A study on agriculture information generation and dissemination at the Department of Agriculture (DOA) in Sri Lanka

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Abstract

The paper discusses findings of a survey conducted at the Department of Agriculture to find out how agriculture information is generated and disseminated to the end users. The objectives of the study are to find out the type of research conducted at Horticultural Research and Development Institute (HORDI), Field Crops Research and Development Institute (FCRDI) and Rice Research and Development Institute (RRDI) of the DOA ,to find out whether the agricultural research conducted at DOA is relevant in addressing farmer's problems, to find out the main methods used for disseminating new agricultural information to scientific community and farmers and to find out barriers for effective information dissemination to farmers. The data were collected by using a structured questionnaire. The total population taken for the study was 74,The analysis was carried out by taking the entire population together and separately by individual institutions. The survey revealed that the researchers in three research institutes of the DOA are regularly engaged in research focusing on local agrarian problems. The main research areas of the researchers were plant breeding, soil and water resource management, and agronomy and crop science. The research conducted by three research institutes of the DOA are hundred percent (100%) relevant to issues encountered in the agriculture sector of the country. Majority of researchers use, seminars/conferences as the main methods for dissemination information to scientific community. Majority of researchers (34%) at HORDI. thirty one percent of researchers (31%) at RRDI and thirty percent of researchers (30%) at FCRDI send their research output to the extension division in the DOA. According to the data, lack of extension staff has been identified as a main problem for effective transfer of research output to the end users timely, by fifty percent of researchers (50%)at FCRDI, forty two percent of researchers (42%) at HORDI and forty percent (40%) of researchers at RRDI respectively. The weak research/extension linkage has been identified as a barrier by twenty five percent (25%) of researchers both at HORDI and FCRDI and twenty percent of researchers (20%) at RRDI.

Keywords: Agriculture research, Agriculture Information, Information dissemination, Department of Agriculture, HORDI, FCRDI, RRDI, Sri Lanka

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Introduction

Agriculture research plays a significant role in uplifting agricultural production and adding quality of life for farming communities in agro-based economies. Further agriculture research can be envisaged as a long term profitable investment for agro-based economies. The research outputs need to be filtered down to the end users, the farming communities to reap the benefits in terms of economic gains.

According to Bernaoui,Hassoun and Issolah (2013), agricultural research is primarily a scientific activity. It has a special role in the development of the productive sector, while promoting agriculture and the financial return. Research efforts are mainly an economic issue and due to this reason countries end to invest in agricultural research. Agricultural research provides farmers agribusiness tools of economic development.

Agriculture information is mainly generated through research.It is considered as an essential input to agriculture education, further enhancing research and development and for extension activities. It is a known fact that different types of information isrequired by different kinds of users for different purposes. The potential users of agriculture information include government decision-makers, policy-makers, planners, researchers, teachers, students, program managers, field workers and farmers. Hence development of research in agriculture requires a mechanism to collect, process, and disseminate agricultural information to stakeholders.

Background

The Sri Lankan Agriculture setup comprises of two main sectors such as plantation and non plantation sector. The plantation sector includes well managed, export oriented crops such as tea, rubber, coconut sugarcane and spices. The non plantation sector basically provides food crops for the domestic market in the country which includes production of rice, and coarse grains, grain legumes, oil crops, fruits and vegetable. Most of the small farmers are

engaged in food crop production (Weerarathne & weerasinghe, 2009). Agriculture is very important for the socio-economic development of the rural communities in the country as 31. % of rural people depends on agriculture and agro-based industries (Dept.of Census and Statistics, 2013). A large number of agricultural research institutes were established in Sri Lanka from the colonial era, mainly to develop both the domestic and export crop sectors. The Department of Agriculture (DOA) is one of the oldest research institutes, established in 1912, and has the largest mandate of research and extension personnel and primarily geared for the development of the domestic food crop sector. The Department of Agriculture is a pioneer in agriculture research, with the expansion of a large number ofsub research institutes located all over the country to carry out research and extension work for crops specifically suitable for agro-ecological zones of the country. Only three important research institutes, namely the HORDI, located in Gannoruwa, the RRDI located in Batalegoda, and the FCRDI in Mahailluppalama were included for the present study due to the time limitations. These three research institutes have unique research mandates. The HORDI undertakes demand driven research on fruit, vegetables root and tuber, mushroom and floriculture whereas RRDI is undertaking research in developing high yielding pest and disease resistance rice varieties. The FCRDI is entrusted to undertake research related to other field crops such as chilli, coarse grains, onions etc.(Dept.of Agriculture,2009)

