植物疫病蟲害示警資訊於社群軟體推播應用與研發

Application of Plant Pest Early Warning in Social Media Notifications

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摘　要

2020 年起，農業部動植物防疫檢疫署（以下簡稱防檢署）與國家災害防救科技中心（以下簡稱災防科技中心）攜手合作建立「植物有害生物戰情分析平台」，致力於發展植物有害生物示警機制。災防科技中心運用地理資訊系統（Geographic Information System, GIS）與儀表板視覺化技術。並導入有害生物綜合管理（Integrated Pest Management, IPM）的策略架構包含「預防」、「監測」與「干預」，其中「監測」及對「監測結果的評估」是 IPM 策略中的核心工作。因此除了調查病蟲害的種類與危害情形外，更重要的是評估執行防治措施的時機，其仰賴於門檻值（Threshold）的建立。

本研究旨在協助植物防疫人員快速掌握全國植物疫病蟲害的發生現況，開發視覺化展示主題圖。以近兩週內各縣市政府對植物疫病蟲害監測的結果，透過『行政區儀表板』呈現縣市/鄉鎮層級的有害生物發生狀況與燈號，以地理資訊圖台方式展示全臺植物疫病蟲害狀況。此外，為了讓中央單位、地方單位、場試所甚至是第一線的農民能快速掌握示警資訊，本研究設計 E-mail 與 LINE 社群推播管道，傳遞示警通知資訊，內容包含植物疫病蟲害類別、示警燈號、示警區域、示警作物、示警時間；LINE 社群推播方面，則採用簡單清晰的台灣圖卡與燈號表格，每日自動化產製並推播預警資訊至使用者。此外，本研究還提供病蟲害示警應用程式介面（Application Programming Interface, API）服務機制，讓相關需求單位能介接病蟲害示警資訊。

本研究相關內容已運用於植物疫病監測數據結果評估，提供相關人員監控最新植物疫病蟲害情勢，未來將探討精進門檻數值，並滾動式調整，以提供防疫人員即時決策，擬定應變防治措施。

關鍵詞：植物疫病蟲害，社群推播，示警資訊

Abstract

Since 2020, the Animal and Plant Health Inspection Agency, Ministry of Agriculture (APHIA) and the National Science and Technology Center for Disaster Reduction (NCDR) have been collaborating to establish the "Plant Pest and Disease Surveillance Platform." This platform aims to develop a warning mechanism for plant pests and diseases. The NCDR utilizes Geographic Information System (GIS) and dashboard visualization technologies and incorporates the strategy framework of Integrated Pest Management (IPM), which includes "prevention," "monitoring," and "intervention." Among these, "monitoring" and "evaluation of monitoring results" are core tasks in the IPM strategy. Therefore, in addition to investigating the types and damage of pests and diseases, it is crucial to evaluate the timing of implementing control measures, which relies on the establishment of threshold values.

This study aims to assist plant quarantine personnel in quickly grasping the occurrence status of plant pests and diseases nationwide by developing visualized thematic maps. Based on the monitoring results of plant pests and diseases from local governments over the past two weeks, the "Administrative District Dashboard" presents the occurrence status of harmful organisms at the county/township level, displaying the plant pest and disease situation across Taiwan in a spatial manner. Additionally, to enable central units, local units, research stations, and frontline farmers to quickly grasp warning information, this study designs E-mail and LINE push notification channels to convey warning notifications, including plant pest and disease types, warning lights, warning areas, warning crops, and warning times. For LINE community push notifications, simple and clear Taiwan maps and light indicator tables are used, automatically generated and pushed daily to users in the warning counties. Furthermore, this study provides a pest and disease warning Application Programming Interface, API service mechanism, allowing relevant demand units to integrate pest and disease warning information.

The content of this study has already been applied to the evaluation of monitoring data results for plant pests and diseases, providing relevant personnel with the latest information on plant pest and disease situations. Future efforts will focus on refining threshold values and making rolling adjustments to provide quarantine personnel with timely decision-making support and the formulation of emergency control measures.

Keywords: Plant Pest, social media, Early Warning