

EFFECTS OF DIFFERENT FUNGICIDES AND FUNGICIDAL SUBSTANCES AGAINST DARK LEAF AND POD SPOT (*ALTERNARIA BRASSICICOLA* AND *A. BRASSICAE*) IN OILSEED RAPE

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Introduction

Dark Leaf and Pod Spot (*Alternaria brassicicola* and *A. brassicae*) is a widespread pathogen in areas of oilseed rape cultivation (Paul, 2003). In many European countries Dark Leaf and Pod Spot is regarded as one of the major fungal pod diseases of oilseed rape.

It was the aim of this study to test certain oilseed rape fungicides and active ingredients for their efficacy against Dark Leaf and Pod Spot (*Alternaria brassicicola* and *A. brassicae*) compared to an untreated control.

Material and Method

For the inoculations the 5th and 6th true leaf of winter oilseed rape cv. Elektra were used in a detached leaf test. The leaves were cut and placed on two layers of paper towels in mini plastic green houses and the petioles were covered with two layers of moist paper towels to avoid drying out. The inoculations were carried out with one isolate of *Alternaria brassicicola* (ALTEBI/BRSOS) isolated from Savoy cabbage and one isolate of *Alternaria brassicae* (ALTEBA/BRSOG) isolated from kohlrabi/turnip cabbage. The codes given follow the EPPO Plant Protection Thesaurus.

ALTEBI

The fungus was grown for two weeks on potato dextrose agar (PDA, Merck). After two weeks the spores were harvested by flooding individual plates with 5 ml of sterile water and rubbing the culture with a rubber spatula. For inoculation the spore suspension was adjusted to 250.000 Spores/ml. 10 µl of the spore suspension was placed as a drop on each leaf with a pipette in a mini plastic green house and then placed in a climatic chamber at 22 °C in darkness. The control was inoculated with water. The experiments were assessed seven days after inoculation.

ALTEBA

The fungus was grown for two weeks on V8 Agar. After two weeks the spores were harvested from the plates by flooding individual plates with 5 ml of a sterile Tween 20 solution (0,01 %) in water and rubbing the mycelia mat with a rubber spatula. The suspension was then filtered through a fine mesh (100 µm pores). For inoculation the spore suspension was adjusted to 15.000 spores/ml (Vishwanath, 1999). 20 µl of the spore suspension was placed as a drop on each leaf with a pipette in a mini plastic green house and then placed in a climatic chamber at 22 °C in darkness. The control was inoculated with water. The experiments were assessed seven days after inoculation.

Fungicide Treatment

The leaves were treated with different fungicides and active ingredients either protective (0, 48 and 96 h before inoculation with *Alternaria brassicicola* and *A. brassicae*) or curative (0 h after inoculation with *Alternaria brassicicola* and *A. brassicae*). As the droplets of Spore suspension roll of the leaves when the fungicide treatment is applied directly after inoculation (first experiment), the fungicide treatment was then delayed 24 h in the later experiments.

Results

ALTEBI

All fungicides gave good control against *Alternaria brassicicola* (ALTEBI) when applied protectively (see Fig. 5). The lesion diameter in the control reached 5.8-8.5 mm and 0.7-2.5 mm (Efilor 0.7 l/ha). There was no clear effect of the fungicides against ALTEBI with regard to the application time. In some cases the best results were achieved when applied directly before inoculation (Efilor 1 l/ha) and in others when applied 96 h before inoculation (Cantus 0.27 kg/ha).

The curative effects of the fungicides/a.i. against ALTEBI are shown in Fig. 6. The leason diameters varied between 0.2 (Efilor 1.0 l/ha) and 1.8 mm (Caramba 1.5 l/ha), while the control showed leason diameters of 13.1 to 19.0 mm.

