ISSN:3107-4200

SABUJEEMA
Agri Newsletter
An International Newsletter for Agriculture and Allied Sciences

Article ID: SAN/02-03/38 Popular Article

Disease management approaches of Muskmelon crop

Sanwar Lal Kumawat[1]* and Radheshyam Kumawat[2]

[1]School of Crop Protection, College of Post Graduate Studies in Agricultural Sciences, Central Agricultural University (Imphal) Umiam, Meghalaya

[2]School of Crop Improvement, College of Post Graduate Studies in Agricultural Sciences, Central Agricultural University (Imphal) Umiam, Meghalaya

INTRODUCTION

Muskmelon (*Cucumis melo* L.) is also known as Kharbuja, Cantaloup, and Net melon. It belongs to family Cucurbitaceae, it is native to tropical Africa. Muskmelon is a short duration summer crop; it can be also cultivated in kharif and rabi season. It is warm season crop known for its unique flavor and delectable taste among all cucurbits. Muskmelon fruit have an edible portion that is composed of 95.0 percent water, 0.3percent protein, 0.3 percent minerals, 3.5 percent carbohydrates. It also contains 11 mg of calcium, 12 mg of magnesium, 0.02 mg of thiamine, 36.7 mg of vitamin c, 0.04 mg of riboflavin, 1 mg of ascorbic acid and 17 kcal of energy value per 100 gm of an edible portion (Gopalan *et al*., 1984). Globally muskmelon production reached 28.6 million tons (FAO, 2021) and 1.47 million tons in India (Anonymous, 2025). Muskmelons are widely cultivated across the country and highest muskmelon producing is Uttar Pradesh State (655.74 kilotons) and other major muskmelon producer states are Andhra Pradesh (304.48 kilotons), Madhya Pradesh (188.67 kilotons), Punjab (146.49 kilotons), Haryana (41.91 kilotons), Chhattisgarh (26.24 kilotons), Tamil Nadu (24.54 kilotons), Bihar (23.40 kilotons), Maharashtra (21.10 kilotons) and Rajasthan (20.17 kilotons) in 2024 (Anonymous, 2025). Tropical and subtropical regions are the most suitable for its cultivation. High temperature at ripening stage will enhance the sweetness and aroma of muskmelon. It is short duration crop but incidence of several disease is main constraint for cultivation of muskmelon. Disease management in muskmelon cultivation is crucial for ensuring high yield along with good quality of fruits. Some of the major diseases of muskmelon are Powdery mildew, downy

mildew, anthracnose, bacterial wilt, fusarium wilt, gummy stem blight, cucumber mosaic virus and muskmelon yellow mosaic virus.

Important diseases of muskmelon and their management practices:

1. **Powdery mildew (*Erysiphe cichoracearum*) –**

Symptoms: it is identified by white dusty powder on upper surface of leaves. In severe infection affected leaves turn yellow then brown and die.

Management: Use of resistant cultivars like Pusa Sharbati, Arka Rajhans, Hara Madhu and Arka Jeet. Remove debris, weeds, and volunteers from field. Application of fungicides like Chlorothalonil 75 WP @ 2.0 g/liter of water. Also Can use karathane 35.7% EC @1ml per liter of water or spray of water-soluble Sulphur@20gm/10 liter of water 2-3times.

2. **Gummy stem blight (*Mycosphaerella melonis*) –**

Symptoms: Large irregular-shaped spots appear on the leaves, whereas the stalk of the fruit rots and turn brown in color, infected stems show water-soaked lesion and then become dry (Park SM *et al*, 2004).

Management: The prevalence of most infections is highest during the rainy season, a period marked by humidity greater than 90% and temperatures in the 20-24˚C range. To prevent the spread of this fungus, overhead irrigation is not recommended due to water splash acting as a dispersal agent and also increase the humidity which is favorable for disease incidence. Use of disease-free seed, rotation the crop with non-cucurbit crops like summer moong and Solanaceous vegetables, and consider fungicide applications - mancozeb 75% WP @ 2gm per liter of water.

