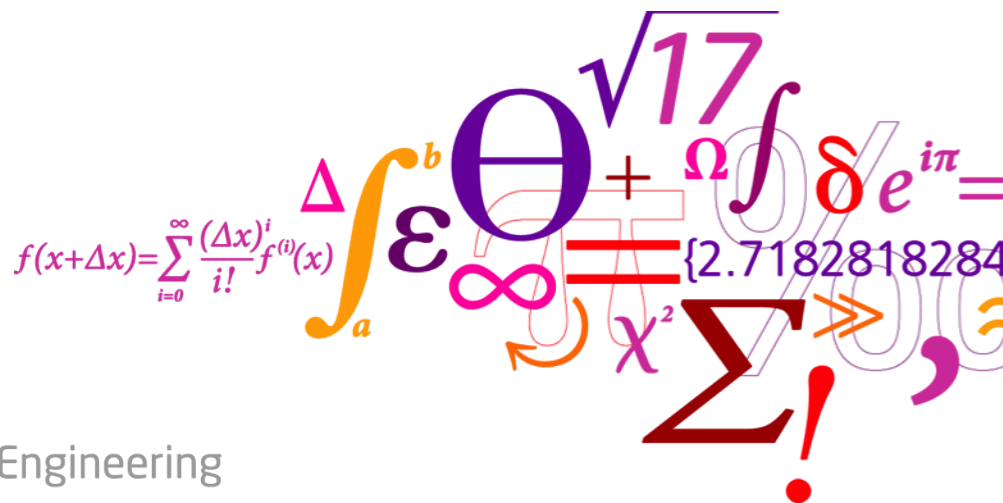


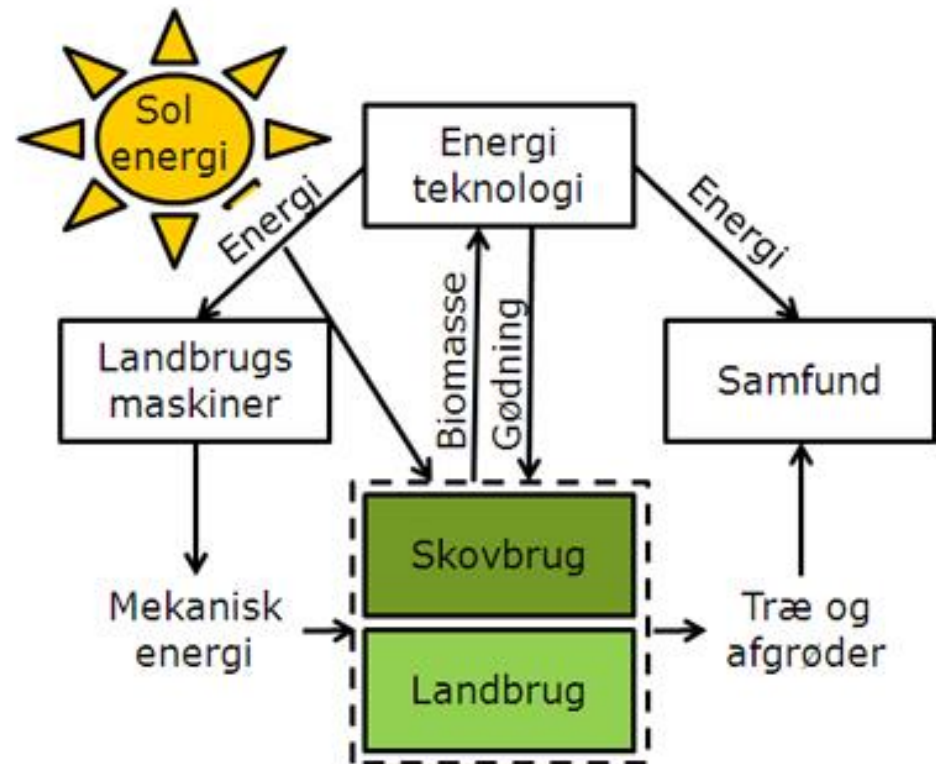
Recirkulering af fosfor fra slam, gyllefibre og restprodukter via termisk forgasning

DTU | BGG - The Biomass Gasification Group

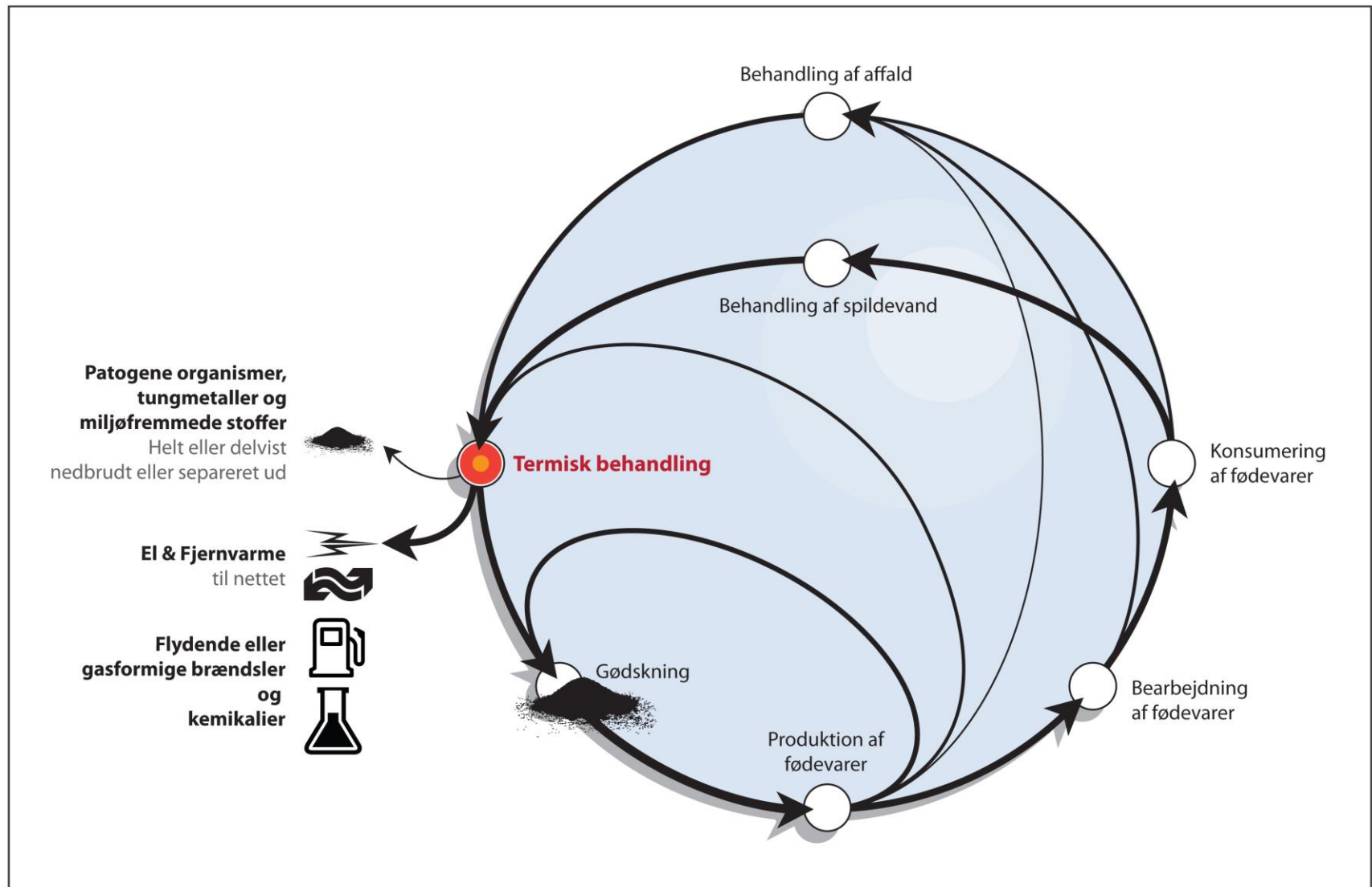
Seniorforsker Jesper Ahrenfeldt (DTU), og andre



