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Storing Leafy and Green Vegetables for the Sake of Human Consumption during a Natural Disaster

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Abstract:

Sri Lanka is undergoing different types of disasters including droughts, landslides and particularly floods. As the pathogens can remain in the soil for a period of months following a flood, there is a risk of contamination of vegetables. Because, flood water may contain disease-causing organisms (pathogenic bacteria, parasites, and viruses). In Sri Lankan culture, vegetables are highly considered as an important, healthy and nutritious food source in meals. But the consumption of leafy and green vegetables either in raw or cooked form during or following natural disasters, such as floods will be associated with foodborne illnesses. This situation can be minimized if the fresh vegetables can be transported from areas where no floods occurred and stored in places where safe but near to the flooding areas for the consumption during and after a disaster.

After harvesting fresh commodities from the field, tend to deteriorate rapidly if proper cooling methods are not practiced. Metabolic reactions (respiration and transpiration) take place in post-harvest commodities cause for this deterioration and to reduce the post-harvest life; because the energy in the process of respiration is discharged as heat. If this heat is not removed, the process is accelerated, and moisture loss will be high and wilting will be resulted. Hence this study aims to develop leafy and green vegetable storage having low (6-12^{0}C) temperature and high (≈95%) relative humidity, where vegetables are subjected to store. The objective of this study is to extend the post-harvest life of leafy and green vegetables for the safe consumption as disaster resilience.

The storage condition can be created with the use of evaporative cooling system consists with exhaust fans. This storage system will be capable of reducing metabolic activities also to retard losing food value, appearance, and weight. The fresh commodities subject to the store has to be free from cuts and bruises. Otherwise, it will stimulate the development of bacterial and fungal infections more, high weight loss, and stress ethylene. With the exposure to exogenous ethylene can lead to accelerate senescence and thus to decrease shelf-life. The efficiency of the storage system can be hindered due to the humid climate during floods. Therefore, desiccants can be used to remove moisture from incoming air for the purpose of decreasing humidity at the inlet.

Keywords: Disasters; Flood; Leafy and green vegetables; Post-harvest; Respiration