

Important Diseases of Cauliflower and Their Management

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Rinku Bhaskar¹, Rohit Kumar², Shivani Datre³

^{1,2} Ph.D. Research Scholar, Department of Plant Pathology, Sardar Vallabhbhai Patel University of Agriculture & Technology, Meerut (U.P.)

³ M.Sc. Ag. Department of Plant pathology. Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj (U.P)

Cauliflower, a versatile cruciferous vegetable, faces various diseases that can threaten its yield and quality. From fungal

infections to viral outbreaks, these diseases pose challenges to cauliflower cultivation. Effective management strategies are crucial to mitigate these threats and ensure a healthy harvest. This article explores common

diseases affecting cauliflower, shedding light on their symptoms and offering practical insights into proactive measures and treatments for successful disease management in cauliflower crops. Cauliflower, known as the 'Queen of winter vegetables,' is a prized cruciferous crop vulnerable to various diseases that can result in substantial yield losses, often reaching 50-70%. These diseases, including *Alternaria* leaf spot, Black rot, and Club root,

pose significant challenges to its cultivation. An article "Diseases of Cauliflower and their Management" offers a comprehensive exploration of these



cauliflower diseases. This knowledge empowers growers and researchers to implement effective disease management strategies, ensuring healthier cauliflower crops and a continuous supply of this nutritious vegetable.

1. Downy Mildew

Causal Organism: *Peronospora parasitica*

Symptoms: Small purplish brown spots on under surface of leaves. Plant shows small, pale yellow angular spots on upper surface of leaves, with downy growth on the undersurface. The spots coalesce leaves shrivel and dries up prematurely. In cabbage, these spots expose the heads to soft rot. Cauliflower curds look brownish at the tip. Stems show dark brown

and depressed lesions or streaks which later develop downy growth of fungus.

Management

- ❖ Choose resistant cauliflower varieties like Graffiti 2.0, Snow Crown, and Alpha.
- ❖ Practice crop rotation, avoiding susceptible crops in the same area for 2-3 years.
- ❖ Apply hot water treatment at 50°C for 30 minutes.
- ❖ Promptly remove and dispose of infected plant material, avoiding composting.
- ❖ Work in dry conditions to prevent disease spread.
- ❖ Ensure proper plant spacing for good air circulation.
- ❖ Maintain balanced fertilization; avoid excessive nitrogen.
- ❖ Minimize overhead irrigation to reduce humidity.
- ❖ Consider using fungicides like mancozeb and Redomil Gold in case of recurring downy mildew issues.

2. Powdery Mildew

Causal organism: *Erysiphe cruciferarum*

Symptoms: The most distinctive symptom of powdery mildew is the appearance of white, powdery-looking spots or patches on the upper surfaces of cauliflower leaves. These spots can vary in size and may initially appear as small, isolated lesions. The affected cauliflower leaves may turn yellow or brown and become distorted. They may also curl or twist. Severely infected leaves may become brittle and eventually drop prematurely. It may start on the lower leaves and then spread to the upper parts of the plant. In severe cases, powdery mildew can affect the stem and curd. Infected curds may have white powdery patches on their surfaces. Cauliflower plants may exhibit smaller cauliflower heads and lower yields.

Management

- ❖ Use resistant cauliflower varieties.
- ❖ Remove and destroy infected plant debris.
- ❖ Practice crop rotation to reduce disease carryover.
- ❖ Remove infected plants to reduce disease spread.
- ❖ Maintain proper spacing between plants for good air circulation.
- ❖ Prevent overcrowding of plants, which promotes humidity and disease.
- ❖ Properly fertilize to maintain plant health. Consider organic options like neem oil or sulfur for control.
- ❖ Apply biological fungicides like Serenade.

3. Alternaria Leaf Spot or Blight Disease

Causal Organism: *Alternaria brassicicola*

Symptoms: Plant shows dark, irregular lesions with concentric rings on cauliflower leaves. Lesions grow larger over time, becoming necrotic and brown. Tissues surrounding lesions turn yellow, leading to leaf death. Dark, sunken lesions can also appear on cauliflower stems. Leaves may drop prematurely, further impacting yield. Severe infections can cause head rot with dark lesions on cauliflower curds. Infected tissues may produce dark spore masses on lesions. Infected plants produce smaller heads and lower yields.

