

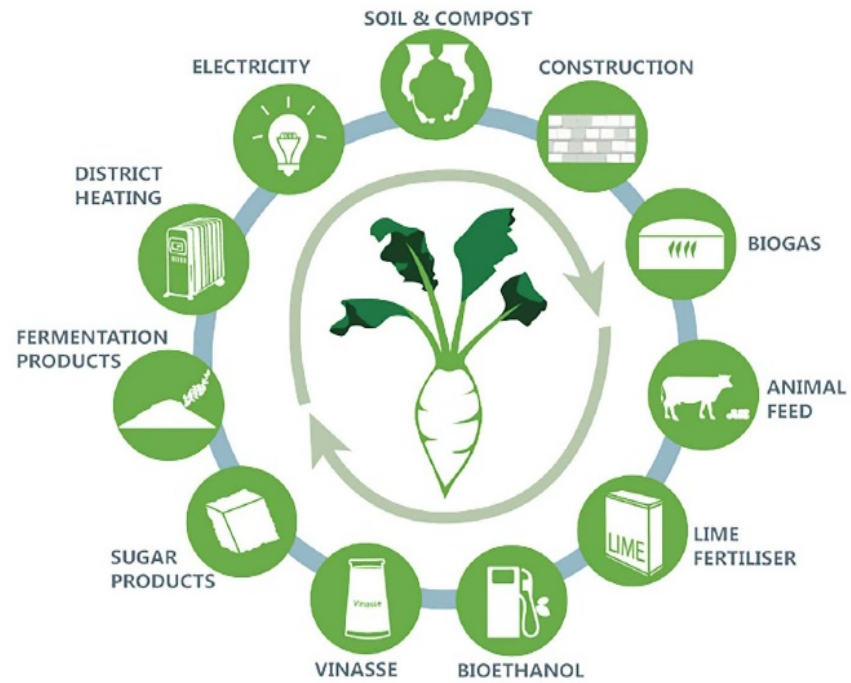
# **Seed priming in sugar beet, Swiss chard and beetroot for advanced crop development**

