



Training in organic breeding

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

Unit 15.4: **Hot Water Treatment at BSAG:
Technical indications**

Author: **Dr. Jelena Baćanović-Šišić**
Bingenheimer Saatgut AG



Co-funded by
the European Union

Funded by the European Union, the Swiss State Secretariat for Education, Research and Innovation (SERI) and UK Research and Innovation (UKRI).



UK Research
and Innovation

HWT



Equipment and Material List

- 500 liter water tank with automatic control and hot water heating
- 500 liter cold water tank
- Cargo lift with grid basket
- Centrifuge
- Circulation pump
- Treatment bag made of nylon fabric
- Scales
- Wire and wire drill unit
- Bag labels with wire
- Waterproof Sharpie (edding)
- Laboratory alarm clock-
- Drying racks, clean, free of foreign seeds, not defective, if necessary, paper sheets to place underneath
- Dehumidifier
- Drying boxes with blower, clean and free of foreign seeds, with fleece inlay if necessary
- Seed humidity meter
- New bags
- New paper bags for reserve samples
- New labels for sacks and paper bags



Max 6L in bags





Max 15 bags/treatment



Maximal weight of one bag

	Carrot	Pumpkin	Beetroot	Lamb lettuce	Parsley	Cabbage	Beans
Maximal weight [kg]	2,5	3,2	2,2	1,75	3,0	1,5	5,0
Maximal allowed humidity for storage [%]	9,0	8,0	12,0	8,5	8,0	7,0	< 14,0



