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First Report of Leaf Spot of Radicchio in Egypt Caused by *Alternariacichorii*

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***Abstract* – During 2012, a foliar disease of commercially grown radicchio (*Cichoriumintybus* cv.) was observed in commercial farming regions of El-Khatatba, Egypt at an estimated incidence of 21% of plants. Symptoms included necrotic spots on leaves, with each spot ranging in diameter from 5 to 25 mm and developing concentric zones of dark tissue. This is the first report of *A. cichorii* causing a leaf spot on commercially grown radicchio in Egypt.**

Keywords* – Leaf Spot, Radicchio, Egypt, *Alternariacichorii.

I. Introduction

Alternaria is a ubiquitous fungal genus that includes saprobic, endophytic and pathogenic species. It is associated with a wide variety of substrates including seeds, plants, agricultural products, animals, soil and the atmosphere[1& 3]. Species of *Alternaria* are known as serious plant pathogens, causing major losses on a wide range of crops. Several taxa are also important postharvest pathogens, causative agents of phaeohyphomycosis in immuno-compromised patients or airborne allergens [4 &7]. Because of the significant negative health effects of *Alternaria* on humans and their surroundings, a correct and rapid identification of *Alternaria* species would be of great value to researchers, medical mycologists and the public alike [6 &7].

II. Materials and Methods

Diseased leaf sections of 20 plants were surface disinfested for 2 min in 1% NaOCl, rinsed in sterile water, plated on tomato juice agar and incubated at 25°C in the dark.

For pathogenicity tests, five radicchio isolates of this fungus were cultivated on tomato juice agar[5] for 5 days at 25°C in the dark, and conidia were used for inoculating radicchio plants of the cv ucknow(each 5 weeks old),under greenhouse conditions. Five replicate plants were each inoculated with the *A. cichorii*conidial suspension (1×10^5 conidia/ml and 25 ml/plant) prepared in sterile, double-distilled water. Twenty control plants were sprayed similarly with sterile, double-distilled water. Tween 80 (0.01%) was added to the conidial suspension and the water. Inoculated radicchio plants were incubated in a moist chamber for 10 days at 25°C by day/23°C by night with a 12h photoperiod.

III. Results and Discussion

Symptoms consist of circular to oblong, tan to light brown, necrotic spotsranging in diameter from 1/4 to 1/2 inch. Such spotsusually contain alternating, concentric zones oflighter and darker tissue. The fungus sporulates on the leaf spots, soa dark green growth may be seen in the center ofspots. Under favourable conditions (10–13°C and high relative humidity) the spots grow very quickly and the exterior leaves turn yellow and disintegrate. Strong infections can result in the disintegration of most of the leaves (Fig. 1)

Fig.1. Develop of *Alternariacichorii* on Radicchio

The fungal isolate was examined morphologically and identified as *Alternariacichorii* Nattrass based on the following characteristics (Barreto*et al*., 2008): conidia obtained from leaf spots were obclavate with a slender, unbranched beak extending from the narrow end of each spore; conidia each measured 56-78×14-20 µm, and the beak measured 37-81×1-2 µm and each spores had 7 to 9 transverse septa. After incubation, leaf spots similar to the original symptoms observed had developed on all plantsinoculated with the isolate. All plants were killed after inoculation with one of *A. cichorii.*

For pathogenicity, symptoms started sooner and developed much more rapidly on endive plants, and the same fungus was re-isolated from symptoms on inoculated plants confirming Koch's postulates. Control plants remained healthy.This is the first report of *A. cichorii* causing a leaf spot on commercially grown radicchio in Egypt.

A foliar disease of commercially grown radicchio was observed in 1996 and 1997 in the Salinas Valley (Monterey County), California. Symptoms consisted of circular to oblong, necrotic spots ranging in diameter from 3 to 20 mm and having concentric zones of darker tissue. In addition, the same disease was confirmed on commercially produced greenhouse transplants of radicchio, indicating that primary inoculum can possibly be seed-borne.*Alternariacichorii*Nattrass (Ascomycota, Dothideomycetes,Pleosporales) is also in Slovenia a relatively insufficientlyknown pathogenic fungus, although it can be and usually is –especially in moist periods – economically the most damagingpathogen on endive plants [7 &8].As a consequence, round, oval, or

angular, whitish, pale grey or pale brown spots, each with a broad, brown, or reddish-violet margin, sometimes confluent, are formed on the exterior leaves [1]. Under favourable conditions (10–13°C and high relative humidity) the spots grow very quickly and the exterior leaves turn yellow and disintegrate. Strong infections can result in the disintegration of most of the leaves. As the seeds used in mass scale endive growing are disinfected, the plant debris can be considered the main source of infection. Disease symptoms vary for different hosts, but it is known that they start sooner and develop much more rapidly on endive plants [4].

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