**Zahra Salimi**

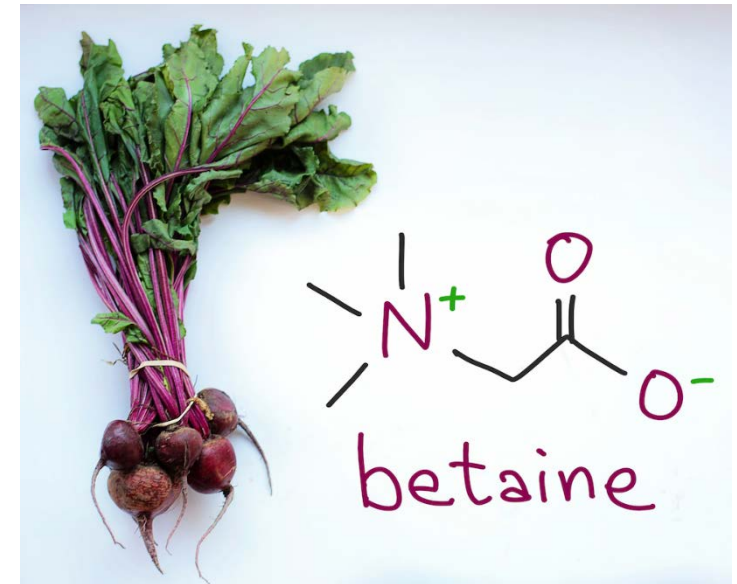
# Beet Botany



<https://parkseed.com/rainbow-mix-beet-seeds/p/52487-PK-P1/>

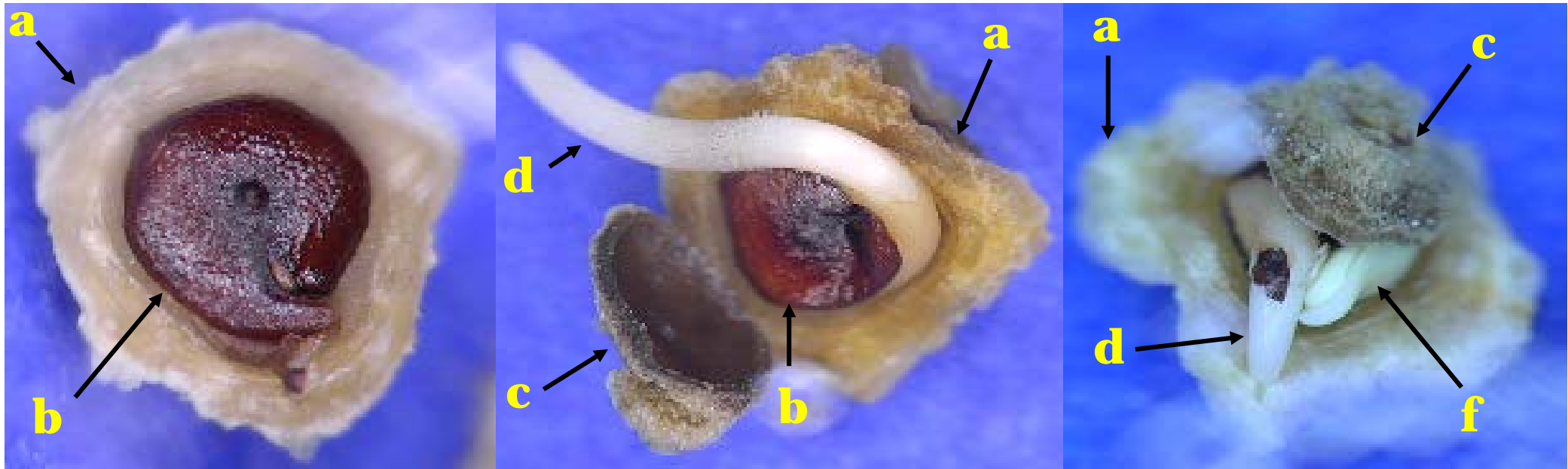


<https://cefs.org/issues/environment-and-sustainability/>

