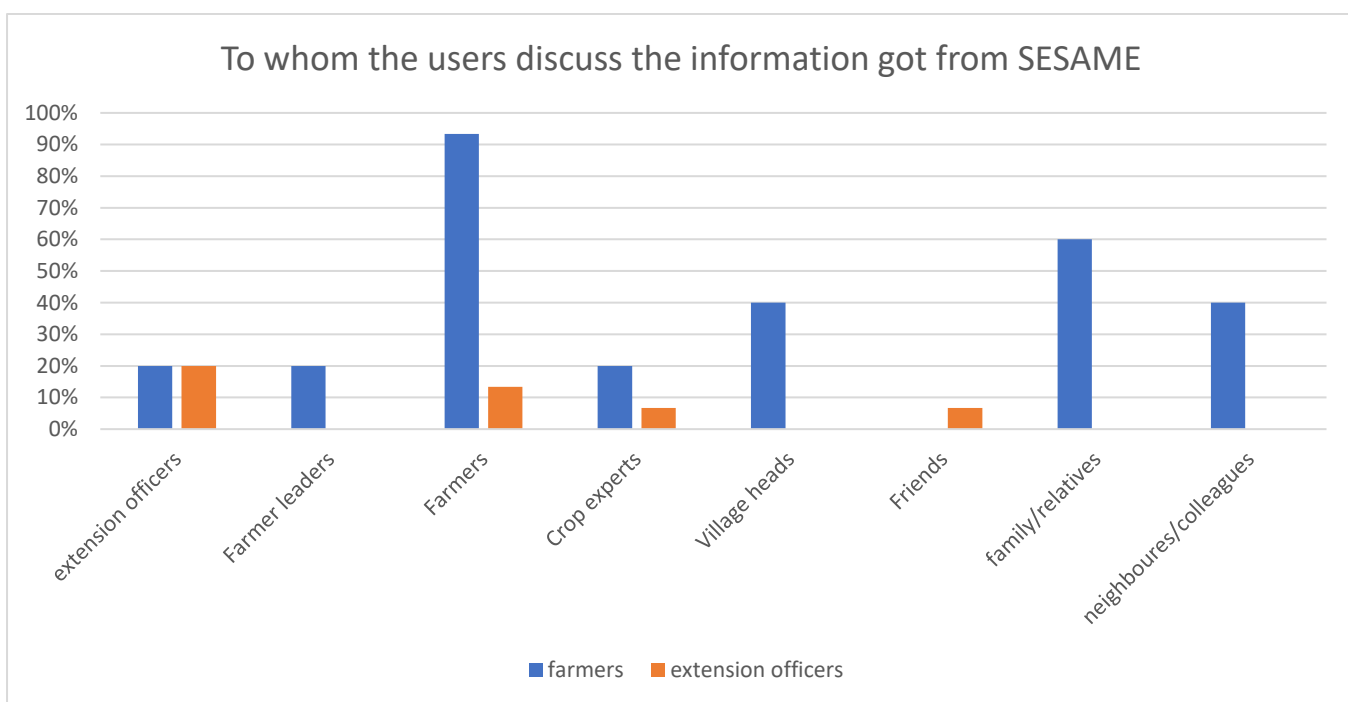


Figure 19. to whom the users discuss the information got from SESAME

With regard to the accuracy of the forecasts from the SESAME, the majority of both farmers and extension officers thought daily and pentad forecasts of the SESAME need to be improved in accuracy (Figure 19).