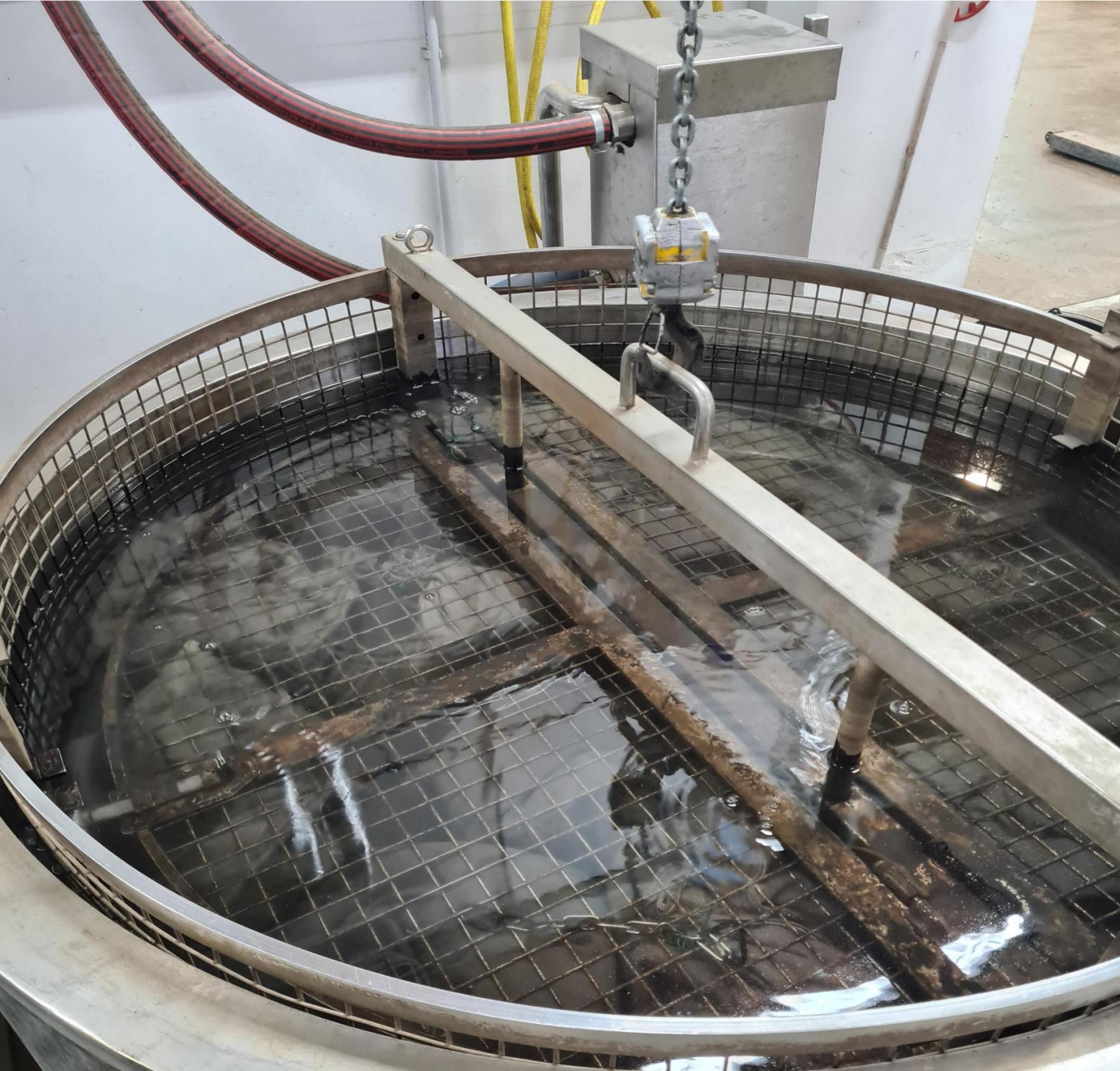


Closing bags





Preheating at 32°C



Main treatment



Cooling in cold water
Max 5 minutes





Centrifuge

20000
U/min mit 500 L

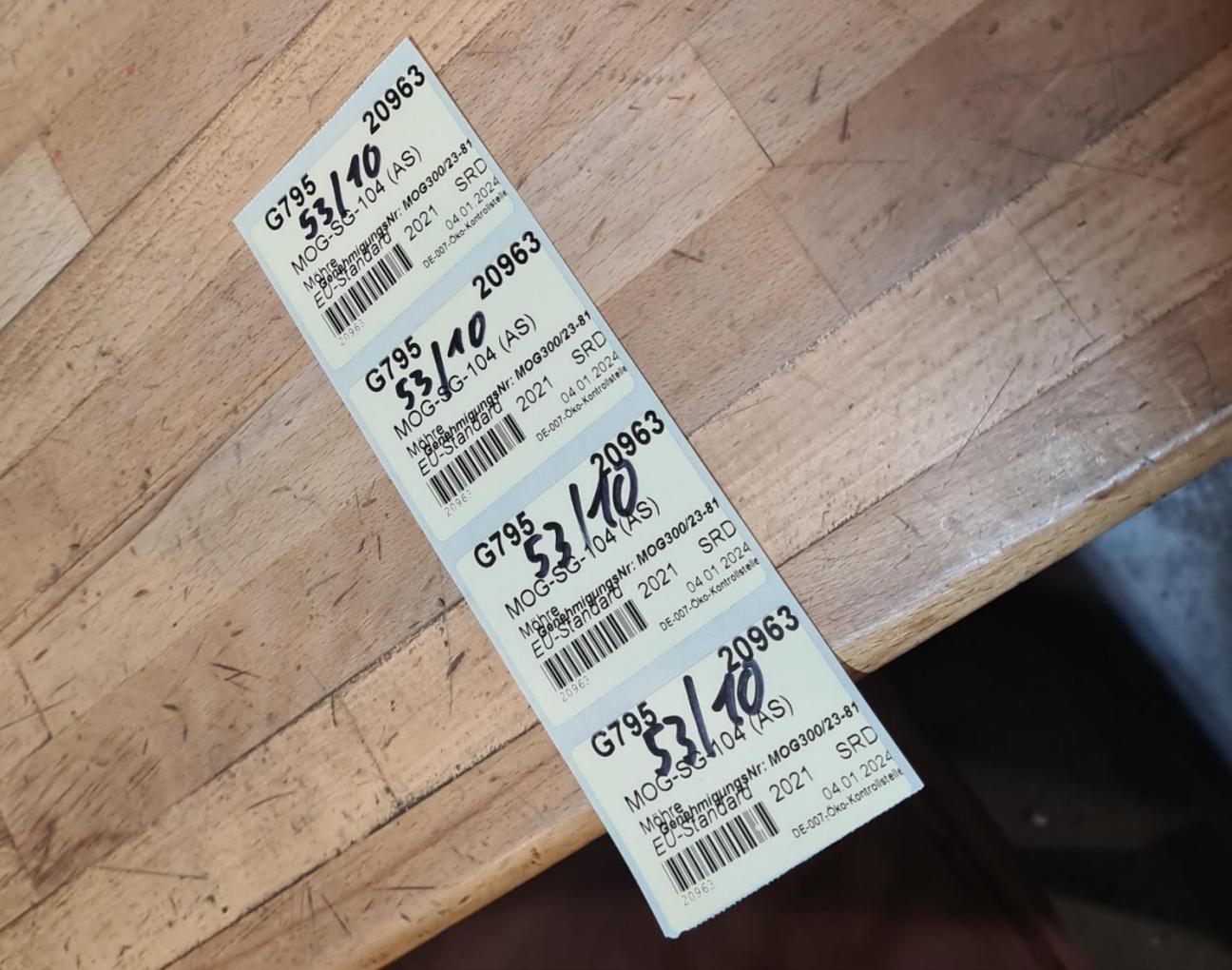
Active Drying

Passive Drying

Dehumidifier

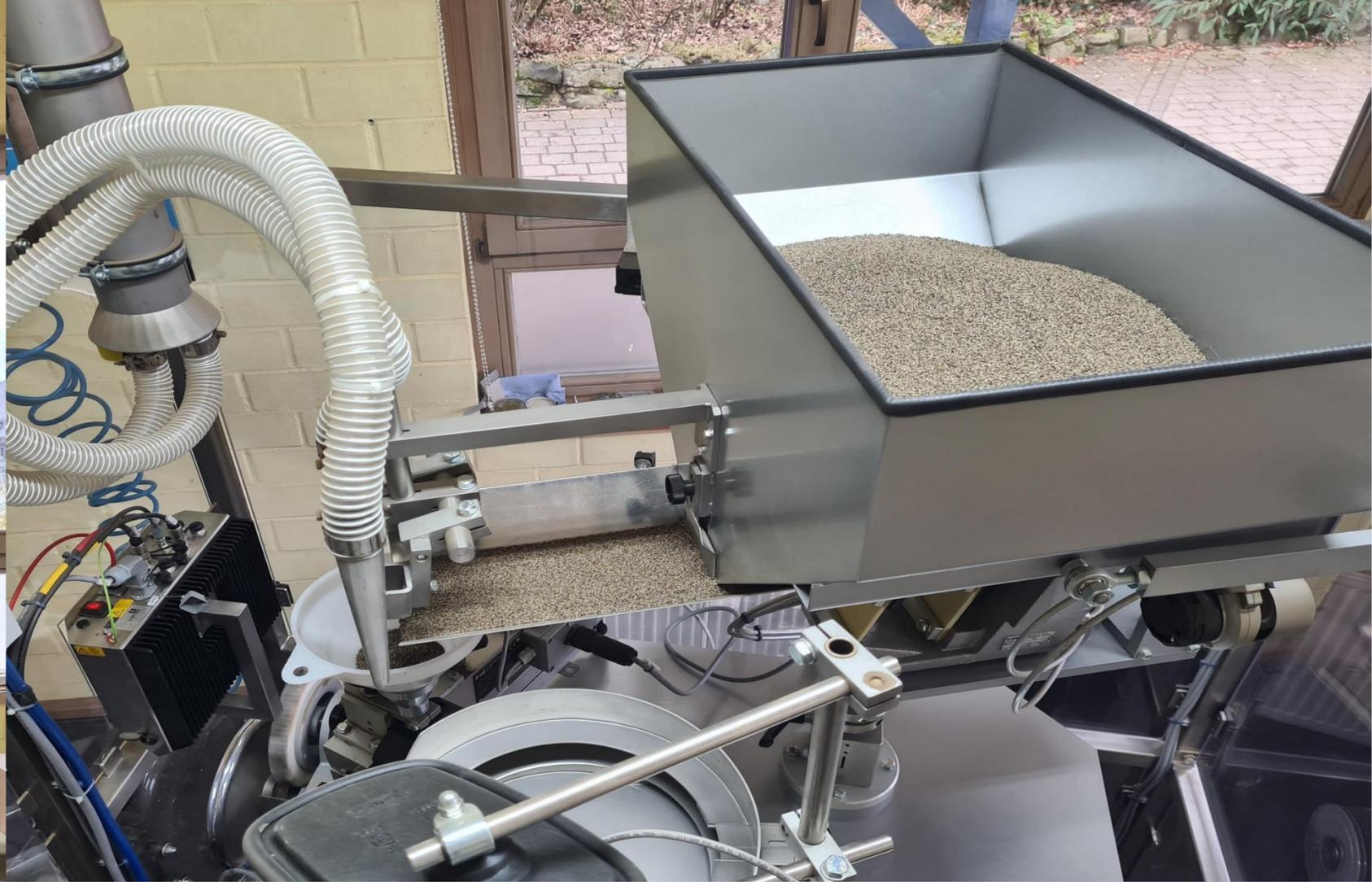
Drying





Labeling





Filling in bags



Storage

demeter 3



Robila
Carrot • Gulerod • Wortel

Varieties are bio-cultural heritage
Free-to-seed
As open pollinating

demeter 3



Persika
Outdoor Cucumber • Frilandsagurk • Augurk

Varieties are bio-cultural heritage
Free-to-seed
As open pollinating

demeter 3



Azur Star
Kohl Rabi • Glaskål • Koolrabi

Varieties are bio-cultural heritage
Free-to-seed
As open pollinating

demeter 3



Red Kuri
Pumpkin • Græskar • Pompoen

Varieties are bio-cultural heritage
Free-to-seed
As open pollinating

demeter 2



Neckarriesen
Lettuce • Hovedsalat • Kropsla

Varieties are bio-cultural heritage
Free-to-seed
As open pollinating

demeter 3



Aromata
Parsnip • Pastinak • Pastinaak

