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Present situation of agricultural information needs and accessibility of women farmers in Imbulpe DS division in Sri Lanka

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Abstract

Agricultural information and accessibility of women farmers are more crucial for enhancing food production. Thus, the main objectives of this research were to study the present situation of the agricultural information needs and accessibility of the women farmers in Imbulpe Divisional Secretariate (DS) Division of the country. Out of the women farmers of the study area, 238 were selected from the simple random sampling method as the sample for the study. A pre-tested, interviewer-administered questionnaire survey was used as the primary data collection method from March to July 2019. Descriptive statistics and chi-square analysis were used as the data analyzing methods. Based on the findings, women farmers showed that, they need more information regarding improved crop varieties, application of agrochemicals, new cropping systems and irrigation systems. Furthermore, most of the respondents showed that the higher level of accessibility to agricultural information on improved crop varieties. However, a lower level of agricultural information accessibility on suitable storage facilities was observed. Extension agents and successful women farmers act as their major sources of agricultural information. Furthermore, ICT equipment act as the least important agricultural information source. Age, marital status, educational level and monthly income were shown as the considerably higher associatiative variables with the agricultural information accessibility than the size of the farmland and farming experience of them. However, farmland size represented a moderate level of statistically significant positive association with the accessibility of agricultural information for the women farmers. Therefore, agricultural information accessibility can be enhanced by organizing awareness programs and extension service for the women farmers. Moreover, enhancement of accessibility for market information through the ICTs and encouragement of women farmers' participation in the farming societies of Imbulpe area will be very important to develop the agricultural information accessibility furthermore.

Keywords

Agricultural information, Imbulpe, Information accessability, Sri Lanka, Women farmers

Introduction

Women constitute about 50% of the global population and they act as the co-builders of civilization. However, still they are underprivileged in many countries in the world, especially in developing countries (World Bank, 2021; Rahman et al., 2007).

In most of the developing countries, women's contribution has been hidden for the development of the country. Based on the sustainable development goals, gender equity or women empowerment was aimed to achieve the sustainable development in developing countries of the globe (United Nations, 2015).

Women farmers perform most of their farming practices on a traditional basis; pre-planting, planting and post-harvest activities due to the increment of men participation in the industrial sector and service sector (International Labor Organization-ILO, 2018;

Ibharhokanrhowa, 2016; Malkanthi, 2016). However, in most of the developing countries, rural women still play a significant role in the agricultural sector. Meanwhile in developed nations, the agricultural operations are mechanized and women farmer's involvement is obtained relatively at a lower level (Ibharhokanrhowa, 2016).

With the development and modernization of societies, male counterpart are having better opportunities in enhancing their capabilities in terms of education, accessibility to modern farming technologies as well as access to agricultural information (FAO, 2018). Because, women farmers have to perform domestic activities, child caring and family welfare activities as a mother. So they have poor level of accessibility to join social networks and lower level of accessibility to monetary facilities than male farmers. Andalso, male farmers have a higher level of accessibility for agricultural information and participation in different extension programs (Bahadurghartimagar, 2011). Gender-differences affect for the use and accessibility of agricultural information sources (Godwin et al., 2018).

Most of the developing countries are suffering from gender inequality which is one of the main factors comes under the sustainable development goals. It causes to increase in the knowledge barrier for the women farmers (Rathnachandra & Malkanthi., 2020; Mojaki & Keregero., 2019). In Sri Lanka, women represent about 14% share of economically active population (Madurawala, 2018; Annual labor Force Reports, 2017). Also, women's contribution to the agricultural sector is gradually increasing in the country. Moreover, most of rural women has contributed their labor in the agricultural sector rather than the industrial sector and service sector (Annual Labor Force Reports, 2017).

Genarally Imbulpe DS Division is a farming area and most of the women are engaging in farming activities more or less similar way to men (Census and Statistics of Agriculture base Report –Rathnapura District, 2013/14). It has 50 GN divisions and is located under the administrative distribution of Sabaragamuwa Province. Based on the statistics of the Imbulpe divisional secretariat office, while the avarage monthly income of most of the people is around LKR 20,000-30,000, a higher percentage of income represent by agricultural activities.