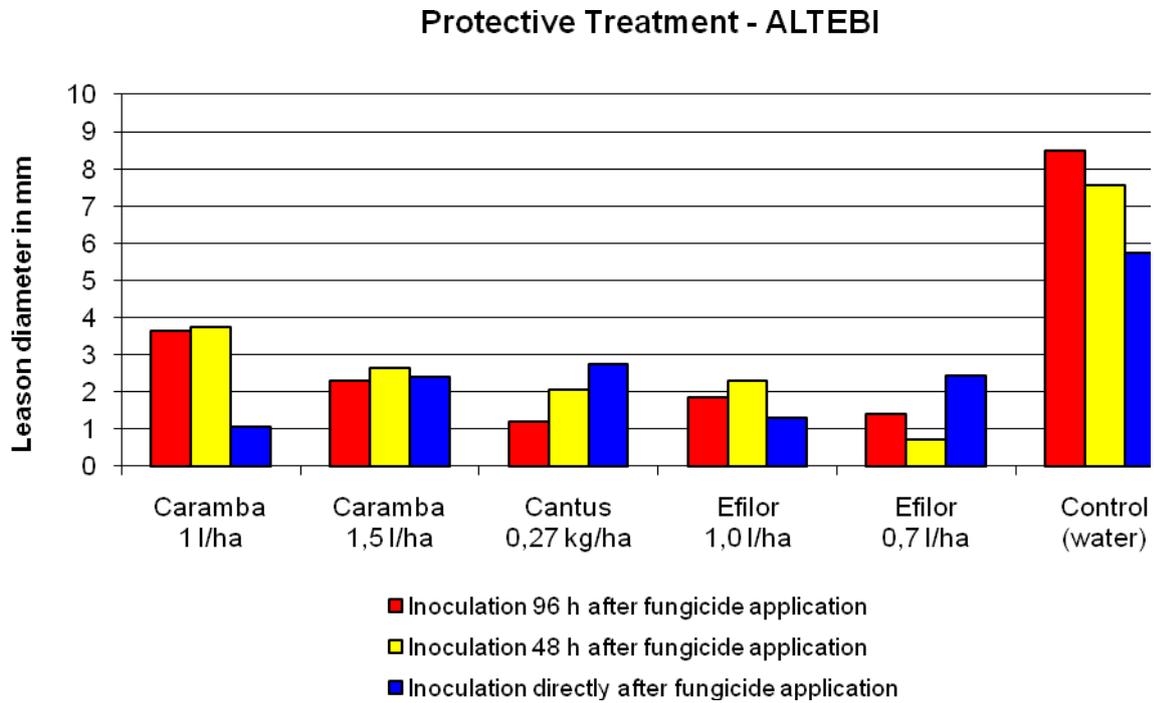


Fig. 5: Leason diameter of ALTEBI after protective treatment with the different fungicides

