

# MANAGEMENT OF WHITE MOLD IN BROADACRE CROPS

(oilseed rape, soyabeans, sunflowers)



LALLEMAND PLANT CARE



## SUMMARY

<b>□ Context.....</b>	<b>3</b>
Introduction.....	3
Symptoms & damage.....	3
<b>□ Biology.....</b>	<b>4</b>
<b>□ Management of the disease on a plot at risk.....</b>	<b>5</b>
Prophylactic methods.....	5
Strategy for crop protection: <i>LALSTOP Contans WG</i> .....	6
Integration advice.....	7
Prospects for the use of the product.....	7





## Context

### Sclerotinia, a serious disease

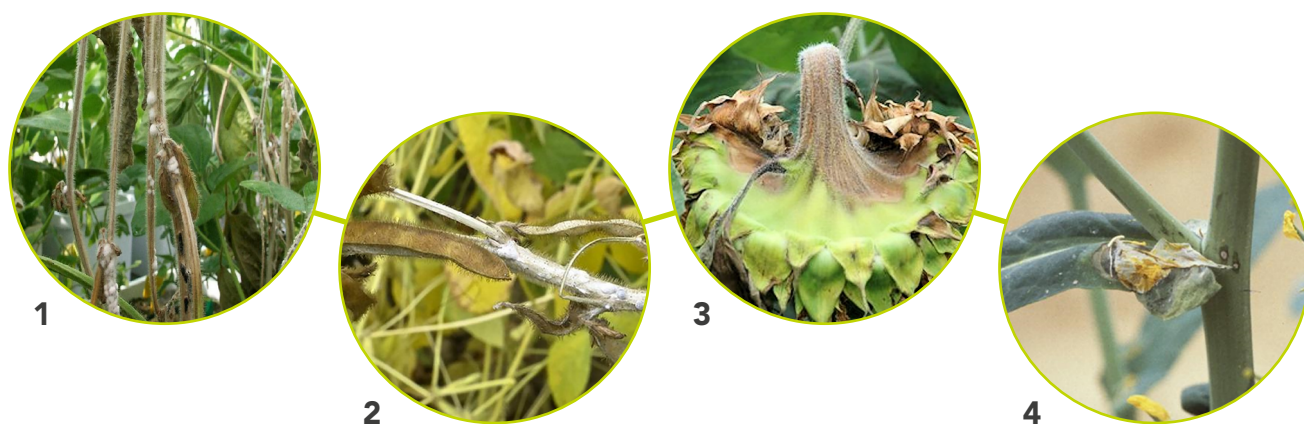
It is the sclerotia, the survival organs of the fungus, which initiate attacks in a crop. These sclerotia reactivate each time that a favourable crop is planted allowing the sclerotinia to develop. Sclerotia are able to remain viable in the soil for at least 10 years. The plot history is therefore a crucial element in assessing the level of contamination.

Sclerotinia (commonly known as white rot) is undoubtedly the dominant disease in these crops, and especially the most damaging in cases of heavy attack.

### Symptoms & damage

In the spring, leaves in contact with the ground can also be infected. A white mycelial mass at the collar of certain plants is the sign of an attack at the level of the roots.

On the leaves of **oilseed rape**, sclerotinia can be recognised by a grey rot. On the stem, greyish-white, encircling spots develop in the leaf axils; necrosis and sclerotia then appear in and on the stems, preventing the circulation of sap. The upper part of the plant scalds (more or less complete cessation of seed filling or maturation). The Pods may also be affected: they turn white and dry out, with possible formation of sclerotia. In cases of attack on the main stems, yield losses can reach or even exceed 15 q/ha. In **soyabeans**, the fungus first develops at a floral node and spreads up the stem and then the top of the plant dries out. In **sunflowers**, sclerotinia attacks start on the young apical leaves forming a rosette which will then contaminate the bud. Infection occurs at the 6-8 leaf stage. If mild and humid weather sets in (during May-June), the infection progresses rapidly to the heart of the bud and the rot destroys it completely.



Photos of damage from sclerotinia: soyabeans (image 1 and 2), sunflowers (image 3) and oilseed rape (image 4). Sources: Terres Inovia (1 and 2), Ephytia (3), La France Agricole (4).





## Biology

### Characteristics

At the end of winter, the sclerotia germinate and form mycelia that reach the roots or leaves in direct contact with the soil. They can also produce ascospores via their apothecia which, carried by the wind, will contaminate other plants from one plot to another during flowering for example. The fungus thus penetrates senescent tissues (e.g. petals on oilseed rape) and then progresses into healthy tissues (e.g. leaves in contact with contaminated petals).

