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

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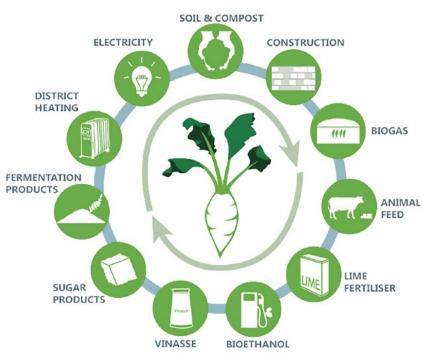




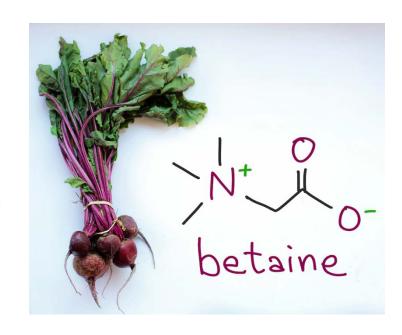
Beet Botany







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

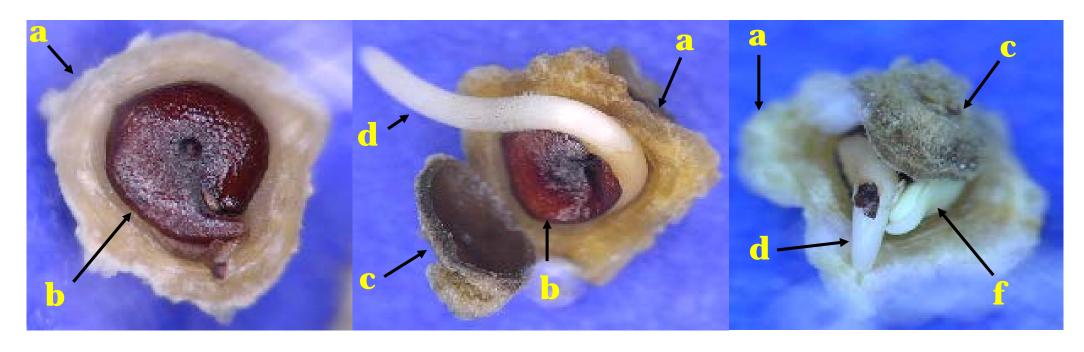


https://itaintmagic.riken.jp/hot-off-the-press/betaine-beets-schizophrenia/





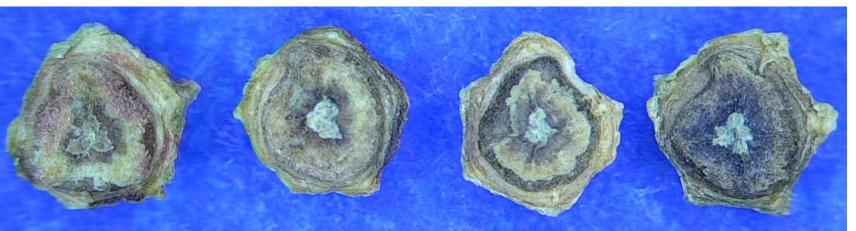
Seed structure



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









Germination performance

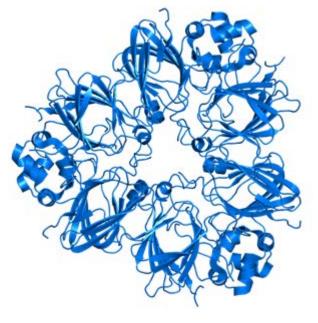
Inhibitors



Maturity level



Nutrition reserve



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



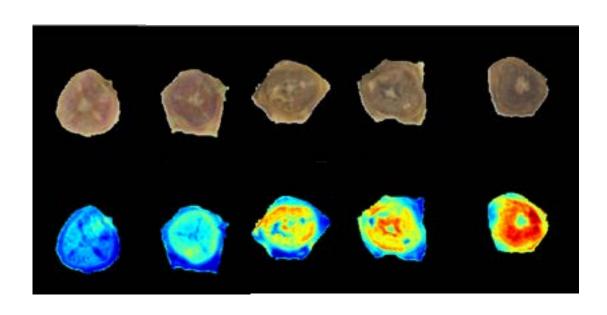
Seed enhancement

Priming Washing Water content 4 Reversible Phase I Seed imbibition Phase II Metabolism activation Phase III Growth - cell elongation Radicle protrusion * Energy metabolism * Regulation of oxidative status * DNA repair * Cell cycle activation * Reserve mobilisation * Modification of hormonal status Cell elongation Final germination **Priming treatment** * Hydropriming Dehydration * Osmopriming * Hormopriming Unprimed * Halopriming - Primed * Chemical priming * Biopriming (Lutts et al., 2016)