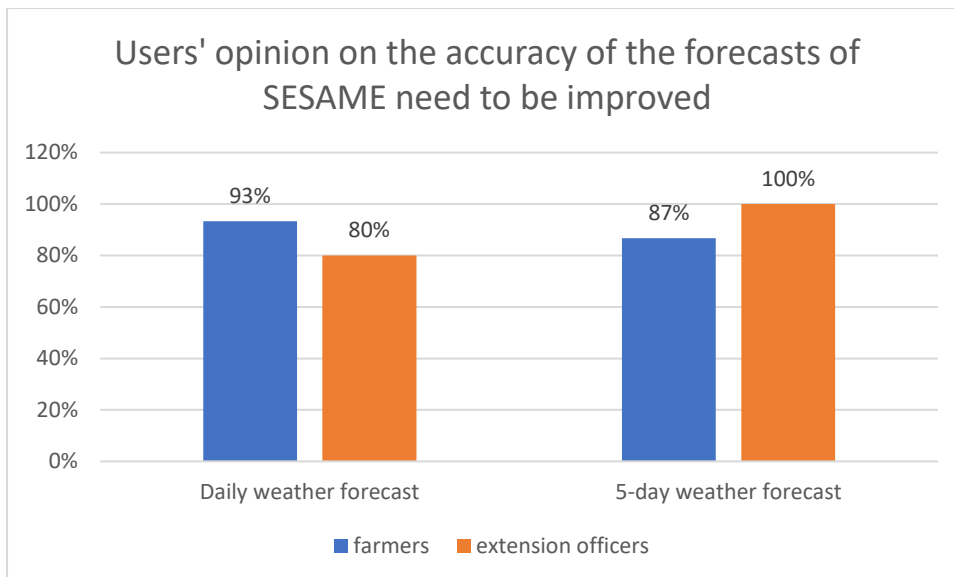


Figure 20. Users' opinion on the accuracy of the forecasts of SESAME need to be improved

Extension officers were also asked whether they know who provides local information to update the content of agro-advisories on SESAME for specific townships. It was found that 40% of the extension officers know the local information were provided by the Department of Agriculture (DOA) and 60% do not know who provides the information. According to direct observation and experience in working for the Decision Trees, the crop related advisories were provided by DOA, but these are not updated according to the weather forecasts except township DOA officials participated in the validation of crop decision trees.

SESAME was first introduced to the respondents in August 2020 as part of the project activities and the purpose to follow up with this assessment. All the farmer respondents were provided the training on the use of SESAME with demonstration. Almost all those farmers know how to interpret the crop data and agro-advisories. We also assessed the users' opinion on what will happen if the tool provides wrong information, the responses are found as below.

Users' opinion on what will happen if the tool provides wrong information	farmers		extension officers	
	#	%	#	%
crop damage, economic loss	1	7%		0%
losses in seeds, labor costs	1	7%		0%
not much affected	4	27%		0%
damage could be high	1	7%		0%
disturbance to crop activities	4	27%	1	20%
crop loss, yield decrease	2	13%	3	60%
people will be frustrated	1	7%	1	20%
n.a	1	7%		0%

