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## First report of pod blight of okra caused by *Choanephora cucurbitarum* in Egypt

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El- Sayed Hussein and El-Sayed Ziedan (2012) First report of pod blight of okra caused by *Choanephora cucurbitarum* in Egypt. International Journal of Agricultural Technology 9(1):135-140.

**Abstract** During May and June 2010, in Kafr El –Abiada village, El Mahalla El Kobera District, Gharbeia Governorate, Egypt. Okra plants were exhibited blossom blight, chlorosis and wet rotten of young fruiting pods. The high losses of fresh pods was observed due to soften wet rot of young pods during their developing. Diseased pods fail to develop during a period of hot and high humidity conditions. Under highly humidity degree in damping chamber, diseased young pods was covered with a cottony growth. Isolation trails from diseased tissue of diseased young pods on potato dextrose agar medium (PDA) revealed that several fungal isolates. A white aerial mycelia that later developed light yellow was identified as *Choanephora cucurbitarum* (Berk&Ravenel) Thaxt. On the basis of cultural and morphological characteristics. Pathogenicity tests were performed by inoculation young pods by mycelial mat of fungal isolates from 7- to 10-day-old cultures grown on (PDA). Pods free inoculation was served as a control in a dew chamber at 28°C for 48 h. Within 48 h after inoculation, pods developed water-soaked lesions and rotted. Koch's postulates were completed by reisolation isolate of two pathogenic fungi from diseased inoculated pods. According to the available literature, this is the first record of wet rot caused by *Choanephora cucurbitarum* on okra in Egypt.

**Key words:** Okra, *Choanephora cucurbitarum*.

### Introduction

Okra (*Abelmoschus esculentus* L.) is an annual vegetable crop grown in the tropical and sub-tropical regions. Tender green fruits of okra used as vegetable are fairly rich in vitamins and minerals. It's an important vegetable crop of Egypt grown commonly in summer season. The most important foliar diseases of okra causing significant losses in yield and quality in Florida are *Cercospora* leaf spot, blossom blight/wet rot (*Choanephora cucurbitarum*), Powdery mildew (Raid, and. Palmateer, 2006). *Choanephora* wet rot of okra fruits was recorded in Malaysia (Siddiqui, 2006 and Siddiquiet al., 2008).

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Recently, in Egypt, Several foliar diseases were recorded of okra, *Alternaria* leaf spot caused *Alternaria alternata* (Atia and Tohamy, 2004 ), *Cercospora* leaf spot caused by *Cercospora* sp. (Farrag Eman, 2011) and *Alternaria* blight of pod caused by *Alternaria alternata* (Ziedan, 2012). The present investigation was aimed to isolation and identification of pod blight of okra growing areas of Kafr El-Abiada village, Gharbeia, Governorate, Egypt.

## **Materials and methods**

### ***Isolation and identification of causal agent***

Samples of rotted blossoms and okra young pods of okra were collected during 2010 from field at Kafr El-Abiada village, Gharbeia, Governorate, Egypt, then incubated in a moist chamber to induce sporulation of fungi associated for 2-3 days at 20-27C. Diseased young pods were cut into bits and surface sterilized using 1% sodium hypochlorite 1 min. then washing with sterilized distilled water several times then cultured on potato dextrose agar medium (PDA) and incubated as mentioned above. Plates were then incubated at 25°C for 7days. Colony margins were then transferred onto (PDA) as part of the culture purification process by single spore culture technique. Fungal isolates were identification according to (Barnett and Hunter, 1998).