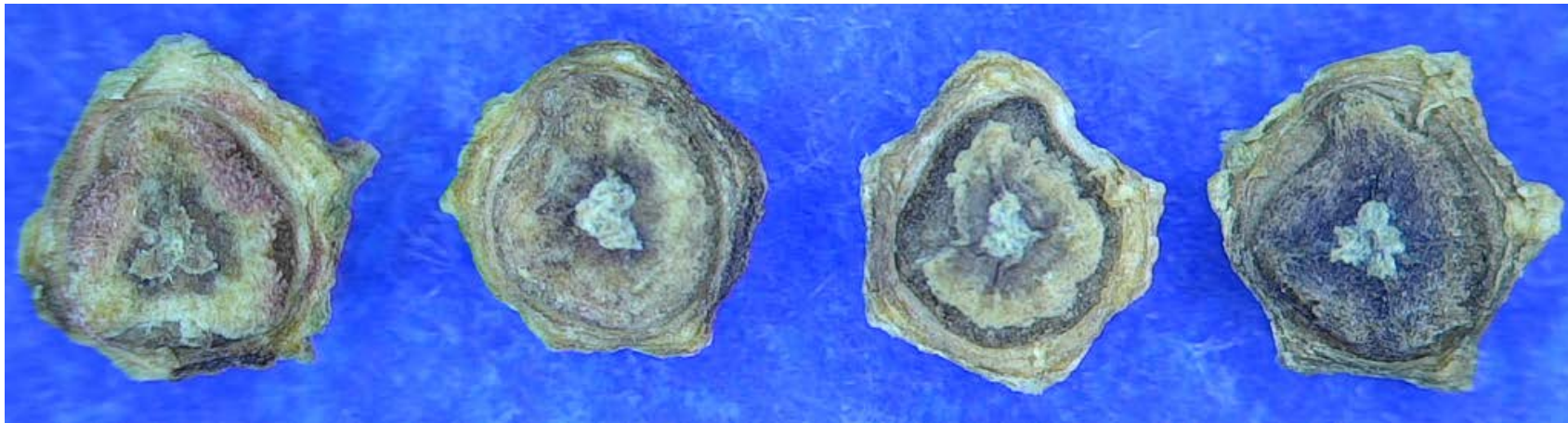


<https://itaintmagic.riken.jp/hot-off-the-press/betaine-beets-schizophrenia/>

# Seed structure

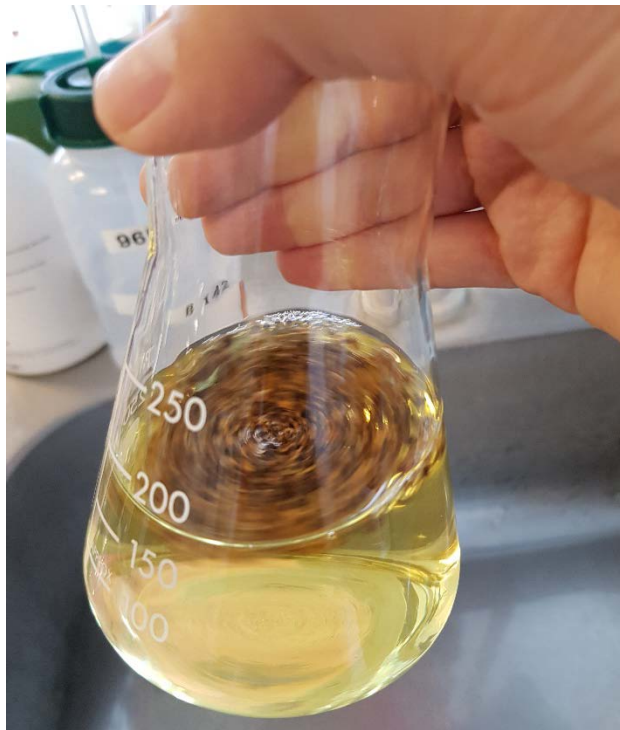