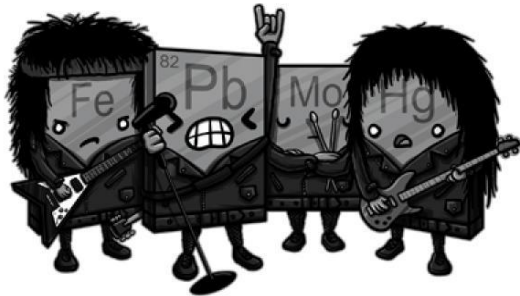
Forskningsområde | Termisk Bioenergi



Den cirkulære tanke | Energi, miljø og gødning



Tungmetaller

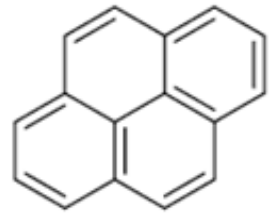


Zn, Cu, Ni, Cd, Pb, Hg, Cr

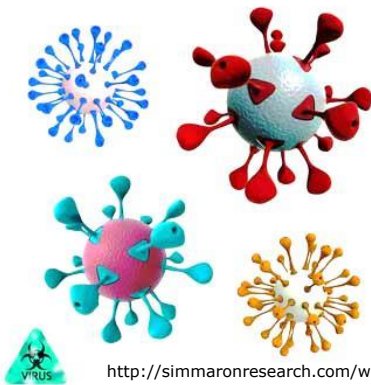
https://uk.ilovesciencestore.com/heavy-metals-mens-tshirt.html?__store=uk_store

Organiske forbindelser

- PAH (polycyclic aromatic hydrocarbons)
- PCB (polychlorinated biphenyls)
- AOX (sum of organohalogenous compounds)
- LAS (linear alkylbenzenesulphonates)



Patogener – bakterier og virus



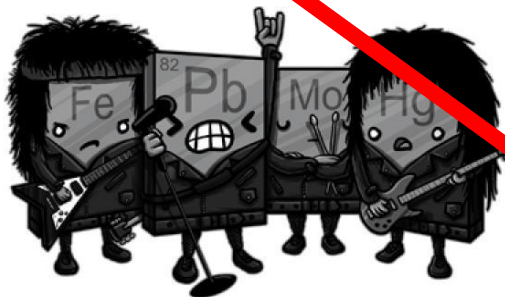
<http://simmaronresearch.com/wp-content/uploads/2016/05/viruses-colorful.jpg>

Antibiotika, hormoner Microplastics



<http://voices.nationalgeographic.com/2016/04/04/pesky-plastic-the-true-harm-of-microplastics-in-the-oceans/>

Tungmetaller

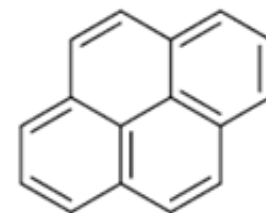


Zn, Cu, Ni, Cd, Pb, Hg, Cr

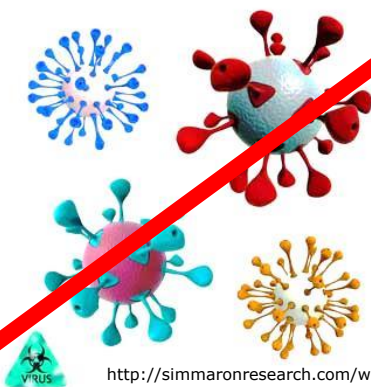
https://uk.ilovesciencestore.com/heavy-metals-mens-tshirt.html?__store=uk_store

Organiske forbindelser

- PAH (polycyclic aromatic hydrocarbons)
- PCB (polychlorinated biphenyls)
- AOX (sum of organohalogenous compounds)
- LAS (linear alkylbenzenesulphonates)



Patogener – bakterier og virus



<http://simmaronresearch.com/wp-content/uploads/2016/05/viruses-colorful.jpg>

Antibiotika, hormoner Microplastics



<http://voices.nationalgeographic.com/2016/04/04/pesky-plastic-the-true-harm-of-microplastics-in-the-oceans/>

Termisk bioenergi | Brændsler

Brændsler:



Halmpiller og snittet halm



Tørret spildevandsslam



Halm- & slampiller (10%)