Access to reliable, timely and relevant knowledge and necessary information can help significantly in many ways to reduce farmers' risk and uncertainty, enabling them to make good decisions in farming activities. But, there is a considerable level of knowledge and skill gaps and difficulties obtain in reaching their agricultural information needs. It is clare that accessibility of agricultural information is supported to build up higher women farmer capacity and upward their level of empowerment (Velde et al., 2020). Thus, this study was conducted to assess the women farmers' agricultural information needs and accessibility in Imbulpe DS division and also, the impact on socio-economic factors of the women farmers to the accessibility of agricultural information. The specific objectives were to identify the areas of agricultural information needs, level of agricultural information requirement for the women farmers, to determine the accessibility of required agricultural information by women farmers, to identify the sources of agricultural information and to determine the relationship between socio-economic factors of women farmers and their accessibility for agricultural information within the study area.

Research Methodology

Imbulpe DS Division is a rural farming area, situated in Rathnapura district in Sabaragamuwa province of Sri Lanka. In this area, a considerable percentage of male counter part have moved to urban areas searching for jobs in the industrial sector. Therefore, most of the women have to do both agricultural activities and also household activities simultaneously. Out of the fifty GN divisions of this area, seven GN divisions were purposively selected for the study namely; Halpe, Seelogama, Kinchigune, Puwakgahawela and Muttettuwegama, Imbulpe and Karagastalawa.238 women farmers were randomly selected as the respondents of the study to minimize the samping error, from the women farmers who registered under the Agrarian Service Center of the study area. A pre-tested, interviewer-administered questionnaire survey and focus group discussion was conducted as the method of primary data collection from March to July 2019. Descriptive statistics and chi-square analysis were used for the data analyzing process.

The areas of agricultural information needs were identified through the findings of the piolet study perior to the data collection process. These agricultural information needs were ranked by the respondents while conducting the questionnaire survey. In analyzing, the required level of accessibility of agricultural information was measured by ranking their information needs as high (3), moderate (2) and low (1) based on the study of Ikuakam et al., 2016.The weighted average was calculated for each information needed area, to assess the level of agricultural information needed by women farmers in the study area. Agricultural information accessibility was determined by ranking their requirement of agricultural information needs. In addition to that, the sources of agricultural information were analyzed through the ranking of a provided list of selected agricultural information sources based on the findings of the pilot study. The Chi-square analysis was used to discover the relationship between socio-economic factors of women farmers and accessibility of agricultural information within the study area for the further data analyzing process.

Results and Discussion

Socio-economic factors of the respondents

Important socio-economic factors of women farmers were studied. Findings are presented in Table 1.

Table 1. Socio-economic factors of respondents (n=238)

Factor	Category	Frequency	Percentage (%)
Age (Years)	20-39	40	16.8
	40-59	149	62.6
	60-79	49	20.6
Marital status	Single	09	3.8
	Married	215	90.3
	Other	14	5.9
Educational level	No Primary education	08	3.4
	Primary education	68	28.6
	Junior secondary education (O/L)	153	64.3
	Senior secondary education (A/L)	09	3.8
Monthly income (LKR)	Less than 20,000	61	25.6
	20,001 – 40,000	156	65.5
	40,001 – 60,000	21	8.8
Number of family members	less than 3	79	33.2
	3 - 5	128	53.8
	more than 5	31	13.0
Farmland size (Acre)	0.0 -0.5	17	0.71
	0.5-1.0	158	66.4
	1.0-1.5	50	21.0
	1.5-2.0	13	05.5
Farming experience (Years)	0-5	12	05.4
	5-10	64	26.9
	10-15	140	58.8
	15-20	24	10.1