**pericarp (a), true seed (b), operculum (c), radicle (d), and cotyledons (f).**



# Germination performance

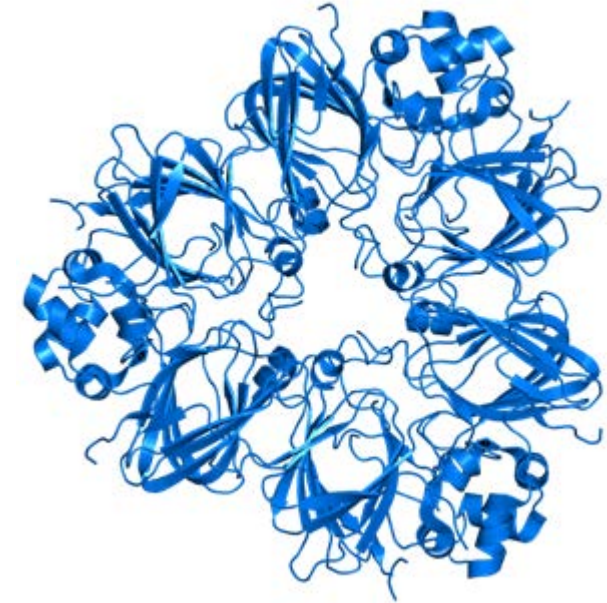
## Inhibitors



## Maturity level



## Nutrition reserve

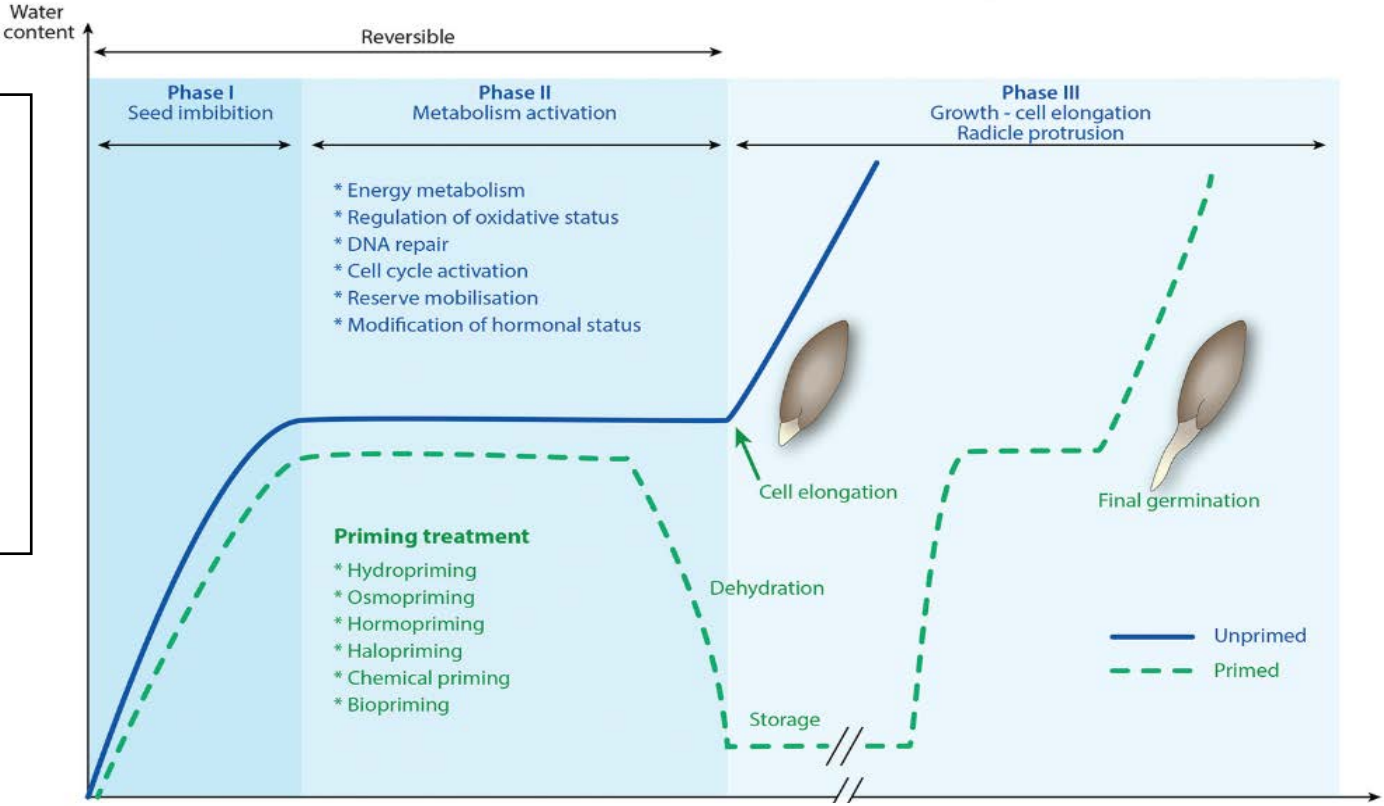