Management

- ❖ Use resistant cauliflower varieties if available.
- ❖ Remove and destroy infected plant debris. Practice crop rotation to reduce disease carryover.
- ❖ Remove infected plants to reduce disease spread.
- ❖ Properly fertilize to maintain plant health.
- ❖ Seed treatment with Mancozeb 75% WP @ 2gm/Kg seed. 6. Foliar spray of Chlorothalonil 75 % WP @ 2gm/ltr. water.

4. Club Root of Crucifers

Causal Organism: *Plasmodiophora brassicae*

Symptoms: Swollen, club-shaped, and distorted roots are a primary symptom. Infected plants exhibit reduced overall growth and may appear smaller than healthy plants. Affected plants may wilt, especially during hot weather, due to the compromised root system. Leaves turn yellow and exhibit nutrient deficiency symptoms, as the root galls hinder nutrient uptake. Leaves and entire plants may prematurely senesce and die, reducing cauliflower yield. Root galls can provide entry points for other soil-borne pathogens, further compromising plant health. On some occasions, lesions resembling water-soaked areas may appear on cauliflower roots. Roots may crack or split open as the disease progresses.

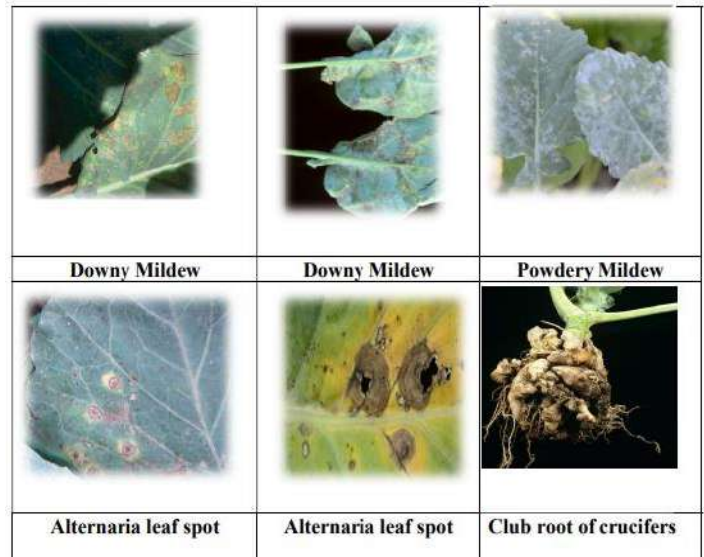
Management

- ❖ Use pathogen free plants. Remove and destroy infected plant.
- ❖ Practice crop rotation to reduce disease carryover.
- ❖ Seed treatment with Captan / Thiram @ 2gm/kg seed. Soil drenching with Copper oxychloride @ 2gm/ltr water.
- ❖ Raising soil pH at least 7-7.5 to prevent disease through the application of wood ash and calcium etc.

References

1. Agnihotri, V. P., & Joshi, P. C. (1984). Influence of *Alternaria brassicae* on yield, quality and storage behaviour of cauliflower. *Indian Phytopathology*, 37(3), 485-488.
2. Bhattarai, A., Adhikari, K., & Mainali, R. P. Disease diversity and disorder in cauliflower and their management practices adopted by farmers in Dhunibeshi municipality, Dhading. *NEPALESE JOURNAL OF AGRICULTURAL SCIENCES*, 39.

- ❖ Add boron as a micronutrient to the soil as a foliar spray or in the transplanting water.



Conclusion

Cauliflower, the 'Queen of winter vegetables,' faces significant disease challenges that can lead to substantial yield losses. Downy mildew, powdery mildew, *Alternaria* leaf spot, and club root threaten its cultivation. Effective management strategies, including crop rotation, resistant varieties, proper spacing, and sanitation, are essential to ensure healthier cauliflower crops and maintain a steady supply of this nutritious vegetable. Growers and researchers must continue to combat these diseases to protect this beloved cruciferous crop.

3. Carroll JE, Wilcox WF., (2003). Effects of humidity on the development of grapevine powdery mildew. *Phytopathology*. 93(9):1137-44.