



Determination of the Important Alfalfa Diseases Occurring in the Alfalfa Growing Areas of the Faculty of Agriculture of Ankara University*

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Abstract: In this study, important alfalfa diseases occurring in the Ankara University Faculty of Agriculture Haymana and Ayaş Research Farms and Dışkapı Campus were determined. Samples were collected during the years 2003 and 2004 and causal agents of the diseases were identified. The fungi found were: *Phoma medicaginis* var. *medicaginis*, *Leptotrochila medicaginis*, *Leveillula taurica*, *Pseudopeziza medicaginis*, *Peronospora trifoliorum*, *Stemphylium botryosum*, *Stagonospora meliloti*, *Colletotrichum trifolii*, *Leptosphaerulina briosiana* and *Rhizoctonia solani*. The incidence of *Phoma medicaginis* var. *medicaginis* was the highest. *Leptosphaerulina briosiana* is a new fungus record for Turkey. *Alfalfa mosaic virus* was also found.

Key Words: Alfalfa diseases, Turkey

Ankara Üniversitesi Ziraat Fakültesi Yonca Ekim Alanlarında Görülen Önemli Hastalıkların Belirlenmesi

Öz: Bu çalışma ile Ankara Üniversitesi Ziraat Fakültesi Ayaş ve Haymana çiftlikleri ile Dışkapı yerleşkesindeki yonca ekim alanlarındaki önemli hastalıklar belirlenmiştir. 2003-2004 yıllarında belirtilen bölgelerden örnekler alınarak hastalık etmenlerinin teşhisleri yapılmıştır. Teşhisi yapılan funguslar; *Phoma medicaginis* var. *medicaginis*, *Leptotrochila medicaginis*, *Leveillula taurica*, *Pseudopeziza medicaginis*, *Peronospora trifoliorum*, *Stemphylium botryosum*, *Stagonospora meliloti*, *Colletotrichum trifolii*, *Leptosphaerulina briosiana* ve *Rhizoctonia solani*' dir. Bu funguslardan en yaygın olarak görüleni *Phoma medicaginis* var. *medicaginis*' dir. *Leptosphaerulina briosiana* ise Türkiye için yeni tespit edilen bir fungustur. Yonca mozaik virüsü de tespit edilmiştir.

Anahtar Kelimeler: Yonca hastalıkları, Türkiye

Introduction

Alfalfa (*Medicago sativa* L.) is an important forage crop. It is high in nutrition and can be consumed by livestock readily (Elçi et al. 1994). In Turkey, alfalfa is grown over 230 000 ha and production from these areas reaches 1 500 000 tons (Anonymous, 1998). Different biotic and abiotic diseases can affect alfalfa production (Graham et al, 1979). Therefore, it is important to determine these diseases so that efficient control measures can be taken. In this study, important alfalfa diseases occurring in the alfalfa growing areas of the Faculty of Agriculture of Ankara University were determined. These areas were Haymana and Ayaş Research Farms and Dışkapı Campus of the Ankara University.

Materials and Methods

This study was carried out at the Haymana and Ayaş Research Farms and Dışkapı Campus of the Faculty of Agriculture of the Ankara University during the years of 2003 and 2004. The alfalfa planting areas were 35 ha and 10 ha at the Haymana and Ayaş Research Farms, respectively. The area at the Dışkapı campus consisted of experimental plantings. Three surveys were accomplished in 2003 during the months of September, October and November to the alfalfa planting areas. Four surveys before the cuttings were made in Ayaş and Haymana Farms in 2004. In addition, in Haymana, 3 more surveys were made before the first cut in 2004. Diseased plant parts were taken to the laboratory and isolations were made using

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Potato Dextrose Agar. Blotter method was also employed. Samples were surface sterilized with %1 NaOCl. Samples were examined periodically using a stereo microscope and a light microscope .

For identification of fungi, Graham et al. 1979; Eken 1999, Tuncer 1984, Sutton 1980, Sneh et al.

1991 were used. For *Rhizoctonia solani* pathogenicity tests Seif El-Nasr and Leath's method (1983) was used with some modifications. Thirty five grams of sterilized barley seed was placed into Petri dishes. Three 5 mm in diameter fungal discs taken from 10-12 day-old fungal cultures were placed into petri plates.