<https://www.ebi.ac.uk/pdbe/entry/pdb/2e9q/protein/1>

# Seed enhancement

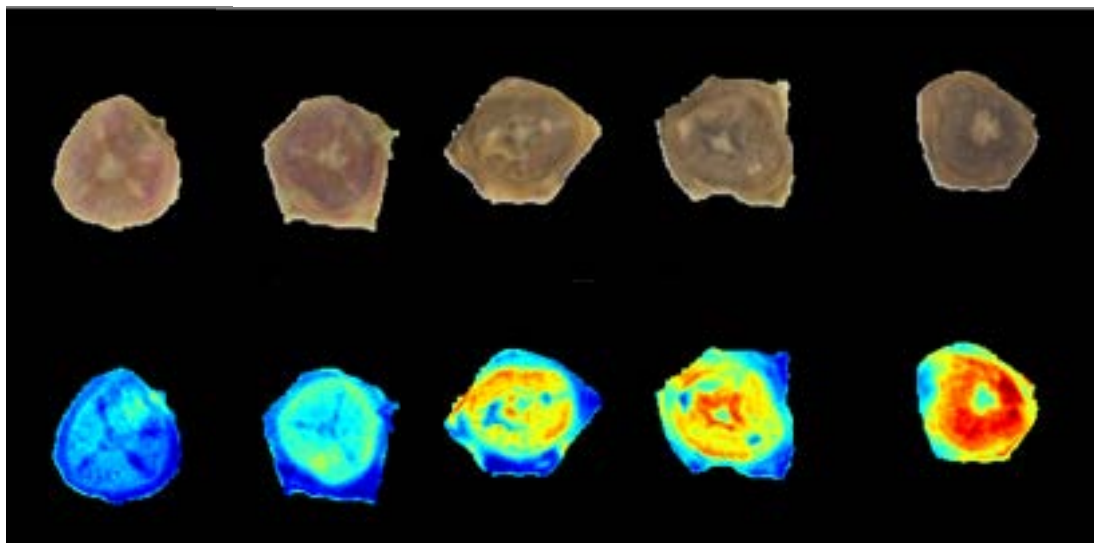
## Washing

## Priming

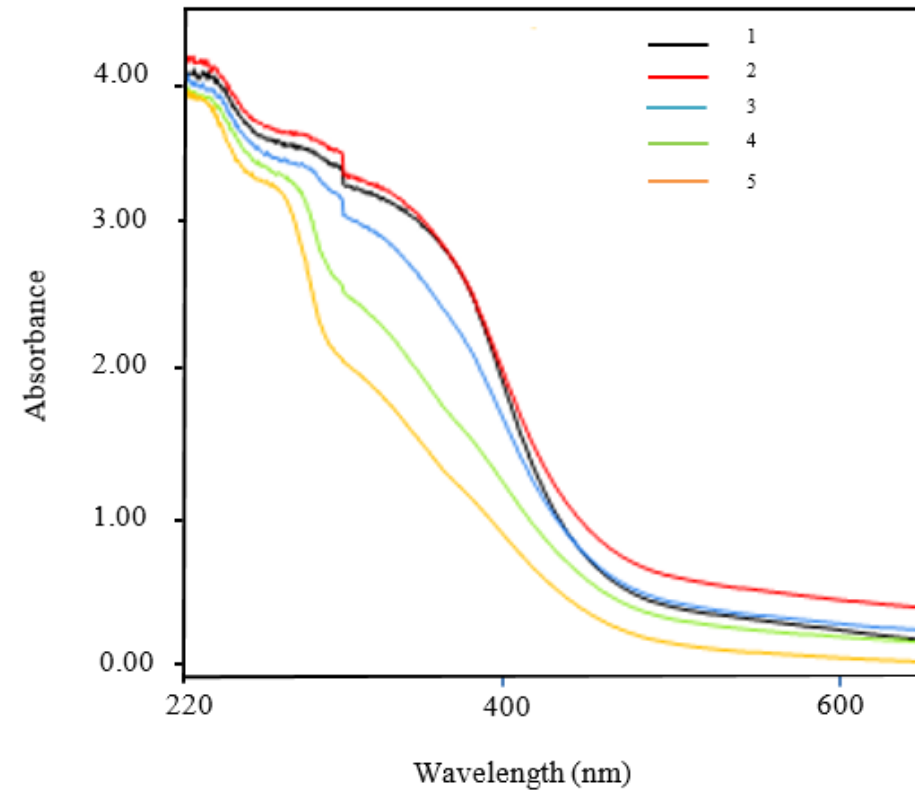


(Lutts et al., 2016)