Gyllefibre (fra svin eller fjerkræ)
Fra både før og efter anaerob udrådning

Systemet



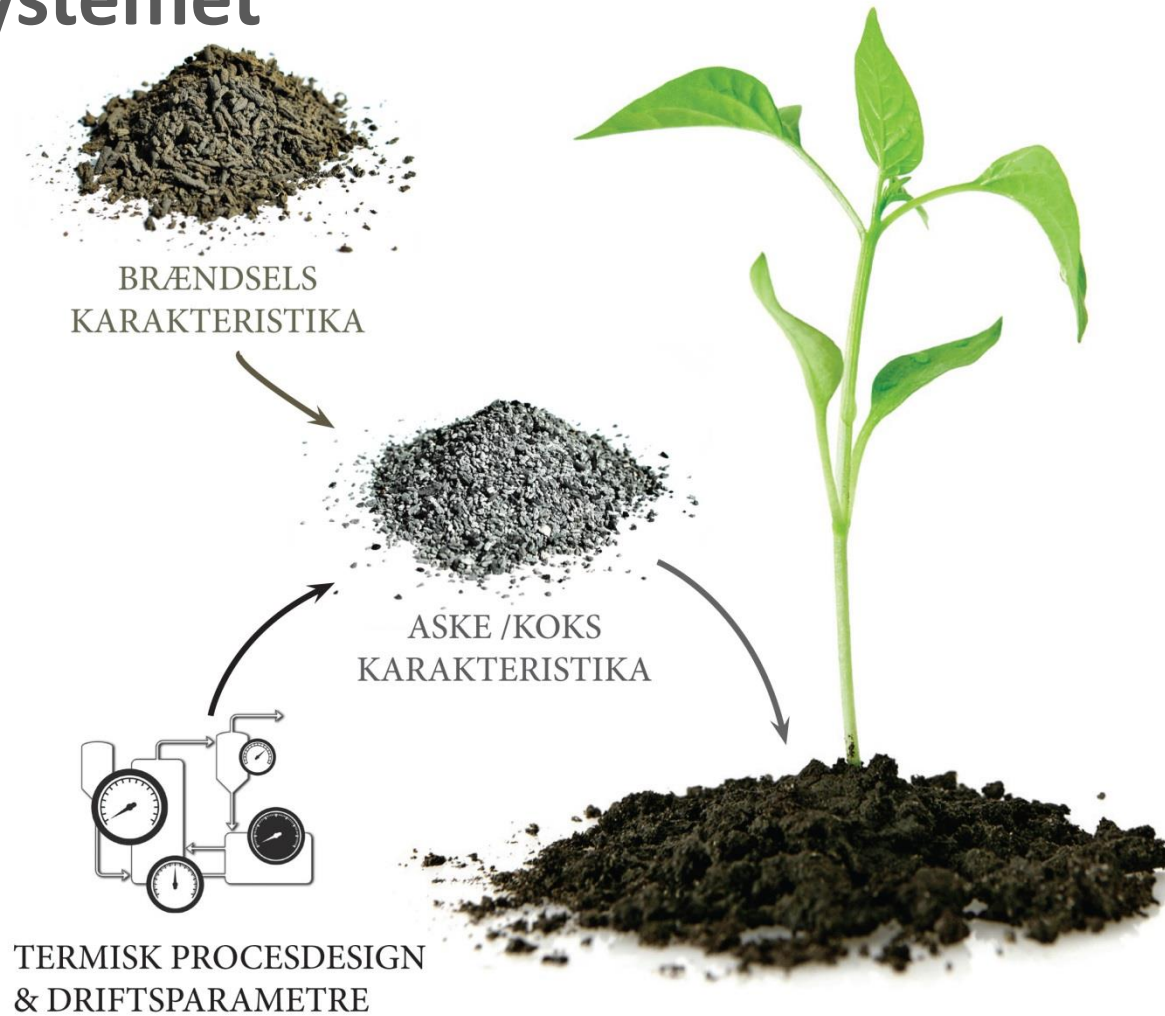
