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How Do Academic Agriculturalists Engage in and View Outreach? The Case of Faculties of Agriculture in State Universities of Sri Lanka

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Abstract

This study aims to fill in the gap in literature on the state of academic engagement in Sri Lanka by investigating types of outreach engagement activities, outreach mechanisms, and attitudes of academic agriculturalists toward outreach. An online questionnaire survey was conducted among the academics (stratified random sample of 257) across eight faculties of agriculture in the state universities of Sri Lanka. According to the results, the average number of outreach activities per academic per year was 2.9, and the majority spent less than 5% of their working time on outreach activities, indicating low involvement in outreach by the academics. However, they held positive views on outreach engagement. Generally, the academics engaged in outreach activities through personal or informal individual contacts. Findings help provide guidelines for strategies to improve outreach engagement by academics at department, faculty, university, and national levels in Sri Lanka.

Keywords: outreach, academics, faculties of agriculture

Status of Outreach of the Faculties of Agriculture in the State Universities of Sri Lanka

The state university system in Sri Lanka consists of 15 national universities situated in different parts of the country. There are eight faculties of agriculture attached to the Universities of Peradeniya, Ruhuna, Rajarata, Wayamba, Jaffna, Sabaragamuwa, Uva Wellassa, and Eastern University, offering agriculture-related degrees. The eight universities are located in different geographical areas of the country belonging to eight provinces out of nine. These provinces vary in terms of geography, crop and livestock production, human resources, industries, and other socioeconomic conditions. According to Wolfe (2005), universities must be an important part of regional development. Therefore, all the faculties of agriculture have the opportunity to engage in national-level and regional-level outreach activities that will contribute to the improvement of regional agricultural and rural development as well as the development of the country as a whole.

The role of faculties of agriculture in the national agriculture extension service has not been defined and recognized. According to Sivayoganathan (1999), the Sri Lanka Council for Agricultural Research (SLCARP) had attempted to develop a national policy for agricultural extension, but it had not been successful. There is no formal system or mechanism to include and obtain the participation of faculties of agriculture in the agricultural extension system of the country. Unlike the more basic sciences, the faculties of agriculture should have more deliverable research outputs and knowledge for the community and industry. Outreach engagement or the extension activities of the faculties are an important conduit to disseminate the research output

to the public. The outreach activities of the agricultural universities may include educational programs for communities, community-oriented research, and various kinds of services to the community such as technical assistance and agricultural and rural planning (Bor, Shute, & Moore, 1989).

According to Crowder, Lindley, Bruening, and Doron (1998), agricultural education institutions play an academic role and also a community development or outreach role that allow them to understand local knowledge and combine it with modern agricultural science. It is emphasized that higher agricultural education institutions need to engage more directly and more effectively with local educational institutions such as schools that provide primary and secondary education, and their surrounding communities (Atchoarena & Holmes, 2005). However, traditionally, many agricultural universities in developing countries have defined their primary mission as training of human resources (Hansen, 1989), which is provided by offering academic degrees. Academic staff of the universities are mainly responsible for teaching, research, and outreach activities. Therefore, engagement in outreach activities by academics is an important aspect of higher education in agriculture as well as the agricultural development process of the country.

Ecklund, James, and Lincoln (2012) stated that there are no nationally representative studies to determine which scientists are engaged in outreach, or what types of outreach scientists do, and also that little is known about the views of scientists' outreach efforts across a broad variety of institutions and disciplines in the United States. He also claimed that there is a lack of knowledge about what strategies could be most effective in creating better outreach efforts. This research gap is evident in the Sri Lankan context as well.

Different countries have adopted different strategies to link agricultural faculties with national research, innovation, and extension systems and have achieved various levels of success. The recent direction of the University Grants Commission (UGC) in Sri Lanka giving more attention to improve university–industry linkages, community-based learning, and outreach activities are a positive trend. The UGC has identified outreach as a mandate of universities. Therefore, community engagement, consultancy, and outreach activities have been included in the evaluation criteria in reviewing higher education institutions in Sri Lanka. Outreach has also been identified as an important indicator in quality assurance, along with nine other criteria (Warnasuriya, Coomaraswamy, Silva, Nandadewa, & Abeygunawardena, 2015). Despite the fairly new and growing interest of the Sri Lankan government, policymakers, and educational specialists in university outreach engagement, only a few research studies have been conducted on university outreach activities (sometimes referred to as the university–industry linkage) to facilitate policy formulation in Sri Lanka (Esham, 2008). Harankaha (2013) examined the innovations by university academics in relation to law and a legislative view. Nisansala et al. (2014) studied the commercializing of university research outcomes in Sri Lanka and stated that there is a lack of research in related topics. Furthermore, there has been no full investigation of academics' views on present engagement, mechanisms of engagement, and factors hindering the active participation of Sri Lankan universities with special reference to faculties of agriculture in utilizing available research outcomes, knowledge, and expertise to address the needs and problems faced at the stakeholder level. Identification of the factors that affect engagement in outreach activities by academics as viewed by them would be helpful for policy implications and for designing guidelines and procedures to promote university outreach activities in Sri Lanka, but such knowledge is lacking.

Although at present the UGC has identified outreach as a mandatory function of universities, no detailed study has been performed to determine how academics view outreach, which is an important determinant of the involvement of academics in outreach. Such knowledge is necessary to better analyze the current situation and thereby develop more appropriate strategies and plans that will enable the achievement of the goals determined by the university system in relation to outreach. Therefore, the objectives of the present study were to investigate outreach engagement, outreach mechanisms, and views of academics on outreach engagement with special reference to the faculties of agriculture in state universities of Sri Lanka.

