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# **Advanced studies on net blotch disease of barley in Egypt**

*By*

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## Table of Contents

Item	Page
<b>INTRODUCTION</b>	<b>1</b>
<b>REVIEW OF LITERATURE</b>	<b>4</b>
<b>1- Antifungal activity of some abiotic and biotic agent on disease severity and yield components</b>	5
<b>1.1 Accumulation of antifungal biochemical compounds in infected treated plants</b>	14
<b>2- Host reaction and yield losses</b>	19
<b>3- <i>MLo1</i> resistant gene</b>	22
<b>MATERIALS AND METHODS</b>	<b>25</b>
<b>1- Media</b>	26
<b>2- Plant materials</b>	26
<b>3- Treatments</b>	27
<b>3-1 Chemical fungicides</b>	27
<b>3-2 Biofungicides</b>	28
<b>3-3- Non-traditional compounds</b>	29
<b>3-3-1 Eugenol</b>	29
<b>3-3-2 Nano- selenium</b>	29
<b>3-3-3 silicate potassium</b>	29
<b>4- Isolation of the causal organism</b>	29
<b>4-1 Source of samples</b>	29
<b>4-2 Isolation, purification and identification of the causal organism</b>	30
<b>5- Inoculum preparation</b>	30
<b>6- Seedling stage test under glasshouse condition</b>	30
<b>7- Adult stage test under field conditions</b>	31
<b>8- Disease assessment</b>	31
<b>8-1 Glasshouse –grown barley</b>	31

<b>Item</b>	<b>Page</b>
<b>8-2 Field –grown barley</b>	32
<b>9- Assessing the antifungal activity of some abiotic and biotic agents against <i>D. teres</i></b>	33
<b>9-1 Glasshouse test</b>	33
<b>9-2 Field test</b>	34
<b>9-3 Assessing of some biochemical parameters</b>	34
<b>9-3-1 Electrolyte leakage percentage (EL %)</b>	34
<b>9-3-2 Detection of superoxide (O<sub>2</sub><sup>·-</sup>)</b>	35
<b>9-3-3 Enzyme activity assays</b>	35
<b>9-3-3-1 Sampling for enzyme assays</b>	35
<b>9-3-3-2 Sample preparation and extraction for enzyme activities determination</b>	35
<b>9-3-3-3 Determination of catalase activity</b>	36
<b>9-3-3-4 Determination of polyphenol oxidase activity</b>	36
<b>9-3-3-5 Determination of peroxidase activity</b>	36
<b>10- Assessment of host reaction and yield losses due to net blotch infection:</b>	36
<b>10-1 Fungicide treatment</b>	36
<b>10-2 Experimental field design</b>	36
<b>10-3 Disease assessment</b>	37
<b>10-3-1 Type of infection and disease severity</b>	37
<b>10-3-2 Area under disease progress curve (AUDPC)</b>	37
<b>10-3-3 Yield components</b>	37
<b>10-3-4 Yield assessments</b>	38
<b>10-3-5 Yield losses</b>	38
<b>11- Detection of resistant related gene</b>	38
<b>11-1 Assessment the level of resistant in barley cultivars to <i>D. teres</i> isolates</b>	38

<b>Item</b>	<b>Page</b>
<b>11-2 Molecular detection of resistance related gene</b>	38
<b>11-2-1 DNA extraction from barley genotypes</b>	38
<b>11-2-2 Primer design</b>	39
<b>11-2-3 Polymerase chain reaction (PCR)</b>	39
<b>11-2-4 Gel electrophoresis</b>	39
<b>12- Statistical analysis</b>	39
<b>EXPERIMENTAL RESULTS</b>	<b>41</b>
<b>1- Isolation and identification of causal organism</b>	42
<b>2- Effect of some abiotic and biotic agents on disease incidence under glasshouse conditions</b>	42
<b>2-1 Effect of T34, Eugenol, potassium silicate, Nano- selenium, Maven, Montoro and Decent on some biochemical parameters in <i>D. teres</i> infected barley plants</b>	44
<b>2-1-1 ROS level and enzymes activities in <i>D. teres</i> infected barley plants</b>	44
<b>2-1-2 Electrolyte leakage percentage:</b>	46
<b>2-2 Effect of chemical fungicides, biofungicides and non- traditional compounds on disease severity and yield components at adult stage</b>	47
<b>2-2-1 Effect chemical fungicides, biofungicides and non- traditional compounds on disease severity</b>	47
<b>2-2-2 Effect of chemical fungicides, biofungicides and non- traditional compounds on yield components</b>	50
<b>2-2-2-1 Effect of chemical fungicides, biofungicides and non- traditional compounds on 1000 K. W. (TKW)</b>	50
<b>2-2-2-2 Effect of chemical fungicides, biofungicides and non- traditional compounds on grain yield/plot</b>	53
<b>3- Effect of net blotch infection on host reaction and yield performance</b>	55
<b>3-1 Host reaction</b>	55

