EFFECTS OF THE CLIMATE CHANGE ON WIDESPREAD AND EPIDEMICS OF THE POTATO AND TOMATO LATE BLIGHT UNDER THE EGYPTIAN CONDITIONS

By

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ABSTRACT

This study was carried out to investigate the impact of the climate change on the widespread and epidemics of potato and tomato late blight disease. The obtained results indicated that, severe epidemics of late blight were emerged in ٢٠٠٣/٢٠٠٤ and ٢٠٠٥/٢٠٠٦ growing seasons. Changes in the incidence and onset of potato and tomato late blight epidemics in Egypt were investigated and compared with some short climatic factors and possible changes in climate. Datasets were constructed from late blight assessments carried out at four cultivated sites during the periods from ٢٠٠٣ to ٢٠٠٦ for potato and at two cultivated sites during the periods of ٢٠٠٥ to ٢٠٠٦ for tomato. The temperature of ٧ to ٢١°C and rainfall above ١٠٠ mm were favourable for developing late blight disease in Egypt. Epidemic analysis from actual potato and tomato fields showed that the late blight epidemics were likely to start from ٢ to ٤ weeks earlier in the epidemic seasons than the non-epidemic ones.

Based on the obtained results, the regression models were the most appropriate for description of the disease progress data. Due to the earlier outbreaks in the epidemic seasons of ٢٠٠٣/٢٠٠٤ and ٢٠٠٥/٢٠٠٦ for potato and ٢٠٠٦ for tomato, the use of fungicides for the late blight disease had dramatically increased. In practice, an epidemic onset that is ٢-٤ weeks earlier means ٢-٤ additional sprays to achieve sufficient control of late blight. Accordingly, ١-٥ more sprays will be applied at the incoming decades of the ٢٠٢٥-٢١٠٠. It is a challenge for potato late-blight researches in the future to find a balance between the public demands for reduction use of pesticides usage and the pressure to increase pesticide utilize due to changes in climate and challenging the pathogen populations.

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

No. **Title** **Page**

No. **Title** **Page**

No. **Title** **Page**