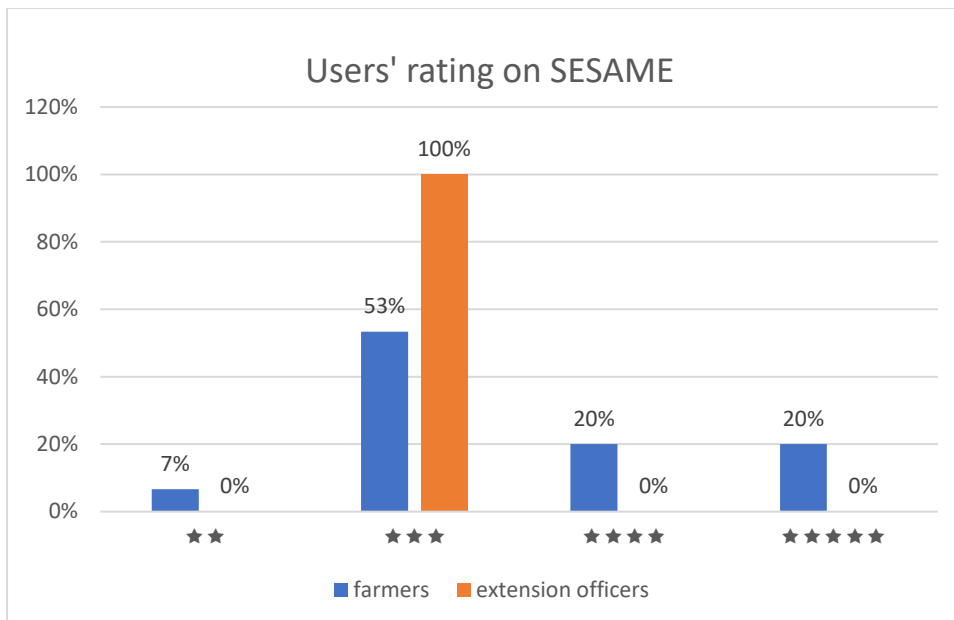


Figure 21. Users' rating on SESAME

III. Conclusion and recommendations

Useful

Farmers are very much interested in climate information services based on the fact that they also use Television programmes and Su Su San. Su Su San is a meteorologist residing in US and she is providing the weather forecasts information via her own Facebook page. It was learned that farmers have large expectation on SESAME to provide reliable climate advisory services. For their farming activities, farmers largely rely on daily and pentad forecasts, while monthly and seasonal forecasts are not available in SESAME. Due to technical and language issues, crop advisories for wetter and drier conditions are not available and it is recommended to fix the technical issues in local language version. Farmer users want to know past weather records for last week, last month, nowcast and forecast for the next month. Crop advisories for drier, wetter and normal conditions should be expressed separately in the Myanmar language version.

Crop advisories should cover the recommendations for planting (sowing) and harvesting dates, crop and variety selection, and, dosage and timing of fertilizer and pesticide application. The users also want to see the early warnings for drought, heat damage and cyclones. There are contact phone numbers provided in the 'call center' section, but none of these cannot be contacted. It is recommended that the developer should contact to relevant information providers to update the contact persons. In addition, farmer users want to use SESAME as a platform where they can share their crop related problems and get advisories from experts and experience from other users. They also want to use this space also as a market place for selling and buying of agricultural inputs and products.

Usable

Results show that most of the farmers apart from those interviewed do not know about the SESAME and some farmers could not afford to buy data package. Poor and marginal farmers can only use lower-priced smart phones and this could affect the compatibility of SESAME to install in their phones. It was supported by the fact that the loading time to fetch the information for farmer users is a bit longer than that for extension officers. This may also be due to the connectivity of mobile phones is slow in rural areas. Despite these barriers, it was learned that farmers are willing to access the SESAME as more frequently as possible. In this respect, it is recommended to carry out more proactive advertisement of SESAME to promote its use in rural areas.

Desirable

It should be noted that the users want to have SMS notifications for daily forecasts. Overall color palette is light and the thumbnails in the crop lists as well. Font size is a bit small and the color is a bit light. Font alignment a bit narrow, maybe they refer line spacing. The respondents suggested that the thumbnails to be green or replaced with logos/symbols or photos of respective crops. Font size should be made a bit bigger and font color should be black or dark color.

Findable

There are still navigation issues to reach the information. If possible, it is recommended to create or add separate sections for different categories of information such as pests and diseases, market information and, Q&A section or discussion platform (similar to a Facebook page) to discuss the crop related problems and get advisories from experts and, make linkages from one section to another to enhance the fast navigation and user satisfaction.

Accessible

Major accessible issue is registration. The registration can be done by English language only. It would be good if the registration could be done in Myanmar language after selecting the user's country. It would be even better the name of countries be provided their own language. Another recommendation is to make the process of registration easier.

Credible

Based on the findings, it was learned that most of the users still need to be familiar with the application. They approach people around them like their colleagues when they have problems in using the app, sometimes figure out by themselves. This shows need of supporting network for farmers to promote the use of SESAME in their farm activities. Additional training on effective use of SESAME integrated with Farmer Field School programmes is recommended to promote the reach of the application among farmers and promote the credibility of SESAME through integration with field activities. With regard to the accuracy of the forecasts from the SESAME, the majority of users indicated that the daily and pentad forecasts of the SESAME need to be improved in accuracy.

Annex I: Questionnaire for the Evaluation of Specialized Expert System for Agro-Meteorology Early-Warning (SESAME) application in Myanmar using User-Centered Design (UCD) approach

Objective:

This activity aims to define the potential entry points for intervention to improve quality of interaction with and perception of SESAME applications based on deep understanding of the users' needs, priorities and preferences. The SESAME app evaluation is divided into two phases: i) characterization of next- and end-users (Department of Agriculture extension workers and farmers leaders; and ii) content providers (DAR agronomic experts, DOA, DMH).

The results of this user-centered design assessment can provide inputs to the improvement of the system for upscaling in the dry zone.

