

Survey of Some fungal Disease of Brinjal (*Solanum melongena* L.) and their Management from Nashik District (Maharashtra, India)

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ABSTRACT

The brinjal commonly called as eggplant (*Solanum melongena*) is widely grown as vegetable crops all over the world, including the Indian sub-continent. This crop is suffered from some species of fungi bacteria and viruses resulting in wilt, soft rot and root rot etc. diseases out of which most of are the fungal. Present survey is carried out to determine occurrence, distribution and the status of fungal diseases on Brinjal cultivated in Nashik districts. As fungal diseases are commonly occurring and causes economic losses the knowledge about their occurrence and management is necessary. Results indicated that major fungal diseases of Brinjal are caused by are Damping off , Collar rot , fruit rot, leaf spot, Alternaria leaf spot etc. The present study indicated that a different fungal disease exists in Brinjal field and to avoid economic loss integrated disease management is required to manage the fungal diseases in the region.

Key words- Fungal diseases, Brinjal, Management

Introduction

Brinjal or eggplant (*solanum melongena* L.) is a one of the well known Solanaceous crop of sub-tropics and tropics. The brinjal, (eggplant) has originated inside the Indian sub-continent and china (Thompson and Kelly, 1957; Purewal, 1957; Martin and Rhodes, 1979). Brinjal is a common vegetable crop of the Bangladesh, India, China and the Philippines. The name brinjal is famous in Indian subcontinents and originate from Arabic and Sanskrit while the name eggplant has been derived from the form of the fruit of some varieties that are white and resemble in shape to chicken eggs. In line with the 1994 FAO, an eggplant manufacturing areas had been 556,000 ha and the entire manufacturing became 8,979,000mt. Asia has the largest eggplant manufacturing which contains more than 90% of the world production region and 87% of the world production. (The data did not include India and Bangladesh). Gill and Tomar (1991) said 299,770 ha of eggplant manufacturing region in India in 1992-1993, bringing the Asian total close to 830,000 ha. The brinjal is of a great deal significance in the heat areas of some distance east, being grown significantly in India, Bangladesh, Pakistan, China and the Philippines. India is considered to be the centre of origin of cultivated brinjal, from wherein it spread to the other elements of the world (Choudhury and Malda, 1968) it's also popular in Egypt, France, Italy and

America. In India, it's far one of the most common place, famous and foremost vegetable vegetation grown at some point of the United States besides better altitudes. It's far a versatile crop adapted to one-of-a-kind agro-climatic regions and can be grown at some stage in the year. It's a perennial but grown commercially as an annual crop. A number of cultivars are grown in India, patron desire being structured upon fruit shade, size and shape ranging from oval or egg-fashioned to long club-shaped; and from white, yellow, inexperienced through levels of red pigmentation to nearly black. Maximum of the commercially important types have been decided on from the lengthy established kinds of the tropical India and China. In India, it's miles one of the maximum, popular and fundamental vegetable crops grown at some stage in the country besides better altitudes. It's far a flexible crop tailored to one of a kind agro-climatic regions and can be grown for the duration of the year. It is a perennial but grown commercially as an annual crop. Brinjal is considered a native to India in which the primary domestication of large fruited cultivars occurred. In book "origin of cultivated plants" De Candolle (1986), said that the species *S. melongena* has been recognized in India from historic times and regarded it as a native of Asia. Vavilov (1928) was of the opinion that its centre of beginning become in the Indo-Burma region. Sampson (1936) suggested the African starting place of this crop but there may be no evidence that *S. melongena* is native there though there are spiny African brinjal vegetation. It has been said that on a mean, the rectangular-fruited eggplant cultivars are wealthy in overall soluble sugars, while the long-fruited cultivars incorporate a better content of free decreasing sugars, anthocyanin, phenols, glyco-alkaloids (inclusive of solasodine), dry count number and amide proteins (Bajaj et al., 1979). Som and malty (1986) suggested that the real place base brinjal cultivation in India is not available due to its seasonal nature of cultivation. The existing farming device totally depends on use of chemical fertilizers, insecticides and increase regulators for reinforcing crop productiveness which step by step culminated in a situation where there may be a need to reconsider the opportunity to chemical agriculture evolved within the western global.