3. **Anthracnose (*Colletotrichum orbiculare*) –**

Symptoms: It showed sunken elongated canker spot on muskmelon fruits and vines.

Management: Use of pathogen free seed, seed treatment with Carbendazim @2gm/kg of seed, Rotate crop with non-cucurbit crops in a three-year rotation, use of mancozeb (Dithane M 45) @2gm/liter of water fungicide.

4. **Bacterial blight (*Erwinia tracheiphila*) –**

Symptoms: It is producing wilting symptoms. A common observation when an affected stem is sectioned is the oozing of a white, sticky exudate from its water-conducting tissues.

Management: Bacteria is transmitted by cucumber beetle. Use of systemic neonicotinoid insecticides like Thiamethoxam 75% w/w SG @5gm/15 liters of water for control of cucumber beetle and also can use other insecticides like Chlorpyriphos 50% EC @3.0 ml per liter of water. The incidence of disease can be minimized by foliar sprays of streptocycline (0.01%) + copper oxychloride (0.3%).

5. Alternaria blight (*Alternaria cucumerina*) -

Symptoms: Concentrate ring shape blighted spot on leaves.

Management: Spry of fungicide like Metalaxyl 8% + Mancozeb 64% WP (Ridomil) @2gm/Ltr of water or carbendazim i.e. Bavistin 50% WP @0.5gm/liter of water (Dube, H.C.,2025).

6. Fusarium wilt (*Fusarium oxysporum* f sp. *Melonis*) –

Symptoms: It is most destructive disease in dry areas. It affects both stages including seedling and fully matured vine of muskmelon. The initial symptoms of Fusarium wilt include wilting and yellowing (chlorosis) of older leaves, accompanied by vascular browning observable in stem cross-sections.

Management: For management of this disease, we use pathogen free seed, crop rotation, Soil solarization is a technique that employs transparent plastic film spread across bare soil during the summer or warmest times of the year. Soil-drenching with systemic fungicides give protection against these fungal diseases (Thamburaj and Singh, 2001). Applying biocontrol agent *i.e. Trichoderma Viride* @1kg/acre, before apply the Trichoderma in soil mixed with 50kg FYM and pre incubated. 2g/kg carbendazim *i.e.* Bavistin 50% WP is used for seed treatment and 0.1% for foliar sprays. Muskmelon grafting techniques helps in managing wilt of muskmelon (Pansare UD *et al.*, 2023)

7. Downy mildew (*Psudopernospora cubensis*) –

Symptoms: white cottony fungal growth under the lower surface of leaves and angular leaf spot on upper surface of leaves which is restricted by leaf veins.

Management: Use of resistant variety like- Kashi Madhu (Reddy and Kiran, 2024). Use of healthy, Pathogen-free seeds and treatment by metalaxyl @2g/kg of seed. Prevention from high humid condition. Crop rotation with non-cucurbit crops for 2-3 years also helpful in its management. Spray of Metalaxyl 8% + Mancozeb 64% WP (Ridomil) @2gm/Ltr of water useful for its management (Ihsan *et al.*, 2013).

8. Cucumber mosaic virus –

Symptoms: CMV cause mottling, leaf distortion, and stunted growth.

Management: Aphids transmit CMV in a non-persistent way, meaning they can acquire the virus from infected plants with less than a minute of feeding and immediately transfer it to healthy plants, without any latent period. for minimizing the activity of its transmitting agents, use sticky yellow traps for control of aphids, along with natural pest control options like 5 per cent NKSE (neem kernel seed extract) or 0.2 per cent neem oil (Sangeeth Shyam Sundar S. S,2024), and spray of insecticide like Methyl demeton 25 EC @2 ml/liter of water or Dimethoate 30 EC @2 ml/liter of water. Treatment with a 20% buttermilk biostimulant resulted

reduction in disease incidence and decrease in severity, alongside improvements in fruit quality and aroma (Dhkal *et al*., 2022). Remove or destroy virus-infected muskmelon vines to prevent infection of healthy plants. Researchers have also reviewed Several alternative strategies, specifically cross-protection, coat protein transgene-mediated protection, and the application of satellite RNA (Tien and Wu, 1991).