Systemet



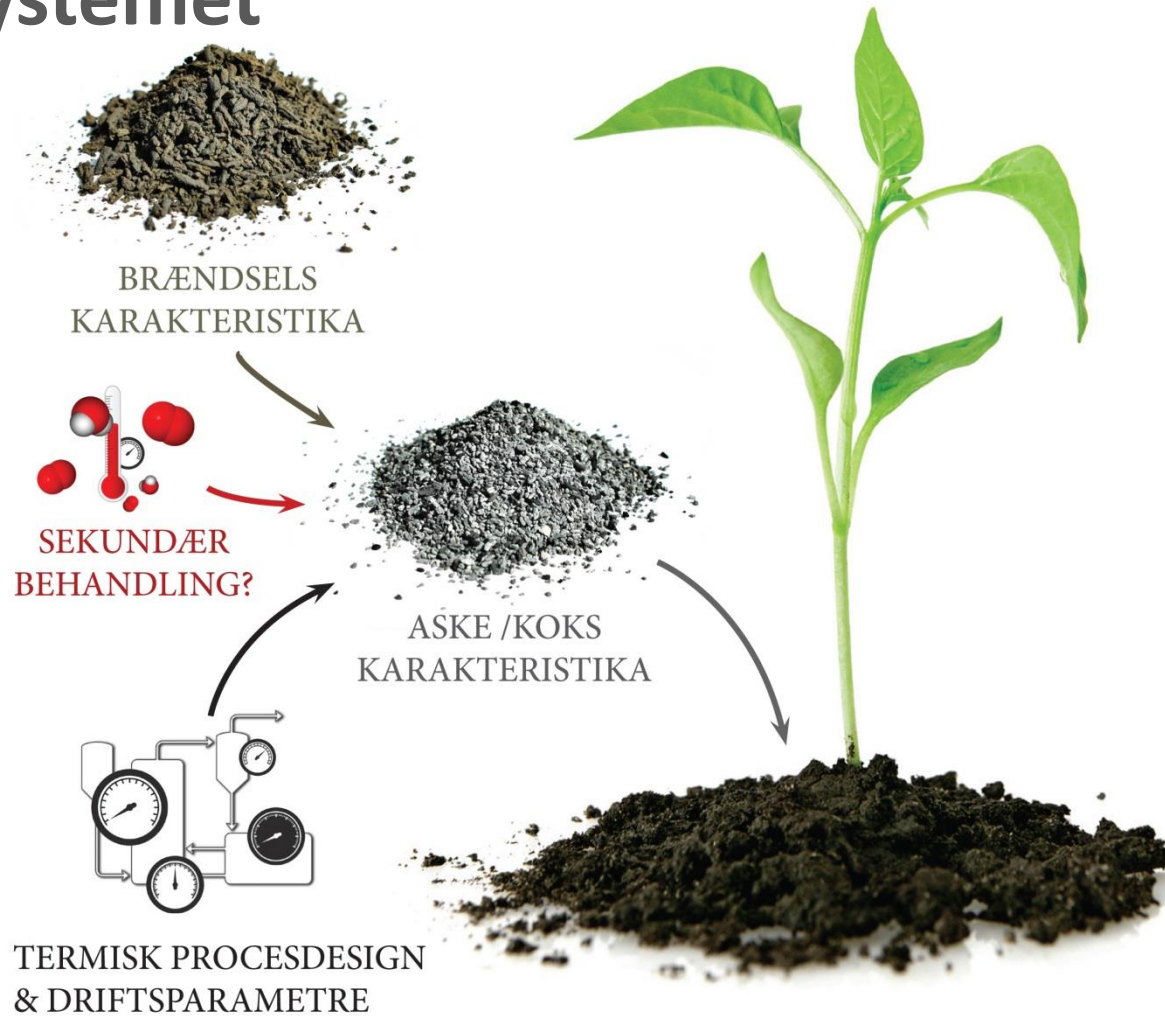
Systemet



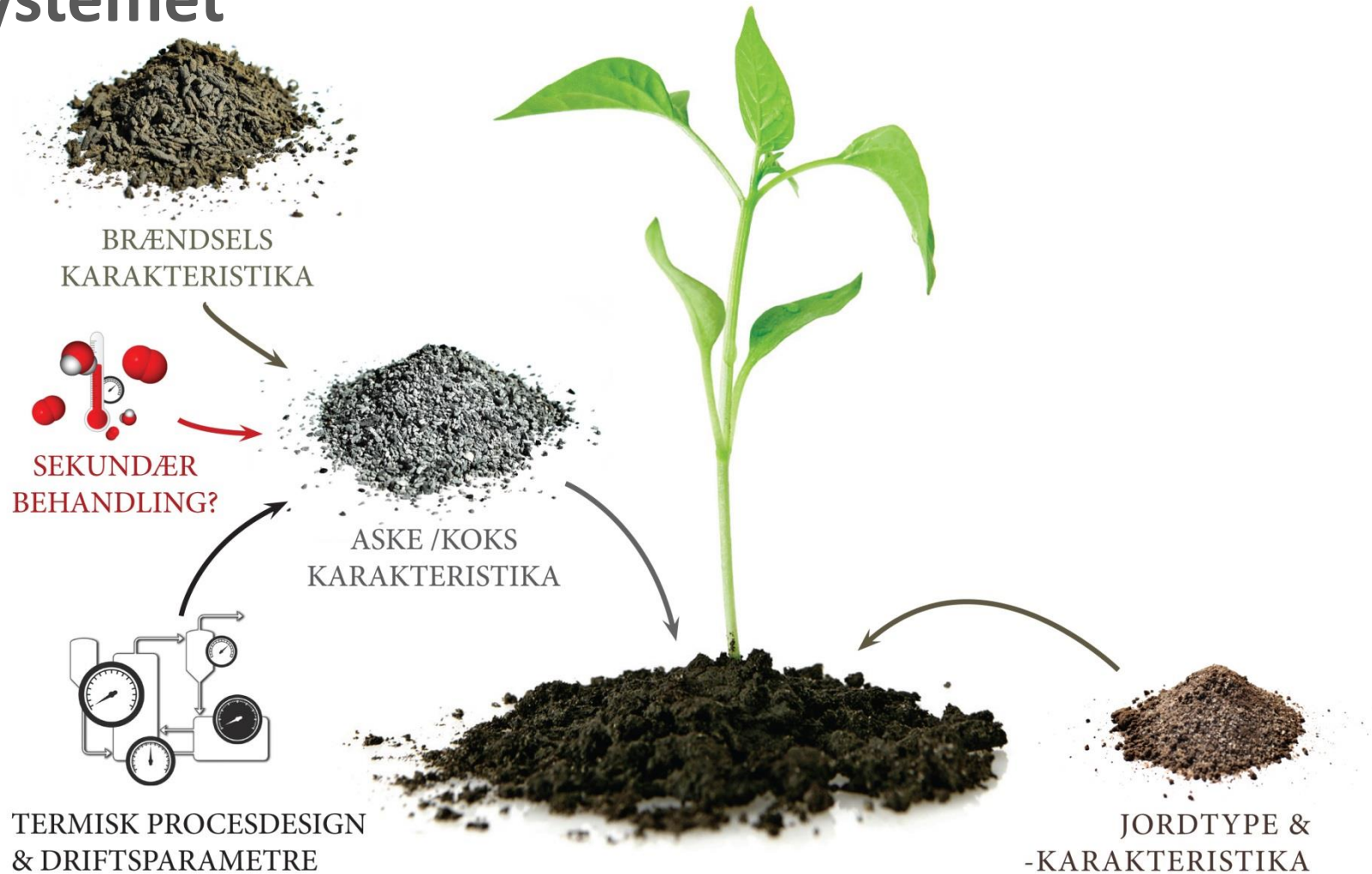
Systemet