Source: Field survey March to July 2019

Based on the results of table 1, majority of women farmers (62.6%) was in between 40 -59 years in their age. It is clear that, women farmers in this age category is able to do farming well based on their farming experiences. And also, most of the them were belonged to the economically active population. Furthermore, in this study, 90.3% of women farmers were married and the majority of them (64.3%) have studied upto junior secondary education (GCE Ordinary Level). However, 3.4% of respondents have not primary education either. Among them, only 3.8% share of women farmers have senior secondary education. According to FAO (2014), if women farmers have a considerable level of education, there is a potential to access and adoption of modern farming technologies, access to credit facilities as necessary and also the agricultural information needs and accessibility. Nevertheless, most of the women farmers reported that they have 3-5 members in their families. Moreover, their average farm size was 0.84 acres and the average level of farming experience is 15 years. While 65.5% of women farmers have received LKR 20,001 – 40,000 as their monthly income, 25.6% of them have received only LKR 20,000 as their monthly income. It is a low level of monthly income. So, it expresses the importance of agricultural information needs and accessibility of them within this area.

Agricultural information needs of women farmers in the area

The main areas of agricultural information needed by women farmers were studied well. The findings are presented in Table 2.

According to the findings in table 2, majority of the women farmers (57.7%) mentioned that they need a higher level of information regarding improved crop varieties. And also they informed that information about the application of agrochemicals (55.3%), new cropping systems (47%) and irrigation systems (45.1%) are very important in farming. However, they were less interested in the information on improved livestock varieties (18.6%) and suitable storage facilities (12.7%). Women farmers were showed that they need moerate level of information regarding modern farming technologies and improved market systems. Because, most of the rural farmers are engaged in the small-scale farming rather than large-scale commercial farming operations (Ranachandra & Malkanthi., 2020). In addition to that, they have a moderate level of education and poor awareness regarding using of ICT equipment for the accessibility of agricultural information (Ranachandra, 2020). A similar findings has reported by Rahman et al., 2020 and Chikaire et al.,2015 in their research studies regarding the subsistence farming practices of women farmers and they do not use ICTs to the accessibility of agricultural information due to lower

level of awareness about ICT usage of women farmers. Thus, there is a requirement of a considerable level of agricultural information about modern farming technologies (Rathnachandra, 2020). Murage et al., 2016, have also reported that in their study, if women farmers have poor level of education, it leads to low level of awreness on modern farming technologies. Andalso, women farmers have considerabally lower level of education, poor access to modern farming technologies, constraints to access financial facilities and agricultural information sources (Rathnachandra & Malkanthi, 2020).

Levels of agricultural information accessibility of the women farmers

Required levels of agricultural information needs of women farmers was categorized into three levels namely; high, moderate and low. Findings of the level of agricultural information needed by women farmers in this area are presented in Table 3.

Table 2. Areas of agricultural information needed by the respondents (n = 238).

Areas of information need	Frequency	Percentage (%)
Irrigation methods	114	45.1
Improved market systems	80	33.6
Application of agrochemicals	140	55.3
Improved livestock varieties	44	18.6
Modern farming technologies	54	22.5
New cropping systems	112	47.0
Improved crop varieties	146	57.7
Suitable storage facilities	30	12.7

Source: Field survey March to July 2019

Table 3. Level of agricultural information accessibility by respondents (n=238)

Level of need	Frequency	Percentage (%)
High	144	60.5
Moderate	71	29.8
Low	23	09.7
Total	238	100.0

Source: Field survey March to July 2019
(Categorizations based on the Ikwuakam et al.,2016)

As per the results shown in table 3, most of the respondents (60.5%) indicated that they have higher accessibility of agricultural information on improved crop varieties while 29.8% had a moderate levels of agricultural information access regarding the modern farming technologies and improved market systems in the study area. Lower level (9.2%) of agricultural information access was shown in suitable storage facilities and improved livestock varieties.

Sources of agricultural information used by women farmers

Possible sources of agricultural information in this area were identified and their application by women farmers was studied in detail. Piolet study was indertaken to identify the agricultural information sources: extension agents, ICT equipment, contact farmers and fellow women farmers. Results are presented in Table 4.

Table 4. Sources of agricultural information used by the women farmers (n = 238).