The research carried out by the DOA has immense benefits to the end users but there may be some problems and drawbacks in effective dissemination of research outputs to the farming communities. This is a common problem all over the world. The literature shows that developing countries have problems in acquiring, retrieving, processing, and disseminating various types of information (Samarakoon, 2010). It is evident that the researchers, extensionists and the farming communities face problems in the information flow at the DOA.

Objectives of the study

- To find out what type of research conducted by the three research institutes of the Department of Agriculture.

- To find out the main methods used for dissemination of new agricultural information to the scientific community.
- To find out the main methods used for dissemination of new agricultural information to the farming communities
- To identify barriers for effective information dissemination to end user.

Significance of the study

The study will provide baseline information to review the present status of agriculture information generation and dissemination to farmers. The status review is useful to create an effective information dissemination system for the future. Therefore the findings of the current research will facilitate the anticipated future goals of the DOA. The identification of barriers for effective information dissemination through the present study can be used as a strategic approach to transfer of new information to the end users.

Methodology

The survey methodology was adopted as the basis for data collection and analysis of the study. The main research tool was a structured questionnaire directed to researchers and extension officers in the three research institutes of the DOA, A pre test of the questionnaire was carried out to find out the clarity of the questions and the questionnaire was modified accordingly. Microsoft excel 2007 package was used for analyzed the data.

Limitation of the study

The study was carried out taking only the researchers in the three research institutes of the DOA as the sample and the population .The farming communities were excluded for the time frame of the study. The paper is based on the findings of the research officers only excluding the extensionists.

Result and Discussion

Response rate of respondents

Seventy four (74) questionnaires were administered to all researchers in the three research institutes of the DOA and fifty three (53) were duly filled and returned with 71% of response rate. Table 1 shows the number of questionnaire administered and the response rate by the respondents.

Table 1: Response rate of respondents

Institutes	Number of distributed	Number of received	
	frequency	frequency	Percentage %
RRDI	23	18	78%
HORDI	25	17	68%
FCRDI	26	18	69%
Total	74	53	71%

Areas of research undertaken by research officers in the three research institutes of the Department of Agriculture

The research officers of the HORDI, FCRDI and RRDI of the DOA were asked to identify their areas of research undertaken by them in the past three years. The data revealed that the majority of researchers in the three research institutes have engaged in research on plant breeding which includes high yielding crop varieties, production of quality seeds etc. which is essential to upgrade the agricultural production in the country (Figure 1). When analyzing the data by taking the three research institutes separately it was revealed that the majority of researchers (33%) at RRDI and twenty seven percent(27%) reserchers at FCRDI were engaged in research on plant breeding respectively.When analysing the

research undertaken by individual institutes separately, it was revealed that (figure.1) the majority of researchers at HORDI, twenty four percent (24%) were engaged in research on crop science while plant breeding has been the second priority of reserch of HORDI researchers.

The second importantarea of reseach has been soil and water resource management and the largest group of researchers in this area was from RRDI with twenty two percent(22%) of researchers. Further eighteen percent of reserchers (18%) in HORDI and seventeen percent of researchers (17%) at FCRDI were engaged in soil and water resourse management.

The reserchers were interested in the subject agronomy too.According to the data twenty percent of resercehrs (20%) in FCRDI ,seventeen percent of reserchers (17%) in RRDI and twelve percent of reserchers (12%) at HORDI were engaged in research on agronomy, while only were engaged in reserch in agronomy. Entomology is also a importent area of research as crop insect problems are acute in many crop cultivations. The largest research group on entomology is from HORDI with eighteen percent (18%) of researchers. while ten percent of reserchers (10%) in RRDI and only four percent of researchrs (4%) in FCRDI were engaged in research on entomology.