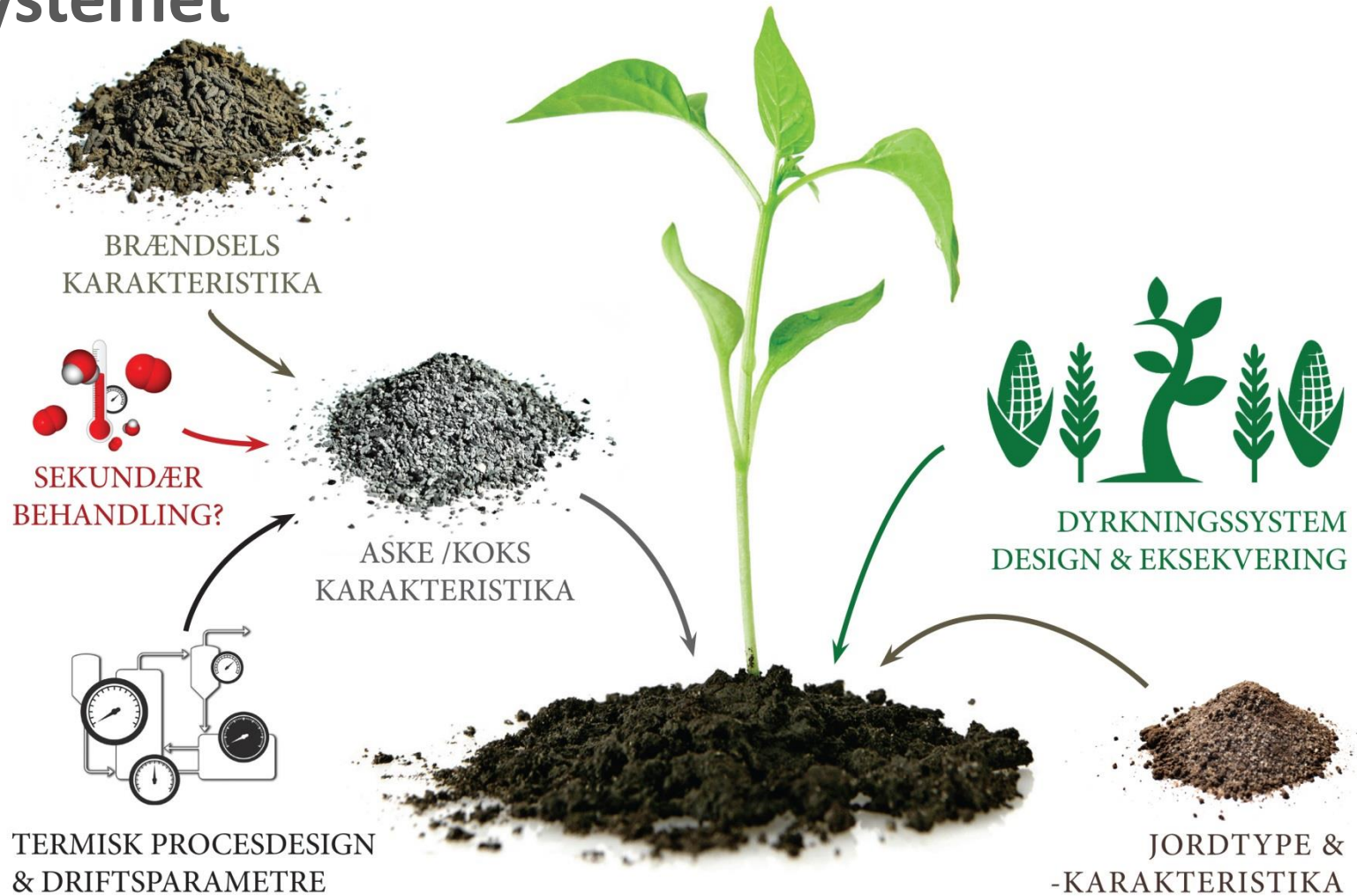
Systemet



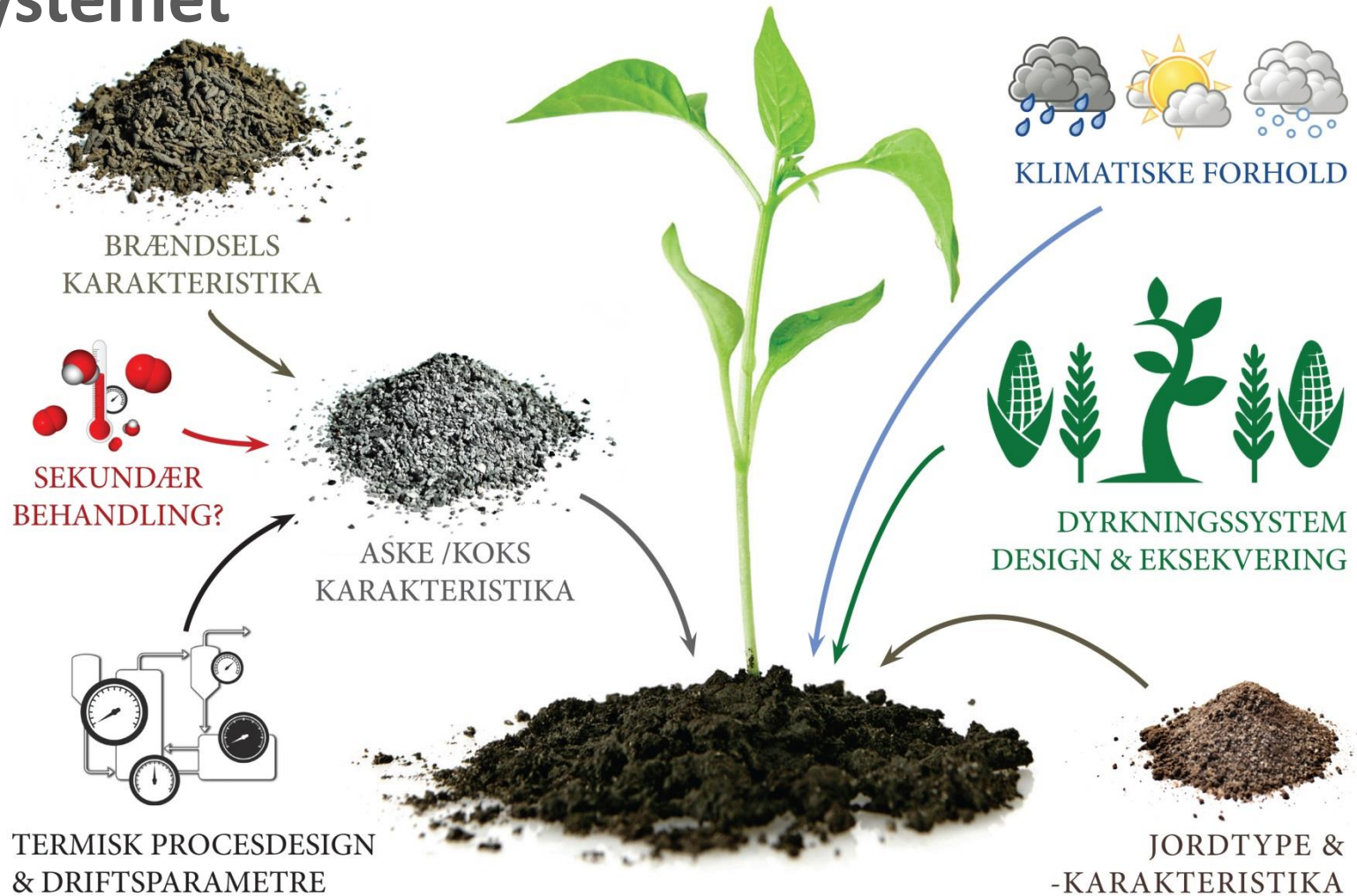
Systemet



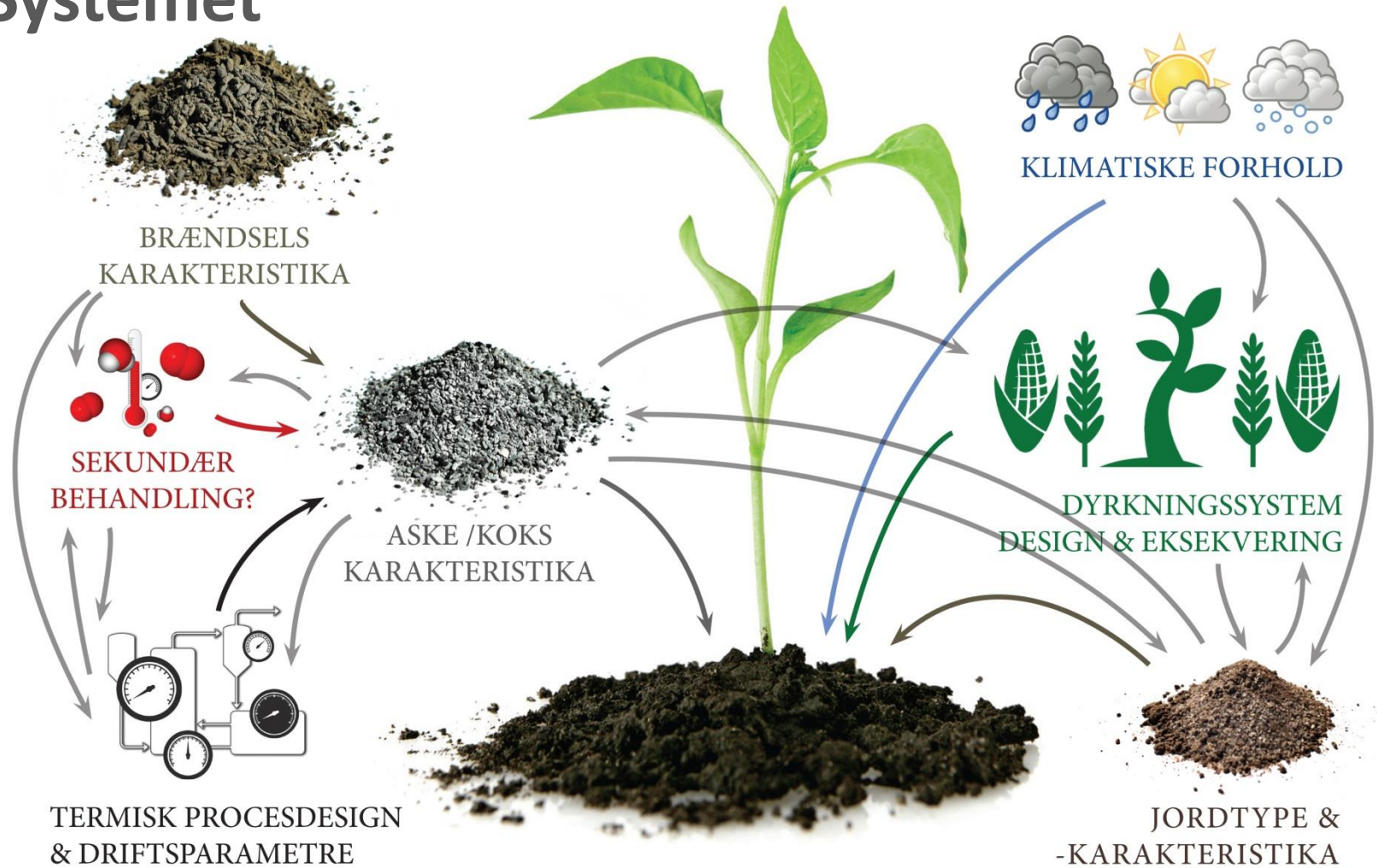
