



Opium (*Papaver somniferum*) Cultivation: Major Diseases and Their Management

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INTRODUCTION

Opium cultivation, also known as poppy cultivation, is a specialised type of farming that involves growing opium poppy (*Papaver somniferum*) plants. The plant produces opium, a sticky substance used to make painkillers and other narcotics. Opium cultivation requires government permission and is legally practiced in the Indian states of Madhya Pradesh, Rajasthan, and Uttar Pradesh.

● **Scientific name:-** *papaver somniferum*

Type of seeds :- The recommended varieties for Madhya Pradesh are Jawahar Opium-16, Jawahar Opium-539 and Jawahar Opium-540 etc.



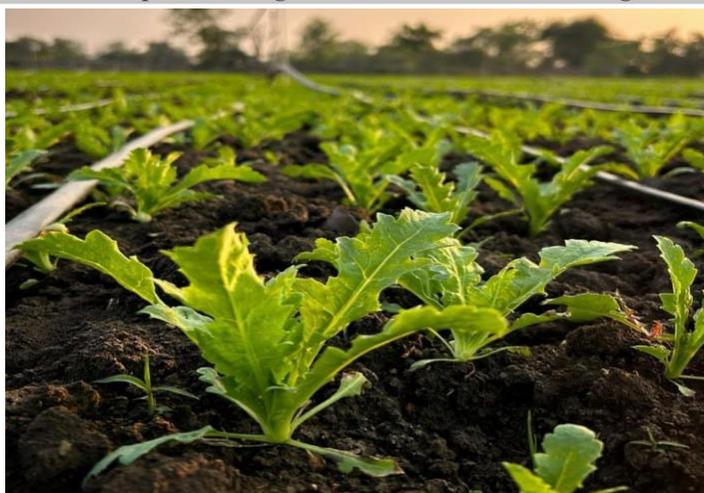
● **Seed Rate:-** Seed quantity is 7-8 kg/ha for broadcast method and 4-5 kg/ha for the line method.

● **Sowing Time:-** The best time for sowing is late October or early November.

● **Sowing Type:-** Opium seeds are sown in two main ways: 1. By broadcasting and 2. By seed drilling. The broadcast method is primarily used in most areas.

(Mainly the spraying method is used in mp and Rajasthan)

● **Seed Treatment:-** Before sowing, seeds can be treated with fungicides like Dithane M-45 @ or Metalaxyl 35% WS @ 4 g per kg of seeds.



Land Preparation And Soil Health:- Before sowing opium, the field is prepared. This involves first plowing the soil thoroughly, lightly and deeply. Typically, the field is ploughed four to five times. After this, the soil is loosened using a rotavator. Additionally, 25 to 30 tons of cow dung manure are added to the field during ploughing. Essential nutrients play a crucial role in the poppy crop's good production. Chemical fertilisers like NPK, sulphur and other soil elements should be given only on the basis of

soil testing. After applying all the fertilizers and ploughing thoroughly, beds are made in the field. Sowing is also done by making beds in certain places.

◆ **Pest and Diseases affecting Opium crop in India:-** Like all agricultural crops, opium is also affected by pests and diseases. These are cured by the use of seed treatment before sowing, using agrochemicals, using integrated pest management techniques, etc.



Pest and Diseases in Opium

A) Fungal diseases

Downy Mildew – It is one of the most serious and wide spread diseases of opium poppy. It causes hypertrophy and curvature of the stem and flower stalks. The infection spread upwards from

the lower leaves. The entire leave surface is covered by brown powder. The stem, branches and even capsules are also attacked resulting in premature death of the plants. In India, the disease appears annually on the crop from seedling stage to maturity in opium poppy

growing areas of Madhya Pradesh, Uttar Pradesh and Rajasthan. The formation of capsules is adversely affected due to infection. Consequently, opium yield is significantly reduced.

Powdery Mildew (Erysiphae Polygon) – It is another minor fungal disease, however, it caused severe damage to opium crop in Rajasthan a few years ago. It is general noticed at later stage of growth of plant and is identified by white powder on leaves and capsules. Field sanitation is important to control this disease. It is recommended to use Sulphur 40% SC for Powdery mildew.

B) Seed Borne disease

There are a few seed borne disease which affect opium crop. It attacks the capsules and seeds only. The infection causes serious reduction in germination and seedlings decay. Some of them are:

Leaf Blight – The symptoms of the disease appear defused yellow spots, followed premature drying of infected leaves. During the course of parthogenesis, toxins are released by the parasites enabling it to assimilate the requisite nutrient. This disease is favoured by high temperature and heavy rainfall by the parasites enabling it to assimilate the requisite nutrient. This disease is favoured by high temperature and heavy rainfall.