Plant diseases are the common problems faced by farmers allover Sri Lanka. Plant diseases encompass all kinds of bacterial, viral, fungi and nutritional deficiencies.The researchers in all three research institutes were engaged in research on plant pathology with 11-12 percent of reserchers as revealed by the data. Weed science research is also an importent area of research, but only reserchers from RRDI and FCRDI were engaged in this area of research both with six percent (6%) of researchers.There was no indication of research done in weed science reserch at HORDI.This may be due to the fact that HORDI did not have reserchers specialized in weed science at the time of data gathering. The least number of reserchers were in the area of food science research only with six percent reserchers (6%) from FCRDI; other two institutes no indication of food science research.

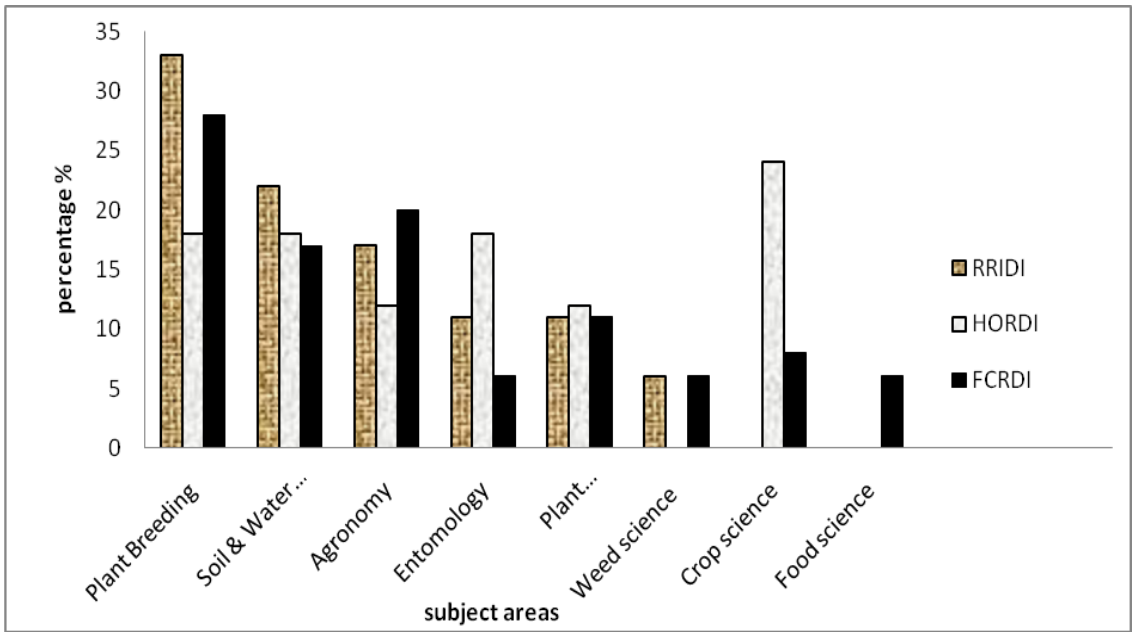

Figure 1: Research undertaken by researchers- institutional wise

The Relevance of research programmes of the institutes to national issues

The research programmes are planned annually by the research institutes of the DOA according to priority areas, which needs to undertaken by the institute. All researchers of the three institutes were involved with planned research programmes of their respective institutes. A question was posed to the researchers to indicate the relevance of research that they conduct to the agriculture sector of the country. The data revealed that research conducted by the three research institutes of the DOA are one hundred percent (100%) relevant to the agriculture sector of the country.

Dissemination of Research Information to Scientific Community

Research will not be an effective method of generating new knowledge unless it is properly disseminated among the research community, and also transferring them to the end users for effective utilization (Angstreich, 2007). In the present study the researchers HORDI, FCRDI and RRDI were asked to indicate the methods they use to disseminate research

outputs to the scientific community by a check list. According to the data the researchers of the study group of the DOA disseminate their research outputs to the scientific community by using different methods. Majority of researchers, forty three percent (43%) of the surveyed population in the three research institutes of the DOA used conference/seminars as the main media to disseminate research information to the scientific community (Figure 2). Annual Symposium of the Dept.of Agriculture' (ASDA) organized by-DOA is, a viable platform/forum for the researchers of DOA to present new research findings to the scientific community.

Forty seven percent (47%)of researchers at FCRDI, forty five percent of respondents (45%) at RRDI and thirty seven percent of researchers (37%) at HORDI use conference/seminars as the main media of dissemination of research output to the scientific community respectively.