# Washing-distinct maturity sample



MSI and transformed image of seeds of distinct maturity class

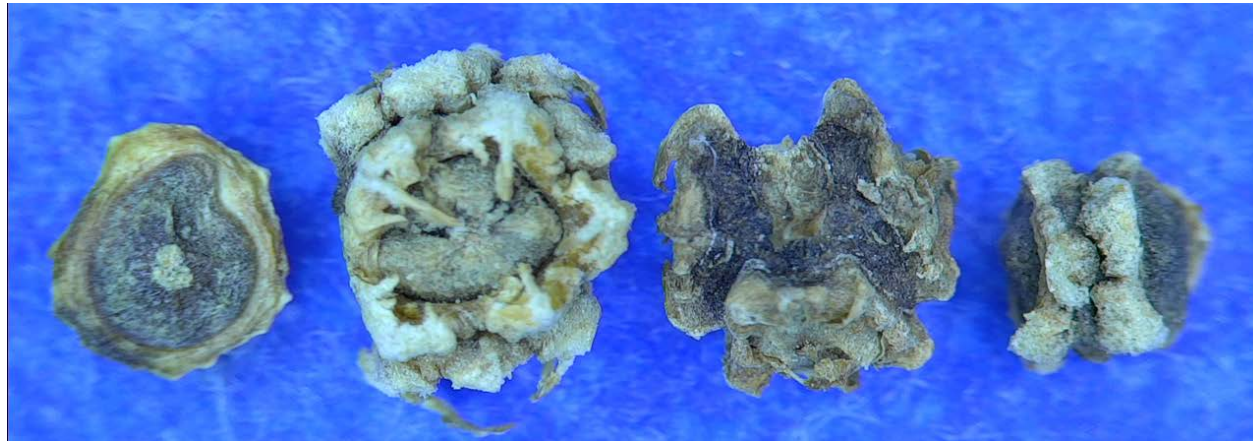


# Seedling comparison of sugar beet seeds of maturity class 1-4 after priming for 0, 16 or 24 h.





# Four beet cultivars priming



Sugar beet

Fordhook giant

Detroit beet

Bull's blood

**SB**

**FG, DB, and BB**



**SB**



**FG**  
**(Swiss chard)**



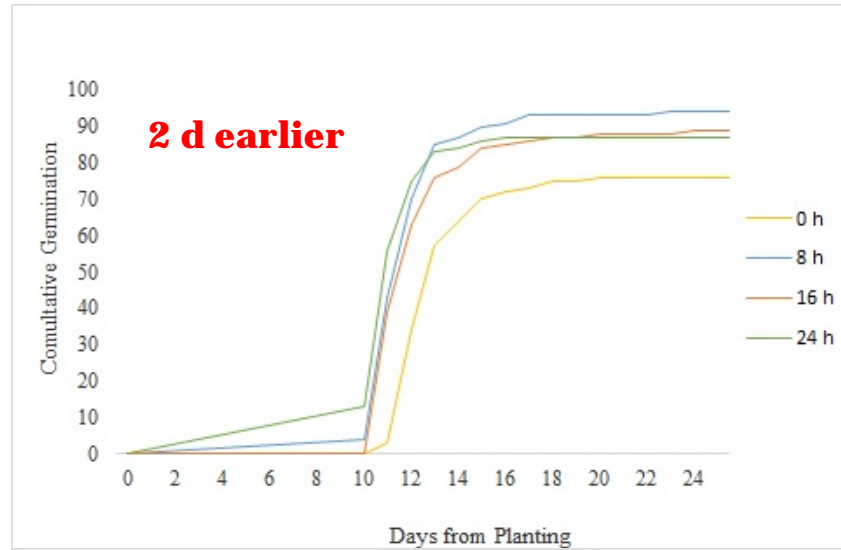
**DB**  
**(garden beet)**



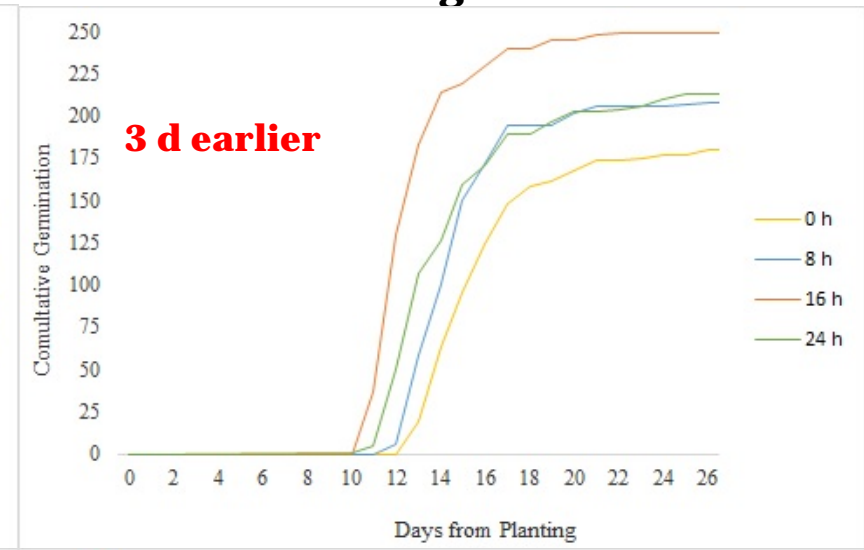
**BB**  
**(garden beet)**

Cumulative emergence curves of four beet cultivars as affected by 0, 8, 16, or 24 h priming recorded during emergence period

