



Training in organic breeding

Module 15: **Hot Water Treatments for Seed Health**

Unit 15.3: **Hot Water Treatment at BSAG:
General considerations and process**

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Seed treatments in Organic agriculture

- Hot water treatment
- Hot steam treatment
- Botanicals/Plant extracts
- Biological control agents
- Essential oils

Hot water treatment (HWT)

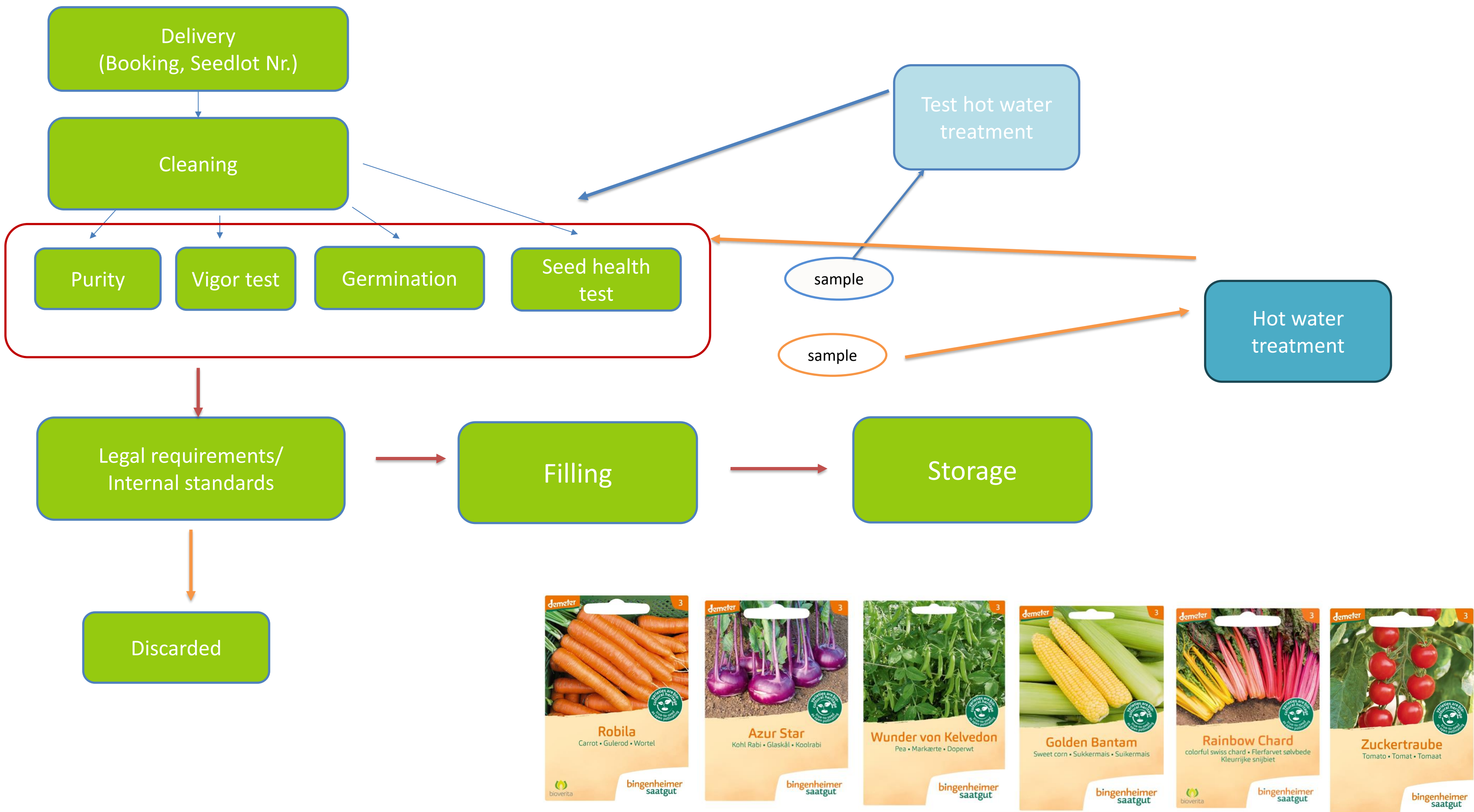
- Commonly used
- Effective against fungal and bacterial pathogens
- Directly kills pathogen – denaturation of proteins and enzymes; disruption of cell membrane
- Systemic acquired resistance (SAR) in plants
- Enhancement of seed vigor – Priming effect