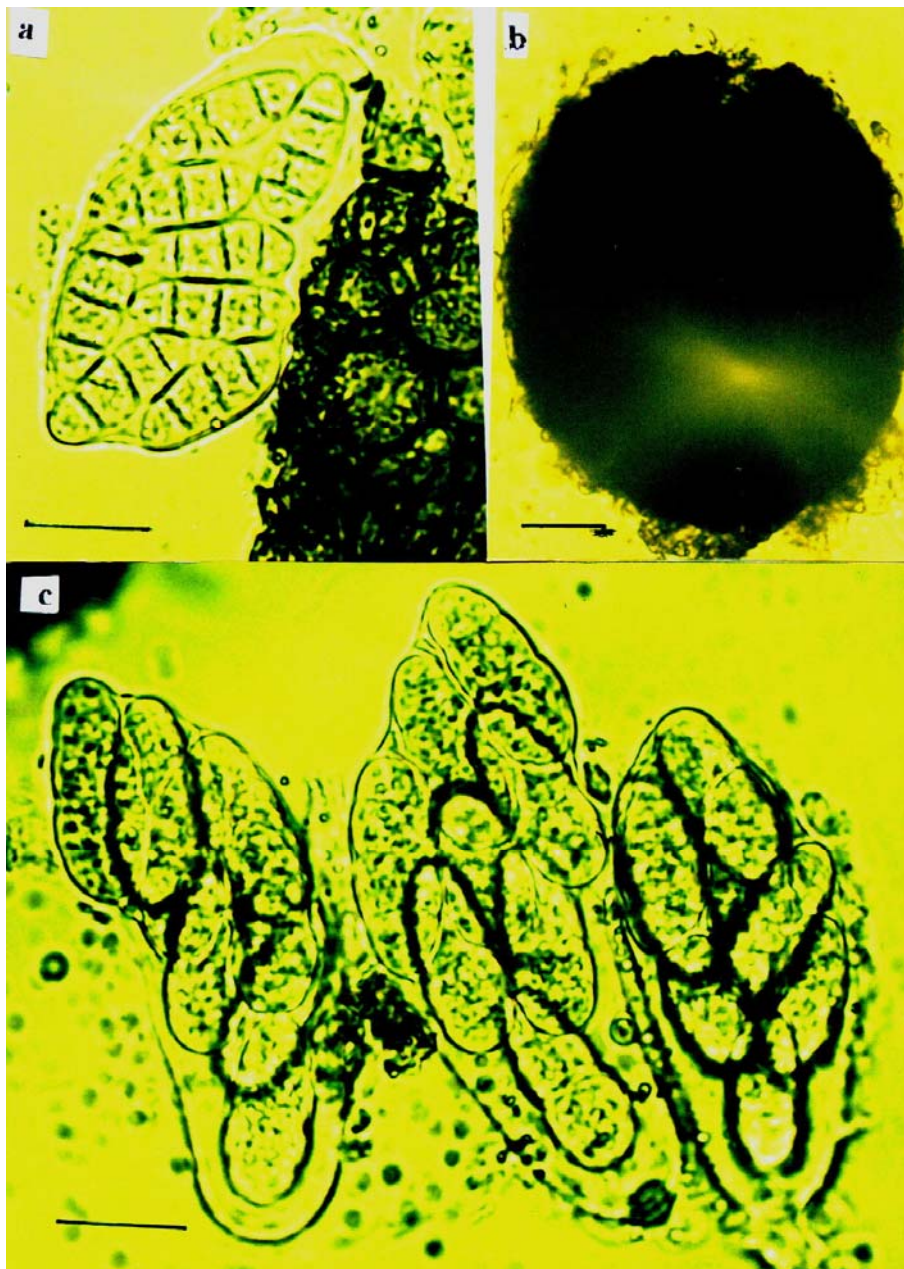


Figure 1 *Leptosphaerulina briosiana*: a. Ascocarp, ascus and ascospores, b. ascocarp, c. ascospores. Bar=30 μ m.

