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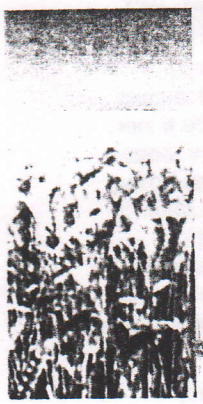

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WEB: http://plantscience.hit.bg
E-mail: plants@abv.bg

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RESISTANCE OF SOME VARIETIES AND LINES OF PRILEP TOBACCO TO POWDERY MILDEW

GORDANA MICESKA, MIROSLAV DIMITRIESKI, PECE TASKOSKI, BILJANA GVEROSKA
Tobacco Institute – Prilep, Republic of Macedonia; E-mil: miceskag@mail.net.mk

Abstract: *Investigations carried out in Biological laboratory of Tobacco Institute in 2005, included 5 new lines and varieties of tobacco type Prilep, created by generative hybridization, and P 12-2/1 as a standard. The aim of investigations was to assess the resistance of the new lines and varieties to the pathogen Erysiphe cichoracearum DC. The disease index was determined by the formulae of Mc Kinney and Towsend-Heuberger. According to the symptoms of the disease and the percentage of infected plants, all varieties were classified into 5 categories. Two of the investigated lines and varieties showed to be highly resistant to powdery mildew, one – resistant and the other – highly susceptible.*
Key words: *Tobacco,Resistance, Powdery mildew, Erysiphe cichoracearum*

G. MICESKA, M. DIMITRESKI, P. TASKOSKI, B. GVEROSKA, Tobacco Institute-Prilep, Republic of Macedonia. УСТОЙЧИВОСТ НА НЯКОИ СОРТОВЕ И ЛИНИИ ТЮТЮН ТИП ПРИЛЕП КЪМ БРАШНЕСТА МАНА

Резюме: *Изследванията са проведени в Биологичната лаборатория при Tobacco Institute – Прилеп през 2005 г. и включват 5 нови линии тютюн тип Прилеп, резултат на генеративна хибридизация, и линията P 12-2/1, използвана като чувствителна контрола. Цел на изследването е да се проучи устойчивостта на 5-те нови линии тютюн към причинителя* Erysiphe cichoracearum *CD. Индексът на нападение е определен по формулата на Mc Kinney и Towsend-Heuberger. Линиите са класирани в 5 категории в зависимост от симптомите и процента на нападение на растенията. Два от проучваните линии и сортове показват висока устойчивост към брашнестата мана, един – устойчивост, а останалите висока чувствителност.*
Ключови думи: *тютюн, устоичивост, брашнеста мана*

Powdery mildew is one of the earliest found diseases on tobacco in R. Macedonia, caused by the pathogen *Erysiphe cichoracearum* D.C. (Dimitrov, 2003) It is distributed in lesser or greater extent in all regios where tobacco is grown. In curing, leaves of the diseased plants turn dark brown, lose their humidity and become powderlike, and thereby their manipulation is more difficult.

Loses caused by this diseases on tobacco, especially during humid and rainy summers, are serious, frequently reducing the yield for 30% and the quality for over 80% (Minev, 1957; Mickovski, 1984; Ivanovic, 1992).

According to investigations (Bradley, 2004), certain role in the incidence of powdery mildew in large-leaf tobacco in Minnesota and North Dakota had the low nitrogen content in the soil. Therefore, previous investigations of soil are necessary before transplanting of tobacco, in order to avoid the occurrence of the disease.

Beside the use of chemicals (Taskoski, 2004) in the control of various diseases which one way or another destroy the natural biocenosis, new orientation in the world is creation of tobacco varieties resistant to certain diseases (Kostov, 1941-43), including powdery mildew. Such varieties have been created in the USSR by Ternovskiy (Atanasov, 1962), resistant to both powdery mildew and TMV.

Investigations of resistance to powdery mildew in our newly created varieties and lines of the Prilep tobacco type presented in this paper are justified from genetical and from breeding aspect, too.

