Abstract

Diseases in plants cause major production and economic losses in agricultural industry worldwide. Monitoring of health and detection of diseases in plants and trees is critical for sustainable agriculture. In this paper an approach for building software systems for plant disease control that perform real time prediction of the outbreak and the development of the disease is proposed. Mathematical base of the approach are the finite automata. A method for transforming a given biological model of the disease to a finite automaton is developed. The software system has just to interpret the obtained automaton. The applicability of the developed approach is demonstrated on an example of a software system for prediction of development of Phitophthora infestans on potatoes and tomatoes. Predicting the breakout of the disease is very important for sustainable agriculture of Bulgaria because on favorable conditions the pathogen could destroy nearly 100% of the yield of potatoes and tomatoes.

References

Finite Automata Models in Agro-ecosystem and Plant Protection


Index Terms

Computer Science Artificial Intelligence

Keywords

Phytophthora infestans Biological model Real time prediction