ABSTRACT

Keywords: barley, seed, variety, foliar diseases, control

The importance of barley cultivation in Romania and in particular in the research, prompted increased attention to research on foliar diseases of this culture. Knowing the health of barley culture and its implications on intervention measures phytosanitary consequences on production, are important concerns of fundamental and applied research on winter barley crop.

Based on these considerations we thought it appropriate study on barley foliar diseases attack, their evolution during the attack on the implications of research and production.

I also felt that a study of winter barley varieties in terms of reaction to the attack of foliar diseases and their impact on production ought to attract the interest of winter barley growers in the area of research. On the other hand, research on the effect of treatment during experimentation bring about the need for their use, taking into account the conditions of the reaction of varieties to attack pathogens that cause foliar diseases and role for the yields obtained.

The research can assist breeders to create varieties with tolerance rezistenţta or face attack of common foliar diseases or with different frequencies and intensities, depending on culture conditions.

Research conducted for the development thesis entitled "Research on foliar diseases of barley and their control of ARDS Teleorman" were conducted in the experimental field of this resort.

Research on identifying pathogens responsible for the emergence foliar diseases detected, the biological study of the fungus *Pyrenophora teres* and micoflora barley seeds were carried out in the Laboratory of Phytopathology, Faculty of Agriculture of the University of Agronomic Sciences and Veterinary Medicine.

Among the reasons that led conducting this research may include:

• necessity of knowing the clinical features of foliar diseases of barley, common research area;

• the need to know the frequency, foliar diseases investigated and the effect on production of barley;

• importance of the effectiveness of treatments applied to vegetation and winter barley seed on diseases;

• the need to know the reaction of barley varieties to common diseases in the area of research;

• the need for knowledge among barley growers in the area of experimentation implications foliar diseases on production of winter barley varieties under study;

The main objective of the research undertaken in the thesis was to identify foliar diseases of barley varieties monitored within ARDS Teleorman, during research and calculate the effectiveness of treatments used in their control in order to determine the most frequent attacks by pathogens in the area and varieties reaction to these attacks.

Research conducted under field conditions were confirmed by identification of pathogens in laboratory and been extended on some diseases that occurred in earsand seed pathogenic load analysis, at biological material analyzed.

To achieve its purpose, the research program have been established and achieved the following objectives:

-Identify macroscopic foliar diseases of barley and their patografia;

-Determining agents responsible for the emergence foliar diseases detected;

-Determining frequency,intensities and calculation of attack degree at diseases detected ;

-The studyon response of varieties monitored to the attack of pathogens identified;

- Calculating the effectiveness of chemicals used in growing the attack pathogens and production of barley;

- Identification of a potential attack by *Fusarium* spp. and determining the frequency of attacks in the ears;

-Analysis statistical results obtained;

The PhD thesis contains five chapters and the following structure:

The first chapter entitled "Status of knowledge diseases barley and pathogens responsible for their production" was developed based on documentation in the thesis subject, with the sources informative books, textbooks, publications and scientific articles in the field of protection of barley, catalogs and codices, information obtained by accessing existing internet sources.

The chapter includes references to the importance and barley cultivation areas and production situation in Romania and internationally. Also, major diseases are treated barley from persepectiva importance, event, pathogen reponsabil of their ecology and epidemiology, prophylaxis and fight them.

Information presented is accompanied by suggestive images, indicating the source consulted. The study presented in the first chapter is the general thesis.

The second chapter entitled "Presentation of the natural environment in which they conducted research" shows the general considerations concerning the natural culture of barley in the area of research, climate characterization of years of experimentation, characterization of soils and vegetation of the region.

In the third chapter, entitled "Material and research methods" are the aims and objectives of research undertaken organization experientelorin field and laboratory, and research methods. They are presented calculation formulas used, researched biological material and equipment used for measurements performed in laboratory conditions.

