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Introduction Of Express Diagnosis Method In Protection Of Vegetable Crops From Diseases

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Abstract:
The focus of the paper is on the development of current digital technologies that can detect and analyze infections detected in vegetable crops and diseases using exterior symptoms and rapid diagnostic approaches.
Keywords. vegetable crops, tomatoes, pathogens, express, diagnostics, programming languages, mobile applications, Java.

Introduction

Fruits and vegetables are edible plants that are luscious, meaty, and delectable. Vegetable growing is one of the fields of botany that deals with their cultivation. Vegetable crops are farmed in all parts of the country and account for around 1% of total arable land, yet vegetables are the most productive crop in terms of total yield per hectare (Zuyev, 2009).

Because of their tenderness, nutrition, and therapeutic powers, vegetables are one of the most common types of food. The amount of carbs, proteins, lipids, and other elements in vegetables determines their nutritional worth. Water makes up 65-96 percent of vegetable composition; dry matter is 4-7 percent in cucumbers, tomatoes, and watermelons, 11-17 percent in root vegetables, only 20% in green peas, and 35% in garlic onions. As a result, veggies have a low nutritional value. The most commonly consumed veggies have a caloric content of 150-400 kcal (600-1700 kj) per kilogram.

The republic's climatic conditions may encourage the quick spread, development, and substantial damage of diseases and pests of vegetable crops, as well as a decline in yield quantity and quality. As a result, timely detection of quarantine and other pests of tomato plants, as well as the implementation of effective techniques to combat them, are critical to growing agro-export volumes. Simultaneously, the ability to detect infections quickly on the scene and provide effective protection against them is improving. As a result, timely disease management measures will be implemented to ensure that the predicted harvest quantity and quality are maintained.

Vegetable crops include phytophthora (Phytophthora infestans), fusarium (Fusarium spp), alternariosis (Alternaria solani), powdery mildew (Botrytis cinerea), white rot (Sclerotinia sclerotiorum) and viral diseases (Tobacco mosaic virus and others). As a result of the increase in the number of types of viral diseases in recent years, it is necessary to simplify the methods of detecting diseases of vegetable crops grown in homesteads and greenhouses and to develop and implement programs using modern technologies. By quickly identifying the species composition of pathogens, the excess costs are eliminated, the cultivation of products without excess pesticides and the possibility of timely detection of diseases is increased.

The creation of applications and mobile applications aimed at conveying to the public in a simple and understandable manner has increased as a result of the development of modern digital technologies, the simplification of languages for creating mobile and web applications, and the simplification of languages for creating mobile and web applications. Complex programs are currently being built in the computer languages C, Java, Python, C ++, C #, JavaScript, PHP, R, and Arduino to automatically detect the sorts of agricultural

products, their morphology, and the types of pests in plants. Agrio, Crops AI, Plants Disease Identification, Plan tix, Leaf Doctor, Crop Doctor, Purdue Tree Doctor, Leaf Plant Tech mobile applications were developed in the field of plant protection utilizing these programming languages to assist agricultural workers in identifying plant diseases and pests.

The benefit of these applications is that they automatically identify pests and make suggestions on disease control measures after photographing the afflicted areas of plants or utilizing specific algorithms in a library of finished photographs. These programs, on the other hand, lay a strong emphasis on identifying pests and crop species that are common in a certain area.

Currently, using digital technologies and plant protection methods in plant protection necessitates the establishment of national programs to research the many types of plant diseases, their bio ecological properties, and the reasons for their genesis in agrobiocenosis.

Using the Visual Studio Code code editor, the Plant Quarantine Research Center's staff is conducting tests in HTML5, CSS, and Java on the main illnesses, spread, damage, and control measures of tomato plants. Research is being performed to establish a database for agricultural workers that includes strategies for predicting pests of vegetable crops as well as ways to conserve the environment for future usage. Illnesses of tomato and pepper crops cultivated in Tashkent region greenhouses were investigated in order to determine the sorts of diseases that affect vegetable crops and to investigate countermeasures.