General user information

Name:	
Age:	
Gender:	
Profession:	
Name of institution:	Not applicable for farmer respondents
Academic background/ Technical expertise:	
Main job responsibilities:	Not applicable for farmer respondents
Major tasks relevant to the job:	Not applicable for farmer respondents
Computer experience (specify software and programs):	Not applicable for farmer respondents
Computer skills proficiency (basic, intermediate, advance):	Not applicable for farmer respondents
Any experience in using mobile application	
What do you usually use to communicate with your colleagues? Or to farmers?	<input type="checkbox"/> Mobile phone calls <input type="checkbox"/> Video conferencing <input type="checkbox"/> Instant messaging (Facebook groups, Messenger, Viber, Whats app., Telegram, etc.) <input type="checkbox"/> E-mail <input type="checkbox"/> Others. Please specify _____ Social Media (Mostly Facebook and Viber)

Understanding User Experience (UX) of SESAME application



Figure 2. User Experience Honeycomb (Peter Morville, 2004)

Qualities of UX	Description
Useful	Content should be original and fulfill a need or purpose
Usable	Tool (website or an application) must be easy to use
Desirable	Image, identity, brand, and other design elements are used to evoke emotion and appreciation
Findable	Content needs to be navigable and locatable onsite and offsite
Accessible	Content needs to be accessible to people with disabilities
Credible	Users must trust and believe what you tell them

Useful

a.1. Do you know the overall purpose of the SESAME application?

___ Yes ___ No

a.2. If yes, please describe briefly its purpose based on your understanding.

a.3. Is the SESAME application essential to perform your job function?

___ Yes ___ No

a.4. If yes, please specify which section of the app is relevant to you. (Participants can select more than one answer).

- a. Weather forecasts and climate outlooks
- b. Crop data
- c. Crop advisory generation
- d. Dissemination

Please specify channels:

___ E-mail ___ SMS ___ Fax ___ Social Media (Facebook) ___ Mobile application ___ Viber

What'App Others

- e. Feedback system
- f. All the sections are relevant.

a.5. What is the forecast resolution (☐ regional, ☐ provincial, ☐ district, ☐ township) and lead time (☐ weekly, ☐ monthly, ☐ 3 to 6 months ahead) that is most crucial for your work?

a.6. Does the weather and climate information you get from SESAME influence the timing and application of your farming practices?

___ Yes ___ No

a.7. If yes, please specify the farming practices influenced by which weather or climate information (daily forecast, 10-day forecast, seasonal forecast).

a.8. What are the missing information in the features of the app.

1. Weather

- ☐ Daily weather forecast
- ☐ Pentad weather forecast
- ☐ Monthly forecast for the next month
- ☐ Seasonal forecast for the next season

2. Crop Advisory

- ☐ Crop advisories not available for the crops
 - i.,
 - ii.,
 - iii.,
 - iv.,
 - v.,
- ☐ Crop advisories not available for
 - ☐ normal condition
 - ☐ wetter than normal condition

- ☐ drier than normal condition
- ☐ real time weather forecast

3. Pest

- ☐ Common seasonal pests
- ☐ Preventive measures
- ☐ Action on infection
- ☐ No data at all

4. Others

- ☐ Livestock
- ☐ Market

a.9. In addition to the information available in SESAME, what additional information do you want to request to be included in SESAME app?

- Weather/climate information (Check boxes)
 - ☐ Past weather information (last week or month weather condition)
 - ☐ Present weather nowcast (current weather condition)
 - ☐ Forecast for next two weeks
 - ☐ Forecast for the next month
 - ☐ 24 hours weather forecast
 - ☐ Others: _____
- Crop-specific farming advisories (Check boxes)
 - ☐ Planting (sowing) and harvesting date recommendation
 - ☐ Crop and variety selection
 - ☐ Fertilizer application timing and amount
 - ☐ Pesticide application timing and amount
 - ☐ Irrigation timing
 - ☐ Others: _____
- Natural disaster early warning and responses to reduce crop damage (Check boxes)
 - ☐ Drought
 - ☐ Flooding
 - ☐ Heat damage
 - ☐ Cold (low temperature or frost) damage
 - ☐ Strong wind (typhoon) damage
 - ☐ Others: _____
- If there are other information needs, please specify: _____

a.10. What is your main reason for using SESAME?