Systemet



Systemet



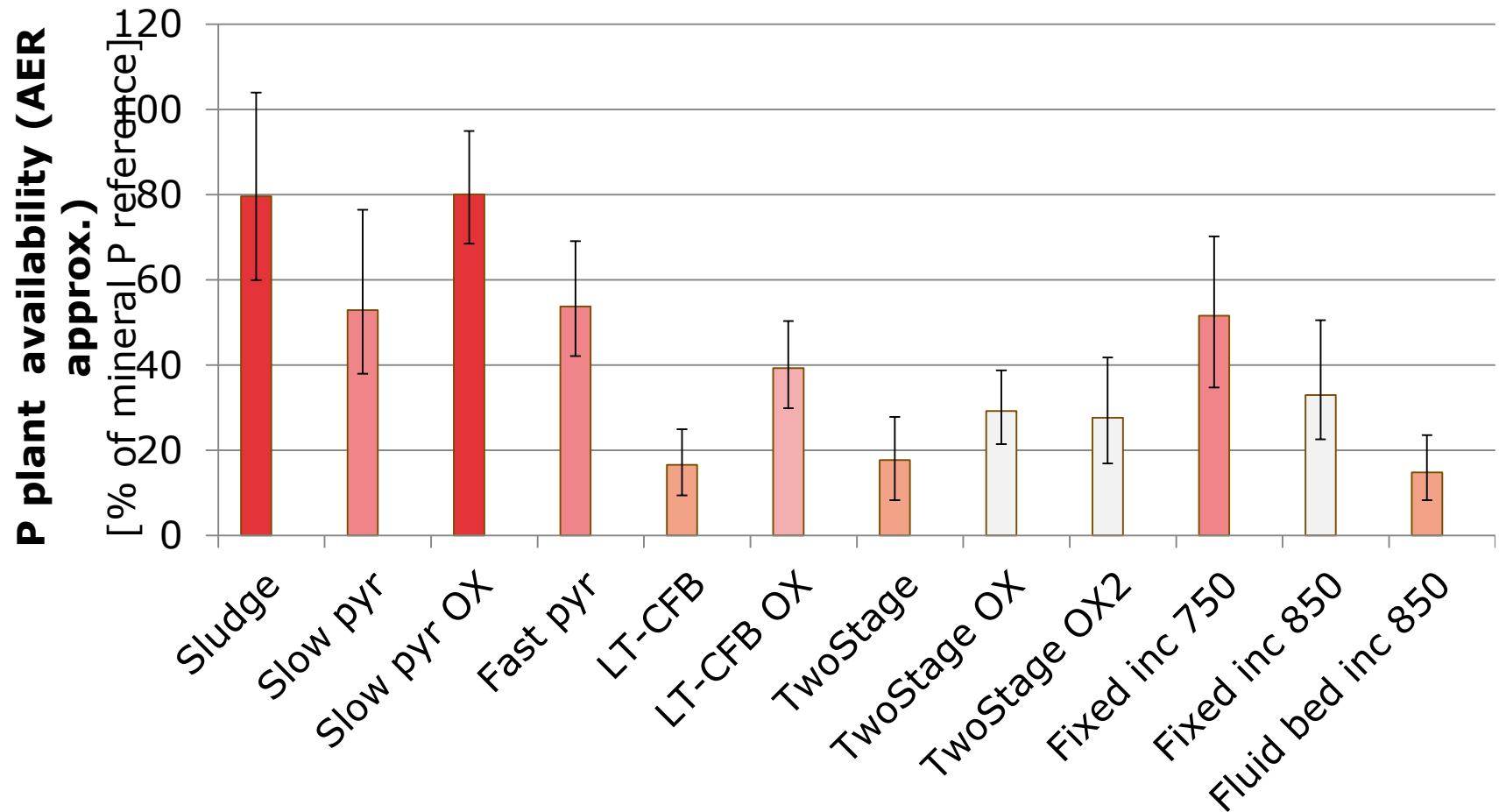
Systemet



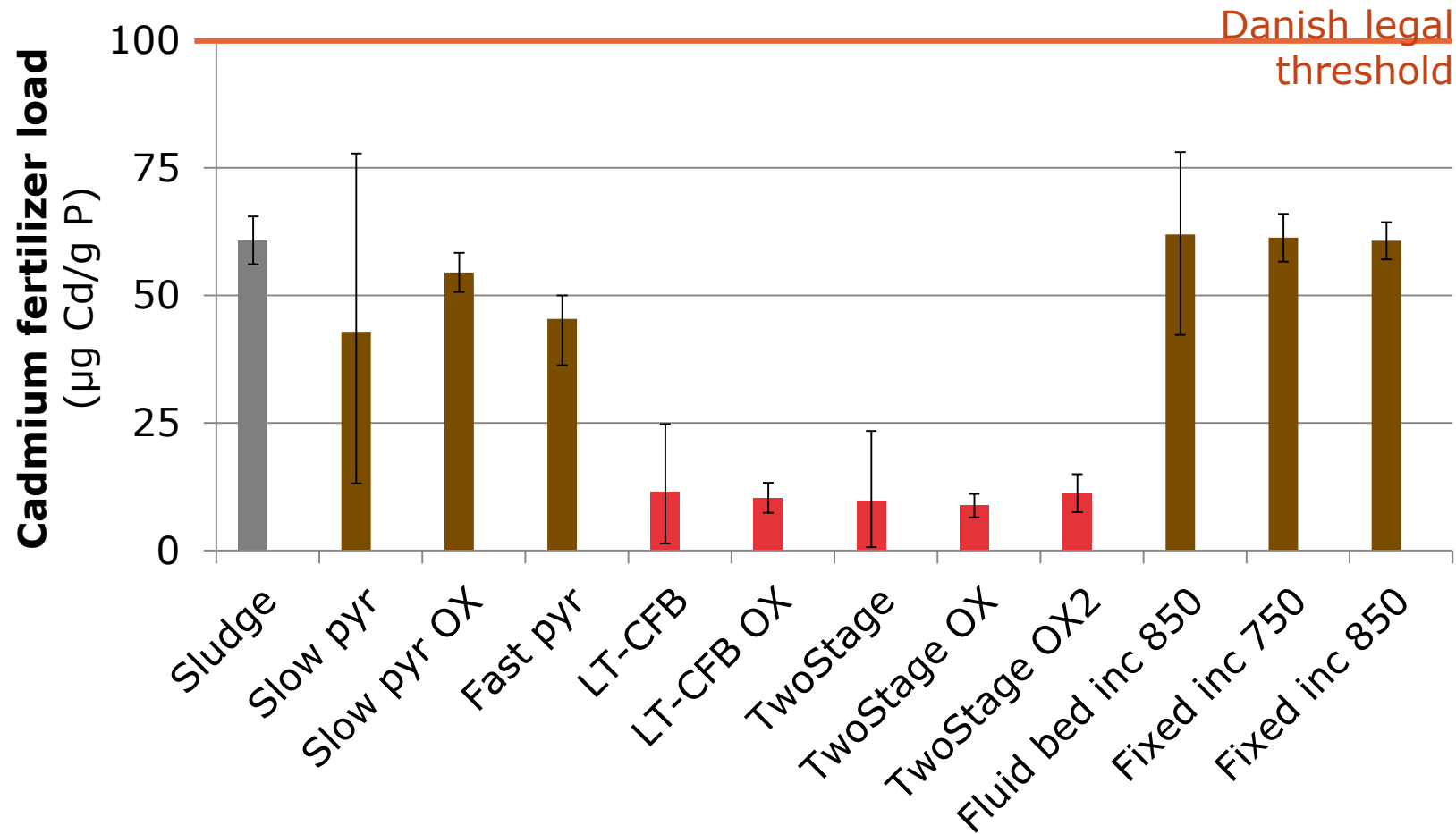