9. Fruit rot (fungal species: Fusarium and Botrytis)

Symptoms: It is post-harvest disease of muskmelon. It showed pale brown, water-soaked lesions and that can expand to cover the entire fruit.

Management: Spraying with Bordeaux mixture can help control fruit rot (Pillai, S.N *et* all, 1979), Application of salicylic acid before harvest increased disease resistance by enhancing enzyme activity related to defense mechanisms, thus minimize disease incidence during storage (Yuanyuan *et al.,* 2016).

Conclusion - Successful muskmelon disease management approaches are requires for accurate diagnosis, and a flexible approach that adapts to specific environmental conditions and disease pressures. The long-term health and productivity of muskmelon crops will depend significantly on persistent research into new resistant cultivars, biological controls, and sustainable cultivation strategies.

References:

Anonymous. 2025. Department of agriculture and farmers welfare, GOI, 2024-25, Accessed from https://agriwelfare.gov.in/en/StatHortEst

Dhkal, M., Sharma, A. Sharma, S. P. 2022. Biostimulants an important nonchemical alternative to pesticides for management of virus disease in Muskmelon. *Egyptian Journal of Biological Pest Control*, *32*(1), 1–8. https://doi.org/10.1186/s41938-022-00560-4

Dube, H.C.,2025, Modern plant pathology, An imprint of AGROBIOS, second edition, p. 430-445.

FAO 2021. FAOSTAT Report. Retrieved April 05, 2025 from Food and Agriculture Organization https://www.fao.org/statistics/en

Gopalan, C., Ramasastri, B.V. and Balasubramanian, S.C. 1984. Nutritive Value of Indian Foods. National Institute of Nutrition. Hyderabad.

Ihsan, J., Mohsan, M., Ali, Q. and Mohyudin, G., 2013. Evaluation of different fungicides for the management of downy mildew (Pseudoperonospora cubensis) of muskmelon. *Pakistan Journal of Phytopathology*, *25*(02), pp.123-126.

Jing, Y., Li, Na., Li, L. and Zhu, Xuan. 2016. Studies on the Control of Postharvest Diseases of Muskmelons and the Induction of Resistance Related Enzymes and Defense Substances by Salicylic Acid Treatment. *Science Discovery*, *4*(4), 226-231. https://doi.org/10.11648/j.sd.20160404.14

Pansare, U.D., Kshirsagar, A.V., Dhakne, V.R. and Bochare, S.V. 2023. Production techniques and constraints in Muskmelon (*Cucumis melo* L.) cultivation, *The Pharma Innovation Journal*. 12(9): 2546-2551

Park S.M., Jung, H.J., Kim, H.S., and Yu, T.S. 2006. Isolation and optimal culture conditions of Brevibacillus sp. KMU-391 against black root pathogens caused by Didymella bryoniae. Korean J Microbiol, 42:135-41.

Pillai, S.N., Patel, J.R. and Patel, A.J., 1979. Control of fruit rot in muskmelon. *Phytoparasitica*, *7*, pp.17-22.

Reddy, K.M. and Kiran, S.B. eds., 2024. of the Book: A Handbook of Temperate Vegetables. *seeds (minimum)*, *75*, p.75.

Sangeeth Shyam Sundar S. S., C. Rajamanickam, K. Nageswari, A. Vijayasamundeeswari and M. Vignesh, 2024, Unmasking Hidden Threats: A Quick Guide to Muskmelon Diseases, The agriculture magazine, Volume-3, Issue-9, https://www.researchgate.net/publication/385631727_Musk_Melon_Diseases/citations

Thamburaj, S. and Singh, N. 2001. *Textbook of vegetables, tubercrops and spices*. *Indian Council of Agricultural Research.*

Tien, P. and Wu, G. 1991. Satellite RNA for the biocontrol of plant disease. *Advances in virus research*, *39*, Pp 321-339.