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The Risk of Fire Blight and Application of Maryblyt Program in Albania

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Abstract:- Fire blight disease is considered as a most dangerous phytopathogenic disease of the pome fruit to the worldwide. Fire blight is listed as a quarantine disease in the Plant Protection Directive of the European Union and is one of the main pests in the A2 list (EPPO) . Fire blight damages host plants by drying flowers , leaves , young shoots and creating cancerous wounds in the bark of the trunk and branches of the trees . In this study is used program Maryblyt with its components such as : phenological stages of plant growth , weather conditions and infection by E. amylovora (which is present in orchard). Use of this program helped for identification of potencial periods of dangerous infection from pathogen.

Keyword:- Erwiniaamylovora , Maryblytpogram , infection.

I. INTRODUCTION

Fire blight is a disease known over 200 years ago. It's caused by the bacterium Erwiniaamylovora, which destroys the host plant. Fire blight besides pome fruits is met and in some ornamental plants that are summarized in genres : Amelanchier , Chaenomeles , Cotoneaster , Crataegus , Cydonia , Eriobotrya , Malus , Mespilus, Pyracantha , Pyrus , Rubus , Sorbus and Stranvaesia. Fire blight is a very dangerous and very complex disease, therefore the use of forecasting program has a particular value. In integrated control of fire blight, we can say that there is lack of pesticides with acceptable effect against this pathogen. On the other hand it is difficult to ensure a safe plant protection throughout the vegetation , while the pathogen penetrates inside the host bodies , while missing systemic bactericide substances for curative intervention. Use of Maryblyt program helps to identify potential infection periods by planning in time needed treatments and avoiding unnecessary ones.

II. MATERIALS AND METHODS

This study was carried out during year 2012 in Zhurje village on the district of Tirana, in an apple orchard (7 - 8 years old) with Gala variety , cultivar which is early and sensitive from fire blight. In carrying out this study, we utilized Maryblyt constituent elements of the program, as :

1. Development of phenological phases of the host plant as: silver tip , green tip , pink , bloom , petal fall , post bloom .
2 . Registration of climatic condition (temperature maximum , minimum , average, air humidity in %, rainfall in mm or inch , daily atmosferic events.
3. Infection situation in orchard : Disease infection is present in orchard .

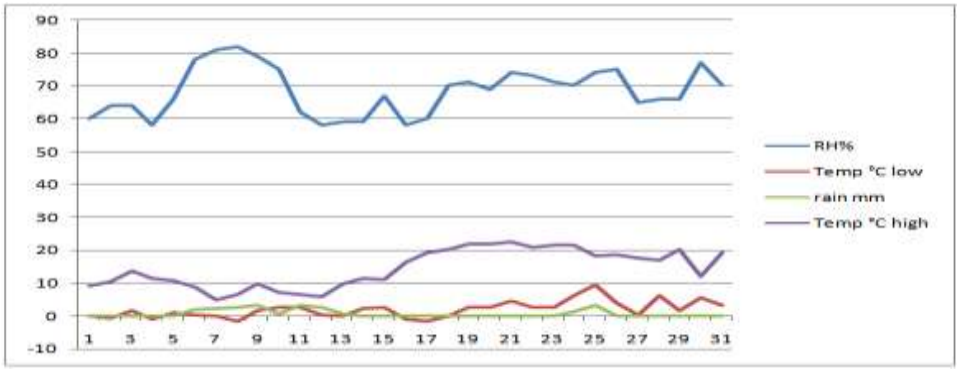
Determination of potential periods of risk is made on the basis (degree days) DD temperature abouve 12.7° C (55° F) , which is considered as the lowest limit to develop a pathogen infection. By calculating temperature values we defined key moments of disease infection as activation of initial inocul, blooming blight, shoot blight etc.