Publications have been identified by thirty percent of researchers (30%) at HORDI and stands as the second important medium of dissemination of research to the scientific community. Researchers at FCRDI and RRDI also used publications with twenty seven percent (27%) and twenty six percent of researchers (26%) respectively. The Tropical Agriculturist and the Annals of the Sri Lanka Department of Agriculture' (ASDA) are two journals devoted to publication of research work carried out by researchers of DOA.

The research institutes of DOA holds regular research communication forums in the respective institutes. Researchers use these forums too, to communicate with fellow researchers with their research. Research forum in the department has been used as a medium for disseminating research output to the scientific community with twenty six percent of researchers (26%) at HORDI, twenty three percent researchers (23%) at RRDI, and eighteen percent of researchers (18%) at FCRDI. Only small percentage (6-8%) of researchers of three research institutes used other methods such as officer training programmes, personnel communication with interested scientists, exhibitions etc for dissemination of research output.

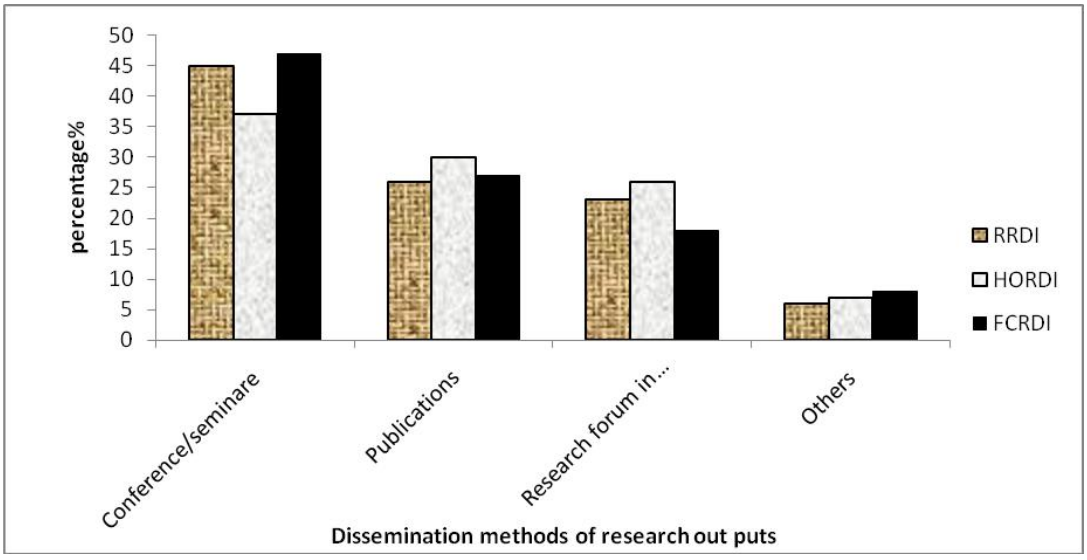

Figure 2: Methods of Information Dissemination to Scientific Community-Institutional Wise

Information dissemination to farming community

At present although a wide range of information sources on new or innovative farming practices is available to farmers all over the world, there is little evidence on effective use of increased number of available information sources by farmers (Dissanayake, 2009). Research finding are useless if they are not communicated effectively, and research itself cannot be effective without two-way communication between farmers and researchers (Angstrich, 2007).The researchers of the three research institutes of the DOA used different methods for delivery of information to the farming community. It is of prime importance to find out whether the research outputs are being transferred to the end users or the farming community in the country. Therefore a question was directed to the researchers to identify methods adopted by them for dissemination of research information to the end users. The methods are listed below;

- By sending research output to the extension division in their respective institutes for extension work.

- By sending research outputs to the Audio Visual center of the Department of Agriculture.
- Producing extension materials by themselves.
- Sending information to mass media.

The data revealed that the majority, thirty two percent of researchers (32%) in the three institutes sent their research information to extension divisions in their respective institutes.