Working Definition of the Term "Outreach"

Traditional definitions of the term *univer-*

sity mainly focus on teaching and research as the primary functions of a university. However, scholars have also identified the role of the university as focusing on different aspects important for higher learning and the development process of the country to meet societal needs. This function of a university is known as "outreach" in general. According to Fear and Sandmann (1995), university outreach is one of the six types of public service, along with inreach, university service, professional service, community/civic service, and consulting. Further, Fear and Sandmann consider outreach part of the academic core, which cuts across teaching, research, and service. The definition of outreach for Michigan State University is "a form of scholarship that cuts across teaching, research and services. It involves generating, transmitting, applying, and preserving knowledge for the direct benefit of external audiences in ways that are consistent with university and unit missions" (Provost's Committee on University Outreach, 2009, p. 1). Poliakoff and Webb (2007) define university outreach as any scientific communication that engages an audience outside academia.

According to Bor, Shute, and Moore (1989), the outreach or extension tasks of an agricultural university consist of the more direct contribution of higher agricultural education to agricultural and rural development. Outreach activities may include educational programs for communities beyond the university campus, the conduct of policy initiatives, industry-and community-oriented research on issues identified by the consumers themselves, and offering various kinds of services to the community such as technical assistance and agricultural and rural planning. This definition is more relevant and provides the basis for the present study, as it directly defines outreach tasks of agricultural universities. The derived working definition for the term *outreach* for the present study was the process of active participation with community partners (government, industry, and community) to effectively apply and utilize the university academics' knowledge, resources, and expertise to address the partners' needs and problems. Schools, farmers, farmer or community organizations, and the general public were considered the community. Such outreach activities as educational programs, trainings, workshops, consultancies, and development projects were taken as units of analysis in this study.

Methodology

Study Sample

All the faculties of agriculture (n = 8) in the state universities of Sri Lanka offering agriculture and related degrees were selected for the study. A stratified random sample was selected for the study. Faculties of agriculture were considered the different strata. The sample consisted of two thirds of randomly selected academic staff members from each faculty (67%; N = 257). Department heads and the heads of the outreach units and programs were selected as the key informants.

Data Collection

A self-administered questionnaire was used as the instrument for data collection. The questionnaire was constructed using the following subheadings: personal profile, professional profile, outreach activities, and suggestions. Views of the academics were investigated mainly on (1) outreach engagement, (2) factors that would hinder outreach, (3) supportive and approving nature from others, and (4) satisfaction. Extent of outreach engagement was measured through numbers of outreach activities engaged in within the last 3 years. The questionnaire was piloted with 10 academics and necessary improvements were made. Then the questionnaires were sent by post and also e-mailed to the selected respondents. Survey recipients were sent reminders three times to encourage responses to the survey. A total of 126 filled questionnaires (49% response rate) were returned after three reminders. Two returned questionnaires were not used due to incompleteness.

Structured interviews with potential key informants were conducted by visiting all eight faculties of agriculture to collect data from existing centers/units and programs of the agriculture faculties involved in outreach activities. Interviews were conducted with the directors of the Agriculture Education Unit (AEU), Agribusiness Centre (AbC), and Agricultural Biotechnology Centre (AgBC) of the Faculty of Agriculture, University of Peradeniya.

Primary data were collected between the period 1 May 2014 to 30 July 2016. Both quantitative and qualitative data were collected using closed-ended and open-ended questions through the abovementioned methods of data collection. A mixed method

of research design was adopted for the study.

Data Analysis

Data were analyzed using descriptive and inferential statistics. Descriptive statistical analyses were used to summarize data and explain the basic characteristics of the respondents and other findings related to outreach activities. Primary data gathered from key informant discussions were qualitatively analyzed.

Results

Background of the Respondents

The sample adequately represented all levels of academics in terms of their grade of employment, namely, professors (20%), senior lecturers (55%), and lecturers (25%). Among the respondents, 56% were male academics and 44% were female academics. Therefore, the sample represented both male and female academics adequately.

In the study sample, 79 academics out of 124 of the total sample (61%) had a Ph.D. degree, and 98% of them had obtained their degrees from foreign universities. An additional 35% of the responding academics held a master's degree, and only 4%, who were probationary lecturers, had only the basic degree. This result shows the higher level of academic qualifications of the respondents, which can be useful in engaging in outreach activities. Only 30% of the academics in the study sample had low experience (less than 5 years). Among those with more than 5 years of experience, 18% had experience of more than 20 years.

Established Universities and Newly Established Universities

Universities were divided into two categories, well-established universities and newly established universities, based on the year of establishment, to see whether there is a difference in outreach engagement in terms of the length of time a faculty had been functioning as an indicator of their resources and experiences. Accordingly, faculties established before 1985—namely, faculties in the Universities of Peradeniya and Ruhuna—were considered to be in well-established universities. Although the University of Jaffna and Eastern University were established quite early—in 1986 and 1990 respectively—their functionality had been disturbed due to 30 years of civil conflict in the country. Therefore, these two faculties were also considered under the category of newly established faculties. Accordingly, the faculties of agriculture established after 1985 in Eastern University and universities in Jaffna, Rajarata, Wayamba, Sabaragamuwa, and Uva Wellassa were considered newly established.

How Do Sri Lankan Academics View Outreach?

Table 1 summarizes the views of the academics regarding outreach involvement. Most of the academics (83%) viewed outreach as a mission of the university and agreed or strongly agreed that they have a duty/responsibility as scientists/academics to engage in outreach activities (87%). Although outreach has been identified as a mandate of universities, 7% of the academics disagreed or strongly disagreed that outreach should be considered a duty or a responsibility of an academic, and 6% neither agreed nor disagreed. A majority (61%) agreed or strongly agreed that engaging in outreach activities is beneficial. To further develop such attitudes, it would be important to enhance the benefits for academics who are engaged in outreach activities through career advancement/promotions and/or opportunities for financial benefits. Some opportunities for financial benefits can be created through consultancies and in research and development projects linked to industry and the private sector. Interestingly, the majority of respondents (86%) reported that they enjoy outreach engagement.