Askeundersøgelser



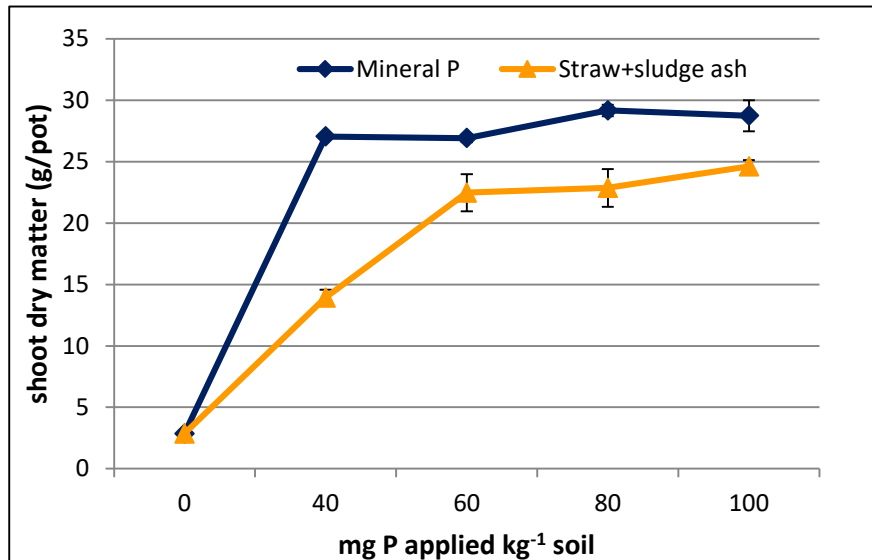
Resultat eksempel **Tech. indflydelse på aske P**