Varieties are bio-cultural heritage
Free-to-seed
As open pollinating

demeter 3



Pantos
Pepper • Peber • Paprika

Varieties are bio-cultural heritage
Free-to-seed
As open pollinating

demeter 2



Avano
Leek • Porre • Prei

Varieties are bio-cultural heritage
Free-to-seed
As open pollinating

demeter 3



Rodelika
Carrot • Gulerod • Wortel

Varieties are bio-cultural heritage
Free-to-seed
As open pollinating

demeter 3



Zuckertraube
Tomato • Tomat • Tomaat

Varieties are bio-cultural heritage
Free-to-seed
As open pollinating

demeter 3



Rainbow Chard
colorful swiss chard • Flerfarvet sølvbede
Kleurrijke snijbiet

Varieties are bio-cultural heritage
Free-to-seed
As open pollinating

demeter 3



Golden Bantam
Sweet corn • Sukkermajs • Suikermajs

Varieties are bio-cultural heritage
Free-to-seed
As open pollinating

demeter 3



Wunder von Kelvedon
Pea • Markærte • Doperwt

Varieties are bio-cultural heritage
Free-to-seed
As open pollinating

demeter 1



Ocimum basilicum
Basil large leaves • Basilikum storbladet
grootbladige basilicum

Varieties are bio-cultural heritage
Free-to-seed
As open pollinating

demeter 2



Melissa officinalis
Lemon balm • Citronmelisse
Citroenmelisse

Varieties are bio-cultural heritage
Free-to-seed
As open pollinating



bingenheimer
saatgut

bingenheimer
saatgut

bingenheimer
saatgut

bingenheimer
saatgut

bingenheimer
saatgut



To summarize:

- Hot water treatment requires **specialized equipment**: heated and cooled water tanks, circulation pump, centrifuge, drying racks/boxes, humidity meters, and labeling systems
- **Treatment steps** include: bag preparation and closing, preheating at 32 °C, main treatment, cooling for max. 5 minutes, centrifugation, active or passive drying, labeling, and storage
- **Strict limits** are applied for treatment quality: max. 6 liters per bag and max. 15 bags per treatment
- **Correct execution of each step** is essential to balance pathogen elimination with seed viability
- **Documentation and labeling** ensure full traceability of each treated seed lot