Source	Frequency	Percentage (%)
Extension agents	114	47.9
ICT equipment (phones, internet etc)	12	5.1
Contact farmers	37	15.5
Fellow women farmers	69	29.0
Other sources	06	2.1

Source: Field survey March to July 2019

Based on the results of table 4, the majority of the respondents mentioned that extension agents (47.9%) and fellow women farmers (29%) as their main sources of agricultural information. However, contact farmers and ICT equipment have acted as less important sources of agricultural information within the study area. Newspapers, farming societies and other family members were noted as the other sources (2.1%) of agricultural information needed of the respondents. As Imbulpe area is a rural area, it consists of rural culture

and usage of ICT for getting information regarding the modern farming technologies is at a very low level. They have a better relationship with the extension agents of the area. As there are female extension agents, they try to disseminate agricultural information according to the requirements and empower women farmers to upgrade their capabilities within the agricultural sector.

Relationship between socio-economic factors of women farmers and accessibility for agricultural information

Firstly, a comparition between socio-economic factors and agricultural information accessibility was conducted. The results are presented in Table 5. In order to identify the relationship between socio-economic factors of women farmers and accessibility to agricultural information, a hypothesis was tested using a chi-square analysis.

($H_{0\ a}$) There is no significant relationship between age of the women farmers and the accessibility of agricultural information.

($H_{0\ b}$) There is no significant relationship between marital status of the women farmers and the accessibility of agricultural information.

($H_{0\ c}$) There is no significant relationship between educational level of the women farmers and the accessibility of agricultural information.

($H_{0\ d}$) There is no significant relationship between monthly income of the women farmers and the accessibility of agricultural information.

($H_{0\ e}$) There is no significant relationship between farmland size of the women farmers and the accessibility of agricultural information.

($H_{0\ f}$) There is no significant relationship between farming experience of the women farmers and the accessibility of agricultural information.

The dependent variable was agricultural information accessibility and the selected socio-economic factors of the women farmers were utilized as the independent variables of the study. Agricultural information accessibility was measured through the ranking scale of their access as low, moderate and high. Results are presented in Table 6.

Table 5. Comparison between socio-economic factors and agricultural information accessibility

			Agricultural information accessibility		
Factor	Category	Low	Moderate	High	Total
Socio-economic factors: Age	20-39 Years	0	0	40	40
	40-59 Years	0	45	104	149
	60-79 Years	23	26	0	49
	Total	23	71	144	238
Marital status	Single	0	0	10	10
	Married	9	71	135	215
	Widowed	13	0	0	13
	Total	23	71	144	238
Educational level	No Primary education	0	8	0	8
	Primary education	0	68	0	68
	Junior secondary education (O/L)	14	71	68	153
	Senior secondary education (A/L)	0	0	9	9
	Total	14	147	77	238
Monthly income (LKR)	Less than 20,000	0	61	0	61
	20,001 – 40,000	2	71	83	156
	40,001 – 60,000	0	0	21	21
	Total	2	132	104	238
Farm land size (acre)	0 - 1	22	65	124	211
	1.1 - 2	1	6	15	22
	2.1 - 3	0	0	5	5
	Total	23	71	144	238
Farming Experience (Years)	5 - 9	0	5	10	15
	10 - 14	0	14	28	42
	15 - 19	23	67	106	181
	Total	23	81	134	238

Source: Field survey March to July 2019

Results of table 5 reveals that women farmers who are in between 20-39 and 40-59 years of age range have a higher level of agricultural information accessibility. While a moderate level of agricultural information accessibility was received by women farmers of 60-79 years. A lower level of information accessibility was received by widowed respondents. Because, most of the widowed respondents were belongs to 60-79 years. Widowed farmers are less aware of the various sources of agricultural knowledge and most of them have not