Extent of Outreach Engagement

The participants were asked to assess the extent of their outreach engagement. The extent was measured using a 5-point Likert scale that included the following categories: "very great extent," "great extent," "somewhat," "very little," and "not at all." The results showed that 35% of the participants had "very little" engagement in outreach activities. However, the majority perceived that they were engaged in outreach activities "somewhat" (38%) or to a "great extent" (21%). Furthermore, only a few respondents (4%) had not been involved in any kind of outreach activity during the past 3 years. These respondents were newly recruited probationary lecturers. Their lack of

Table 1. Views of the Academics Regarding Outreach Involvement

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
My belief is that outreach is a mission of the university	51%	32%	9%	6%	2%
I have a duty/responsibility as an academic/scientist to engage in outreach activities	42%	45%	6%	5%	2%
Engaging in outreach activities is enjoyable	59%	27%	8%	4%	2%
Engaging in outreach activities is beneficial	37%	24%	11%	20%	8%
Average	41%	32%	8%	9%	4%

participation in outreach probably reflects their need to initially focus on duties assigned to them such as teaching. They may also not have adequate academic training and experience to engage in outreach.

What Do Academics Do as Outreach?

Figure 1 shows the different types of outreach activities conducted during the 3-year period 2012–2014. The most common type of outreach activity conducted was trainings (32%), followed by workshops (24%), seminars (21%), consultancies (15%), and development projects (8%). In terms of the target sectors for outreach activities, the government sector, including different government departments, authorities, and institutes, was the key audience, with the highest percentage (43%). The involvement with industry was less than in other sectors (24%), indicating the need for improvement of the linkages with industry.

Less than 5% of the respondents also indicated some other outreach activities, such as serving as visiting lecturers for other universities, holding membership in professional bodies and serving as office-bearers, and representing the university in committees or meetings of different government departments and institutes at regional and national levels. These activities also enable academics to contribute their expertise to agencies outside the university.

Table 2 shows the number and the type of outreach activities conducted by academics for different sectors during the 3-year period during 2012–2014. The most common

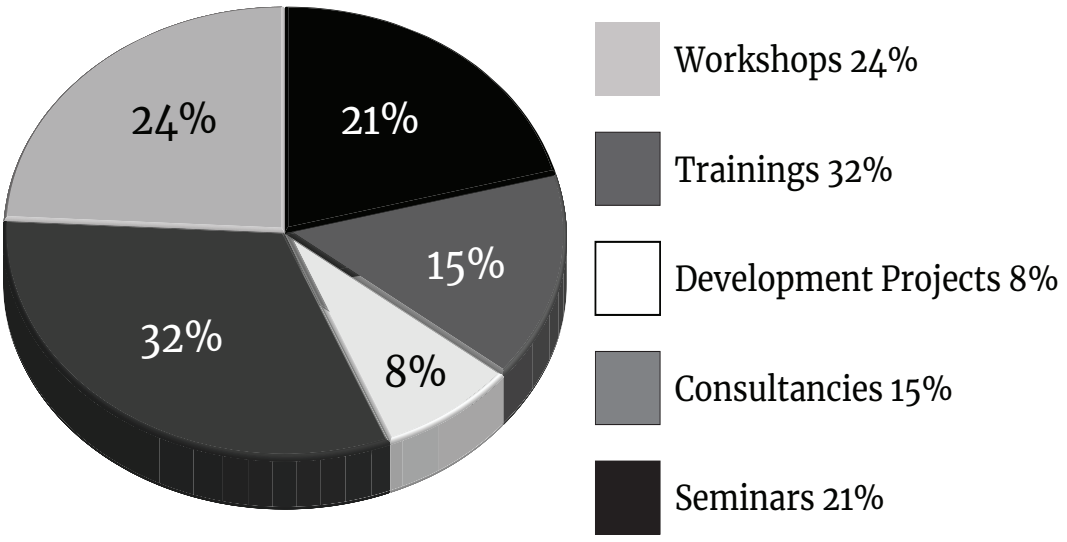

Figure 1. Different Types of Outreach Activities Conducted from 2012–2014

Table 2. Number of Outreach Activities Conducted by Academics for Different Sectors During the 3-year Period 2012 to 2014

Outreach Activity	Community		Industry		Government		Total	
	No:	%	No:	%	No:	%	No:	%
Trainings	145	40	65	25	134	29	344	32
Workshops	88	24	51	20	127	27	266	24
Seminars	61	17	70	27	100	21	231	21
Consultancies	50	14	59	22	54	12	163	15
Development Projects	19	05	17	06	52	11	088	08
Total No:	363	33	262	24	467	43	1092	100

Note: Government includes the different departments, authorities, research, and other government institutions. Community includes farmers, schoolchildren, and the general public. Industry includes basically the private production and service industries.

type of outreach activity was trainings (344). Within that, the highest number of trainings (145) was conducted for the community, which consisted of farmers, schoolchildren, and the general public. In terms of the total number of outreach activities conducted by academics of the study sample (n = 124) during the 3-year period, the least involvement was in development projects (88). In terms of the sector of involvement, government ranked the highest (467), followed by community (363) and industry (262). The results clearly indicated that the involvement of academics with industry was less than with the government sector and with the community.