Important fungal disease of brinjal

Damping off

Caused by:- *Pythium* spp., *Phytophthora* spp., *Rhizoctonia* spp., *Sclerotium* spp. and *Sclerotinia* spp.

Symptoms: It's one of the severe diseases of brinjal seedlings and particularly takes place in nursery mattress. The sickness infected seedlings rot at ground level after which the plants fall over floor. The seedlings die in patches. Each the pre-emergence and post-emergence damping-off symptoms are visible in diseased phase. The germinating seeds are infected with the aid of fungi on the initial stges. The infection later spreads to hypocotyls basal stem and growing roots. The post-emergence damping off segment is characterized by way of infection of the young, juvenile tissues of the collar on the floor level. The affected seedlings emerge as pale green and brownish lesions are determined at the collar area, resulting in bottling and topple over of seedlings.

Control measures:

To control this disease avoid over-watering in field. Drench the beds and treat the seeds (at 3 g kg-1 seed) with Capton or Thiram at 0.4% at 5-7 days after germination. Fumigate the soil with Formalin (7%) by drenching 10-15 cm deep soil and if possible give hot water treatment to seeds

(52°C for 30 min). The seed bed should be treated with Formalin before sowing of seeds. The seeds should be treated without water (30 min at 52°C) or Cerasan or Agrosan G.N. before sowing of seed. The seedlings in the nursery should be sprayed with any fungicides at regular intervals

Phomopsis blight and fruit rot

Caused by- *Phomopsis vexans*

Symptoms: Phomopsis blight is a severe fungal disorder of brinjal that's because of the fungi phomopsis vexans. It affects in the main stems, leaves and culmination of brinjal. Severe infection stem signs and symptoms of this fungal disorder encompass brown or dark sunken lesions slightly above the soil floor and may result in cankers. Seedlings subsequently collapse and die. The pathogen assaults leaves but older ones are greater inclined. Lesions are epically round, grey to brown and increase a light center. Within the center of older lesions, numerous fruiting bodies, called pycnidia, may be located as small, black pimples, embedded inside the host tissue. Affected leaves might also turn yellow and drop in advance. Spots and cankers can shape on mature stems and branches. The maximum vital signs are at the fruit. Fruit harm starts as a pale, sunken, oval region(s) at the floor. Those in the end enlarge and become depressed. With one lesion or several spots coalescing, large portions of the fruit are affected.

Control measures:

Try the use of Disease resistant variety (Such as Pusa Bhairab, Pusa Cluster etc.) or disease free seeds, seeds treatment with some fungicide and long crop rotation are the most common remedial measures of this disease. The disease can effectively be controlled by weekly spraying of nursery and field with Zineb (Dithane-Z-78) or Mancozeb (Dithane M-45) at 2.5 g L⁻¹ of water. Prompt destruction of infected plant material to reduce initial inoculums. About 3-4 year crop rotation is beneficial, since the fungus does not infect other crops. Weed control is advisable since pathogen can survive on solanaceous weeds such as nightshades. Fungicides may be warranted and should be done in combination with the above cultural practices

Leaf spot

Caused by- *Cercospora melongenae*

Symptoms: The infection signs are characterised by using chlorotic lesion, angular to abnormal in shape, later turning grayish-brown. Critically infected leaves drop off in advance, resulting in decreased fruit yield. The disorder reasons feature leaf spots with concentric rings. The spots are mostly irregular and coalesce to cowl big areas of the leaf blade. Severely affected leaves drop off. The symptoms on the affected end result are in the form of massive deep-seated spots. The infected fruits flip yellow and drop off in advance.