These plates were kept under near UV light with a 12/12h day/night period for 20 days. Twenty days later, they were mixed into 13 cm in diameter plastic pots containing sand:soil (1:1) as 5%. Control pots were inoculated with steril barley seeds only. Alfalfa seeds were surface sterilized 5 minutes with 1% NaOCl and rinsed with steril distilled water. Fifteen seeds were planted for each pot. A completely randomized design with three replications were used. For the virus detection Das-Elisa method was used (Clark and Adams 1977). For this purpose Plantest Elisa procedures were used (Sanofi Diagnostics Pasteur, S. A., Bio-Rad Service Phytodiagnosics 3, Boulevard Raymond Poincare 92430 Marnes la Coquette- France)

Results and Discussion

A total of 10 fungi and 1 virus causing diseases on alfalfa were identified at the alfalfa growing areas of the Faculty of Agriculture of Ankara University. These fungi were *Phoma medicaginis* var. *medicaginis*, *Leptotrochila medicaginis*, *Leveillula taurica*, *Pseudopeziza medicaginis*, *Peronospora trifoliorum*, *Stemphylium botryosum*, *Stagonospora meliloti*, *Colletotrichum trifolii*, *Leptosphaerulina briosiana* and *Rhizoctonia solani*. Alfalfa mosaic virus was also found.

Among these disease agents, *Peronospora trifoliorum*, *Phoma medicaginis* var. *medicaginis* and alfalfa mosaic virus were present in all of the areas surveyed. *Stemphylium botryosum* and *Rhizoctonia solani* were detected in Haymana and Ayaş Research Farms. *Leptotrochila medicaginis* was present in Haymana Farm and Dışkapı Campus. *Stagonospora meliloti*, *Colletotrichum trifolii* and *Leptosphaerulina briosiana* were found only in the Haymana Farm and *Leveillula taurica* and *Pseudopeziza medicaginis* was detected only in the Dışkapı Campus.

Among these disease agents, *Phoma medicaginis* var. *medicaginis* was common in the all areas surveyed. This disease was more widespread in the Ayaş farm. Tuncer (1984) reported that this disease was not common but was present in the alfalfa plants grown in a greenhouse of Faculty of Agriculture of Ankara University. *Phoma medicaginis* was also present on the alfalfa plants grown in the Aegean region (Öz and Yalçın 1991). Additionally, it was reported from alfalfa fields of the Erzurum province (Eken 1999).

In Haymana Farm, especially before the cuttings in May and June of 2004, *Leptotrochila medicaginis* was common. This disease was also found as

common in Ankara, Eskişehir, Konya, Kayseri and Nevşehir provinces alfalfa growing areas by Tuncer (1984). Eken (1999), also reported this disease from Erzurum.

Leptosphaerulina briosiana which is encountered in Haymana Farm during our surveys is a new fungus record for Turkey (Figure 1). Pathogenicity studies with this fungus on alfalfa should be performed and Koch postulates should be fulfilled.

Tuncer (1984) reported *Colletotrichum gleosporoides* from alfalfa fields of Central Anatolia. Eken (1999) reported *Colletotrichum trifolii* and *Colletotrichum truncatum* from Erzurum alfalfa fields. Öz and Yalçın(1991) found *Colletotrichum coccodes* from alfalfa fields in the Aegean region. In our study, we found *Colletotrichum trifolii* causing disease in alfalfa fields.

Tuncer (1984), from Central Anatolian alfalfa fields, reported *Rhizoctonia solani* and *Rhizoctonia violaceae*. Öz and Yalçın (1991) reported *Rhizoctonia solani* from Aegean alfalfa fields. From Erzurum alfalfa fields, Eken (1999) reported *Rhizoctonia crocorum*, binucleate *Rhizoctonia* spp. and *Rhizoctonia solani*. In our study, we isolated *Rhizoctonia solani* from diseased alfalfa plants. In pathogenicity tests, no emergence was observed from the pots inoculated with *R. solani*.

Pseudopeziza medicaginis, *Peronospora trifoliorum*, *Stemphylium botryosum*, and *Stagonospora* sp. also reported from Central Anatolia (Tuncer 1984) and from Erzurum (Eken 1999). *Peronospora trifoliorum*, *Pseudopeziza medicaginis*, *Stemphylium botryosum* also reported from Aegean region (Öz and Yalçın 1984).

Alfalfa mosaic virus was detected from the alfalfa growing areas of the Haymana and Ayaş Research Farms and Dışkapı campus. Alfalfa mosaic virus also reported from alfalfa growing areas of Central Anatolia (Çalı 1990, Çıtır and İbbağı 1997, İbbağı 1997).

With this study, important alfalfa diseases occurring in the alfalfa growing areas of the Faculty of Agriculture of Ankara University were determined. The most commonly encountered disease was *Phoma medicaginis* var. *medicaginis*.

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