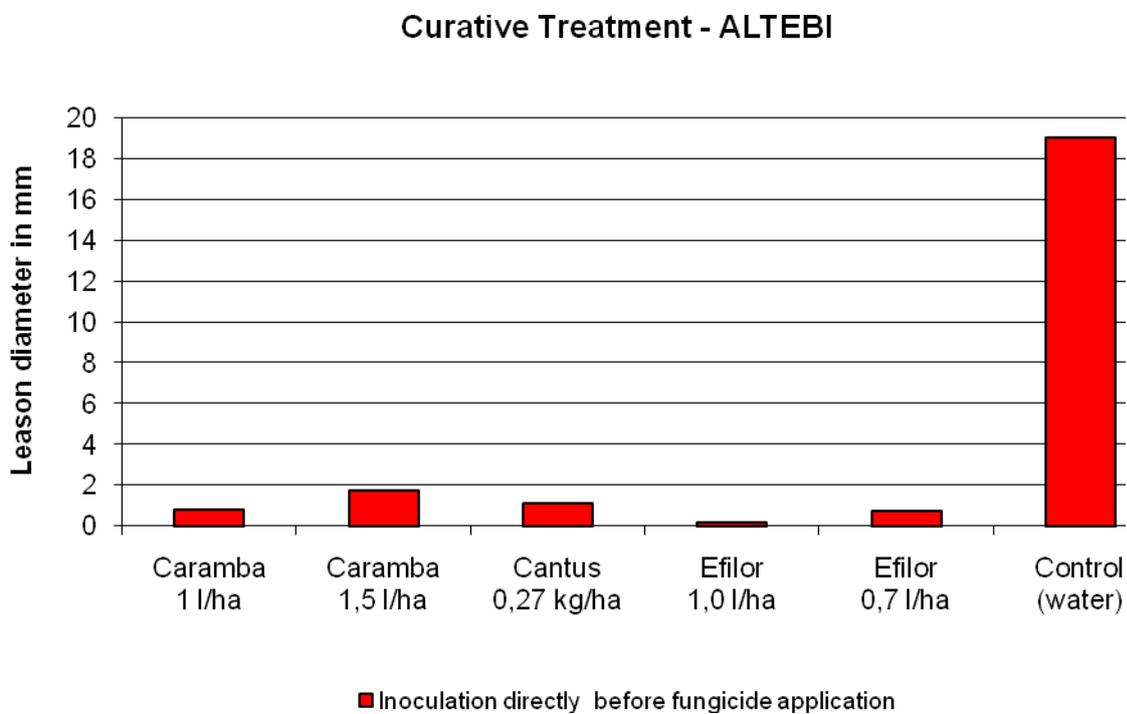


Fig. 6: Leason diameter of ALTEBI after curative treatment with the different fungicides

ALTEBA

The curative effects of the fungicide treatments against ALTEBA (s. Fig. 7) were similar to the results shown for ALTEBI (Fig. 6). All fungicides used showed a good control of ALTEBA.

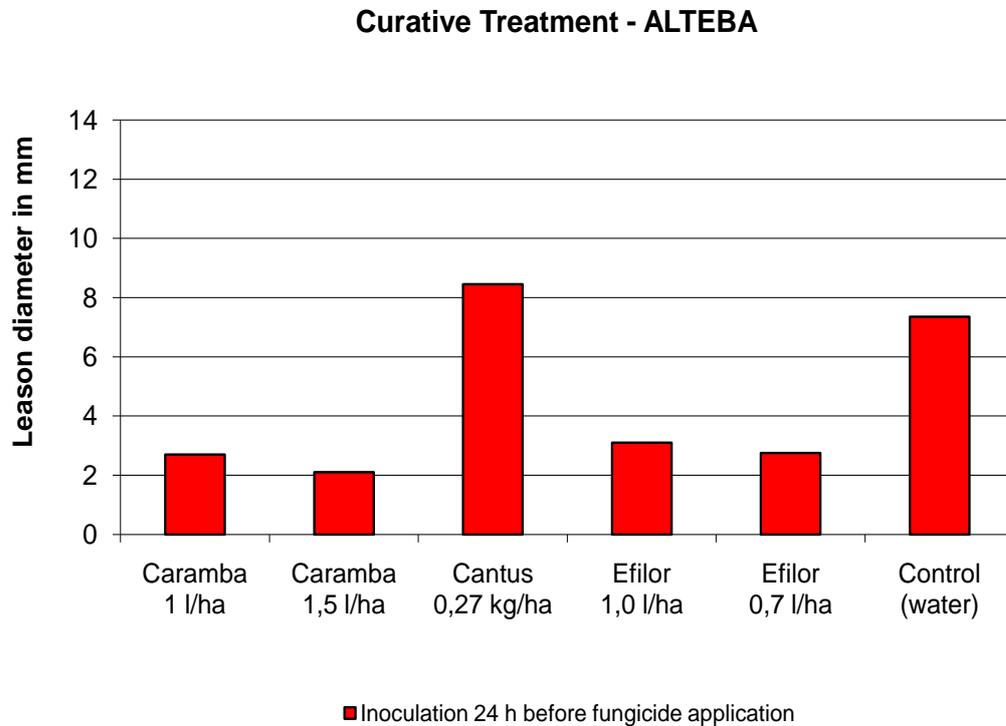


Fig. 7: Leason diameter of ALTEBA after curative treatment (24 h p.i.) with the different fungicides

Discussion/Summary

The results show a good effect of different fungicides against ALTEBI and ALTEBA. The best effects are achieved with a protective treatment. Curative treatments also show good effect against *Alternaria* Dark Leaf and Pot Spot (*Alternaria brassicicola* and *A. brassicae*). The degree of efficiency of control of Dark Leaf and Pot Spot treated protectively as well as curatively depends on the application time before or after inoculation. Further investigations will follow, especially with regard to the pod protection of *Brassica napus* to *Alternaria brassicicola* and *A. brassicae*.

References

- Paul, V.H., 2003: Raps – Krankheiten, Schädlinge, Schadpflanzen. Verlag Th. Mann, Gelsenkirchen
- Vishwanath, S.J., Kolte, M.P. Singh and Awasthi, R.P., 1999: Induction of resistance in mustard (*Brassica juncea*) against *Alternaria* black spot with an avirulent *Alternaria brassicae* isolate-D. European Journal of Plant Pathology 105: 217-220