<b>Item</b>	<b>Page</b>
<b>3-2 Grain yield and Yield losses</b>	<b>56</b>
<b>3-2-1 Thousand Kernel Weight (g)</b>	<b>56</b>
<b>3-2-2 Grain yield / plot (kg)</b>	<b>57</b>
<b>3-2-3 Correlation between AUDPC and losses in grain yield</b>	<b>58</b>
<b>4- Resistance related gene to net blotch in some barley genotypes:</b>	<b>59</b>
<b>4-1 Virulence spectrum on barley genotypes to <i>Drechslera teres</i> isolates.</b>	<b>59</b>
<b>4-2 Reaction of barley genotypes to <i>Drechslera teres</i> isolates</b>	<b>61</b>
<b>4-3 `Detection MLO1 gene in twenty barley genotypes</b>	<b>61</b>
<b>DISCUSSION</b>	<b>63</b>
<b>SUMMARY</b>	<b>75</b>
<b>REFERENCES</b>	<b>80</b>
<b>ARABIC SUMMARY</b>	<b>-</b>

## List of Tables

Table	Title	Page
1	List of the Egyptian barley cultivars and their pedigree, area and year of release.	26
2	Barley genotypes used as differential set to evaluate the pathogenic variability of isolates of <i>Drechslera teres</i> .	27
3	List of tested chemical and Bio fungicides	28
4	list of Non-traditional compounds	29
5	List of the pathogenic <i>Drechslera teres</i> isolates that isolated from different locations in four governorates during 2016/ 17.	42
6	Effect of chemical fungicides, biofungicides and non-traditional compounds on net blotch disease assessment at seedling stage.	43
7	Effect of chemical fungicides, biofungicides and non-traditional compounds on disease severity under field condition during two growing seasons (2017/18- 2018/19) at Sakha Agriculture Research station.	48
8	Effect of chemical fungicides, biofungicides and non-traditional compounds on 1000 kernel weight during two growing seasons (2017/18- 2018/19) at Sakha Agriculture Research station.	51
9	Effect of chemical fungicides, biofungicides and non-traditional compounds on grain yield / plot (Kg) during two growing seasons (2017/18- 2018/19) at Sakha Agriculture Research station.	53
10	Infection type, Final net blotch severity (FNBS%) and AUDPC for six Egyptian barley cultivars during 2017/18 and 2108/19 growing seasons under field conditions at Sakha Agricultural Research Station.	56
11	Loss of thousand kernel weight (TKW) for six Egyptian barley cultivars infected with net blotch under field conditions at Sakha Agricultural Research Station during 2017/18 – 2108/19 growing seasons.	57
12	Loss of grain yield/plot for six Egyptian barley cultivars infected with net blotch under field conditions at Sakha Agricultural Research Station during 2017/18 – 2108/19 growing seasons.	57
13	Mean performance for infection response of barley genotypes artificially inoculated with eight isolates of <i>D. teres</i> under glasshouse conditions.	60
14	Virulence spectrum on 39 barley genotypes to eight isolates of <i>Drechslera teres</i> .	61
15	Infection responses exhibited on 39 barley genotypes to all <i>Drechslera teres</i> isolates	61

## List of Figure

Fig.	Title	Page
1	A numerical scale used for visual net blotch assessment on barley plants (Tekauz, 1985).	32
2	Effect of chemical fungicides, biofungicides and non-traditional compounds on infection response.	44
3	Effect of chemical fungicides, biofungicides and non-traditional compounds on percentage of net blotch disease control as applied 24h before and 48h after inoculation at seedling stage.	44
4	Purple discoloration of superoxide on barley leaves early after inoculation with <i>Drechslera teres</i> 48 hai. Cont.: barley leaves inoculated only with <i>D. teres</i> . T34: commercial product og <i>T. asperilium</i> . Eugenol: active substance from cloves. K. Silicate: potassium silicate, Nano- Selenium: Nano- selenium, Maven, Montoro and Decent: fungicides.	45
5	Antioxidant enzyme activities in barley leaves 48, 72 and 96 hai with <i>D. teres</i> . CAT: catalase, POX: peroxidase, PPO: polyphenol oxidase enzymes. Cont.: barley leaves inoculated only with <i>D. teres</i> . T34: commercial product og <i>T. asperilium</i> . Eugenol: active substance from cloves. K. Silicate: potassium silicate, Nano-Selenium: Nano- selenium, Maven, Montoro and Decent: fungicides.	46
6	Electrolyte leakage in barley leaves after inoculation with <i>Drechslera teres</i> 48 hai. Cont.: barley leaves inoculated only with <i>D. teres</i> . T34: commercial product of <i>T. asperilium</i> . Eugenol: active substance from cloves. K. Silicate: potassium silicate, Nano-Selenium: Nano- selenium, Maven, Montoro and Decent: fungicides.	49
7	Effect of chemical fungicides, biofungicides and non-traditional compounds on disease severity on barley during season 2017/2018 at adult stage.	49
8	Effect of chemical fungicides, biofungicides and non-traditional compounds on disease severity on barley during season 2018/2019 at adult stage.	49
9	Effect of chemical fungicides, biofungicides and non-traditional compounds on 1000 kernel weight and increase over control during season 2017/2018	52

