

The background of the slide is a collage of images related to sunflowers. On the left, there are several sunflowers in bloom with bright yellow petals and dark brown centers. On the right, there are close-up images of sunflower seeds, some whole and some cracked open, showing their characteristic striped pattern. The overall theme is agricultural and focuses on sunflower cultivation and seed quality.

# **DISEASE OF SUNFLOWER CROP**

Session-3

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# MAJOR DISEASES OF SUNFLOWER

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## FUNGAL DISEASE

<b>LEAF BLIGHT</b>	<i>Alternaria helianthi</i>
<b>RUST</b>	<i>Puccinia helianthi</i>
<b>HEAD ROT</b>	<i>Rhizopus sp. (Mostly R. arrhizus)</i>
<b>DOWNY MILDEW</b>	<i>Plasmopara halstedii</i>
<b>POWDERY MILDEW</b>	<i>Erysiphe cichoracearum</i>
<b>SCLEROTIAL WILT/COLLAR ROT</b>	<i>Sclerotium rolfsii</i>
<b>SEPTORIA LEAF SPOT</b>	<i>Septoria helianthi</i>

## VIRAL DISEASE

<b>ASTER YELLOW</b>	<b>virus</b>
<b>MOSAIC</b>	<b>virus</b>



# LEAF BLIGHT OF SUNFLOWER

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It is the most destructive disease and is widely distributed wherever sunflower is grown.

- It occurs on all the varieties in the winter season and it spreads rapidly during the rainy season.
- This disease has been reported to reduce the seed yield by 27 to 80% and oil yield by 17 to 35%.
- The disease also affects the quality of seeds which adversely affects seed germination and vigour of seedlings.

## SYMPTOMS

- The fungus produces brown spots on the leaves, but the spots can also be seen on the stem, sepals and petals.
- The lesions on the leaves are dark brown to black, circular to oval spots, ranging from 0.2 to 0.5mm in diameter.
- The spots are often surrounded by a chlorotic zone with necrotic center.
- The spots later enlarge in size with concentric rings and become irregular in shape.
- Under high atmospheric humidity, several spots coalesce to show bigger irregular lesions leading to drying and defoliation.
- The disease sometimes cause rotting of flower heads and affects the quality of seeds by reducing the germination



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# LEAF BLIGHT OF SUNFLOWER





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# ALTERNARIA SPOT ON FLOWER HEAD AND STEM





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# ALTERNARIA CONIDIA





## **PATHOGEN- *Alternaria helianthi***

**[Subdivision-Deuteromycotina,order-Moniliales,Family-Moniliaceae]**

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- The fungus produces cylindrical conidiophores, which are pale grey-yellow coloured, straight or curved, geniculate, simple or branched, septate and bear single conidium.
- Conidia are cylindrical to long ellipsoid, straight or slightly curved, pale grey-yellow to pale brown, 1 to 11 septate with transverse and occasionally longitudinal septa measuring about  $40-110 \times 13-28 \mu$ .
- Conidia are not formed in chains.

### **DISEASE CYCLE**

- The fungus survives on seed, host debris and weed hosts.
- The secondary spread is mainly through wind blown conidia.

### **FAVOURABLE CONDITIONS**

- Rainy weather, cool winter climate and late sown crops are highly susceptible.

### **MANAGEMENT**

- Grow tolerant variety like KBSH-1,APSH-1.
- Remove and destroy infected plant debris.
- Rogue out weeds at periodical intervals.



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# SCLEROTINIA STEM ROT

## Symptoms

- Initial symptoms are visible during pod development.
- Leaves will wilt and turn gray-green before turning brown, curling and dying.
- Infected plants can be spotted from a distance by their sickly appearance, later the entire plant withers and dies.
- White cottony mycelium and mustard seed sized sclerotial bodies are formed on the affected stem near soil level.





# SCLEROTINIA STEM ROT

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**Causal organism:** *Sclerotium rolfsii*

• **Sub-division:** *Deuteromycotina*

## Disease cycle

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• **Primary infection:** The fungus survives as **sclerotia** in soil and plant debris.

• **Secondary infection:** The secondary spread of the disease occurs through sclerotia by implements and irrigation water.

## Favourable conditions

• Alternate periods of high soil moisture and water stress conditions predispose the disease.

## Management

- Collection and destruction of plant debris.
- Seed treatment with Carboxin + Thiram @0.3%.
- Use of antagonistic fungi such as *T. harzianum*.
- Spray **Validamycin@0.2%**.