



Reducing plant infection caused by *Alternaria* spp., *Leptosphaeria* spp. after using EM preparation on yellowseed forms of *B. napus* obtained in vitro "interspecific hybrids"

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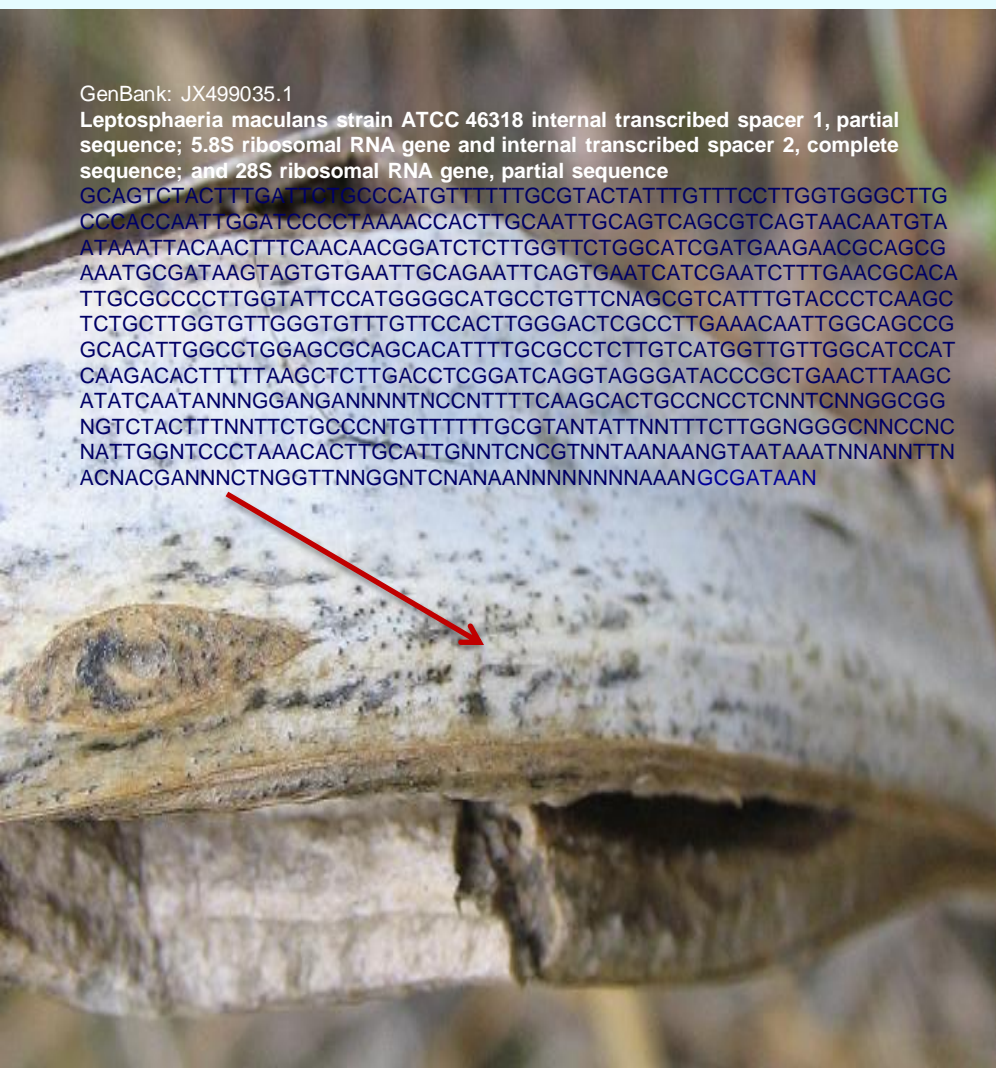
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Introduction

The study used *Brassica napus* L. yellow seed forms, which can be used as an additive to mustard. The primary objective of the study was to determine whether the protective spray after flowering plants using EM (Effective Microorganism) is effective in the field on the new genotypes.



„A”



„B”

Phot. 1A, B. Fungal phatogens: *Alternaria* (A) and *Leptosphaeria maculans* (B) in natural conditions.

