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Incidence of post-harvest fruit rot of tomato in vegetable market of Muzaffarnagar district

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Abstract

Tomato *Lycopersicon esculantum* L. is the most popular vegetables world wide. Tomato crop and yield is suffered every year due to number of pathogenic disease. Such disease are caused by fungi, bacteria, viruses and nematode. Fruit-rot of tomato is an economically important disease which affects production of tomato. During survey of vegetable market in Muzaffarnagar district, it was observed that most of the tomato fruits have been suffered by fruit-rot disease caused by *Alternaria solani* (Ellis and mart.) Jones and Grout. The fruit-rot was encountered in all the months during which survey was done Nov 2016 to Oct 2017, but the incidence was maximum during April (9.75) and minimum in January (5.00).

Keywords: Fruit-rot, tomato, *Alternaria alternata*

Introduction

Tomato *Lycopersicon esculantum* L. originated south America belongs to solanaceae family is a widely grown vegetable in the world (Thompson and Kelly 1957) [1]. The leading producer of tomato in the world is U.S.A followed by China, Italy, Turkey, Egypt, Spain, Romania, Brazil and Greece. In India the crop is grown over an area of 809,000 hectare with a production 19697,000 MT (Anonymous 2017) [2] in India every tomato grower, dealer, whole seller and retailer are faced with the great loss from disease caused by fungi and bacteria. Out of these, the fungal disease are most common which cause considerable damage to the tomato fruits (Chenulu and Thakur 1968 [3], Sharma 1994 [4], Chaurasia 2001 [5]). Amongst fungal pathogens, *Alternaria solani* (Ellis and mart.) Jones and Grout is one of the most destructive and common pathogen of tomato fruits causing fruit rot disease in fields and during storage, marketing and transportation in Muzaffarnagar district of U.P. Due to this disease, The tomato fruits not only lost their nutritional value but also quick and severe rotting makes them unfit for domestic use. Therefore the present investigation was carried out to study the effect of *Alternaria solani* on fruit rot disease development. The principle fungal fruit rot reported all over the world with various intensities on tomato includes Alternaria rot by *Alternaria solani* and *Alternaria tenuis*, *Phytophthora nicotianae* var. *parasitica*, Anthracnose ripe rot caused by *Colletotrichum phomoides*, Phoma-rot *Phoma destructiva* and *fusarium* rot caused by *fusarium species* (Jones 1991, Iqbal *et al* 2003, Patel *et al* 2005, Ali *et al.*, 2005.) [6-9]. The fungal rot was also reported from India (Thomas 1944, Aggarwal *et al.*, 1950, Rao 1965 Baraki and Fauchs 1980 and Husain 1996) [10-14] have reported that alternaria is main decay causing organism of post harvest tomato fruit while responsible for black rot lesions on tomato fruits.

Material and Method

In order to find out incidence of post-harvest rot of tomato fruits for locations viz, Budhna, Muzaffarnagar, Shahpur and Charthawal in Muzaffarnagar district were selected in these locations survey was conducted at 15 days intervals. In each visit the disease incidence was recorded based on a number of fruits infected in four samples, each sample comprised of 100 fruits selected at random from 4 shops/Thelas at each locations. Total number of fruits and diseased fruits from each lot were counted on the basis of typical symptoms and per cent incidence/loss was estimated by using following formula suggested by Ratnam and Nema (1967) [15].

$$A = \frac{Y}{X} \times 100$$

Where,

A = % Incidence/loss due to fruit rot decay

X = Total number of fruits

Y = number of decayed fruits

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Result and Discussion

Fortnightly survey of Budhana, Muzaffarnagar, Charthawal, Shahpur vegetable markets conducted during Nov 2016 to Oct 2017. Reveled fruit rot of tomato fruits induced by *Alternaria Solani*. Fruit rot was encountered on every visit, with fluctuations in incidence during the survey period. The highest incidence (9.75%). of rotting fruits was found during April 2017 followed by October 2016, March 2017 and

November 2016. Whereas lowest incidence (5.00%) was found during January 2017. The average incidence of fruit rot of tomato was 7.00% (Table 1 & Fig. 1). Although the incidence did not vary much from place to place but the highest incidence was recorded in Charthawal, Muzaffarnagar followed by Shahpur and Budhana. (Patel and Patel 1991, Garg and Gupta 1979, Ravishankar 2006) [16-18].

