

of nations located in South-east Asia, including India, China, and Nepal (Abascal and Yarmell, 2005 and Raj *et al.*, 2010) [1]. Downy mildew, powdery mildew, gummosis, Phytophthora blight, anthracnose, Cercospora leaf spot, phoma blight, collar rot, Fusarium wilt, white rot, dampingoff of seedlings and fungal root rots, root knot nematode, bacterial wilt, and bacterial leaf spot” are just some of the diseases that commonly affect bitter gourd. Other These diseases are considered to be of national importance, and the economic harm that they do to cucurbit crops is substantial “(Mathew and Alice, 2002 [4], Pandey *et al.*, 2002, Palada and Change, 2003 [5], Rai *et al.*, 2008 and Khan *et al.*, 2014). Some of the most common diseases that can cause significant damage to plants include “downy mildew (Hansen, 2000 [6] and Rai and Yadav, 2005), powdery mildew (Watson and Napier, 2009) [7], mosaic Ashwini *et al.*, 2016 [9], leaf curl (Raj *et al.*, 2010), fusarium wilt (Rakhollya *et al.*, 2003) [40], and leaf spot. Downy mildew, which is caused by Pseudoperonospora cubensis, is one of the most serious foliar diseases that can harm bitter gourd. It is also one of the most common. “Bitter gourd, muskmelon, watermelon, cucumber, sponge gourd, and ridge gourd are some of the vegetables that are severely impacted by this pest, which was first recorded in 1868. (Hansen, 2000 [18] and Rai and Yadav, 2005)”. In its earliest stages, the illness presents itself as patches of a whitish-green coloration on the upper surfaces of the leaf surfaces. These transform into golden specks with a jagged appearance. A fine, downy growth that can range in colour from white to a greyish grey swiftly arises on the underside of the leaf. This growth can be either white or greyish. However, infected leaves may still be able to maintain their upright position, even though the outer margins of their leaf blades have begun to curl inward. This is because the infection causes the cells that make up the leaf to die. In the majority of instances, the illness manifests itself initially on the leaves that are situated closer to the middle of the hill or row. The infected area spreads outward, which causes the death of the plant’s leaves, a slowdown in growth, and a poor development of the fruit. Additionally, the illness causes the plant to age more slowly. There is a chance that the entire facility will be destroyed in the end (Kuepper, 2003 and Rai and Yadav, 2005). When the circumstances are humid, the underside of the leaves is covered with a downy mildew that can range in colour from a very light grey to a deep purple. Depending on how old the mildew is, its colour

can range from being virtually white to being almost as dark as black. Infected leaves will typically wilt and fall off the plant, but if they are healthy enough, they may maintain their upright position even as the outside margins of the leaf blade curl inward. In the majority of instances, the illness manifests itself initially on the leaves that are situated closer to the middle of the hill or row. When the infected patch spreads outward, it causes defoliation and poor fruit development, both of which contribute to a lower yield. Defoliation and poor fruit development both lead to a lower yield. When there is precipitation and high humidity, the entire vein is destroyed (Babadoost 2001). Although later infections of downy mildew are less harmful, early infections have the potential to reduce crop productivity by as much as 60 percent (Colucci and Holmes, 2010 [13] and Wallace *et al.*, 2014). It is generally agreed that downy mildew is one of the most deadly types of issue. In India, it may be found over the whole country, with one major exception being the high-altitude temperate zone that surrounds the Himalaya. This region is not home to this species. The instances in which one suffers a loss When a plant is afflicted with powdery mildew, a white powdery growth will emerge on the upper surfaces of the leaves and on the stems of the plant. This growth may be removed by washing the plant well.

Fungi called Sphaerotheca fuliginea and Erysiphe cichoracearum are responsible for the development of this condition. The diseased sections of the plant are typically malformed, and if they aren’t removed, they may perish before their time if the infection is allowed to progress. In most instances, the fruits themselves are not destroyed; nonetheless, there is a possibility that their growth and size will be significantly impacted. Fungi are the organisms that are to blame for the development of powdery mildew. In this particular case, we are concerned with the species Erysiphe cichoracearum and Sphaerotheca fuliginea. When the air is dry and the relative humidity is high, infections are more likely to occur in temperatures ranging from 50 to 90 degrees Fahrenheit (Anonymous, 2016). The viral infections known as bitter guard mosaic and leaf curl disease have emerged as one of the most serious impediments to the effective production of the crop in a number of different regions around the world. The sickness may be responsible for a decrease in production that is as high as one hundred percent. The bitter gourd mosaic is caused by three different viruses that are completely separate from one another. These viruses are referred