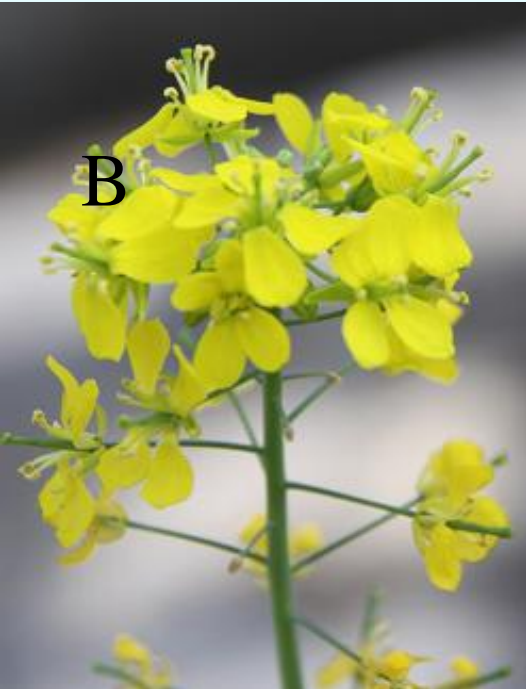
Results

Table 1. Comparison IP for *Alternaria* spp. and *Leptosphaeria* spp. after induction EM preparation for the protection of interspecific forms (2014).

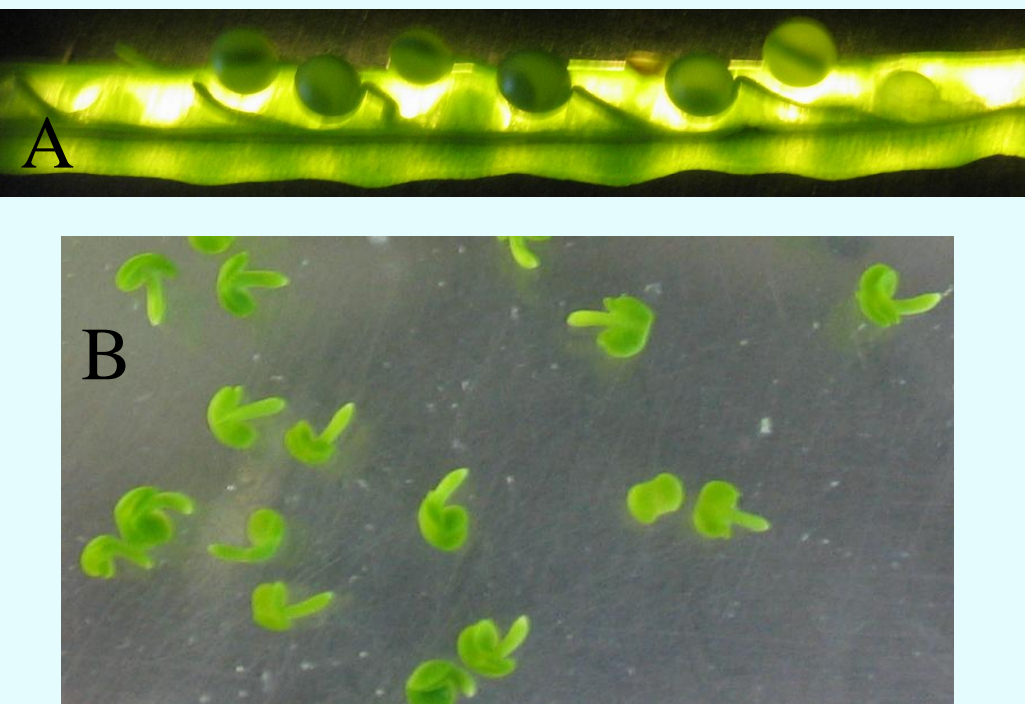
No	Interspecific forms	<i>Alternaria</i> spp.		<i>Leptosphaeria</i> spp.	
		IP after EM induction	IP Control	IP after EM induction	IP Control
1	701	0,000	0,05	0,000	0,138
2	702	0,000	0,0375	0,000	0,113
3	703	0,000	0,0375	0,038	0,113
4	704	0,000	0,0375	0,000	0,050
5	705	0,000	0,025	0,013	0,100
6	706	0,000	0,0625	0,025	0,113
7	707	0,000	0,0375	0,000	0,088
8	713	0,000	0,0375	0,000	0,100
9	721	0,000	0	0,025	0,075
10	722	0,000	0,0125	0,025	0,075
11	723	0,000	0,05	0,000	0,125
12	724	0,000	0,0375	0,000	0,113
13	727	0,000	0,05	0,038	0,075
14	728	0,000	0,025	0,025	0,138
15	729	0,000	0,05	0,000	0,163
16	732	0,000	0	0,038	0,025
17	733	0,000	0	0,025	0,025
18	735	0,000	0	0,038	0,000
19	736	0,000	0	0,000	0,000
20	740	0,000	0,025	0,025	0,025
		Test t –Student 3,50164E-05**			

Materials and methods

Interspecific crossings within *Brassica* genus.



Phot. 2A, B. Flowering maternal ♀ *B. oleracea* plant before emasculation prepared for pollination (A) and flowering ♂ *B. napus* “OO” plant (B) as pollen donor.