Further analyzing data by individual institutes (figure 3) revealed that the majority, thirty four percent of researchers (34%) at HORDI, thirty one percent of researchers (31%) at RRDI and thirty percent of researchers (30%) at FCRDI sent their research output to the extension division in the DOA. Therefore the data confirmed that researchers made an attempt to disseminate their research output to the farming communities. An important finding came out of the study was that the dual role played by researchers as extensionists at the DOA. The highest numbers of researchers, thirty four percent (34%) at FCRDI used their research outputs to produce extension material by themselves. They used their research outputs for crop clinics, lectures, and field trials with the farmers. Twenty seven percent of researchers (27%) at RRDI used research output to producing extension materials by themselves. Only seventeen percent of researchers (17%) at HORDI which is comparatively low when compared to other two institutes used research outputs to produce extension materials by themselves. This is due to the fact that the extension division of the DOA is located in Peradeniya, in close proximity to HORDI and the researchers could send their research outputs without any delay for preparation of extension material.

It is important to know that thirty percent of researchers (30%) at RRDI, twenty seven percent of researchers (27%) at HORDI and seventeen percent of researchers

(17%) at FCRDI sent their research output to A/V Centre respectively.

It is somewhat a disturbing factor to note that the use of mass media by researchers in the three research institutes were relatively low compared to other dissemination methods although mass media has a high appeal for communicating with general public including farmers effectively. Only twenty two percent of researchers (22%) at HORDI and nineteen percent of researchers (19%) at FCRDI and twelve percent of researchers (12%) at RRDI used mass media to communicate with the masses in the country.

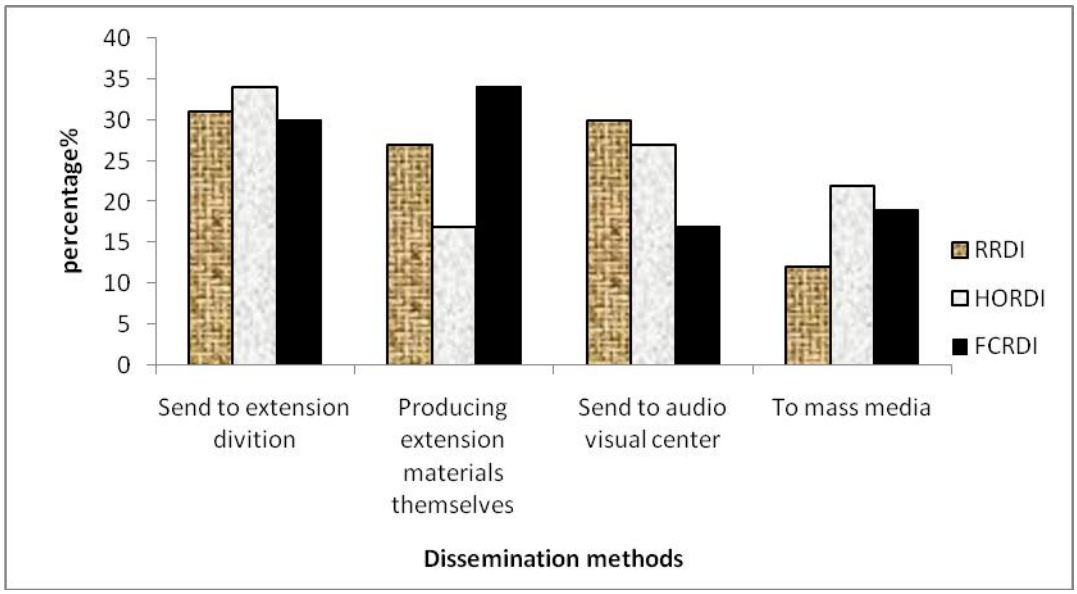

Figure 3: Methods used by Researchers for Dissemination Research Outputs to Farming Community -Institutional wise

Barriers for dissemination of research outputs of the researchers

The researchers of the three institutes have identified barriers when dissemination of research outputs to the end users in their respective institutes. According to the data it is revealed that the majority, forty five percent of researchers (45%) have

identified shortage of extension staff as the main difficulty that they face in dissemination of research information to farmers.

Further analyzing the data, institution-wise the barriers faced by researchers in RRDI, FCRDI are presented separately in figure 4. According to the data, lack of extension staff has been identified as a main problem for effective transfer of research output to the end users timely, with fifty percent of researchers (50%) at, FCRDI, forty two percent of researchers (42%) at HORDI, and forty percent (40%) of researchers at RRDI respectively. The weak research/extension linkage has been identified as a barrier by twenty five percent (25%) of researchers both at HORDI and FCRDI and twenty percent of researchers, (20%) at RRDI. Further, lack of training has identified as a drawback for dissemination of research output with thirty percent of researchers (30%) at RRDI, seventeen percent(17%) of researchers at HORDI and eight percent(8%) of researchers at FCRDI respectively. Shortage of extension programmes has been accounted for seventeen percent of researchers (17%) at FCRDI, sixteen percent of researchers (16%) at FCRDI and ten percent of researchers (10%) at RRDI respectively.