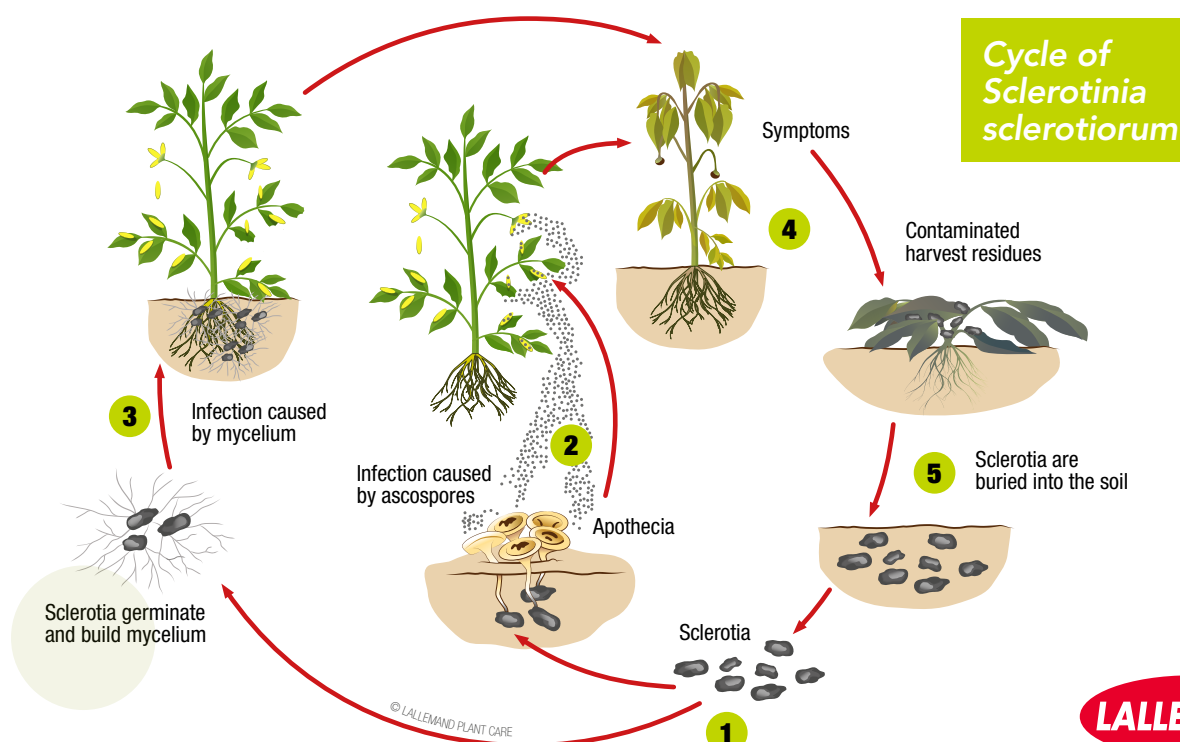
Contamination occurs step by step (leaves then petiole then stem...). When ambient humidity is favourable, the fungus produces sclerotia.



Photo of sclerotia from *Sclerotinia sclerotiorum*  
Source: Ephytia

### The conditions favourable for the contamination of plants are:

Contamination from 10 days if temperature is  $>5^{\circ}\text{C}$  with high humidity ( $>92\%$ )  
from 16 to 24 hours if temperature is optimal ( $15\text{-}20^{\circ}\text{C}$ ) with high humidity ( $>92\%$ ).





## Management of the disease on a plot at risk

### Prophylactic methods

There are a number of preventive measures. To anticipate the risks of sclerotinia, there are several factors of interest on which to act:

- **Rotation:** avoid succession of susceptible crops, as this fungus is present on many crop species. The level of risk is therefore at the plot level.
- **Watering regime:** in soyabeans the percentage of attack varies according to the ambient humidity. A first irrigation as late as possible and a 10 to 15 days interval between each watering reduces attacks by sclerotinia, the dry phase between two applications being unfavourable to its development. In sunflowers, avoid irrigating during flowering.
- **Varietal choice:** in soyabean cropping, depending on the crop earliness grouping, the risk of sclerotinia is more or less high. It is also advisable to choose the variety according to its sensitivity to lodging. Generally, sclerotinia and lodging susceptibility are linked. Lodging is often correlated with canopy closure, with a dense population creating a humid environment favourable to the germination of the fungus. For oilseed rape, all of the classic varieties are susceptible to sclerotinia except for certain new varieties developed for their greater tolerance to this disease, such as BRV703. Their choice may prove to be judicious in addition to conventional control measures. For sunflower cropping, avoid choosing susceptible varieties.
- **Density:** an overcrowded canopy increases the risk of sclerotinia. The denser the canopy, the more moisture is retained for the development of the fungus. At sowing, it is therefore advisable to control the population.
- **Weed management:** on the one hand to eliminate broadleaf weeds, the host plants of sclerotinia, and on the other hand to avoid maintaining a humid climate in the vegetation which is favourable to the pathogen.
- **Fertilisation management:** avoid excessive plant vigour.