As indicated, most of the outreach activities were trainings, workshops, and seminars to transfer knowledge. This result, supported by key informant discussions, revealed the traditional view of linear knowledge transfer (top–bottom approach) from institutions to the end users. This model is more in line with the general agricultural extension approach. The basic assumption of this approach is that technology is generated and information is available that is not being used by end users, and if this knowledge could be communicated, practices would be improved (Axinn, 1988). These kinds of models are said to be traditional and top-down because the active participation of all

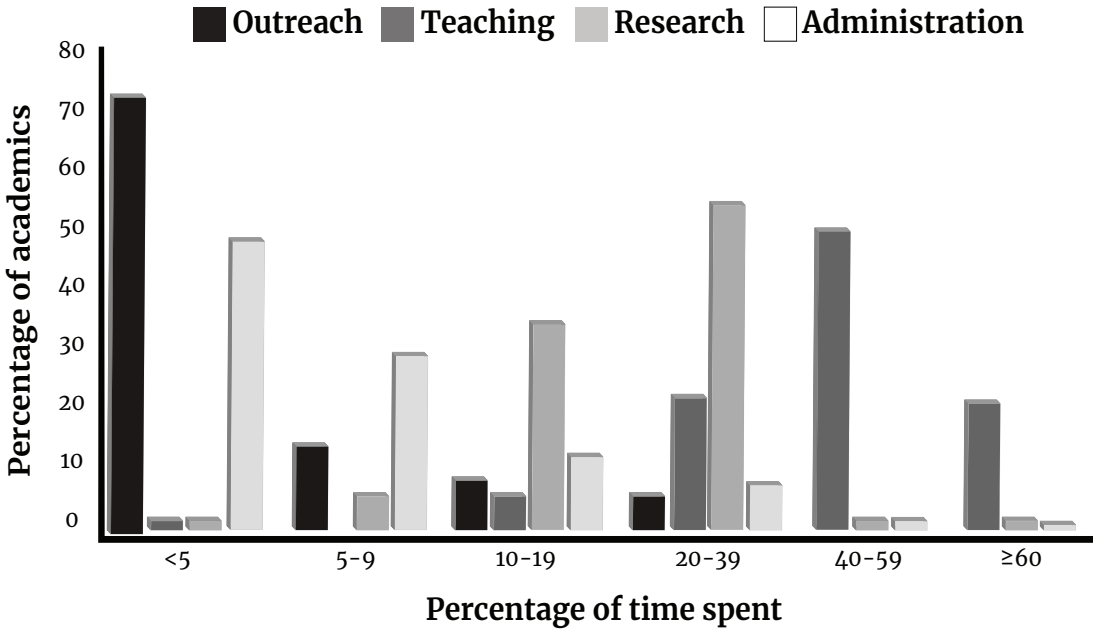

Figure 2. Self-assessment of Share of Time Allocated by Academics During One Week for Different Activities

involved parties in sharing of knowledge at different levels of technology generation and use is lacking. However, the term "outreach engagement" is meant more for sharing of knowledge and joint efforts with the stakeholders to address the problems faced.

How Much Time is Allocated for Outreach Activities?

Basically, academics are involved in teaching, research, administration, and outreach activities. Figure 2 shows the percentage of time allocated by academics for different activities during a week (8:00 a.m. to 5:00 p.m.), including weekends. Weekends were included since the majority of the academics are involved in postgraduate teaching and research and also in outreach activities during the weekends. This was so because even though the general working hours (8:00 a.m. to 5:00 p.m.) were considered a norm, most of the teaching, research, and outreach work in academia do not conform to these general working hours.

As illustrated by Figure 2, the majority of the academics (73%) spent less than 5% of their time on outreach activities. About 50% of academics spent 40%–59% of their time on teaching, and 54% spent 20%–39% of their time on research. In general, most of the academics devoted their time mainly to teaching activities, which is the core function of the university.

Teaching and research are considered the main role of a university. Therefore, academics devote their time mainly to teaching and research activities (Figure 2). Additionally, they also engage in administrative roles such as heads of departments, deans of faculties, directors of different units, and as the members of different subcommittees of their respective faculties and universities.

Perceived influence of time availability on outreach engagement was measured using the statement "There is no time to engage in outreach activities due to the workload of teaching, research, and administration." A 5-point Likert scale was given with the following response options: "very great extent," "great extent," "somewhat," "very little," "not at all."

According to the results, nearly half of the respondents (48%) stated that not having time due to the workload of teaching, research, and administration affected their extent of outreach engagement to a "very great extent" or "great extent." Accordingly, time availability is not a major factor affecting 52% of the academics' potential engagement in outreach activities. According to the Mann–Whitney U test, there was a statistically significant difference ($U = 1.356$, $p = 0.03$) between well-established universities and newly established universities in the impact of available time for outreach engagement. According to the mean ranks, academics in newly established universities claimed that they do not have time to engage in outreach activities ($M = 64$) compared to those at well-established universities ($M = 60$). According to the key informant discussions, the workload of the available staff of newly established universities is high due to lack of staff members in their faculties. Another contributing factor for the heavy workload of staff was that many of the newly recruited staff members were away on study leaves for their higher studies such as to obtain master's and doctoral degrees.

Presently, there is no accepted norm regarding how much time should be allocated by an academic in a Sri Lankan state university for outreach. Such a norm was not found in literature for other countries in the region as well. However, as outreach is one of the criteria for institutional review of Sri Lankan universities and higher education institutions along with nine other criteria, it would be beneficial if some guideline is provided to evaluate the level of outreach of faculties and correspondingly the level of outreach of individual academic staff members. It is noted that to become a professor, according to the grading scale given by UGC, it is essential to obtain a minimum of 10 points for the category of dissemination of knowledge and contribution to university and national development, out of a minimum of 105 points. It may be surmised that an assumption seems to be, even though not explicit, that roughly at least 10% of the achievements are associated with activities related to outreach. Accordingly it may be suggested as a guideline that an academic should devote approximately 10% of their time to outreach.

Even though the above value has been suggested for initial thoughts at an appropriate time when the need arises, it is noted that it is an extremely difficult task to set norms that are basically a standard for the whole

system. The time that could be allocated, and the contacts established, differ vastly between senior staff and newly recruited staff. Similarly, the contexts of established universities and the more recent ones are also very different in terms of resources that could be allocated to outreach, especially human resources where priority would be placed on teaching when the number of staff is limited or many of the new staff are on long-term study leave.

