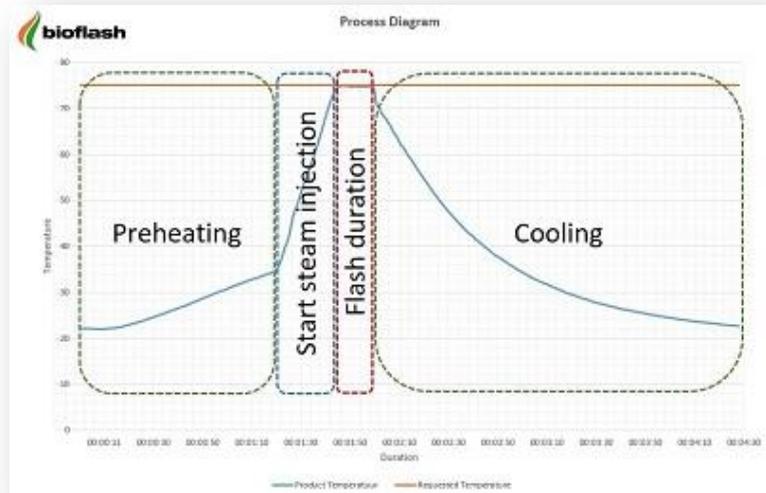


## “Quick and Easy disinfection of seed lots”

The BioFlash is a **brand new developed biologic disinfection system** with already proven results on several seed species. The machine is developed together with several seed companies to prove the effect of the steam disinfection. The BioFlash Lab system gives you the opportunity to develop steam disinfection protocols and even do production of small seed lots. The machine is easy to use due to the intelligent software and protocol setup.



The requested maximum temperature and duration can be easily set in the protocol and the machine will do the complete process. Because of the automatic protocol system you can repeat trails, be sure that all runs are exactly the same and develop automatic disinfection protocols.

### Specifications

- Standard stainless steel frame
- Control box with PLC and HMI for easy control of process
  - Up to 99 recipes
  - Automatic PID controlled BioFlash process
- Logging of at least 5 batches and can be exported to USB Flash Drive
- Container location with transparent door for easy access but safe process
- Special container for BioFlash protocol
- Automatic steam supply system (excl. steam generator)
- Air speed and several temperature sensors for logging complete process

### Options

- Smaller container for even smaller quantities
- Steam generator (electrical or gas fired)
- PLC upgrades for extended logging functionality

### Technical information

Power	3~400 Vac / 50Hz / 16A
Connector	EU standard round 5P Plug
Capacity	0.25-1 l/batch
Steam supply required	3/8", 25kg/hr max / 8bar
Condensation outlet connection	3/8" waste water connection
Compressed Air	6 bar required

## Proven Concept, developed together with renowned Dutch seed companies

End of 2015 a multiple year project was completed to develop a steam disinfection unit to treat seeds against seed borne pathogens. Focus is obvious; a) Eradication of seed borne pathogens from Seed, b) Keep seed and seedling vigour at the desired high level.

## Targeted project crop/pathogen combinations

Crop	# Batches	# Steam Treatments	Target Pathogen(s)
Corn Salad	5	56	Acidovorax valerianellae, Phoma valerianellae, Peronospora valerianellae
Basil	3	31	Peronospora belbahrii
Pumpkin	3	16	Fusarium solani, Fusarium oxysporum
Onion	4	49	Botrytis allii, Aspergillus, Rhizopus

## RESULTS

### Corn Salad

Total germination remains quite stable during treatments.

#### Acidovorax valerianellae

Tests were done on 4 positive batches. Steam treatments were not successful in eradication of Av.

#### Phoma valerianellae

Tests were carried out on three severely infected batches. Phoma was dramatically reduced, but not fully eradicated by steam treatment when maintaining an acceptable germination.

#### Peronospora valerianellae

Four batches were tested. Several steam treatments were able to eradicate the pathogen while maintaining acceptable vigour.

Treatment	Acidovorax val. (2*5000 seeds)	Phoma without superficial disinfection (200 seeds) (%)	Phoma with superficial disinfection (200 seeds) (%)	Peronospora val. (1200 seeds) (%)
untreated	+	34	2	3,9
treatment 1	+	5,5	1,5	0,1
treatment 2	+	0,5	0	0
treatment 3	-	0	0	0
treatment 4	-	0	0	0

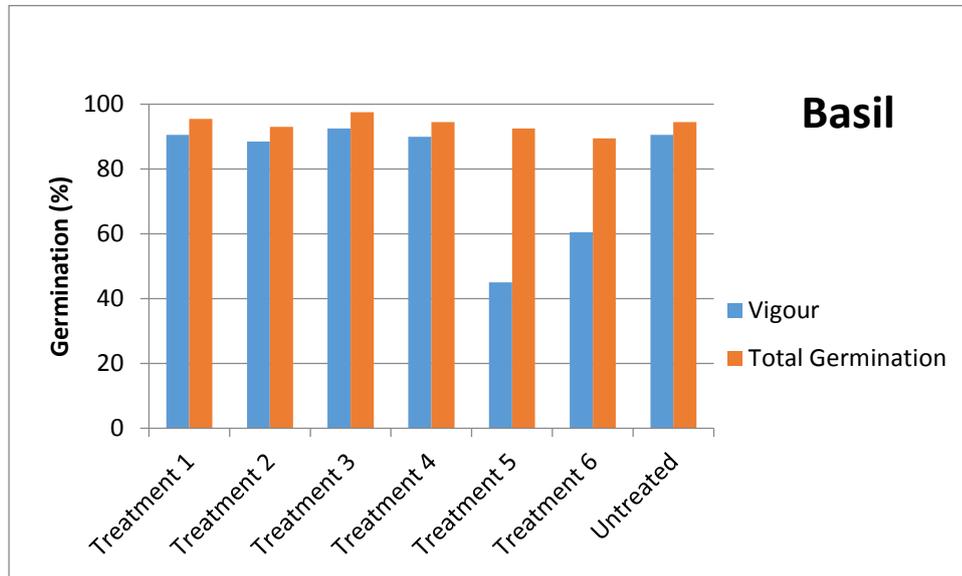
## Basil

Tests were done on 3 batches. To maintain germination quality, no high temperature treatments should be applied.

### *Peronospora belbahrii*

Was tested for one batch (two untreated batches were not to infected in successive testing).

Steam treatments were able to eradicate the pathogen and maintain an acceptable seed vigour.



## Onion

Four batches were tested, against four fungal pathogens. All pathogens were dramatically reduced, and seed quality was maintained at acceptable levels.

## Pumpkin

### *Fusarium oxysporum/Fusarium solani*

There are indicates for an effect on *Fusarium* on pumpkin seed and some of the treatments were not detrimental for seed quality. Due to the weight of the seed effects might vary.