

Fungal diseases of vegetable crops in Albania

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Summary. A preliminary investigation on the frequency and intensity of fungal diseases in the most important Albanian vegetable crop-growing areas was conducted in 2000 and 2001. Severe attacks of *Phytophthora* spp., *Pythium* spp., *Botrytis cinerea*, *Didimella lycopersici*, *Alternaria* spp. and *Cladosporium fulvum* occurred annually. Crown and root rot were frequent and sometimes severe in the field as well as in greenhouses. In the districts of Lushnjë, Fier and Durrës, attacks by *Pyrenochaeta lycopersici* were common. *Pseudoperonospora cubensis* was very frequent and severe in greenhouse-grown cucurbits, especially in spring. Some considerations about the future of Albanian horticulture and strategies for control are also offered.

Key words: cucurbits, solanaceous, survey, phytopathogenic fungi.

Introduction

In Albania the total area of arable land amounts to about 700,000 ha and the agricultural sector still constitutes one of the pillars of the national economy, accounting for 52% of GDP (Agolli, 2000). Albanian agriculture was affected by political events and the land reforms that took place at the end of the last century (Shundi, 1992). Since 1994, many dramatic changes have occurred, but privatization was and still is considered to be the essential and most important element of reform. Currently, Albanian agriculture is at the beginning of a phase of production growth due to intensive labour- and capital-saving innovations (Teqja *et al.*, 2000). Notwithstanding important improvements, the Albanian production system remains primitive, yields

are low, infrastructures poor and many farms are too small and fragmented to be competitive. In addition to pulse and other field crops, vegetables are the most important agricultural products grown in most parts of the country, primarily in open fields.

Albanian vegetable crops are each year damaged heavily by pests and by diseases caused by fungi, bacteria and viruses. Since a knowledge of pathogens and their seriousness is essential in order to set up efficient control strategies, an investigation was carried out on fungal diseases in particular, the preliminary results of which, are reported in the present paper.

Field surveys

In this investigation, monthly surveys were conducted on 25 farms in the main Albanian vegetable-growing areas in the last two years. Observations were made principally on Solanaceae and Cucurbitaceae, recording the frequency and intensity of diseases and collecting samples for laborato-

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ry analysis. When necessary, pathogenicity tests were also carried out.

The most common phytopathogenic fungi found in solanaceous crops and cucurbits are listed in Tables 1 and 2 respectively. Severe attacks by *Phytophthora* spp., *Pythium* spp., *Botrytis cinerea* (De Bary) Whet., *Didimella lycopersici* Kleb., *Alternaria* spp. and *Cladosporium fulvum* Cooke occurred in spring, especially in plants grown in tunnels or greenhouses. These pathogens were frequently found in structures without heating and with poor ventilation where the relative humidity remained high for long periods. In this environment, attacks by *D. lycopersici* and *B. cinerea* were particularly severe. These pathogens were more frequent and very destructive for tomatoes grown in greenhouses where re-cropping was common, and where residues of previous crop were often not completely removed. Under these conditions, to-

mato losses varied from 20% (late infections by *Alternaria* spp. or *Cladosporium* sp.) to 80% of yield (early infections by *P. infestans* (Mont.) De Bary or *D. lycopersici*, followed by *B. cinerea*).

Pseudoperonospora cubensis (Berk. & Curt.) Rost. was very frequent and severe in greenhouse-grown cucurbits, especially in spring. In many farms, this pathogen caused extensive desiccation of the foliage, leading to heavy losses in quality and yield. Powdery mildew caused by *Sphaerotheca fusca* Blumer (syn. = *S. fuliginea*) in cucurbits and *Leveillula taurica* (Lev.) Arnaud in Solanaceae was very common in summer, both in open fields and in greenhouses. These pathogens developed frequently in epidemic form, causing severe defoliation and reduction in yield and quality.

Crown and root rots caused by *Fusarium* spp., *Rhizoctonia solani* Kühn., *Sclerotinia sclerotiorum*, (Lib.) De Bary, *Sclerotium rolfsii* Curzi, *Phytoph-*

Table 1. Phytopathogenic fungi frequently found in some Albanian Solanaceous crops in 2000 and 2001.

Pathogen	Potato	Tomato	Pepper	Eggplant	District
<i>Phytophthora infestans</i>	+	+			All
<i>Phytophthora capsici</i>			+		All
<i>Phytophthora nicotianae</i>	+	+	+	+	All
<i>Pythium</i> spp.		+	+	+	Durrës, Lezhë
<i>Botrytis cinerea</i>	+	+	+	+	All
<i>Leveillula taurica</i>		+	+	+	Lushnjë, Durrës, Vlorë
<i>Fusarium oxysporum</i>	+	+	+		Durrës
<i>Verticillium dahliae</i>		+		+	Fier
<i>Didimella lycopersici</i>		+			Lushnjë, Berat
<i>Sclerotinia sclerotiorum</i>	+	+		+	Fier
<i>Rhizoctonia solani</i>	+	+			Durrës
<i>Phyrenochaeta lycopersici</i>		+			Durrës, Vlorë
<i>Alternaria</i> spp.	+	+	+	+	All
<i>Cladosporium fulvum</i>		+			Krujë, Tiranë

Table 2. Phytopathogenic fungi frequently found in some Albanian Cucurbits in 2000 and 2001.

Pathogen	Cucumber	Melon	Zucchini	District
<i>Pseudoperonospora cubensis</i>	+	+		Lushnjë
<i>Sphaerotheca fusca</i>	+	+	+	Fier, Lushnjë
<i>Pythium</i> spp.	+	+		Durrës
<i>Botrytis cinerea</i>	+	+	+	All
<i>Sclerotinia sclerotiorum</i>	+	+	+	Fier
<i>Sclerotium rolfsii</i>	+	+		Fier, Lushnjë
<i>Fusarium oxysporum</i>	+	+		Durrës, Krujë
<i>Alternaria</i> spp.	+	+		All

thora spp, *Pythium* spp., etc. were frequent and sometimes severe in fields as well as in greenhouses. In some areas of the districts of Lushnjë, Fier and Durrës, where tomatoes are grown intensively, attacks by *Pyrenochaeta lycopersici* Gerlach were common and disease incidence increased from year to year, causing severe damage in summer.

Discussion

Presently vegetable crops in Albania occupy an area of more than 35,000 hectares and the favourable climatic conditions of many Albanian areas are likely to foster an increase in vegetable crop growing. The introduction of new crops such as asparagus, artichoke, Brassicaceae, etc., in the warm western plain along the Adriatic coast appears to be particularly promising (Myrta, 1993). However, the ideal climatic conditions of this area in spring are also particularly favourable to many diseases. The severe attacks recently recorded in some vegetable crops grown in plastic tunnels or in greenhouses suggest that technical improvements of these infrastructures are needed. Furthermore, epidemiological studies on common and severe pathogens such as *D. lycopersici* (Mercuri, 1976) and others need to be continued and expanded.

The increase and specialization of vegetable

crops in Albania may soon open international markets to them (Myrta, 1993). In order to prevent the spread of diseases and avoid the introduction of new pathogens, it is advisable to use certified seeds, buy only certified plants from controlled nurseries, grow genetically different varieties, and put into practice new strategies for stabilizing selection (Jenkin and Plumb, 1981) and techniques of integrated pest management (Lorenzini, 2001).

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