

Market Survey on Incidence of Black Mold Rot of Garlic (*Allium sativum* L.)

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ABSTRACT

The survey was carried out at 15 days interval on incidence of black mold rot of garlic starting from April to September, 2015 at Sardar Patel vegetable market, Anand, Vegetable market, Petlad and Janta bazaar, Borsad, revealed the presence of *Aspergillus* sp. (black mold rot) in all the three markets of Anand district. The highest black mold rot incidence was recorded in May (24.33 %), while lowest black mold rot incidence was recorded in September month (7.69 %).

Key words *Black mold rot, Aspergillus niger, survey, markets*

Garlic (*Allium sativum* L.) is the most important bulbous crop after onion, belonging to *Amaryllidaceae* family. (Sharma, 2012) Garlic is widely cultivated in China, India, Republic of Korea, Egypt, Russia, Bangladesh, Ethiopia, Myanmar, United States of America, France, Spain and Ukraine (Anon., 2015) The stored garlic always succumb to the infection by *Aspergillus niger* causing black mold rot. It is responsible for incurring losses to the extent of 12-25 percent due to various bulb rots and total losses during storage of 5-6 months were as high as 30-40 per cent (Maini and Chakravarti, 2000). Black mold rot disease occurs more or less every year in bulbous crops and causes extensive damage to quality of bulbs and the pathogen (*A. niger*) is responsible for causing the disease in storage as well as in market. Therefore the present study was undertaken to assess the incidence of black mold rot in various markets of Anand district.

MATERIALS AND METHODS

Survey was carried out at 15 days interval at Anand, Petlad and Borsad Market to study the incidence of black mold rot of garlic starting from

April to September, 2015. One hundred bulb samples were selected randomly from retailers of each taluka made 300 bulbs from all three locations (Taluka) and were examined for the incidence of black mold rot of garlic caused by *A. niger*. The per cent black mold rot incidence was calculated by following standard formula:

$$\text{Black mold rot incidence (\%)} = \frac{\text{Number of infected bulbs}}{\text{Total number of bulbs examined}} \times 100$$

RESULTS AND DISCUSSION

The survey was carried out at 15 days interval at Anand, Petlad and Borsad markets for assessing the incidence of black mold rot of garlic starting from April to September, 2015. The results revealed the presence of *Aspergillus* sp. (black mold rot) at Sardar Patel vegetable market, Anand, Janta bazaar, Borsad and vegetable market, Petlad. The data presented in Table .1 indicated that the disease incidence was ranged from 8-24 per cent at Sardar Patel vegetable market, Anand and highest per cent black mold rot incidence (24%) was recorded in 2nd fortnight of May and 1st fortnight of June month, respectively. While, lowest per cent black mold rot incidence was observed in 1st and 2nd fortnight of September at Sardar Patel vegetable market, Anand. Almost similar results were found in Vegetable market, Petlad. At Petlad market, per cent black mold rot incidence was ranged from 6-27 per cent. Highest black mold rot incidence i.e. 27% was recorded in 2nd fortnight of May, while lowest incidence (6%) was recorded in 1st fortnight of September. In case of Borsad market, the highest black mold rot incidence and lowest incidence was recorded in 1st fortnight of June (27%) and 2nd fortnight of September month (8%), respectively. The highest black mold rot incidence was recorded

Table 1, Survey on incidence of black mold rot of garlic in Anand, Petlad and Borsad in 2015

| Locations | Per cent Disease Incidence (PDI) | | | | | | Mean |
|-----------|----------------------------------|-------|--------|-------|--------|-------|-------|
| | Anand | | Petlad | | Borsad | | |
| Months | I* | II** | I | II | I | II | |
| April | 17.00 | 19.00 | 15.00 | 18.00 | 20.00 | 21.00 | 18.33 |
| May | 23.00 | 24.00 | 23.00 | 27.00 | 24.00 | 25.00 | 24.33 |
| June | 24.00 | 21.00 | 26.00 | 22.00 | 27.00 | 25.00 | 24.17 |
| July | 19.00 | 15.00 | 15.00 | 14.00 | 18.00 | 14.00 | 15.83 |
| August | 12.00 | 13.00 | 11.00 | 09.00 | 10.00 | 11.00 | 11.00 |
| September | 09.00 | 08.00 | 06.00 | 06.00 | 09.00 | 08.00 | 7.67 |
| Mean | 17.00 | | 16.00 | | 17.66 | | -- |

*I= 1st fortnight, **II= 2nd fortnight

in May (24.33%) followed by June (24.17%), April (18.33%) and July (15.83%). While, lowest black mold rot incidence was recorded in September (7.67%) followed by August month (11%). The result of survey revealed that incidence of black mold rot of garlic was 17, 16 and 17.66 per cent at Sardar Patel vegetable market, Anand, vegetable market, Petlad and Janta bazaar, Borsad.

The probable reasons for the recording higher incidence of black mold rot in April and May month in all three locations may be due to higher temperature during that months. The most favourable temperature for the growth of the fungus is 28°C - 34°C followed by the warm and moist conditions eliciting infection (Tysony and Fullerton, 2004) and as the temperature goes down simultaneously the black mold rot incidence gets lower down.

The results of present investigation are in consonance with the results obtained by Patel, 1990. He recorded the lowest incidence of black mold rot in garlic in first month after harvest and ten months after harvest in Visnager market followed by Ahmedabad market, and also observed the highest incidence of black mold of garlic within a month of harvest in Vadodara market while after ten months of storage it was recorded in Anand market. Ko *et al.* (2002) reported that the black mold, soft rot and basal rot were the main cause of

storage losses to the tune of 36, 25 and 14 per cent, respectively in onion. Yadav (2000) reported 7.75, 8.05, 7.23 and 6.75 per cent *Aspergillus* fruit rot incidence in onion due to *A. niger* from orchards and markets of Jobner, Renwal, Chomu and Jaipur, respectively. Survey carried out by Panchal (2008) on post-harvest diseases of tomato at vegetable market, station road, Anand during 2007 to 2008 revealed the presence of five pathogenic rots *viz.*, *Alternaria* (19.7%), *Rhizopus* (4.59%), *Aspergillus* (3.44%), *Penicillium* (2.6%) and *Fusarium* (2.2%), respectively.

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