<b>Fig.</b>	<b>Title</b>	<b>Page</b>
10	Effect of chemical fungicides, biofungicides and non-traditional compounds on 1000 kernel weight and increase over control during season 2018/2109.	52
11	Effect of chemical fungicides, biofungicides and non-traditional compounds on grain yield / plot and increase over control during season 2017/18.	54
12	Figure (13) Effect of chemical fungicides, biofungicides and non-traditional compounds on grain yield / plot and increase over control during season 2018/19.	54
13	Percentage of disease severity of commercial barley cultivars during 2017/18 and 2018/19 growing seasons.	56
14	Association between AUDPC with losses percent of 1000 kernel weight and losses in grain yield/ plot for six Egyptian barley tested cultivars during 2017/18 and 2018/19 growing seasons.	58
15	PCR prproduct of MLO1 gene of D. teres on the twenty barley genotypes tested (CIho9214, Tifang, CIho5791, CIho9819, CIho9820, Giza 134, Giza 135, Giza 124, Giza 125, Giza 126, Giza 138, Canadian Lake Shore, Prato, Cape, Rika, Giza 121, Giza 127, Giza 128, Giza 137 and Giza 2000).	62



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## ABSTRACT

Net blotch of barley, caused by *Drechslera teres*, is one of the most important and wide spread disease attacking barley in Egypt. Eight pathogenic isolates of *Drechslera teres* were isolated from diseased leaves of barley plants showing typical symptoms of net blotch, collected from four governorates. In this study, Plants were treated with twelve treatments: seven chemical fungicides, two biofungicides and three non-traditional compounds under glasshouse and field condition. All treatments significantly decreased disease severity (%) except eugenol which showed less efficiency. Also, the yield characters (1000 K.W. and Grain yield/plot) were increased significantly compared with control. Electrolyte leakage (%) was reduced significantly due to all treatments. Endogenous reactive oxygen species (ROS) was significantly elevated early after pathogen inoculation and later catalase (CAT), peroxidase (POX) and polyphenol oxidase (PPO) activities were increased significantly compared with the control. Elevated levels of  $O_2^-$  early after inoculation could play essential role in killing or suppressing the fungus and inhibiting disease symptoms as well as stimulated enzyme activities. Also, the relation between host reaction and yield losses attributed to net blotch infection of six Egyptian barley cultivars were assessed under field conditions in two seasons. The assessment included, i.e. final net blotch severity (FNBS%) and area under disease progress curve (AUDPC) as well as yield components, i.e. 1000-kernel weight (TKW) and grain yield/plot. Yield losses were determined for infected and fungicide protected plant. Giza134 and 135 showed lowest levels of both FNBS% and AUDPC and increased yield components where, Giza 2000 and 121 showed highly susceptible and lowest yield components. This study is very important to the plant breeders to protect the resistant cultivars from breakdown and create new resistant cultivars. On the other hand, eight *D. teres* isolates showed different levels of virulence on barley plants were tested on 39 barley genotypes. Barley genotypes varied in their reaction to *D. teres* isolates, where, genotypes CIho9214, Tifang, CIho5791, CIho9819, CIho6311, CIho9820, Giza 134 and Giza 135 were identified as resistant. But the genotypes Beecher, Canadian Lake Shore, Manchurian, Algerian, Prato, Manchuria, Cape, Rika, Atlas, Harbin, CIho1243, Giza 121, Giza 127, Giza 128, Giza 132, Giza 133, Giza 137 and Giza 2000 were identified as susceptible genotypes. The PCR product using degenerate primer of MLO1 indicated that the appearance of one fragment sizes about 950 bp. *MLO1* gene was detected in 20 barley genotypes selected from 39 barley genotypes.