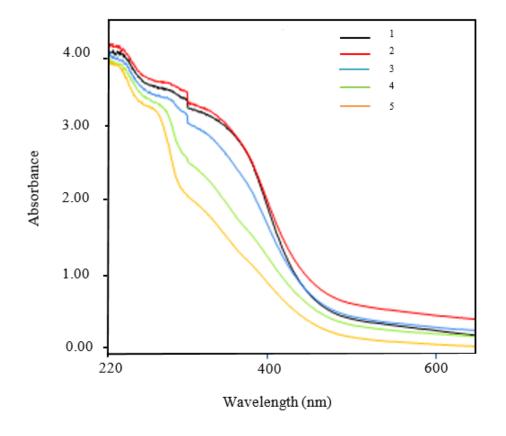




Washing-distinct maturity sample



MSI and transformed image of seeds of distinct maturity class







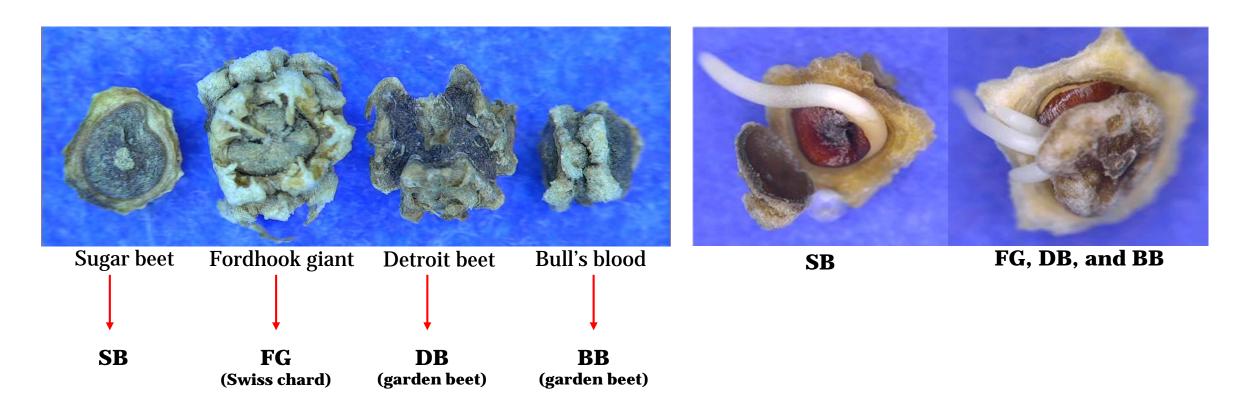
Seedling comparison of sugar beet seeds of maturity class 1-4 after priming for 0, 16 or 24 h.





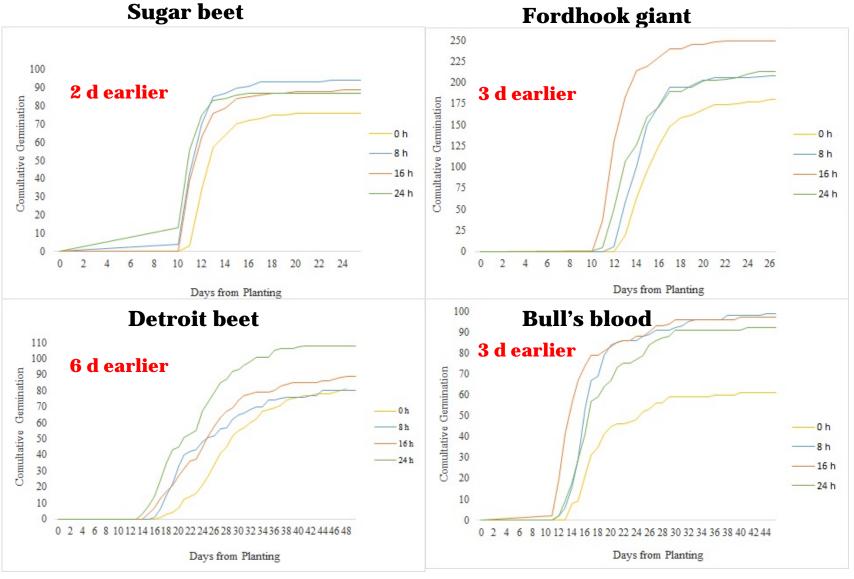


Four beet cultivars priming





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







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

Shorter reproductive stage

New species & varieties





Acknowledgment