- ☐ Access weather and seasonal forecasts to guide planning and decision-making
- ☐ Access weather-based crop advisories to guide farm management
- ☐ Additional information about weather/climate
- ☐ Additional information about crops
- ☐ Business purposes
- ☐ Social networking
- ☐ Others, please specify: _____

a.11. Do you use other sources of information for weather/climate forecasts and crop advisories?

___ Yes ___ No

a.12. If yes, please specify the source/name of application.

- ☐ TV
- ☐ Radio
- ☐ Su Su San
- ☐ Htwet Toe
- ☐ Green Way
- ☐ Golden Paddy
- ☐ PP
- ☐ Other (please specify).....

Usable

b.2. For those who did not install the SESAME application on mobile phone, please share your reason for not installing the application.

- ☐ device is slow and has low capacity
- ☐ do not usually connect to the internet
- ☐ The design of the application is complicated
- ☐ don't think it is necessary to install the application
- ☐ Other reason/s: _____

b.3. How often do you use the SESAME application?

- ☐ At least once a day
- ☐ Three times a week
- ☐ Once every two weeks
- ☐ Once a month
- ☐ Once every season (please specify: before, during, end)
- ☐ Three times every season (before, during, end)
- ☐ Others _____

b.4. Do you go to SESAME website or use the mobile application if you need weather- or climate-based advisories?

___ Yes ___ No

b.5. How long does it take for you to get or download the specific information that you need from SESAME?

- ☐ Less than a minute
- ☐ Five minutes
- ☐ Between 10 and 15 minutes
- ☐ 30 minutes
- ☐ At least one hour
- ☐ Others, please specify: _____

b.6. Are you able to get offline access for some information in SESAME app?

_____Yes _____No

b.7. If no, do you prefer to get offline access for some information?

_____Yes _____No

Desirable

c.1. In which format do you prefer to receive the daily weather forecast for next 7 days from SESAME?

- ☐ SMS
- ☐ Smartphone pop up alarm
- ☐ Video with explanation
- ☐ Weather advisory on television
- ☐ Weather advisory on radio
- ☐ Weather advisory broadcast through loudspeakers
- ☐ Others, please specify: _____

c.2. In which format do you prefer to receive the 5-day forecasts for next 10 days from SESAME?

- ☐ Printed copy of the bulletin
- ☐ PDF file received via e-mail
- ☐ Official letter
- ☐ Video with explanation
- ☐ Weather advisory on television
- ☐ Weather advisory on radio
- ☐ Weather advisory broadcast through loudspeakers
- ☐ Available in the application and download in the smartphone
- ☐ Others, please specify: _____

c.3. Do you think that the forecasts and agro-advisories communicated through SESAME were clear and straightforward?

- ☐ Yes. I believe that the information from SESAME is structured using clear language.
- ☐ No. I would suggest improving the messages based on the following
 - ☐ language
 - ☐ simpler terminologies
 - ☐ length
 - ☐ others - please specify): _____

c.5. Do you find the overall color palette of the SESAME application and website attractive?

___ Yes ___ No

c.6. If no, what color palette would you prefer for it to be more attractive?

c.7. Please provide comments on overall typography of the SESAME application in terms of the following:

- Font style and size: _____
- Alignment : _____
- Color: _____
- Spacing: _____

c.8. Please rate the overall map visualization of weather and climate data in the SESAME app.

- ☐ I can easily understand the information on the map.
- ☐ I do not understand the information provided on the map.
- ☐ I prefer to get the information in different format rather than a map. Please specify
.....

Findable

d.1. Can you easily navigate through the website and find the information that you are looking for?

___ Yes ___ No

d.2. Can you easily navigate through the SESAME mobile application and find the information that you are looking for?

___ Yes ___ No

d.3. Do you find SESAME application efficient to use in terms of fast navigation, practical and organized content?

___ Yes ___ No

d.4. If no, what do you think shall be improved in terms of navigating the application?

Accessible

e.1. Can you understand the wording and terminologies used on the website and mobile application of SESAME?