Further, it is also noted that although the university system has been operating for decades in Sri Lanka, this system has only recently begun to address the issue of norms for teaching and research. Given that norms for two well-accepted areas have experienced development only recently, it may be premature to set norms for outreach that need to be adhered to. The present need is to promote and obtain greater acceptance regarding the need for outreach, rather than trying to "force" a particular number of hours on an academic member. Thus, to restate, the value is only to give a suggestion for consideration when such a need arises in the system.

Outreach Strategies of the Faculties

Some universities in the world have formal, dedicated outreach centers as the outreach arms of the university and adopt different strategies to conduct outreach activities at the university. There were different outreach strategies in faculties of agriculture in state universities of Sri Lanka. However, outreach centers or units have been established only in a few faculties. AEU, AbC, and AgBC of the Faculty of Agriculture at the University of Peradeniya, University Interactive Cell in Faculty of Agriculture of the Eastern University of Sri Lanka, and Outreach Centre in Faculty of Animal Science and Fisheries in the Wayamba University of Sri Lanka are examples of such units. There were some teams/committees to coordinate outreach activities in some faculties where a specific outreach center/unit is absent.

Method of Coordination of Outreach Activities of the Academics

Coordination of outreach activities was, for most academics, achieved through individual/personal contacts (44%), followed by the dean or heads of the departments (37%). Only 18% of the academics had their outreach engagement through an outreach center or team in the faculty. It is important to utilize personal contacts/network to initiate and develop outreach engagement, but a formal mechanism to facilitate the process is a necessity. According to a key informant discussion conducted with a head of a department in Ruhuna University of Sri Lanka, there is no strong mechanism in the faculty for recording, monitoring, and evaluation of the outreach engagement of academics. Some academics do not even report their engagement to the faculty board since there is no mandated requirement. Accordingly, he pointed out that although the academics are engaged in outreach activities, there is no follow-up mechanism to evaluate the impact. Therefore, it is difficult to determine the effectiveness of such outreach work.

The key informant discussions confirmed that there was no formal mechanism, center, or office dedicated to outreach activities in many faculties of agriculture in the universities of Sri Lanka. In some universities, there were outreach mechanisms established by different programs and projects, but they were not sustainable. The main barrier to sustainability was inadequate financial support and less recognition and rewards for academics who were engaged in administration, coordination, and other work related to outreach activities. However, one recent outreach initiative—a mobile phone intervention in the mushroom industry by Faculty of Agriculture in University of Ruhuna in Sri Lanka (Wijerathna & Silva, 2014)—has been an example of a successful collaboration with a private mobile service provider. The project focused on the use of mobile phones for technology dissemination to small-scale mushroom producers. During a 6-month time span, 5,583 mushroom farmers accessed the program and obtained relevant knowledge elements for the enterprise. This project demonstrated that it is possible to have a sustainable private sector partnership even without a dedicated outreach arm. According to the key informant discussion with the activity coordinator of this project, it was successful due to the positive attitudes and commitment of the academic staff members. He also mentioned that the use of information and communication technology (ICT) enabled them to serve a larger community.

There was no full-time academic member or specifically recruited person for outreach activities in seven faculties of agriculture

out of eight. There was a permanent person recruited as a senior lecturer and to act as the director for only one outreach arm of the one faculty, namely, AgBC of the Faculty of Agriculture, University of Peradeniya. In addition, an academic cadre has been secured to serve in a similar capacity in the ABC of the same faculty. The director of the AEU is selected once in 3 years from the academic staff members of the Faculty Board. According to the key informant discussion conducted with the director of the AEU, it is important to have such a unit in the faculty to reach the public as the AEU rather than as individuals in order to maximize trust and recognition. The unit provides a platform for academics to engage in outreach. Furthermore, having such a unit is important because the reduction of bureaucracy streamlines financial handling and enables quick decision making. However, he highlighted the fact that the position needs high commitment due to the obligations for teaching and research as an academic. Further, he mentioned that the rewards and recognition for the commitment are less tangible. He also indicated the need for adequate office space and a dedicated staff member for clerical work and as an office assistant. It was observed that the success of the unit is dependent solely on the commitment of the person and on personal characteristics such as ability to develop a network with external constituents.

The directors of the ABC and AgBC are a permanent cadre position of the Faculty of Agriculture, University of Peradeniya. They report to the dean of the faculty. Therefore, the line of command is relatively short and thus less bureaucratic. According to the key informant discussion with the director of the AgBC, it is an advantage to have separate infrastructure facilities, including research labs, equipment, and a supporting staff. Furthermore, the challenge of the center is to earn money for its existence. The center is in a financial deficit since it does not receive money from UGC allocations. However, the center earns money by offering services to outside professionals, agencies, and organizations. According to the views of the director of the AgBC, the service to the farming community is neglected due to a lack of funding to provide free services.

In all other cases, academics of the faculty boards work as the directors, coordinators, and officers-in-charge in the outreach centers, units, and teams on a voluntary basis in addition to their teaching, research, and general administrative roles in the faculty. According to the key informant discussion conducted with the coordinator of the university–industry linkages at Eastern University, academics were reluctant to serve in these positions due to inadequate recognition and rewards and also because of time constraints. However, at present, outreach activities in most of the faculties have been promoted through the Quality and Innovative Grant (QIG) provided by the World Bank through the Higher Education for the Twenty First Century Project (HETC), and this is a positive trend.

Perceived Satisfaction of Academics With Their Outreach Engagements

Satisfaction of the academics in terms of quantity and quality of their outreach activities was measured. Only 31% of the academics who responded were satisfied with the outreach activities, and 38% were neutral in their response. More importantly, 21% were dissatisfied, and 10% were highly dissatisfied regarding outreach activities in comparison to teaching, research, and administration activities. The majority of the academics were highly satisfied about their teaching (69%) and research (69%), and 58% were neutral in response for the satisfaction about administration. This may be due to the low involvement of the majority in administrative work.