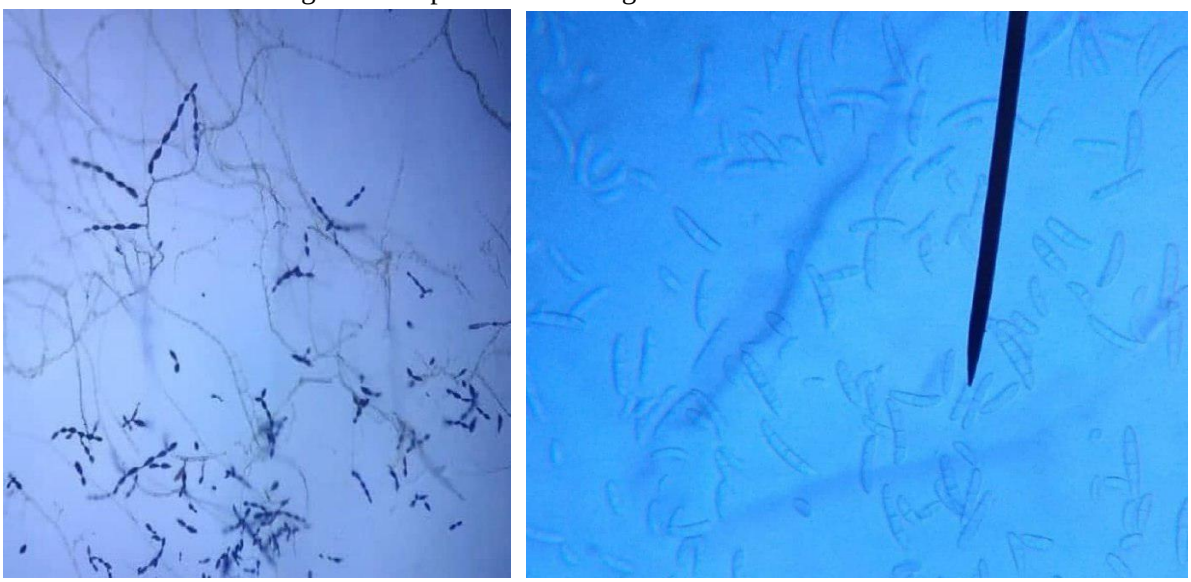

Figure 1. Alternaria spp and Fusarium spp isolated in tomato plant. macro and microconidia of fungi

Indicators of express diagnostic method accuracy. The method of "express diagnostics" has been used to identify the main diseases of the tomato plant. At the same time, 12 percent of tomato plants were discovered to be infected with alternariosis and 5% with phytophthora. The pathogens of these diseases were researched in the laboratory to determine the reliability of the "express diagnosis" method. Pathogen types were isolated, and the results were compared to the "express diagnostics" method's results. Tomato alternarioz was diagnosed with 73.2 percent accuracy and a difference of 26.8%. The symptoms of the plant disease were investigated and evaluated.

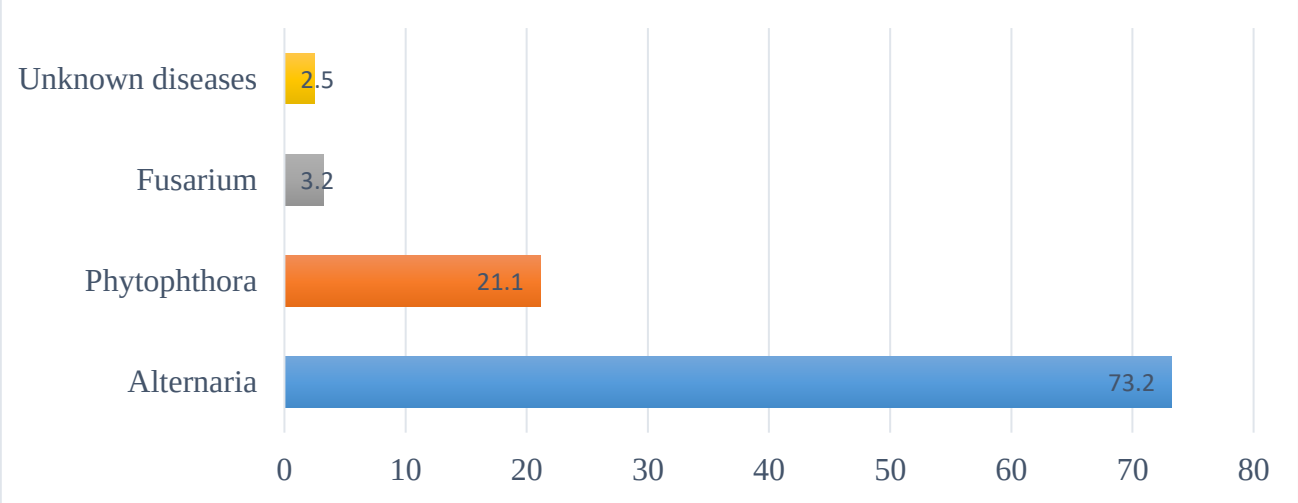

Figure 2: Tomato disease express diagnosis results

The testing revealed that the new algorithm correctly detects alternariosis 73.2 percent of the time, phytophthora 21.1 percent of the time, fusarium 3.2 percent of the time, and unknown infections 2.5 percent of the time. The program's flaws were investigated, and more research into how to enhance it is planned.

LIST OF REFERENCES:

1. Buronov Yu.X., Mambetnazarov A.B., Turamuradova G.X. Application of quarantine measures in the prevention of dangerous external quarantine disease of tomatoes (Tomato brown rugose fruit virus) // Agrochemical protection and plant quarantine №1. 2021. 47-49 b.
2. Zuyev V.I., Qodirhojaev O., Adilov MM, Akramov U.I. Vegetable and horticulture // Handbook 2009. 248 p
3. Martin R. Clean code creation, analysis and refactoring // Peter M. 2019, p. 464.
4. Mogilov A.V., Listrova L.V. Programming methods computer calculations BHV-Petersburg, 2008 - 320 p.
5. Chumakov A.E. Basic research methods // Moscow: Kolos, 1974 - 192p.
6. Blancard D. Tomato Diseases // CRC Press 688 c.
7. Lorenzini G.1, Guidi L., Nali C., Ciompi S., Soldatini G.F. 1 G. Photosynthetic response of tomato plants to vascular wilt diseases // Plant science 124 №: 2, 1997 P. 143-152
8. Mcgovern R.J. Management of tomato diseases caused by fusarium oxysporum // Crop protection 73, 2015. 78-92 p.
9. Sherimbetov A.G., Adilov B.S., Kadirova Z.N., Makhmudov T.X., Mambetnazarov A.B., Ruzmetov D.R., Yuldashov U.X., Karimov E.Y. Molecular verification of species identity of some isolates of the genus fusarium deposited in the phytopathogen collection in Uzbekistan // Plant cell biotechnology and molecular biology №71-72, 2020 p 94-98.