Table 1: incidence of fruit-rot of tomato in vegetable market of Muzaffarnagar district surveyed from Nov. 2016- Oct. 2017

S. No.	Month Of Survey	Percent Incidence/ Vegetable Markets				
		Budhana	Muzaffarnagar	Charthawal	Shahpur	Average Incidence Percent
1	November	6.00	7.50	6.75	6.75	6.75
2	December	5.00	5.50	5.75	4.75	5.25
3	January	3.50	5.00	5.50	6.00	5.00
4	February	4.75	5.50	5.25	5.50	5.25
5	March	7.50	8.50	8.75	8.25	8.25
6	April	8.50	10.00	10.50	10.00	9.75
7	May	6.75	7.50	7.25	6.75	7.06
8	June	6.00	6.50	6.50	6.00	6.25
9	July	6.00	7.50	6.75	5.75	6.50
10	August	6.00	5.00	6.75	6.25	6.00
11	September	6.25	6.50	6.25	7.00	6.50
12	October	6.75	9.50	9.00	8.75	8.50
	Average % Incidence	6.08	7.04	7.08	6.81	6.76

(Average based on 4 retailers/vegetable market)

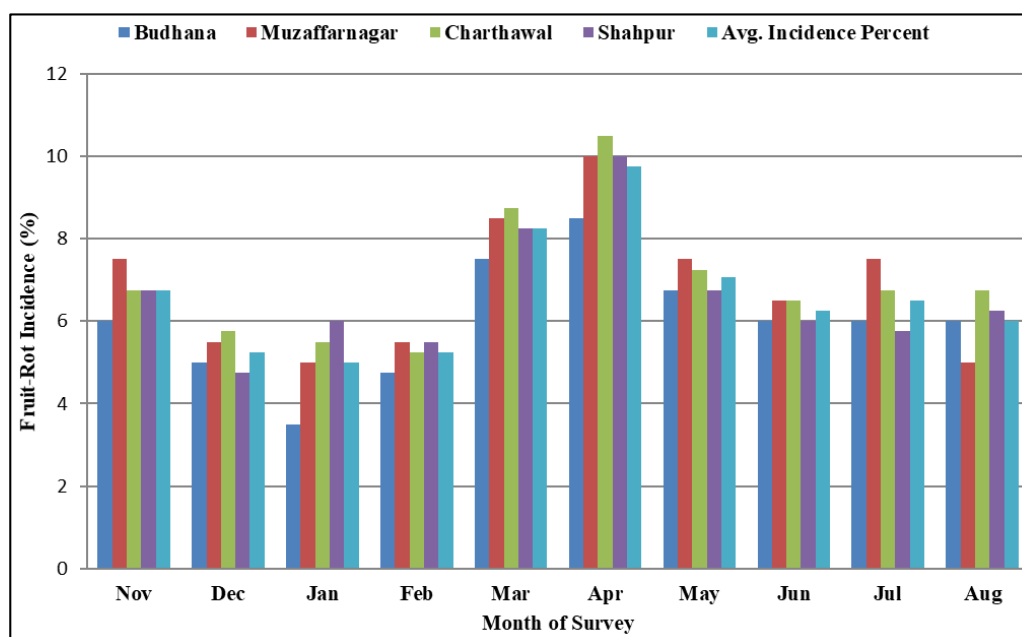


Fig 1: Incidence of fruit-rot of tomato in vegetable market of Muzaffarnagar district surveyed from Nov. 2016- Oct. 2017

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