A Kruskal-Wallis test resulted in no statistically significant association between the two types of universities for satisfaction related to teaching ($x^2 = 0.116$, $p = 0.733$), research ($x^2 = 0.245$, $p = 0.621$), and administration ($x^2 = 0.071$, $p = 0.789$). However, there was a statistically significant relationship ($x^2 = 8.87$, $p = 0.003$) between well-established universities and newly established universities for satisfaction with outreach activities.

The academics in the well-established universities were highly satisfied and satisfied (69%) with outreach activities; in comparison, only 23% of those in newly established universities gave the same responses. Furthermore, only 24% of academics in the well-established universities were dissatisfied or highly dissatisfied about outreach, whereas 43% of those from newly established universities responded as dissatisfied or highly dissatisfied. This difference is probably due to more opportunities and facilities for outreach activities being

Table 3. Response of the Academics for the Statements on Subjective Norms

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
My academic colleagues would approve the engagement in outreach activities.	25%	48%	19%	6%	2%
My superiors (e.g., head of the department/dean of the faculty) would approve the engagement in outreach activities.	19%	62%	11%	6%	2%
My friends (nonacademic and family members) would approve the participation in knowledge and technology dissemination.	23%	56%	12%	7%	2%
Average	22%	55%	14%	6%	2%

available in well-established universities than at newly established universities. Furthermore, the academics of newly established universities have less time for outreach due to the workload of teaching, research, and administration.

Views on Approval and Support From Others for Outreach (Subjective Norms)

Subjective norms are the beliefs about whether a specific reference group would approve or disapprove of a particular behavior, and that was measured using three statements. According to Ajzen (1999), approval of the institutional community as well as family, friends, and other related outsiders is also an important factor governing a particular behavior. Therefore, it shows the perceived social pressure for a given behavior.

In general, the majority of the academics felt that outreach activities planned and implemented would get the approval and thereby the support of their academic colleagues, superiors (head of the department/dean of the faculty), friends, and family members (Table 3). The results thus revealed that in general the academics perceived obtaining the necessary support and motivation from the institute itself as well as from their families and outside friends to engage in outreach work. This approving/supporting nature of the academics and superiors should be continued to improve outreach engagement by academics.

Factors Hindering Outreach Engagement

The ability to perform outreach tasks and the availability of resources and opportunities were important considerations in this study. Table 4 shows a summary of the responses given by academics for the statements given to assess the perceived hindering factors for outreach engagement.

The majority of the academics perceived that they have necessary knowledge and skills to engage in outreach activities and perceived that they have enough experience/training to engage in outreach activities. However, most of the academics agreed that the universities lack established networks with government, the private sector, and the community for outreach activities. Furthermore, the majority agreed that they do not have a central mechanism/unit to coordinate outreach activities of their faculties. Some academics (39%) perceived that their universities do not have a policy toward outreach engagement, and this could influence the outreach activities performed by them.

Table 5 shows the perceived effect of different resources (financial, human, and physical) on outreach engagement. The majority of academics perceived that they do not have adequate financial, human, and physical resources in their faculties to engage in outreach activities. Therefore, it is important to improve the human and physical resources and provide adequate financial resources necessary for outreach engagement. It was assumed that well-established universities and newly established universi-

Table 4. Response of the Academics Regarding Hindering Factors That May Affect Outreach Engagement

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I do not have necessary knowledge and skills to engage in outreach activities.	2%	2%	6%	40%	50%
I do not have enough experience/training to engage in outreach activities.	1%	12%	14%	29%	44%
Lack of established networks with government, private sector, and community.	17%	47%	17%	14%	5%
The university structure is not adapted for outreach activities.	10%	32%	22%	27%	9%
University norms, culture, and procedures do not support outreach activities.	5%	20%	20%	34%	21%
Curriculum of the faculty does not support outreach activities.	6%	40%	14%	20%	20%
Inadequate infrastructure facilities for outreach activities.	10%	42%	16%	23%	9%
Geographical location of the university does not support outreach activities.	9%	17%	18%	34%	22%
I am not aware of the opportunities to engage in outreach activities.	23%	33%	19%	20%	5%
The university does not have a policy toward outreach engagement.	8%	31%	26%	24%	11%
There is no central mechanism/office to provide support and coordination.	27%	33%	15%	15%	10%
Average	11%	28%	17%	25%	19%

Table 5. View on Extent of Influence of Resources for Outreach					
Statement	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Financial resources are not enough to engage in outreach activities	19%	44%	19%	10%	8%
Human resource is not available to adequately engage in outreach activities	27%	32%	19%	6%	16%
Physical resources are not available to adequately engage in outreach activities	12%	40%	26%	16%	6%
Average	19%	39%	21%	11%	10%

ties would differ in extent of resources and influence on outreach activities. However, based on the results of the Mann–Whitney U test, only physical resources showed a statistically significant difference (U = 1541, p = 0.048) between the two types of universities. Well-established universities may have more physical resources than the newly established universities. Accordingly, a lack of physical resources could be a strong influence on outreach involvement of academics in newly established universities. Therefore, priority should be given to newly established universities in terms of physical resource development.

Grade and Outreach Engagement

It was assumed that academics from all designation categories may be involved in outreach activities similarly. However, according to ANOVA results (F = 3.243, p = 0.006), there was a statistically significant difference between the different designations and outreach engagement. The results of Duncan mean separation are given in Table 6. There was a gradual reduction in the number of outreach activities conducted by the academics from senior professors to probationary lecturers. The probationers are probably less engaged in outreach because they are within their first few years in the system as lecturers and thus are concentrating on their teaching roles, higher studies, and research. Their opportunities also may be limited. As an academic gets into senior positions, they also have more links, contacts, and responsibilities to cater to national and regional problems.

