CABBAGE POSTHARVEST STORAGE

TIMAC AGRO ADVICE KIT

HOW TO IMPROVE POSTHARVEST STORAGE ABILITY ON CABBAGE?

Botrytis cinerea (Botrytis), the causal agent of grey mould, is a prevalent fungus found on stored cabbage and the main reason for losses of cabbage intended for long-term storage. Botrytis is an opportunistic pathogen that easily invades weak, damaged, or senescent tissues; therefore, mature healthy leaf tissues of plants are more resistant to Botrytis attack.

Up to
45% of cabbage
are discarded due to decay during post-harvest storage

In the field, the use of fungicides is a common practice to kill pathogens. During storage, the storage under the controlled atmosphere is favorable to reduce its occurrence.

1 TIMAC AGRO INSIGHT

The control of Botrytis is difficult because the pathogen can attack crops at any stage of growth and can infect all plant parts.

MECHANISM OF BOTRYTIS INFECTION

FROM THE FIELD:

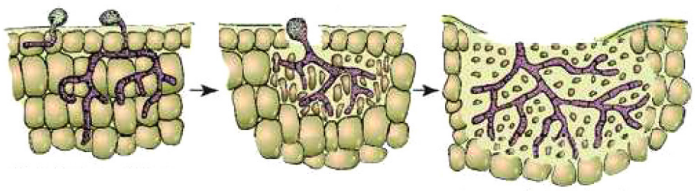
Latent infection is common during the crop cycle; therefore it is not always visible at harvest. In latent infections, the fungus penetrates the cuticle but fails to produce disease. Once the plant cuticle has been broken through, the plant cell wall is considered the second barrier.

It is reported that tissues high in Ca reduce the symptom of grey mould. The mechanism of resistance is supposedly associated with the effect of Ca on the improvement of structural integrity of cell walls.

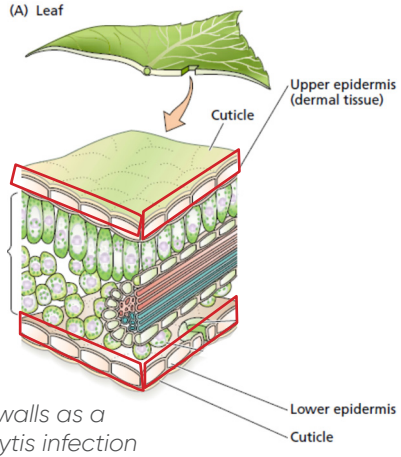
DURING HANDLING:

Large proportion of the decay in stored cabbage originates in mechanical injuries due to rough handling before storage. Plant tissues are well protected against infection as long as they are uninjured. But any break in epidermis may serve as a starting point of infection.

Calcium is known for strengthening cell walls and plant tissues.



→ *Fig1: Botrytis development in plant tissues*



→ *Fig2: Epidermis cell walls as a second barrier to Botrytis infection*

2 TIMAC AGRO SOLUTIONS

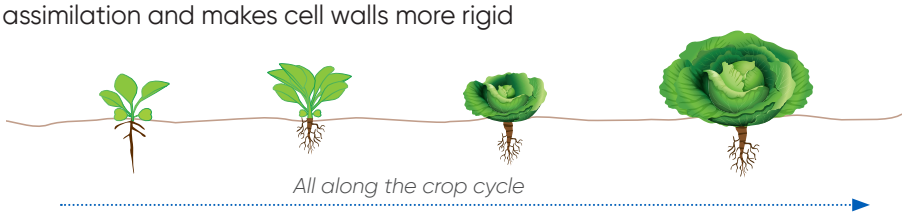
TIMAC AGRO Technologies recommended to improve post harvest storage and help your farmers to reach their targets

- **Improves nut rients absorption, transport and distribution**
- **Increases tolerance to abiotic stress**
- **Stimulates photosynthesis**

RECOMMENDATIONS

FERTILEADER containing Ca makes cabbage more resistant to Botrytis attack during the crop cycle as well as handling thanks to the following effects:

- Makes plants in a good health and delay the senescence of plant tissues
- Improves Ca assimilation and makes cell walls more rigid



- **Product application:** FERTILEADER Azur
- **Application stage:** At every fungicide application along the crop cycle
- **Application Dose:** 5L/ha for one application targeting around 20L/ha in total (4x5L)
- **Application Method:** foliar application mixing with fungicide if compatibility allows, water volume preferable at least more than 350L/ha, the higher the volume, the better the product penetration into plants.

ZOOM ON TRIALS...

CABBAGE

- Type of crop: White cabbage
- Country: TIMAC AGRO Deutschland
- Application: Fertileader Azur (15%Ca) : the dose of 5L/ha for four times combined with every fungicide application (20L/ha in total, diluted in 350L/ ha of water)

Planting	May 25
1st App.	July 30 (66 days after planting (DAP))
2nd App.	August 28 (95 DAP)
3rd App.	Sept. 17 (115 DAP)
4th App.	Oct. 9 (137 DAP)
Harvest	Nov. 8, 2014 (167 DAP)
Storage evaluation	Feb 10, 2015 (94 days after harvest)

RESULTS

FERTILEADER AZUR reduced rate of Botrytis infection by **41%**

CONTROL VS FERTILEADER AZUR
% of cabbages infected by Botrytis

2014-2015	2015-2016	2016-2017
45% vs 32%	35% vs 17%	32% vs 18%

→ *Control*

→ *FERTILEADER Azur*