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Conceptual Model to Identify Pest and Disease of Brinjal in Home Gardens: A Case study

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Home gardening has become an essential part of Sri Lankans after launching the "Saubhagya" program which aims to develop one million home gardens. But with the busy lifestyles of the people, it revealed that it is very difficult to manage their home gardens. Hence the gardens are not as effective and efficient as it should be, most of the gardens are left behind even before getting a single crop yield. Lack of context-specific, complete, and actionable information to make timely-correct decisions was identified as the major factor for that. Since mobile phones play an important role in modern lifestyles, the team "Govi-Nena" introduced a mobile App called Govi-Nena Home Gardening specially designed and developed for Sri Lankan home gardeners. After launching the game-changing mobile application we had several feedback sessions with the agricultural domain experts. More than 90% of the participants urged the requirement of having a customized pest and disease calendar for the home gardeners which will enhance the efficiency and effectiveness of home gardens by maximizing the yield. A case study was conducted in selected fields in the "Kirimatimulla" area in the "Matara" district by selecting the Brinjal to check the feasibility of addressing the above critical improvement. A novel model has been developed by syncing crop life cycle stages with pest and disease life cycles. The model will allow users to visually map the symptoms of pests and diseases with their home gardens which lead to the identification of pests and diseases accurately. When the user inputs are ambiguous, it will take additional user inputs as images and predict the pest and disease attacks using a convolutional neural network-based algorithm. The model is currently under construction while having continuous improvements by getting the feedbacks of the domain experts which shows promising results to the end users.

Keywords: Crop calendar, Home garden, Govi-Nena mobile application, Pest and diseases Prediction system