The fourth chapter is called "Results obtained " and includes results on patografia diseases detected, the attack on their varieties researched period testing the effectiveness of treatments to attack and their influence on production, frequent attacks of *Fusarium* spp. Research conducted in laboratory conditions shows the results on the identification of specific pathogens diseases monitored in field conditions, the study of the biological parameters of the fungus responsible for the occurrence of leaf blotch pathogenic the highest frequency in field conditions and results on seed pathogenic load of barley.

The fifth chapter, entitled "Conclusions and recommendations" contain the conclusions resulting from the research addressed after processing and data analysis, observations and notaries conditionsi performed „in vivo "and" in vitro ".

Among the conclusions we present the following:

- Foliar diseases common during the testing varieties of barley were studied: powdery mildew, caused by the fungus *Erysiphe* (*Blumeria*) *graminis* f.*hordei*, blotch caused by *Pyrenophora teres* fungal, leaf burn caused by fungus *Rhynchosporium secalis*. Also it has detected attack tearing leaves produced by *Pyrenophora graminea*fungus and fusarium, caused by *Gibberella zeae*.
- Attack of mildew was observed in all varieties studied: Andrei, Amical,Compact, Dana, Madalin and Orizont, Madalin, throughout the research;
- Blotch recorded maximum frequency values in all varieties throughout the experimental period;
- Burn the leaves recorded the highest values of the attack in terms of 2010-2011, between 5.6% Andrei variety and 7.1% Amical variety;
- Tearing barley leaves was present on the leaves with low frequency Orizont varieties, under the 2010-2011 year conditions, Madalin, Dana and Compact, in terms of 2011-2012 and also with low levels of incidence varieties Compact and Dana given year 2012-2013;
- Has not registered this fungus *Pyrenophora graminea*Amical and Andrei varieties during research;
- Was observed concomitant attack of *Pyrenophora* spp;
- Application of treatment products Alert 0.5 l / ha and DuettUltra 0.2l / ha reduced foliar disease attacks all varieties studied;
- Treatment application on the blotch was visible on the intensity of the attack which was reduced in all varieties studied;
- Effectiveness of treatments on the attack of mildew was between 90.7% and 94% variety Amical, variety Madalin given year from 2010 to 2011; 78.6% and 92.4% Compact variety to variety Madalin in 2011-2012 and 80.5% and 89.2% for the varieties Orizont and Madalin given year from 2012 to 2013;
- Against blotch efficacy was obtained in 84% Andrei variety in 2010-2011, 85.7% in terms of the variety Orizont 2011 to 2012 and 72.5% in the year 2012-2013 the variety Dana;
- 2010-2011 in terms of the effectiveness of treatments on the attack of leaf burn recorded values between 65% for Amicalvarietyand 87.5% for Andreivariety;
-Effectiveness of treatments attack against burning leaves was between 77% and 86.8% Madalin variety and Compactvariety in terms of 211-2012; in year 2012-2013 specified application of treatment products resulted in a 82.2% efficacy Andrei variety;
- Applying the treatments resulted in getting production increases in all varieties studied statistically;
- Conditions "in vitro" fungus *Pyrenophora teres* grew and sporulated well at 20-260C after 15 days of observation; pathogen *Pyrenophora teres* preferred natural environments of the culture that has developed a vegetative mass and abundance of sporulated well, continuous light and alternating light / dark;

- High plasticity of the fungus *Pyrenophora teres* in controlled conditions may explain its high incidence in different field conditions;

The PhD thesis contains tables and original figures and a bibliography of the literature carefully selected Romanian and international. The results were used in articles published in journals indexed in databases and ISI's international.

The thesis brings important contributions in protecting current and barley, and foliar disease control posiblitatea of this culture in the context of climatic conditions during experimentation and variety studied.

Through research protection culture barley behavior of varieties to attack pathogens foliar in climatic conditions specific to the research, the effectiveness of treatments, the research on mycology seed and biology one tooth most aggressive and virulent pathogens foliar of the barley thesis makes an interdisciplinary approach with implications for agricultural research applied and fundamental.

We believe that research on the health of crops of barley, phytosanitary intervention activity in relation to disease ecology in the areas of culture and in collaboration with the work-breeding and must be a permanent research for agriculture.