As the results indicate that the outreach engagement of junior academics is lower, they should be encouraged and be given opportunities to engage in more outreach activities than they are involved in at present.

Does Gender Matter in Outreach Engagement?

Among the respondents, 56% were male academics and 44% were female. In general, women have a dual role to play as a professional and as a mother or a wife, and gender stereotyping may sometimes constrain the women scientists. Thus, it can be assumed that time availability and cultural constraints limit the women academics in engaging in outreach activities. A study conducted by Dudo (2012) also identified no links between a scientist's gender and his or her level of public communication activities. However, he indicated that gender may have an impact in public communication activities of scientists and that this possibility requires additional scrutiny. Supporting this idea, Roten (2011) reported that the attitudes toward public outreach and engagement are the same among men and women scientists, but such activities are performed significantly more often by men scientists than by women scientists. Similarly, in this study as indicated by the ANOVA model (F = 17.558, p = 0.000), males had a significantly greater involvement than females in actual outreach activities (number of activities conducted during the past 3 years).

In contrast, Ecklund, James, and Lincoln (2012) reported that women scientists are markedly more involved in outreach work than men. However, the context examined for the present study was in Sri Lanka specifically. The results suggest that in design-

Table 6. Mean Value for Outreach Activities Engaged in by Academics According to Their Designation

Designation	Mean	SDE
Senior professor	56.400	15.215
Professor	45.235	8.252
Associate professor	23.333	19.643
Senior lecturer I	24.227	7.254
Senior lecturer II	18.587	5.016
Lecturer confirmed	9.667	13.890
Lecturer probationary	6.680	6.804

ing and developing strategies to improve the outreach engagement of men and women scientists, known gender differences should be taken into account. The present study suggests that women academics should be more encouraged to engage in outreach activities.

Suggestions to Improve Outreach Engagement

It is important to look at academics' suggestions to improve outreach engagement. Figure 3 illustrates that 89% of academics in this study highlighted the need for financial flexibility in universities for engaging in outreach activities. It was revealed that it is difficult to utilize money received from outside organizations for outreach activities due to strict financial regulations and procedures of the university. For example, it takes a long time to obtain approvals due to the universities' bureaucratic financial management systems. It was also mentioned that a considerable percentage of the money has to be given to the university as an administrative fee.

About 87% of respondents proposed including outreach as a component of the curriculum to improve outreach engagement of the students as well as the academics. This suggestion would help to make outreach engagement compulsory by incorporating it in the academic program. As shown in Table 4, 46% of academics agreed or strongly agreed that the curriculum does not support outreach engagement; another 25% gave a neutral response. Including outreach activities in the curriculum is important to promote outreach engagement not only of academics but also of the students by enhancing their opportunities for exposure to real-world experiences.

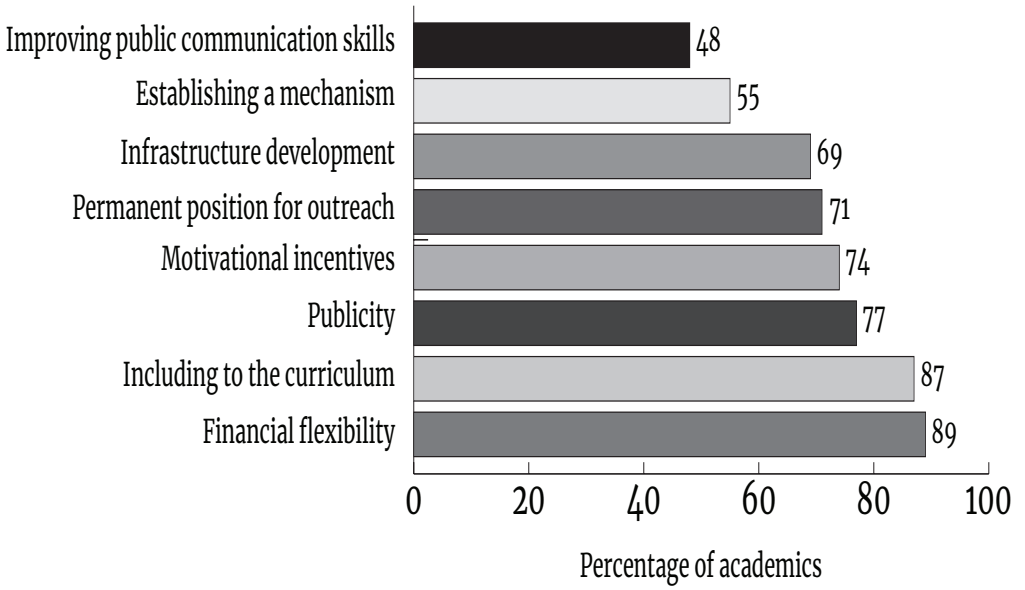

Figure 3. Suggestions of the Academics to Improve Outreach Engagement

Publicizing outreach activities was suggested by 77% of the responding academics, who claimed that the community and industry were not aware of the outreach arms/programs of the faculties. The suggestion of Self, Foster, and Sauser (1995) to look at outreach as a "service industry" and adopt the "marketing" concept is important in this regard. Establishment of new linkages and creating more demand from outside organizations are thus important. Also significantly, 74% of the academics in the study sample stated that it is beneficial to improve motivational incentives.

A fully devoted permanent position to coordinate the outreach activities of the faculties was suggested by 71% of respondents, and 69% perceived that it would be important to develop the infrastructure facilities of the faculties in order to facilitate outreach engagement. Specific suggestions included developing laboratories and equipment, as well as transport facilities. Such development may be mostly needed by the newly established faculties, given that human resources and other infrastructure facilities vary across the faculties. The need for an outreach mechanism was suggested by 55% of the academics. Only one of the faculties of agriculture had three established outreach centers/units. Interestingly, 48% of the responding academics suggested improving the interpersonal and public communication skills of the academics, including writing for newspapers, public speaking, and communication skills in electronic media such as radio and television.