### ***Pathogenicity test***

Healthy young pods Cv. Balady were kept at 4 C for 4 days prior inoculation by fungal mycelium, pods wounded with entomological pins, followed by deposition of a plug of mycelial culture on the injured site. A plug of sterile (PDA) free fungal growth was used as a control. After inoculation, pods were kept in plastic bags (95 % RH) for seven days in growth chambers with temperatures set at 25 C or 12 C. Seven days after inoculation, wounded pods were completely rotted, the pod's typical greenish color turning brown, and the infected tissues fully covered with mycelia. Percentage of diseased pods was recorded and disease severity development was observed and recorded 2 days as follows according to (Ziedan, 2012)

0= healthy,no lesion observed

1= 25%soften of pod area

2= 50% soften of pod area

3= 75 % soften of pod area

4= 100% soften of pod area

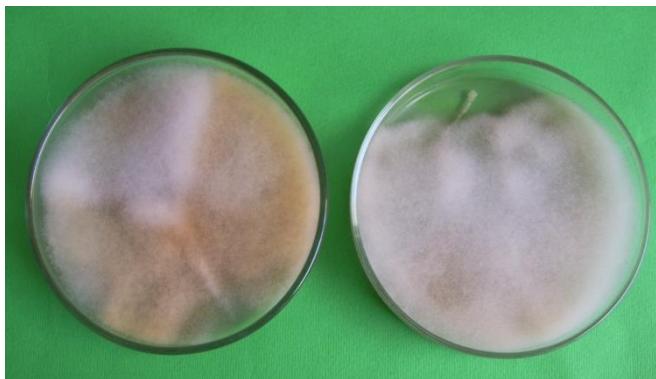
### *Statistical analysis*

The data was statistically analyzed by procedures of Sukhatme and Amble (1985).

### **Results**

#### *Isolation, identification and pathological potential of fungal isolates*

Syndrome of okra blight due to *Choanephora cucurbitarum* Fig (1) invasion early on newly opened blooms will split and collapse Fig (2). Fruit may become infected and covered with a dense white mycelium (Fig 4). Affected pods were failure to developing as shown in Figs (2 and 3) Affected parts will often soften and fall to the ground. Soften rot syndromes was observed of diseased pods as shown in Fig (3). Different degrees of disease syndromes on pods was observed chlorosis, yellowish and soften of tissues on diseased pods. Pods invaded by *Choanephora cucurbitarum* clearly observed stunt compare the healthy (control) as shown in Fig (3). *Choanephora cucurbitarum* isolates was identified according morphological chracters Fig (1). All isolates were able to causing wet rot of wounded okra pods compare the control (wounded pods free fungal infestation ). Fungal isolates varied of their pathological potential on okra pods as shown in Table (1).



**Fig. 1.** Culture of *Choanephora cucurbitarum* 7 days old on PDA medium

**Table 1.**Pathogenicity test of fungal isolates on okra pods

Fungal name	Diseased pods %	D. severity
<i>Choanephora cucurbitarum</i> 1	40.0 b	1.8 d
<i>Choanephora cucurbitarum</i> 2	50.0 a	1.4 d
<i>Choanephora cucurbitarum</i> 3	33.3 c	2.8 c
<i>Choanephora cucurbitarum</i> 4	40.0 b	3.0 b
<i>Choanephora cucurbitarum</i> 5	53.3 a	3.6 b
Without fungi	00.0 e	0.0 e

Values with the different in the same column are significantly ( $P \leq 0.05$ ) according to Duncan's multiple range test.



**Fig. 2.** Blossom blight of okra pods (left) showing mycelium growth compare the healthy pods (right).



**Fig. 3.** Syndromes of pod blight under natural field infestation from left to right (healthy), chlorosis, 25% rot of pod, soften rot of 50% and soften rot of 100% of whole pod. All diseased pods were stunted than the healthy pods.



**Fig. 4.** Different degrees of soften rot severity on okra pods by isolates of *Choanephora cucurbitarum* showing white of mycelim growth

## Dissicusion

Our observation clearly indicate that *Choanephora cucurbitarum* (Berk. & Ravenel) Thaxt causing blight /wet rot disease of okra blossoms and young pods in Egypt. As far as the writer are aware, this is first record of Egypt .*Choanephora* wet rot of okra fruits was recorded inFloride (Raidand Palmateer, 2006) and in Malaysia (Siddiqui, 2006 and Siddiqui *et al.*, 2008). According to the available literature, this is the first record of *Choanephora cucurbitarum* as new pathogen causing blight of blossoms and okra pods in Egypt.

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(Received 30 July 2012; accepted 30 December 2012)