MATERIAL AND METHODS

Investigations were made on tobacco type Prilep in Biolab (greenhouse) of Tobacco Institute – Prilep during 2005, with the following lines and varieties: P 11-46/65, P 65/R, P146-7/1, P 146-7/1, P 65/94R, P 12-2/1 and P 112-2/1. They were obtained by generative hybridization (Manolov, 1979) between introduced resistant and local non-resistant tobacco varieties. Disease intensity was assessed on the basis of total number of observed plants and the number of diseased plants (leaves) expressed percentually. Observation was made in two

Table 1/Таблица 1

Resistance to powdery mildew in some varieties of tobacco type Prilep
Устойчивост на някои сортове тютюн, тип Прилеп към брашнеста мана

Varieties Lines/линии	Disease intensity/Индекс на нападение			Resistence Устойчивост
	I estimation I отчитане	II estimation II отчитане	Average Средно	
P 12-2/1	55,62	55,65	55,63	Highly susceptible/Високо чувсвителен
P 112-2/1	4,74	3,60	4,71	Resistant/Устойчив
P146-7/1	8,06	3,91	5,98	Poorly susceptible/Слабо чувсвителен
P11-46/65	63,45	62,75	63,10	Highly susceptible/Високо чувствителен
P 65/R	0,54	0,00	0,27	Highly resistant/Високо устойчив
P 65/94R	1,39	0,20	0,79	Highly resistant/Високо устойчив

1. Highly resistant – up to 1%; 2. Resistant – 1–5%; 3. poorly susceptible – 5–25%; 4. Susceptible – 25–50%; 5. highly susceptible – 50%

occasions: on 4.10.2005 and 18.10.2005, i.e. when intensity of disease attack in the susceptible varieties was the highest. For estimation of the intensity, a scale in a range 1-5 was used. Index of the disease was estimated by the formulae of Mc. Kinney and Towsend-Heuberger. According to the symptoms developed in plants and the intensity of attack, all the varieties investigated were classified into 5 categories:

1. Highly resistant – up to 1% infection
2. Resistant – 1–5%
3. poorly susceptible – 5–25%
4. Susceptible – 25–50%
5. highly susceptible – 50–100%

RESULTS AND DISCATION

All varieties investigated showed (table 1, fig. 1) various intensity of powdery mildew attack. Two of the varieties (P 65/R, P 65/94R) showed the lowest percentage of disease intensity (0.27%, 0.79%), and they were classified in the first category – as highly resistant, one variety (P112-2/1) as resistant, with 4.17% disease intensity, one (P 146-7/1) as poorly susceptible, with intensity of 5.98% and two (P 11-46/65 and P 12-2/1) as highly susceptible, with intensity of 63.10% and 55.635, respectively.

P12-2/1highly susceptible, (2) P65/R (highly resistant)

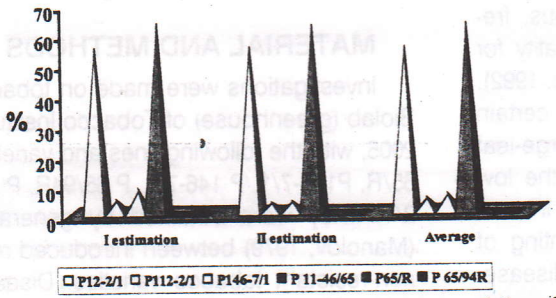

Fig. 1. *Resistance to powdery mildew in some varieties of tobacco type Prilep*

Фиг. 1. *Устойчивост при някои линии тютюн тип Прилеп към брашнеста мана*

CONCLUSION

Investigations of the resistance of some tobacco varieties and lines of the type Prilep to powdery mildew disease in R. Macedonia lead to the following conclusions:

1. Out of 6 investigated lines and varieties of the type Prilep, two lines are highly resistant to the disease (P 65/R and P 65/94R), one variety is resistant (P112-2/1), while two varieties are highly susceptible and one is poorly susceptible.

2. Intensity of disease attack ranges from 0.27% (P 65/R) to 63.10% (P 11-46/65).

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