Control measures:

Removal and destruction of affected plant parts and spraying the affected plants with Bavistin (0.1%) or Chlorothalonil (2 g L⁻¹ of water) is useful for disease control

Wilting

Caused by- *Fusarium* spp.

Symptoms: Signs and symptoms first seem as a moderate yellowing of foliage and wilting of upper leaves. As wilting progresses, leaves can also flip stupid-inexperienced to brown and continue to be connected to the plant. While the stem and roots are cut diagonally, reddish-brown streaks are visible within the vascular tissues. In fusarium wilt, the underground stems end up dry and brown as a result of cortical decay at the same time as roots may additionally have tender and water soaked look. Stunted boom, withering of immature culmination, yellowing of lower leaves, drooping of the apical component, browning of vascular bundles and closing drying of the entire plant. Wilting of seedlings is likewise a not unusual feature of the sicknesses.

Control measures:

Plant on raised beds to promote soil water drainage away from roots. Thoroughly disinfect equipment before moving from infested to clean fields. Follow long term crop rotation with non solanaceous crop and use of resistant varieties

Alternaria leaf spot

Caused by -*Alternaria melongenae*, *A. solani*

Symptoms: Causes feature spot on the leaf with concentric earrings. Affected leaves may additionally drop off. It could also infect end result that flip yellow and may drop off prematurely. Symptoms of early blight arise on fruit, stem and foliage of brinjal and stem, foliage preliminary symptoms on leaves seem as small 1-2 mm black or brown lesions. Under conducive environmental situations, the lesions enlarge and are regularly surrounded by a yellow halo. This so-known as bullseye type lesion is tremendously feature of early blight. As lesions increase and new lesions expand, entire leaves may flip chlorotic and dehisce, leading to considerable defoliation.

Control measures:

Early blight control is based on crop rotation, removal and destruction of crop debris from previous crops, staking, mulching and timely application of fungicides is also generally needed for early blight control. Field tests have shown that chlorothalonil, maneb and mancozeb fungicides all available at gardening supply stores under a variety of trade names provide effective early blight control when used according to label directions and applications are started early in the season

Fruit rot

Caused by- *Phytophthora nicotianae*

Symptoms: High humidity favours the improvement of the disease. The signs first seem as small water soaked lesions on the fruit which later enlarges in length drastically. Pores and skin of inflamed fruit turns brown and develops white cottony boom.

Control measures:

Removal and destruction of the affected fruits and spraying the crop with Difolatan (0.3%) thrice at an interval of 10 days effectively controls the disease

Verticillium wilt

Caused by-*Verticillium dahliae*

Symptoms: The disease attacks the young vegetation in addition to mature flowers. The inflamed young flowers display dwarfing and stunting because of the shortening of the internodes. Such plant life do not give flower and fruit. Infection after the flowering level consequences in improvement of distorted floral buds and fruits. The affected culmination in the end drop off. The infected leaves display the presence of irregularly scattered necrotic faded yellow spots over the leaf lamina. In a while, these spots coalesce resulting in entire wilting of the leaves. The roots of the affected plant life are cut up open longitudinally, a feature dark brown discoloration if the xylem vessels is determined.

Control measure:

Crop rotation with bhendi, tomato, potato should be avoided. Soil application and foliar Application with Benlate (0.1%) is effective in reducing the wilt disease

Collar rot

Caused by- *Sclerotium rolfsi*

Symptoms: The disease every so often occurs in extreme form. The decrease part of the stem is affected from the soil borne inoculums (sclerotia). Decortication is the main symptom. Publicity and necrosis of underlying tissues may also cause fall apart of the plant. Close to the floor surface on the stem may be seen the mycelia and sclerotia. Lack of plant vigour, accumulation of water around the stem and mechanical injuries assist in development of this sickness.

Control measures:

Collection and destruction of diseased parts and portions of the plant. Seed treatment with 4 g of *Trichoderma viride* formulation per kilogram seed will help in reducing the disease. Spraying with Mancozeb at 2 g L⁻¹ of water

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