Considerations and limitations

- Correct temperature and duration are crucial
- Too high or too long – seeds can be quickly damaged, reducing the germination rate
- Effective HWT – conditions differ not only among species but among cultivars and even seed lots
- Years of experience
- Trial and error

HWT at BSAG





Species that are treated

Asia Salat	Savoy cabbage	Swiss chard	Celery
Pak Choi	Kale	Beetroot	Miner's lettuce
Lamb's Lettuce	Kohlrabi	Carrots	Onions
Cabbage	Turnip	Parsly	Dill
Cauliflower	Oxheart cabbage	Radish	
Red cabbage	Fennel	Endive	
Broccoli	Pumpkins	Lettuce	

Delivery



Booking after delivery and getting
Seed lot number

Claytonia perfoliata - Miner's lettuce

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Cleaning



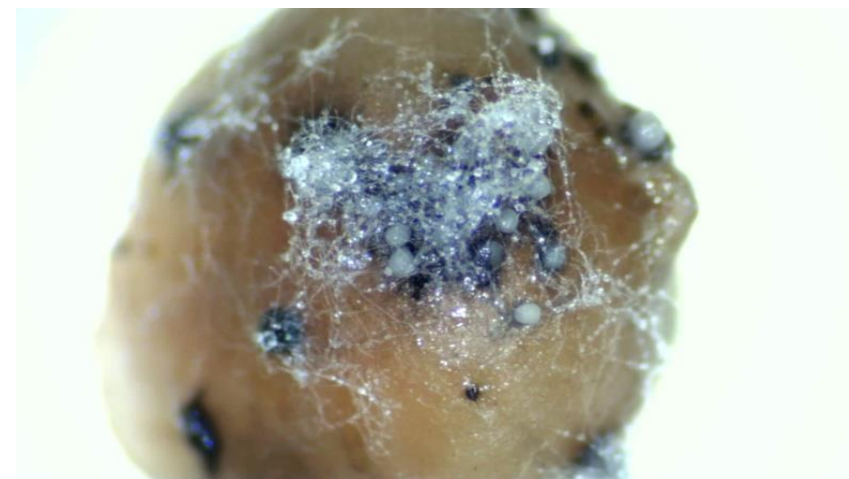
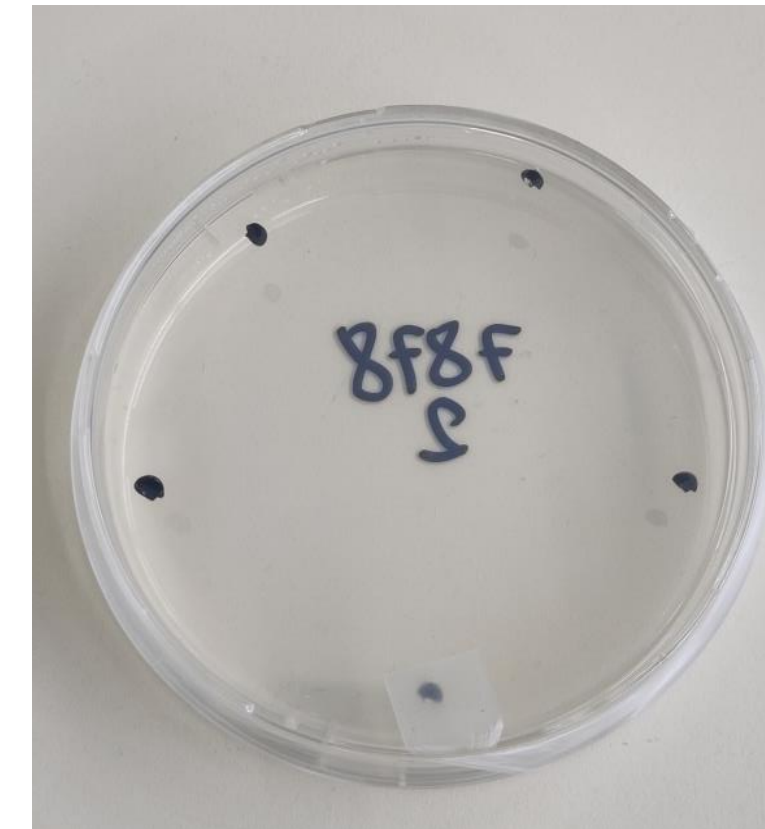
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Diagnostic laboratory