considerable level of education. However, married women farmers receive both the moderate and higher level of agricultural information accessibility. Because, married women farmers have various responsibilities regarding child caring, domestic activities etc. Therefore, sometimes married women farmers can receive only a moderate level of agricultural information accessibility. In addition to that, most of the married respondents are in 20-59 years age and they have higher level of agricultural information accessibility. However, most of the married women farmers who are under 20-59 years age have an adequate level of education and awareness about the usage of ICT tools and apply them for agricultural purposes. Similar findings have been received by Narmilan et al., 2020 in their research study. Furthemore, women farmers who had education upto senior secondary level, have higher level of agricultural information accessibility. Moreover, moderate level of agricultural information accessibility obtained women farmers who educated up to junior secondary level and respondents who educated below the junior secondary level, showed lower agricultural information accessibility. Furthermore, respondents who have monthly income of LKR 20,001-40,000 showed a higher level of agricultural information accessibility and moderate level of agricultural information accessibility was showed respondents who received below LKR 20,000 as their monthly income. Also, it was shown that when increase the size of the farmland, there was a higher accessibility for agricultural information. Because, higher farmland size represent the commercial scale farming and they have higher agricultural information accessibility than subsistence farmers (Debonne et al., 2021). Higher farming experience was indicated higher agricultural information accessibility and when farming experience obtained at low, their agricultural information accessibility remain as lower.

Chi-square analysis of the socio-economic factors of the women farmers and accessibility of agricultural information

The results of the chi-square analysis of socio-economic factors of the women farmers and accessibility of agricultural information are presented in Table 6.

Table 6. Chi-square analysis of the relationship between socio-economic factors of the respondents and agricultural information accessibility.

Socio-economic factor	Cramer's V value	p value	Contigency co-efficient
Age	0.564	0.00	0.62
Marital status	0.718	0.00	0.78
Educational level	0.741	0.00	0.79
Monthly income	0.721	0.00	0.72
Farm land size	0.498	0.04	0.57
Farming experience	0.190	0.07	0.26

Source: Field survey March to July 2019

As per the results of table 6, age, marital status, educational level and monthly income showed a considerably higher level of cramer's v values and contingency co-efficient values than the size of the farmland and farming experience of the women farmers in the study area. Also, the p values of the above mentioned variables (age, marital status, educational level and monthly income) are less than 0.05. Therefore age, marital status, educational level and monthly income are the strongly associated socio-economic variables with agricultural information accessibility. Moreover, the size of the farmland showed a moderate level of association with the agricultural information accessibility of women farmers in the study area.

Hence,

$H_{0\,a}$ rejected

$H_{o\,b}$ rejected

$H_{o\,c}$ rejected

$H_{o\,d}$ and $H_{o\,e}$ rejected

Findings of the study of Rehman et al (2013) showed that the educational level of the respondents creates a considerable impact on agricultural information accessibility. However, farming experience have not shown a significant relationship with agricultural information accessibility. According to the findings of the Okwu and Umoru (2019) age, education and income level of the women farmers obtain a significant relationship with the agricultural information accessibility in Nigeria. Based on the findings of the Akinola (2017), age, marital status, gender, educational level, monthly income, farmland size and farming experience show a significant relationship with the agricultural information accessibility.

Conclusion

According to the findings of the study, several conclusions can be drawn. Most of the respondents need the information about improved crop varieties. In addition to that, information related to the application of agrochemicals, new cropping systems and irrigation systems related information are also more important for them.

However, they are less interested related to the information about improved livestock varieties and suitable storage facilities. Most of them are engage in small-scale farming rather than large-scale farming operations.

The majority of the women farmers are willing to get agricultural information from extension agents. Since women extension officers are there, women farmers have a very close contact with them. Fellow women are also doing a great job in this regard. In addition to that, contact with better farmers provides a considerable level of agricultural information. ICT equipment act as a less important agricultural information source in this area. Newspapers, women farmers' husbands, farming societies and other family members are also somewhat important sources of agricultural information in this area.

Age, marital status, educational level and monthly income are showing a considerably strong positive association between agricultural information accessibility of women farmers in the study area. However, farmland size represents a moderate level of statistically significant positive association with the agricultural information accessibility of the women farmers.