Resultat eksempel **Tech. indflydelse på aske Cd**



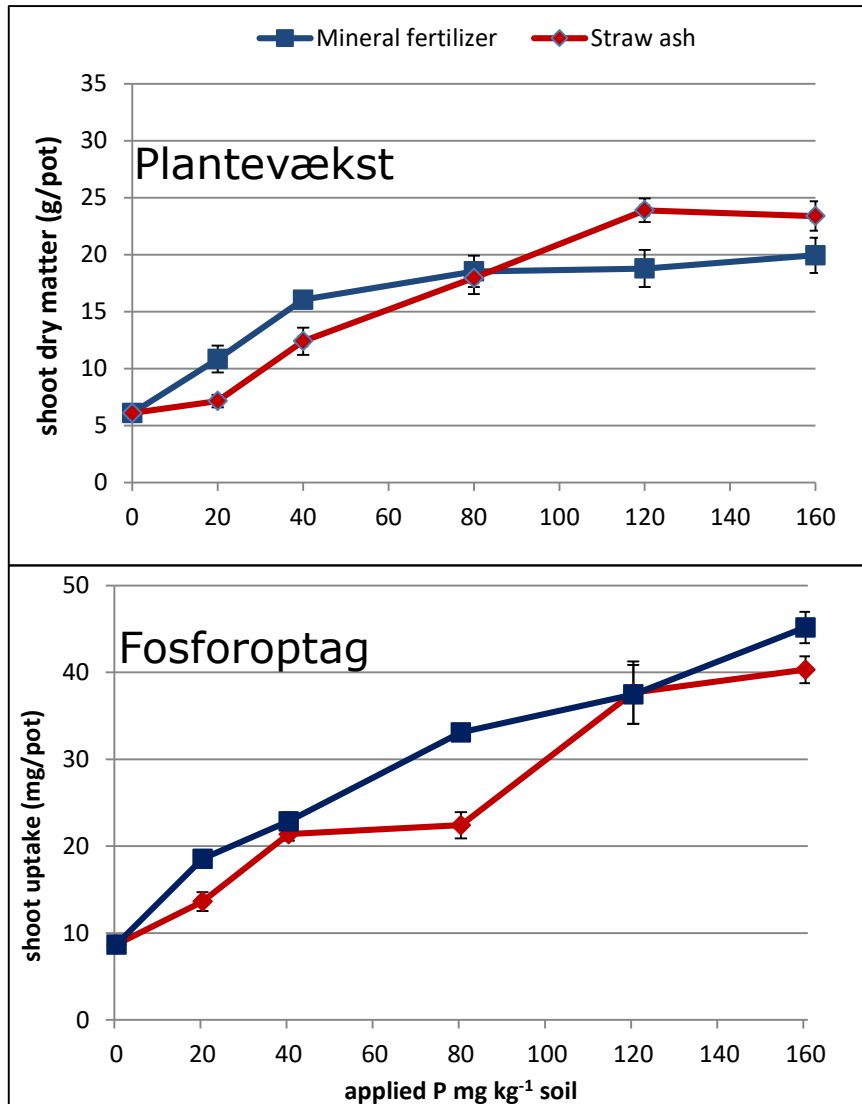
Bio-aske | Gødningseffekt af fosfor fra halm-slam



Barley plant response to increasing amounts of sludge/straw gasification ash (40, 60, 80, and 100 mg P kg⁻¹ soil)

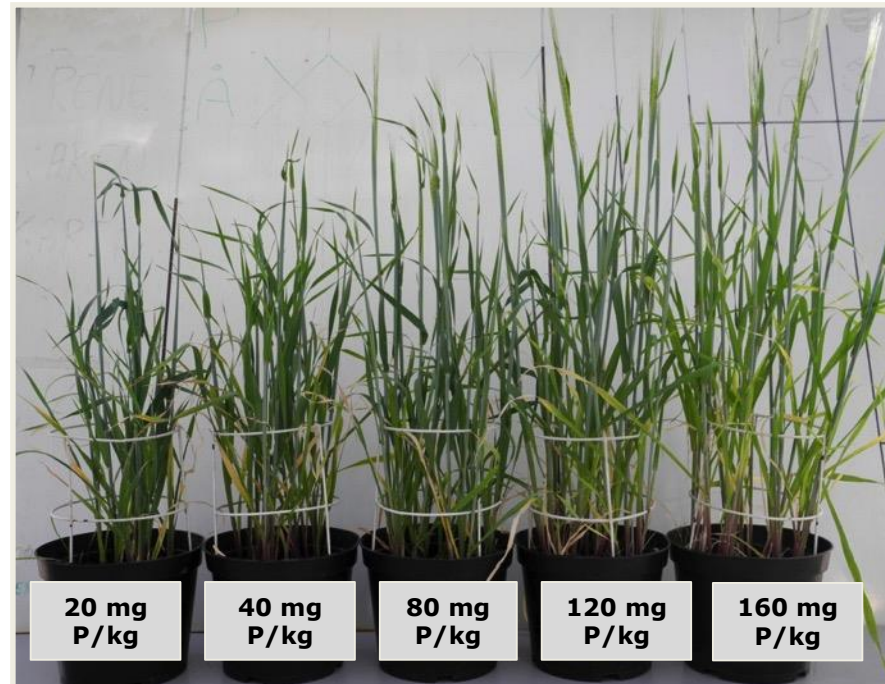


Bio-aske | Gødningseffekt af fosfor fra bio-aske (halm)



Vækst for byg
gødet med 80
mg P kg⁻¹ jord:
Bio-aske fra
halm (højre) og
KH₂PO₄
(venstre)

Bio-aske | Gødningseffekt af fosfor fra bio-aske (halm)



Planterespons for byg gødet med øget mængde af bio-aske fra halm



Bio-aske | Markforsøg på Bregentved





Bio-aske | Markforsøg på Bregentved





Bio-aske | Markforsøg på Bregentved



Bio-aske | Markforsøg på Bregentved

Perspektiver:

- Udnyttelse af energiresourcen
- Produktion af ensartet, lugtfri, lagerstabilt, koncentreret og transportabelt gødningsprodukt
- Mulighed for omfordeling af næringsstoffer
- Potentiel anvendelse som gødning i økologisk landbrug

Udvalgte samarbejdspartnere



Tak for opmærksomheden!



Biomass Gasification Group