Phot. 3A,B. 21 days old seeds of *B. oleracea* x *B. napus* hybrids in sucrose solution (10% - C₁₂H₂₂O₁₁.), ready for embryo preparation.



Phot. 4. Four weeks old embrions of *B. oleracea* x *B. napus* hybrids in B5 medium (2015).



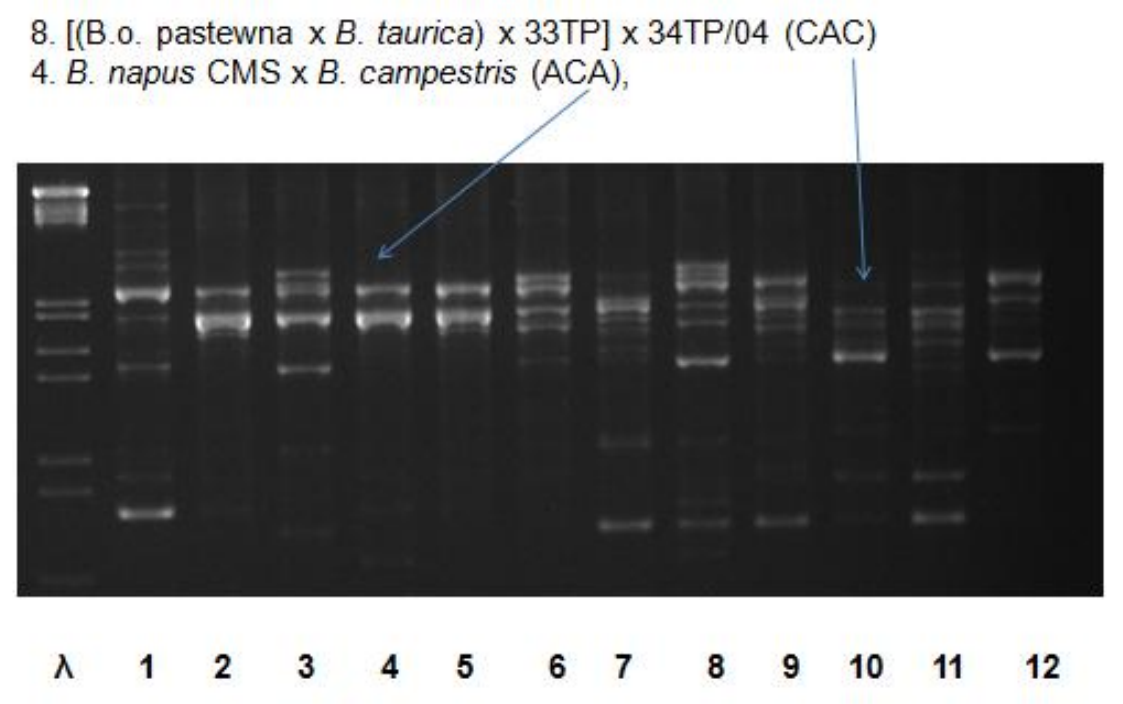
Phot. 5. Backcrosses of rapeseed with *B. oleracea* cytoplasm, generation F₄ in field condition, Malyszyn 2014.



Phot. 6. Rapeseed yellowseed forms resistance to *Leptosphaeria maculans* (Desm.) Ces. et de Not., conidial stage *Phoma lingam* (Tode ex Fr.) Desm. and *Alternaria* spp. of alloplasmatic forms.

Fig. 1. Agarose gel electrophoresis of PCR with the use of the OPY10 primer.

1. *B. campestris* (A), 2. *B. napus* CMS (AC), 3. *B. napus* restorer (AC), 4. *B. napus* CMS x *B. campestris* (ACA), 5. (*B.n.* CMS ogu x *B. juncea*) x *B.n.* restorer (PN 1162) (ACAB), 6. *B.n.* CMS ogu x *B. juncea* (ACAB), 7. *B. acephala* x *B. campestris* (CA), 8. [(*B.o. pastewna* x *B. taurica*) x 33TP] x 34TP/04 (CAC), 9. Brukselka x *B.n* (CAC), 10. [(*B. pastewna* x *B. taurica*) x 35TP] x Liclassic/04 (CAC), 11. (Kap. biala x brukselka) x (*B. cretica* x *B.n*) (CAC), 12. *B.cretica* x *B.n* (CAC).



Summary

The field experiment was conducted in IHAR-PIB in Malyszyn involving 20 breeding yellow seeds forms sprayed EM and 20 of the same forms as a control without spraying.

The occurrence of *Alternaria* spp. and *Leptosphaeria* spp. was entirely confined after application of EM which was statistically demonstrated.

After harvest during the phytopathological control of yellow seeds observed a small percentage of dangerous pathogens.