## Rationale for intermediate crops:

This is particularly relevant for intermediate nitrate trap crops and other winter cover crops. Many of them are actually vectors of the disease. **This is the case for crucifers (mustard, radish, turnip...), legumes (clover, vetch...) and even borage on which «devastating» attacks of sclerotinia have been observed.** These cover crops, which have experienced strong development under the effect of agri-environmental measures, consequently multiply the inoculum without any control. The choice of species is therefore crucial and must absolutely be integrated into the rationale for the control of sclerotinia. Only grasses allow a real break and the avoidance of any soil recontamination risk: ryegrass, or rye whose rapid establishment is suitable after the late harvests of September-October. More generally, it is the whole rotation that must be managed as well as possible in the face of sclerotinia.

## Strategy for crop protection:

Against this disease with a strong economic impact, phytosanitary control consists of using chemical and/or biocontrol products in order to minimise damage. LALSTOP Contans WG is the only biofungicide product based on the fungus *Coniothyrium minitans* CON/M/91-08 (usable in organic farming) that effectively reduces and destroys soil sclerotia (the source of inoculum of the disease). **As it is used in the rotation, the stock of sclerotia in contaminated soils is reduced. The regular application of this product is important to achieve the required effectiveness.**

LALSTOP Contans WG allows the soil to be cleaned of sclerotia over time. If the presence of sclerotia is still too high (at the beginning of the application of LALSTOP Contans WG) or after only a few applications, the use of plant protection products during the flowering period of these crops remains indispensable when conditions are favourable to contamination and provided the risk is high.

They make it possible to stop secondary contamination due to the presence of sclerotinia spores on foliage and flowers, emitted by sclerotia.

The main groups of active ingredients are:

- SDHI
- Triazols
- Triazolinthion
- Strobulin
- Microbiological products (ex. Rhapsody)

It is necessary to encourage alternation and the associations of these families. Developed by Terres Inovia, the «petal kit» is a tool for estimating sclerotinia risk: some petals are placed into petri dishes containing sclerotinia-selective nutrient medium. The discolouration of the medium indicates whether the fungus is present or absent. The risk table is also a tool for estimating the sclerotinia risk in plots: a point table with parameters relating to the plot, the growing conditions and the weather. Treatment is triggered if the total number of points exceeds a certain threshold.



## Integrated advice on LALSTOP Contans WG:

- Quantify the number of sclerotia in the field (LALLEMAND Service) in order to estimate a potential risk and whether or not to trigger control measures integrating LALSTOP Contans WG.
- Use LALSTOP Contans WG as a pre-planting treatment on at-risk plots by incorporating it into the first 5 cm of soil and if damage is observed on the crop in place, also use it after harvest when incorporating the crop residues.
- In rotation, apply LALSTOP Contans WG at least once a year regardless of the crop (e.g. in the autumn after ploughing and before sowing cereals when conditions are optimal for the product).

## Prospects for the use of the product LALSTOP Contans WG:

Within the framework of the reduction of Treatment Frequency Indicators (TFI), the use of LALSTOP Contans WG associated in a programme with reduced doses of synthetic products is being evaluated by many technical centres in order to reduce the share of these molecules in the control of white rot in field crops.

The arrival of sclerotinia-tolerant varieties in oilseed rape or sunflowers associated with the use of LALSTOP Contans WG will soon also allow less use of chemical molecules in the longterm.





## Bibliography

- Article Maseeds « Lutte contre la sclérotinia ».  
Link: <https://www.maseeds.fr/nos-dossiers/lutte-contre-la-sclerotinia>.
- Article Ephytia Sclerotinia sclerotiorum - Pourriture blanche du tournesol.  
Link: <http://ephytia.inra.fr/fr/C/22776/Vigi-Semences-Sclerotinia-sclerotiorum-Pourriture-blanche-du-tournesol>.
- Article Terres Inovia « Sclérotinia : est-il nécessaire de réaliser un traitement fongicide ? ».  
Link: <https://www.terresinovia.fr/-/sclerotinia-est-il-necessaire-de-realiser-un-traitement-fongicide>.
- Article Cultivar Avril 2022 « Le sclérotinia en recrudescence sur la culture du soja ».  
Link: <https://www.cultivar.fr/technique/le-sclerotinia-en-recrudescence-sur-la-culture-du-soja>.
- Article «Sclerotinia du Colza». Link: [www.terre-net.fr](http://www.terre-net.fr).
- Article Terres Inovia « Anticiper le risque de maladies sur soja ».  
Link: <https://www.terresinovia.fr/-/anticiper-le-risque-maladies-sur-soja>.
- Technical days presentation Terres Inovia 2021 « Comprendre le sclerotinia pour mieux anticiper le risque ».





**MICROBIAL  
BY  
NATURE**



**LALLEMAND PLANT CARE**