Recommendations

Dissemination of timely important agricultural information within the study area and pursuation of them to share the farming experiences with fellow women farmers, contact farmers and other family members.

Motivation of Pursuant women in order to act as agricultural extension agents in order to work with women farmers for efficient information sharing and improving the social networks.

Provision of awareness programs related to use of ICT equipment and also dissemination of the latest information on agriculture for the women farmers

Encouragement of women farmers' participation in the farming societies of this area.

Compliance with Ethical Standards

Conflict of interest

The authors declared that for this research article, they have no actual, potential or perceived conflict of interest.

Author contribution

The contribution of the authors to the present study is equal.

All the authors read and approved the final manuscript. All the authors verify that the Text, Figures, and Tables are original and that they have not been published before.

Ethical approval

Ethics committee approval is not required.

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Data availability

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Consent for publication

Not applicable.

References

Akinola, A. A. (2017). Influence of socio-economic factors on farmers use of mobile phones for agricultural infromation in Nigeria. *Library Philosophy and Practice (e-journal)*, 1688. Retrieved from https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=4811&context=libphilprac

Annual Labor Force Report: *Department of Census and Statistics* . (2017). Retrieved from: https://www.adb.org/sites/default/files/publication/382296/sri-lanka-employment-diagnostic.pdf

Bahadurghartimagar, S. (2011). An Assessment of Men and Women Farmers Accessibility to Governmental Agricultural Extension Program: A Case of Arghakhanchi District, Nepal. *Partial fulfillment of the Master Degree in Management of Development sp: Rural Development and Gender, Wageningen the Netherlands*, 1-51. Retrieved from: https://edepot.wur.nl/192651

Census and Statistics Base Report of Agriculture-Rathnapura District 2013/14. (2014). *Department of Agriculture*. Retrieved from: http://www.statistics.gov.lk/Agriculture/StaticalInformation/new

Chikaire, J. U., Nnadi, F. N., & Godson-Ibeji, C. C. (2015). Analysis of Information and Communication Technology Roles in Poverty Reduction Among Small and Medium Scale Farmers in Imo State, Nigeria. *Library Philosophy and Practice, 7*, 14. http://digitalcommons.unl.edu/libphilprac/1284

Debonne, N., Vliet, J., Ramkat, R., Snelder, D., & Verburg, P. (2021). Farm scale as a driver of agricultural development in the Kenyan Rift Valley. *Agricultural systems:ELSVISER, 186*, 102943. doi:https://doi.org/10.1016/j.agsy.2020.102943

Food and Agriculture Organization (FAO). (2018). *Country Gender Assessment of Agriculture and the Rural Sector in Sri Lanka*. Retrived from: doi: http://www.fao.org/3/CA1516EN/ca151en.pdf accessed on 11.07.2021.

Food and Agriculture Organization (FAO). (2014). *Gender Specific Approaches, Rural Institutions and Technological Innovations*. Retrieved from: http://www.fao.org.

Godwin, J. L., Williams, F. E., Aslam, N., Cardey, S., Dorward, P., & Almas, M. (2018). Gender Diferences in Use and Preferences of Agricultural Information Sources in Pakistan. *The Journal of Agricultural Education and Extension, 24*(5), 319-434. doi: https://doi.org/10.1080/1389224X.2018.1491870

Ibharhokanrhowa, O. M. (2016). *Empowerment of Rural Women Farmers and Food Production in Esan West Local Government Area of Edo State, Nigeria.* A Thesis Submitted in Partial Fulfilment of the requirements forthe Degree of Doctor of Philosophy (Ph.d) in Sociology to the Department of Sociology, College of Business and Social Sciences Covenant University. Retrieved from: http://eprints.covenantuniv

Ikwuakam, O. T., Lyela, A., & Olutegbe, N. S. (2016). Information Needs of Sesame Farming Households in Selected Agricultural Zones of Katsina State, Nigeria. *Mediterranean Journal of Social Sciences, 7*(1), 204-212. doi: https://doi.org/10.5901/mjss.2016.v71s1p204