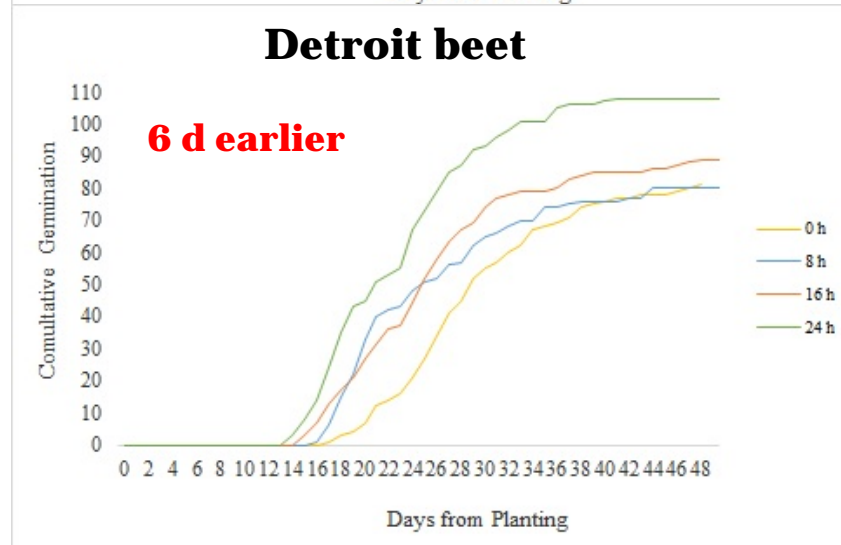
**Sugar beet**



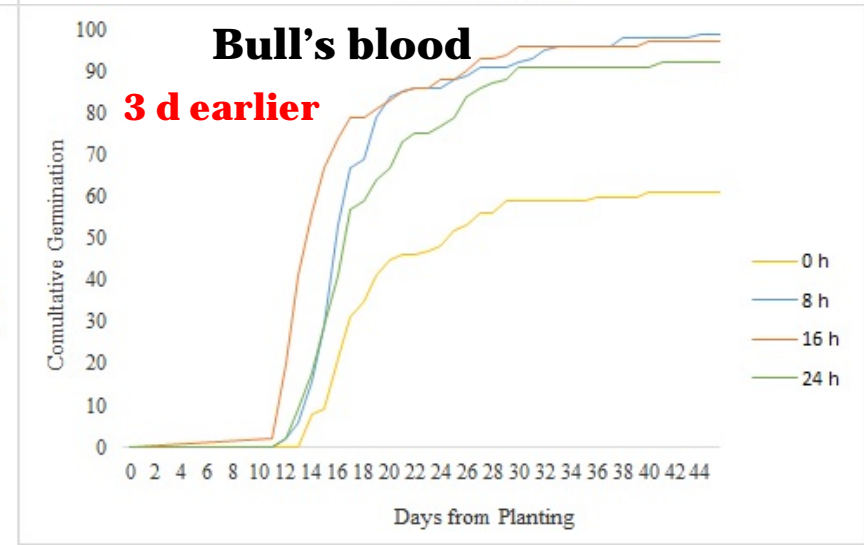
**Fordhook giant**



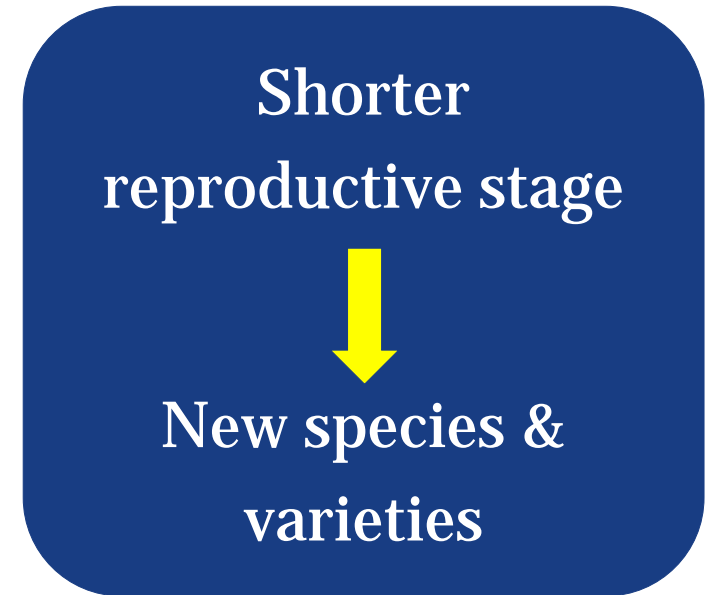
**Detroit beet**



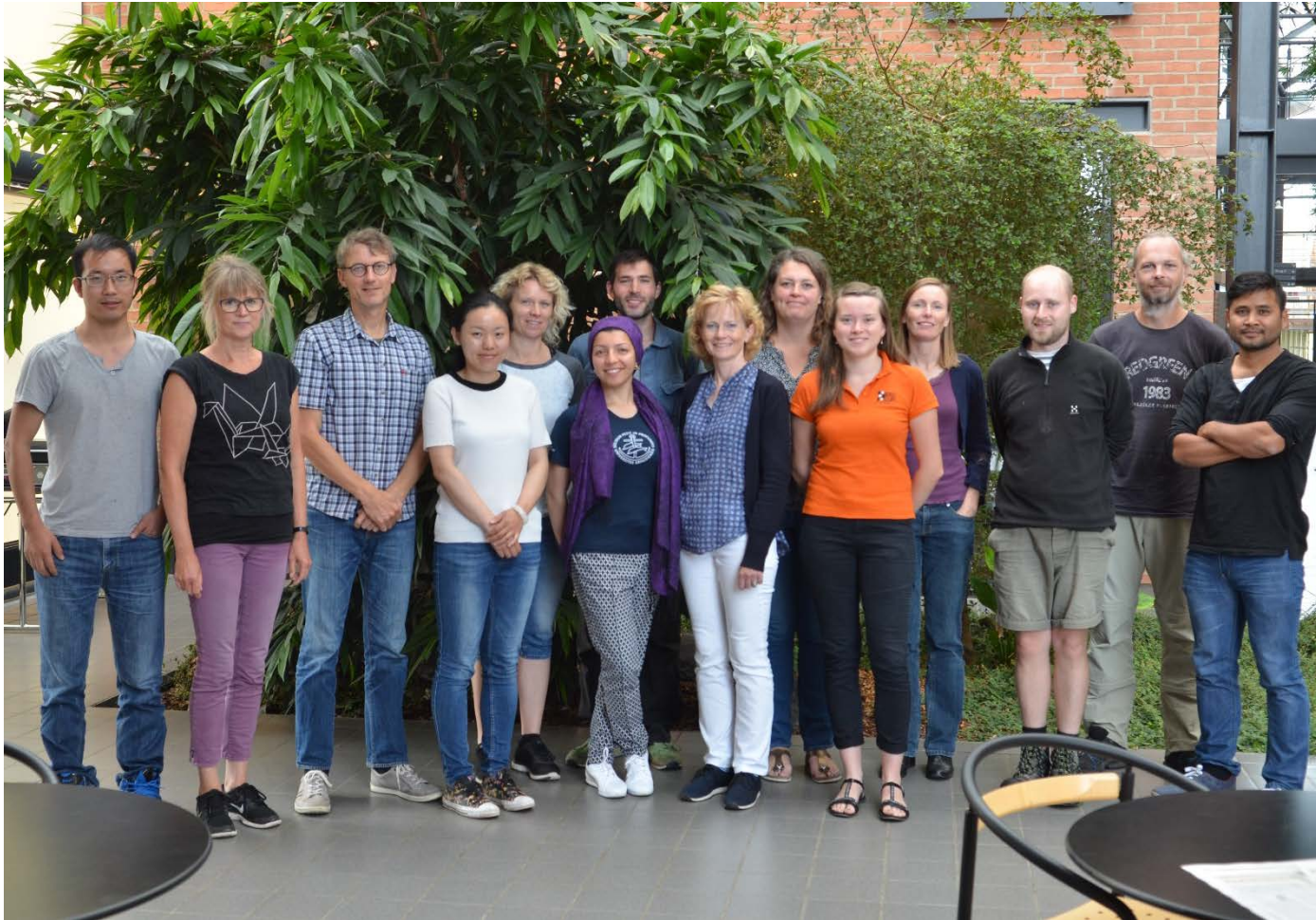
**Bull's blood**



	<b>Priming time (h)</b>	<b>Emergence</b>	<b>Bolting</b>	<b>Flowering</b>
<b>Sugar Beet</b>	<b>8</b>			
	<b>16</b>			
	<b>24</b>			
<b>Fordhook giant</b>	<b>8</b>			
	<b>16</b>			
	<b>24</b>			
<b>Detroit Beet</b>	<b>8</b>			
	<b>16</b>			
	<b>24</b>			
<b>Bull's blood</b>	<b>8</b>			
	<b>16</b>			
	<b>24</b>			



# Acknowledgment





AARHUS  
UNIVERSITY