Consideration of the above suggestions in planning and implementation of strategies to improve outreach activities of the faculties of agriculture would be of immense importance to strengthen outreach programs carried out by these faculties in the universities of Sri Lanka.

Implications

The academics of the faculties of agriculture in the universities of Sri Lanka are engaged in outreach activities to a limited extent and contribute in some measure to agricultural knowledge and technology dissemination to the community, industry, and various government departments, authorities, and institutes. However, in general, their involvement is not at a satisfactory level. The average number of activities per academic per year was 2.9, and the majority of questionnaire respondents spent less than 5% of their working time on outreach activities. More importantly, the majority is either dissatisfied or highly dissatisfied with outreach activities in comparison with teaching, research, and administration; indicating a need for more administrative support and coordination.

The most common type of outreach activity was trainings (32%) conducted for the community, which includes farmers, schoolchildren, and the general public (Figure 1). Other outreach activities were workshops (24%), seminars (21%), consultancies (15%), and development projects (8%). The lowest number of interactions occurred with industries in comparison to the involvements with government institutes and the general public.

The general mechanism of the academics for engaging in outreach activities has been through personal or informal contacts. Only one faculty has three well-established separate centers for outreach. Well-established universities engaged more in outreach activities than newly established universities during the period 2012–2014. Furthermore, more academics in well-established universities reportedly were "highly satisfied" or "satisfied" (69%) with outreach activities in comparison to those who were in newly established universities (23%).

Academics are generally confident enough in their competencies to engage in outreach. The study also revealed that, in the sample population, male academics showed a higher engagement in actual outreach than female academics during the period 2012–2014.

Recommendations

Recommendations for the Department, Faculty, and University Level

Measures should be taken to improve the general level of satisfaction and motivation of academics to engage in outreach activities. There should be a mechanism for recognition and rewards for outreach engagement, such as adequate recognition in promotional guidelines and in awarding research and development grants.

Promotion of favorable attitudes of academics toward outreach engagement and subjective norms would be beneficial. Motivational activities, such as formal and

informal approvals for such outreach activities and appreciation of services rendered by the academics from superiors, including heads of the departments, deans of the faculties, and vice chancellors of the universities, are important. Female academics should be motivated and encouraged more, as their engagement in outreach is low compared to that of males.

Outreach, too, should be an integral part of the academic curriculum of the universities. There should be a mechanism to facilitate the interactions of all the academics for outreach engagement, in contrast to the current predominance of working alone according to personal or informal contacts and agendas. Although the UGC has identified outreach as a mandate of universities, the academics are not much aware of that. Therefore, it is important to make them aware that outreach is an expected activity. All academic staff members should be aware that community engagement, consultancy, and outreach activities are part of the evaluation criteria in reviewing higher educational institutions in Sri Lanka. This would act as an additional motivating factor for academics to be involved in outreach activities and for faculties to promote outreach.

It is important to have an overall clear mission in the faculties for outreach engagement. It would be beneficial to have a formal outreach mechanism in faculties to promote outreach activities while providing opportunities to all stakeholders for joint efforts in learning, sharing knowledge and experience, and, especially, in solving the problems faced. Fully devoted outreach arms should be established at faculties or universities to facilitate this process. A permanent academic–administrative position should be established to coordinate the activities, as the academics are busy with their teaching, research, and obligatory administrative work. However, success does not solely depend on having a separate outreach arm or a dedicated staff member for outreach. The personal characteristics of the staff members are important determinants of success. The staff should be carefully recruited, especially when there is a permanent position for outreach, because success could be largely dependent on personal characteristics such as leadership, networking ability, public relations and communication, and, above all, motivation, interest, and commitment.

Recommendations at National and Policy Level

Designing strategies and preparing guidelines to improve outreach activities of the faculties of agriculture in the state universities in Sri Lanka at the national and policy level is of utmost importance. The outreach mission of the faculties of agriculture should be clearly defined. At present, the universities perform their outreach activities on their own without a clear integration with the national agenda. Therefore, the faculties of agriculture should be included in the formulation and execution of national research and extension strategies. Strategies should not overlap and conflict with already functioning external mechanisms, but should be mutually beneficial.

Adequate infrastructure should be developed to facilitate the outreach process, especially in newly established faculties of agriculture. Flexible administrative procedures in financial handling for outreach activities and possible strategies to finance the outreach activities should be explored. Also, establishing a clear innovation patent policy on the ownership of inventions originating in universities is important to encourage innovations by academics.

Many of the above recommendations would also enable taking into consideration the suggestions given by academics during planning and implementation of strategies to improve outreach activities of the faculties of agriculture in the state universities of Sri Lanka. The main suggestions were financial flexibility in universities for engaging in outreach activities, including outreach as a component of the curriculum, popularizing outreach activities, improving incentives to engage in outreach, establishing a permanent position for outreach, and developing necessary infrastructure facilities. These concerns should be addressed not only at the university level, but also at the policy level at higher forums.

Recommendations for Future Studies

Structural and policy arrangements of the universities, government institutes, and industries to facilitate outreach activities of academics should be studied in detail to identify the strengths, weaknesses, and opportunities for development through incorporation and coordination with each other. In-depth studies are required to investigate the activities in detail in relation to inputs

and their outputs and impacts. Case studies will also be useful in understanding specific situations, problems, and solutions. This study mainly focused on outreach activities of individual academics. However, it is important to assess the involvement and mechanisms of different units/centers/departments and faculties for a comprehensive understanding about the outreach activities of academia. Furthermore, it is also important to investigate the outreach engagement of students in relation to academic programs and extracurricular activities.

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