International Labor Organization (ILO). (2018). Potential Oppotinities for women's economic empowerment. Retrieved from https://www.ilo.org

Madurawala, S. (2018, March). Economically Empowering Sri Lankan Women: One Strategy Does Not Fit All. https://www.ips.lk/talkingeconomics/2018/03/08/economically-empowering-sri-lankan-women-one-strategy-does-not-fit-all/

Malkanthi. S.H.P. (2016). Gender contribution to cultivation use of underutilized crops: case in Monaragala District in Sri Lanka. *International Journal of Agricultural Resources, 12*(2), 77-92. Retrieved from: doi:http://dx.doi.org/10.4038/jas.v12i3.8266

Mojaki, R. A., & Keregero, K. J. B. (2019). Turning challenges into opprtunity: Potential for adoption of e-extension in Lesotho . *11*(11), pp. 184-191. Retrieved from: https://doi.org/10.5897/JAERD2019.1040

Murage, A. W., Pittchar, C. O., Onyango , C. O., Pickett, J. A., & Khan, Z. R. (2016). Gender Appropriateness of Field Days in Knowledge Generation and Adoption of Push-pull Technology in Eastern Africa. *5 th International Conference of the African Association of Agricultural Economists, September 23-26,* (p. 20). Addis, Ethiopia. Retrieved from: https://ageconsearch.umn.edu

Narmilan, A., Niroash, G., & Puvanitha, N. (2020). Assessment of Current Status on Smart Farming Technologies in Batticaloa District, Sri Lanka. *Sri Lankan Journal of Technology, 1*(1), 14-20. www.seu.ac.lk/slijot/publication/v1n1/SLJ0T-2020-01(1)-14-2.pdf

Okwu, O. J., & Umoru, B. I. (2019, February). A study of women farmers' agricultural information needs and accessibility: A case study of Apa Local Government Area of Benue State, Nigeria. *African Journal of Gender and Women Studies, 4*(2), 001-007. Retrieved from: www.internationalscholarsjournals.org.

Rahman, H., and Naoroze, K. (2007). Women empowerment through participation in Aquaculture: Experience of e large scale technology Demostrain project in Bangladesh. *Journal of social science*.

Rahman, T., Ara, S., & Khan, A. (2020). Agri-information Service and Information Seeking Behaviour of Small-scale Farmers in Rural Bangladesh. *Asia-Pacific Journal of Rural Development, 30*(1-2), 175-194. doi: https://doi.org/10.1177/1018529120977259

Rehman, F., Ruby, T., & Ismat, D. R. (2013). Effect of farmers' socioeconomic characteristics on access to agricultural information: Empirical evidence from Pakistan. *Journal of Animal and Plant Sciences, 23*(1), 324-329.

Rathnachandra S.D.D (2020) Use of ICT by Women Farmers in Imbulpe Divisional Secretariat Division in Sri Lanka. Important Aspects of Present Agriculture Sector in Sri Lanka – Edited book: Chapter 4. Dr. S H P Malkanthi, Senior Lecturer, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka. Retrieved from: https://www.researchgate.net/publication/353340078_CHAPTER_04_Use_of_ICT_by_Women_Farmers_in_the_Imbulpe_Divisional_Secretariat_Division_in_Sri_Lanka

Rathnachandra, S.D.D, and Malkanthi, S.H.P (2020). Management activity of women farmers in Imbulpe DS division in Sri Lanka: A Household Level Analysis. *Икономика и управление на селското стопанство, 65*(2), 70-75. https://journal.jaem.info/page/en/details.php?article_id=483

United Nations. (2015). United Nations Sustainable Development Knowledge Platform. Retrieved from: https://www.sustainabledevelopment.un.org.

Velde, P. V., Stanley, V., & Stickler, M. M. (2020, October 14). World Bank Blogs. *Invisible Farmers: Why recognizing and supporting women farmers is key to food and nutrition security*.

World Bank. (2021). *Women Economic Empowerment Study.* Retrieved from: https://documents.worldbank.org