III. DISCUSSION AND RESULTS

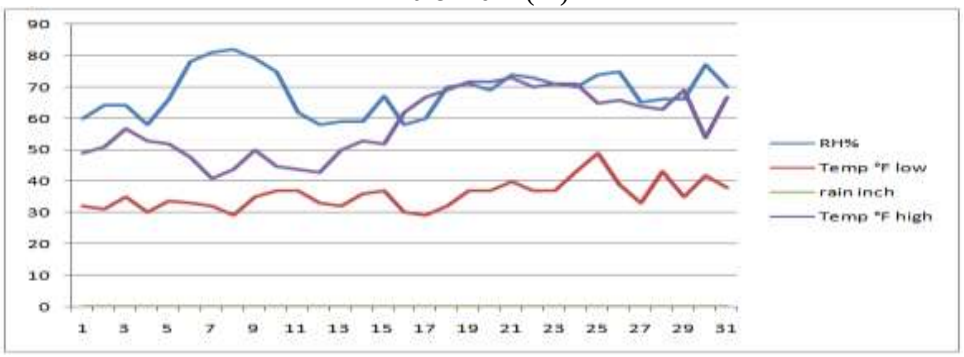
Orchards where is carried the study has natural infection by fire blight. Following the development of phenological phases of orchard we saw that silver tip appeared at 16.03.2012. In the same month appeared the green tip, at 26.03.2012 , and for both phenological stages is presenting the following graph .

Graph No. 1 - Climatic conditions of silver tip and green tip.

March 2012 (°C)



March 2012 (°F)



Making records of maximum and minimum temperatures and also their estimates over 12.7 ° C (55 ° F) from green tip stage we found that activation of initial inocul resulted at 06.04.2012. Initial inocul appeared at active temperatures sum = 94.9 ° F (DD) = 53.5 ° C (GD) above 12.7 ° C (55 ° F) from green tip stage. This moment occurred in Pink stage , when daily maximum temperature was 17.7 ° C = 63.9 ° F , minimum temperature 10.5 ° C = 50.9 ° F , average temperature of 14.1 ° C = 57.4 ° F, air humidity 82 %. This was followed by precipitation in quantity 2.8 mm = 0,11 inch. Blooming stage appeared dated 04.07.2012 which was accompanied by winds and rainfall . By continuing calculation of temperature, we saw that blooming blight appeared at 21.04.2012. At this time sum of active temperatures was 196.4 ° F (DD) = 110.8 ° C (GD) from green tip stage, daily maximum temperature was 22.2 ° C = 72 ° F , daily minimum temperature was 7.2 ° C = 45 ° F, daily average temperature was 14.7 ° C = 58.5 ° F, air humidity 71 % and rainfall in quantity was 2 mm = 0,08 inch. Low temperatures have led these infections to appear later in the stage of postblooming. Later , on continuing calculation we saw that shoot blight appeared on dated 27.04.2012 when active temperatures sum was 173.1 ° C (GD) = 307.7 ° F (DD) above 12.7 ° C (55 ° F) from green tip stage. At this time, daily maximum temperature was 23.8 ° C = 74.8 ° F , daily minimum temperature 5.5 ° C = 41.9 ° F , average daily temperature of 14.7 ° C = 58.4 ° F, air humidity 67 % . This infection occurred in the phase of fruit growth and shoots.

IV. CONCLUSION

The Maryblyt program used in this study allowed the determination of infection periods as: activation of initial inocul, blooming blight, shoot blight, etc. Use of this program helped us with the use of fungicide treatments against fire blight at the right time , reducing the number of treatments and minimize infection (implemented in an other experiment).

1.Initial inocul appeared in the pink stage , at the sum of temperatures = 94.9 ° F (DD) = 53.5 ° C (GD) from green tip stage.

2. Blooming blight appeared on stage post blooming in the sum of temperatures = 196.4 ° F (DD) = 110.8 ° C (GD) from green tip stage , and 101.5 ° F (DD) = 57.3 ° C (GD) from ready inocul.

3.Shoot blight appeared on stage post blooming, in the sum of temperatures = 307.7 ° F (DD) = 173.1 ° C from green tip stage , and 212.8 ° F (DD) = 119.6 ° C (GD) from ready inocul.

We concluded as these are main moments of infection from fire blight disease. Exactly in these moments are necessary treatments with fungicides and pruning of damaged parts.

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