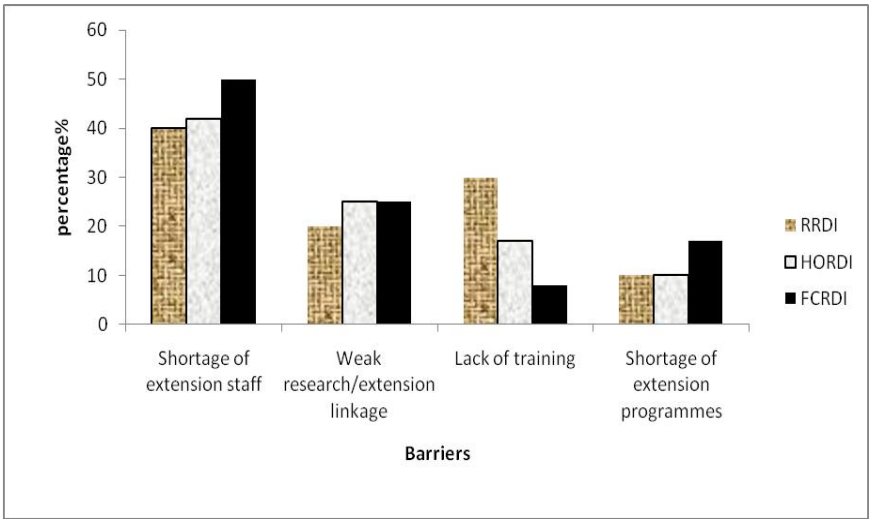

Figure.4: Barriers to disseminate research information by researchers institutional wise

Conclusion

The survey revealed that the research and extension personnel in the three research institutes of DOA are regularly engaged in research, focusing on local agrarian problems. The main research areas of the researchers were plant breeding, soil and water resource management, and agronomy and crop science. The research conducted by three research institutes of the DOA are hundred percent (100%) relevant to the agriculture sector of the country. The majority of researchers of these three institutes used conference/seminars as the main media for dissemination information to scientific community. Publications are the second largest method used by them. The dual role played by the researchers of DOA as extensionists is a new finding of this study. The highest number of researchers, thirty four percent (34%) at FCRDI used their research outputs to produce extension material by themselves. They used their research outputs for conducting crop clinics, lectures, and field trials with the farmers. Further twenty seven percent of researchers (27%) at RRDI used research outputs to produce extension materials by themselves. Only fifteen percent of researchers (15%) at HORDI which is comparatively low, with other two institutes used research outputs to produce extension materials by themselves. A small percentage of researchers used mass media for dissemination of information to farming community. The main barrier for transfer of new information to farmers is lack of adequate staff at field/extension level. The weak research/extension linkage takes the second place as a barrier faced by researchers. Lack of extension programmes and lack of trainings for researchers are also identified as crucial barriers for information transfer to expected targets. These barriers are identified as common across all three research institutes of DOA.

Recommendation

Based on the data it is important to increase field level extension staff to carryout regular extension programmes for the farmers. The current findings revealed that lack of extension staff is one of the major problems across all three research

institutes in the DOA to carryout effective extension services. Therefore immediate actions need to be taken to ensure the adequacy in number of extension and other field staff who directly deal with the farmers. There should be a strong linkage between research/extension of the DOA. The findings proved that the communication between researchers, extension personnel and farmers are at a poor level. Therefore proper action needs to be taken to improve the communication channels of these three parties. More time should be allocated to mass media for dissemination of information to farmers because the use of mass-media for information transfer has a great potential for increasing the efficiency of capturing the targeted group. Establishing a Central Research Hub to deal with agricultural research output is recommended with the aim of keeping records on the type and quantity of research that has been carried out along with findings that are derived etc. This would prevent repetition of research thus reducing the cost which otherwise would be an extra burden for a country like Sri Lanka.

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