___ Yes ___ No

e.2. Where do you access the SESAME application and website?

- ☐ Office
- ☐ Home
- ☐ Road
- ☐ Field
- ☐ Any place where internet connection is available
- ☐ Others: _____

e.3. What is the equipment that you use in accessing the SESAME application?

- ☐ Smartphone provided by the office
- ☐ Desktop computer provided by the office
- ☐ Laptop issued by the office
- ☐ Personal smartphone
- ☐ Personal laptop
- ☐ Others. Please specify. _____

e.4. Do you have stable internet connectivity when using the SESAME application or website?

- ☐ Yes
- ☐ No.

e.5. If no, what are the challenges that you experience while using the SESAME application?

- ☐ Not advanced smart phone (can't update information, font problem, etc.)
- ☐ Not familiar with using application
- ☐ Expensive data package for internet usage

e.6. Do you think the cost of internet data to connect to the SESAME application using your smartphone or computer matters to you?

- ☐ Yes
- ☐ No.

e.7. How did you resolve those challenges?

e.8. Do you have to ask other people's approval or permission for you to log in on SESAME application or website?

___ Yes ___ No. I can access the application by myself.

e.9. If yes, please describe the process of approval and identify the person or office involved.

e.10. Please describe the level of difficulty that you experienced in signing up for the SESAME application.

- i. ☐ Easy ☐ Medium ☐ Hard

Credible

f.1. Do you think SESAME is more effective if the tool is accompanied by a technical training like Farmers' Field School (FFS)?

___ Yes ___ No

f.2. What/who is your resource if you have questions or clarification on how to use the SESAME application?

- ☐ I use the available SESAME manual or handbook.
- ☐ I visit RIMES website for additional information.
- ☐ I visit SESAME Frequently Asked Questions (FAQs) section
- ☐ I will contact the in-country coordinator from RIMES
- ☐ I figure it out myself
- ☐ I asked my colleagues to help me figure it out
- ☐ Others. Please specify:

f.3. What are the communication channels that you use to transmit information from SESAME application?

- ☐ Meetings
- ☐ Online messaging (Messenger, Telegram, Whats app, Viber)
- ☐ Mobile phone calls
- ☐ Trainings
- ☐ Official letter
- ☐ SMS exchange
- ☐ Voice message
- ☐ E-mail
- ☐ Peoples' Network
- ☐ Others, please specify: _____

f.4. What type of support activities do you need to use the application better or more effectively?

- ☐ Additional training on the use of the application
- ☐ Step-by-step manual on the use of SESAME
- ☐ Video tutorial of the SESAME website and mobile application
- ☐ Additional knowledge on the use of SESAME
- ☐ Others. Please specify: _____

f.5. With whom do you discuss the information that you get from SESAME?

- ☐ Agricultural extension workers
- ☐ Farmer leaders
- ☐ Farmers
- ☐ Crop experts
- ☐ Village heads
- ☐ Others. Please specify: _____

f.6. Which weather/climate information from SESAME do you think need to be improved in accuracy?

- ☐ daily weather forecast
- ☐ 5-day weather forecast
- ☐ Others, please specify: _____

f.7. Who provides local information to update the content of agro-advisories on SESAME for specific townships?

(This question is not applicable for farmer respondents)

- ☐ Department of Agriculture
- ☐ Agricultural extension workers
- ☐ Village heads
- ☐ Farmer leaders
- ☐ Local hydro-meteorological services
- ☐ I don't know
- ☐ Others, please specify: _____

f.8. How did you find out about SESAME website or mobile application?

- ☐ Department of Agriculture (DOA)
- ☐ Department of Meteorology and Hydrology (DMH)
- ☐ Mass media (TV, radio)
- ☐ Website
- ☐ Text message
- ☐ Project
- ☐ Farmers
- ☐ Others, please specify: _____

f.9. Did you attend previous trainings on SESAME application?

___ Yes ___ No

f.10. If yes, do you know how to interpret the crop data and agro-advisories including voice messages in the system?

___ Yes ___ No

f.11. What do you think will happen if the tool provides wrong information? Please share your opinion.

F12. How would you rate your overall experience on that SESAME app?

(Lowest) 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ (Highest)