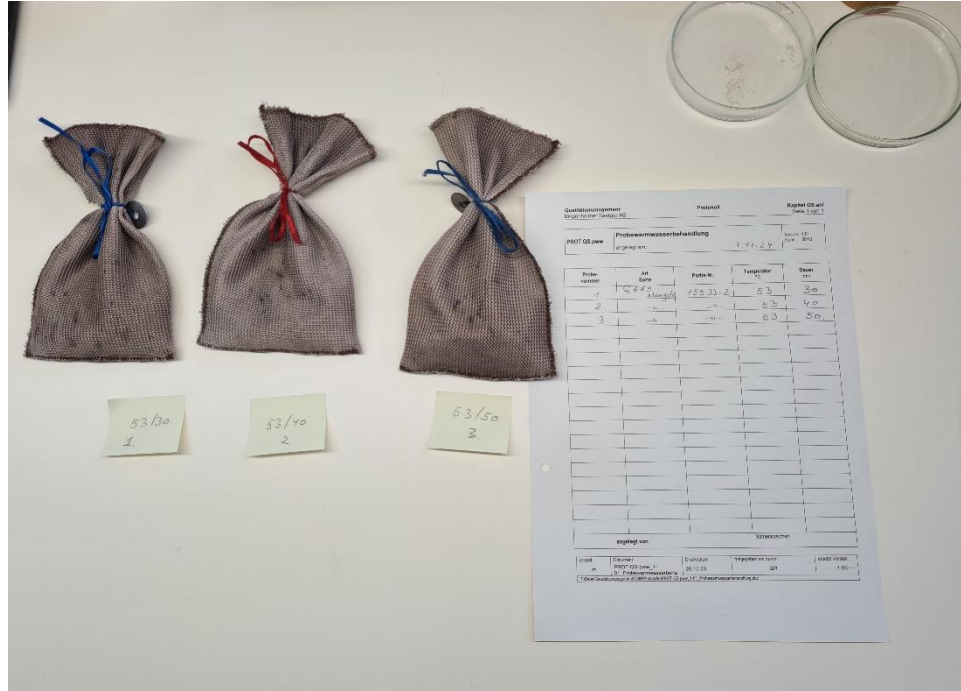
Germination and vigor tests

Diagnostic laboratory



Seed health testing

Diagnostic laboratory



Test hot water treatment

Cleaning



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Test hot water treatment

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To summarize:

- Hot water treatment (**HWT**) is one of the few approved and effective seed treatments in organic farming
- It acts by directly **killing pathogens** (denaturation, membrane disruption) and can also **stimulate SAR and a priming effect**
- The success of HWT depends on precise **control of temperature and duration**; mistakes quickly damage seed quality
- **Efficacy** varies between species, cultivars, and even seed lots — practical experience and adaptation are essential
- At BSAG, HWT is embedded in **a systematic workflow**, including seed cleaning, germination and vigor tests, seed health testing, test treatments, and strict internal standards.

In the next unit, we will go deeper into the technical indications of hot water treatment. We will cover required equipment and set-up, as well as treatment conditions and step-by-step process.



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