“Status of Food Security in Sri Lanka and the Role of Food Processing Technologies in Contributing to Food Security: A case study in 03 selected Divisional Secretariat”

by

Kalahe Gamage Indrananda Amarasinghe

Ph.D 2015

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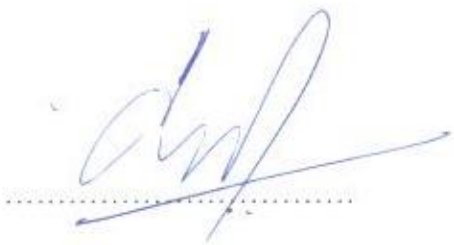
Thesis submitted to the University of Sri Jayewardenepura for the award of the Degree of Doctor of Philosophy in Food Security on 2015

The work described in this thesis was carried out by me under the supervision of Prof A. Bamunuarachchi, Dr M.A.J.Wansapala, Dr A.A.J.Jayasiri and Dr R.M.K.Ratnayake and a report on this has not been submitted in whole or in part to any university or any other institution for another Degree / Diploma



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Signature of the candidate

We certify that the above statement made by the candidate is true and that this thesis is suitable for submission to the University for the purpose of evaluation

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We certify that the candidate has incorporated all corrections, additions and amendments recommended by the examiners to the final version of the Ph.D thesis.

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ABSTRACT

South Asia is one of the most food insecure regions in the world. Among the South Asian countries, Sri Lanka appears to be at a satisfactory position but the country is not completely secure in food. Prevalence of malnutrition and micronutrient deficiencies in the country is at a high level. The estate, rural and low income urban sectors are the most affected sectors in the country with food insecurity. Food processing technologies play a major role towards food security, however, in Sri Lankan context the role of food technologies towards food security is not assessed yet. The objectives of the current study were to investigate the status of food security, and direct/indirect factors affecting the food security in Sri Lanka. Further, the role of food processing technologies in contributing to food security was also assessed in three representative divisional secretariats to identify the situation in detail. An island wide survey was carried out in order to recognize the household contribution to the main food security related sectors (agric food, fisheries, and livestock production). The survey data was used to identify the sectors and areas which need further development to establish food security in the country.

The detail study was carried out with three representative divisional secretariats (DS), Thamankaduwa (as an urban area), Sevenagala (as a semi urban area) and Lunugamwehera (as a rural area). Sri Lankan food insecurity map and multidimensional

poverty headcount ratio (health, education and living standard) were considered as major criteria for selection. The data were collected through standard questionnaires, interviews, discussions and the data bases available in well established government and non government organizations. Gathered data were compared and analyzed descriptively.

The island wide survey results showed that the household contribution to the agricultural food, fisheries and livestock of the Northern and Eastern provinces were 24%, 12% and 20% respectively while contributions of other seven provinces for the above were 39%, 1% and 6% respectively. However, it was identified that there is a provision to increase the household contribution to the food security by utilizing the available resources in an organized way.

In three selected DSs, the total monthly protein production from animal, cereal and pulses were 181.0MT. The protein production was less than the requirement and the existing protein deficit was 24.3%. Sufficient amount of energy and micronutrient production was observed. In the sample area monthly production of energy from carbohydrates was 43321.3 Mn Kcal and the production was higher than the requirement. However, prevalence of macro and micro nutrient wasting existed in these areas. Monthly production of micronutrients, i.e. Vitamin A, Vitamin C, Thiamine, Riboflavin, Iron and Calcium were 0.2 Kg, 1034.4 Kg, 14.3 Kg, 17.9 Kg, 496.2 Kg and 3951.2 Kg respectively. Less knowledge of the people in the areas regarding nutritious foods has resulted low intake of energy and micronutrients which has led to malnutrition and micronutrient deficiencies in the population. Usage of food crops as cash crops due to existing poverty has generated this situation.

The total monthly production of cereals and pulses in the sample area was 12450.0 MT, but in the three divisional secretariats, processing of cereals and pulses were very low. The percentages of processed agricultural based products in Thamankaduwa, Lunugamvehera and Sevanagla were 0.62, 0.04 and 2.50 respectively. The common cereal based value added product available in all three sample areas was string hopper flour (87%) and rest was the confectionary based products (13%). Processing of milk and fish was 9.4% and 1.8% out of total production respectively. Processing of meat was at a negligible level and tendency to manufacture value added foods was at a very low (2.0%) level. The intermediate level value added technologies were required to minimize the food loss and improve the food availability as well as accessibility to upgrade the food security. The percentages of drinking water and sanitation in the sample area were 70% and 89% respectively. Many food manufacturing technologies has evolved in the world today that use raw agriculture, fisheries and livestock produces to manufacture a variety of stable, nutritious and safe food products. However, the results confirmed that Sri Lanka seems to be far behind in adopting such novel technologies. On the whole, there is an inadequate knowledge regarding food processing technologies in the country, which is the reason for the diminished production of processed foods and a considerable wastage of food. Present study revealed that there is a need to transfer correct technologies to the grass root level. Thus promoting and adopting food processing technologies in rural sectors is necessity for achieving total food security goal in Sri Lanka.

Key words : Food security , Malnutrition, Production of major foods , Value addition