Leaf Spots – This disease is characterised by chlorotic areas on the leaf, often accompanied by curling. However, all the leaf spot diseases observed till now on this crop were of minor importance, though there is a distinct correlation between leaf spot infection and decline in morphine, codeine and thebaine content of the poppy plant.

Capsule Infection – This disease causes large velvety black spots to appear on the green capsule. It reduces the morphine, codeine and thebaine contents in opium poppy capsule. Capsule rot of opium poppy caused by a particular fungus entailing in severe damage is prevalent in Rajasthan. A severe capsule rot caused by another fungus was also observed in opium poppy crop grown at Lucknow.

Wilt & Root Rot (Fusarium Semitectum) – This disease occurs during the advanced stage of growth, causing rapid wilt and desiccation of leaves. The infection originates at the stem base and causes damping of roots. Black necrotic lesions develop on the cortex of the stem. The symptoms of the disease are characterised by withering and drying of the leaves, early maturity and low opium yield. This disease can be controlled by removing infected plants and by spraying of recommended chemicals of appropriate doses.

C) Diseases caused by bacteria

Bacterial diseases cause considerable damage to the crop. The symptoms are systematic in nature. The bacteria gains its entry to the host through stomata and water pores. In later stages it penetrates the vascular system and multiplies. The seeds from infected plants are discoloured and malformed. Another bacteria attacks all organs of opium poppy plant, the general characteristics of disease being brown to black brown spots on poppy seeds.

D) Diseases caused by viruses

Several viral diseases cause extensive damage to opium poppy. Cabbage ring spot virus was observed to be capable of infecting opium poppy. The infection rapidly becomes systemic and causes yellowing of plants and elongation of stem. Opium poppy is also susceptible to yellow virus. The symptoms appear as irregular chlorotic band along the veins which spread very fast all over the inter-veinal areas, leaving green strips along the veins. Infected plants were found to be stunted. The virus is transmitted mechanically from poppy to beans and from naturally infected beans to poppy. A mosaic disease of opium poppy has been observed in India. The disease causes stunting vein banding and deformed capsule formation. The virus is readily transmitted from the sap. The disease is transmitted by aphids.

E) Insect

The opium poppy is attacked by a number of insect pests. These insect affect and damages root (Root Weevil), leaf-stem (Aphids), floral parts (Thrips and Sawfly), and capsule (Head

gall fly, Capsule weevil and Capsule borer). The weather conditions, plant diseases, and soil composition all have a bearing on opium gum yield.

◆ **Weed Management :-** In opium crop, the first operation of weed control and thinning should be done 25-30 days after sowing and the second operation should be done 35-40 days after sowing when disease, insect infested and underdeveloped plants emerge. Final thinning is done after 50-55 days to maintain plant to plant distance of 8-10 cm. Like other crops, opium crops also commonly grow weeds, which, if present in the soil, usually appear after the first irrigation.

◆ **Irrigation Methods:-** In opium farming, both traditional and modern irrigation methods are used, with the choice depending largely on regional practices, water availability, and resources. Flood irrigation is a common traditional method in some regions, while drip irrigation is a modern technique promoted for its water efficiency.

◆ **Irrigation Time:-** Opium poppy cultivation requires a careful irrigation schedule, typically involving 12 to 15 irrigations during the entire crop period to prevent moisture stress, which can significantly reduce the yield of latex.

The general irrigation schedule is as follows:

Immediately after sowing, A light irrigation is given to ensure proper moisture for germination.

After 7 days: Another light irrigation follows as the seeds begin to germinate.

Till the pre-flowering stage: Irrigations are provided every 12 to 15 days.

During flowering and capsule formation, The frequency is increased to every 8 to 10 days, as this is a critical stage where adequate moisture is essential for maximum latex exudation.

CONCLUSION

Opium poppy (*Papaver somniferum*) cultivation is a highly regulated and specialised farming practice in India, demanding scientific management at every stage—from seed selection

to harvesting. Successful production depends on selecting suitable varieties, adopting proper sowing techniques, ensuring balanced nutrition through organic and inorganic fertilisers, and maintaining optimum soil health. Since the crop is vulnerable to numerous fungal, bacterial, viral, and insect-related problems, integrated pest and disease management becomes essential for protecting both yield and quality. Equally important is timely weed control and systematic thinning to maintain ideal plant spacing. Proper irrigation plays a crucial role, especially during flowering and capsule formation, which directly influences latex exudation and final opium yield. With strict adherence to recommended agronomic practices, government guidelines, and sustainable farming techniques, opium cultivation can achieve high productivity while ensuring economic viability for licensed farmers.

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