



The
University
Of
Sheffield.

P³

Plant production
and protection

Prof. Duncan Cameron, Co-director
P³ (Plant, Production & Protection) centre of
excellence for translational agricultural technologies



University of Sheffield

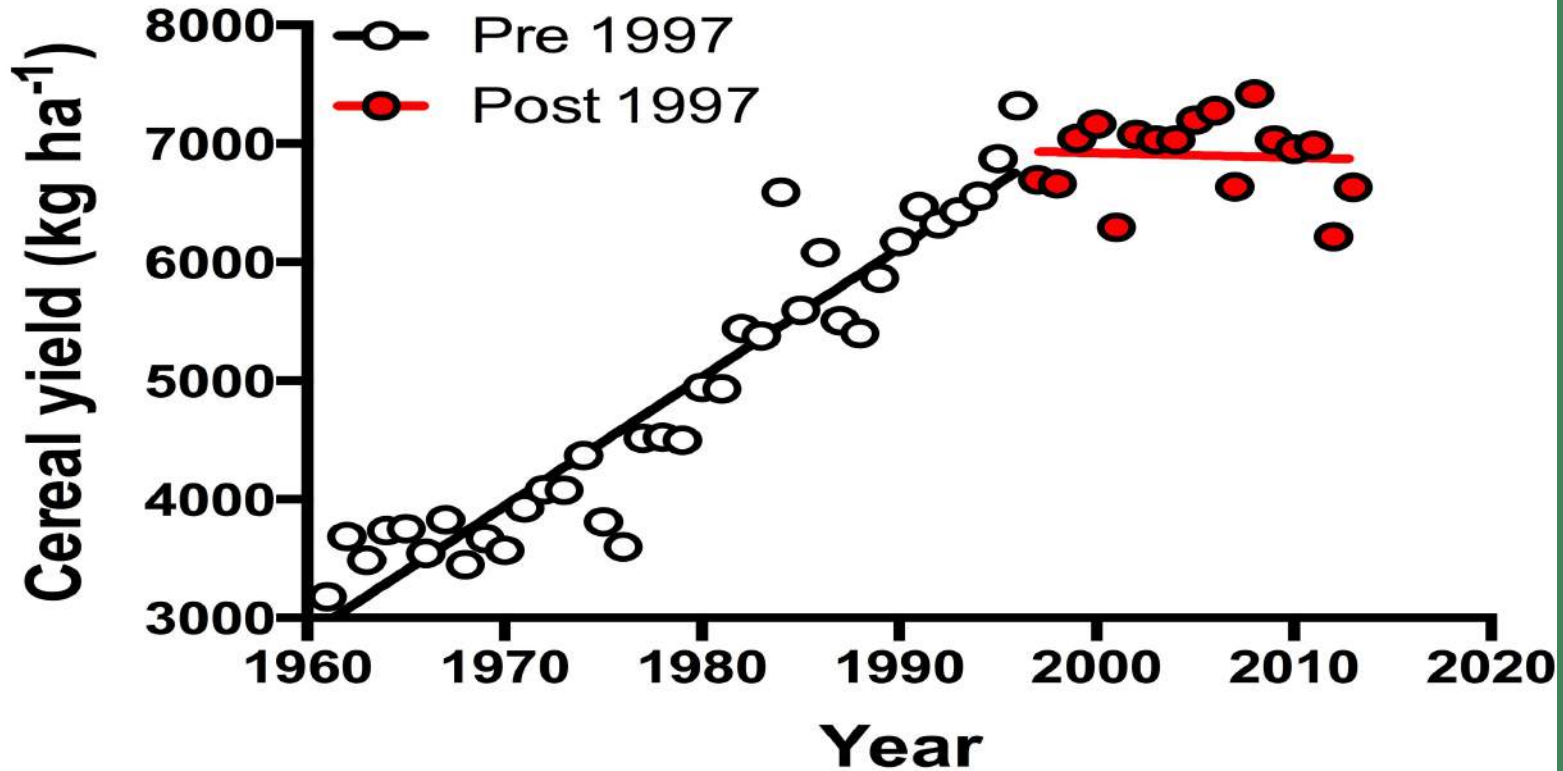


The University
Of
Sheffield.

P3

Plant production
and protection

Is the yield plateau partly a function of soil degradation?





The
University
Of
Sheffield.

P3

Plant production
and protection

Soil loss is an unfolding global disaster

“The Nation that destroys its
soil destroys itself”



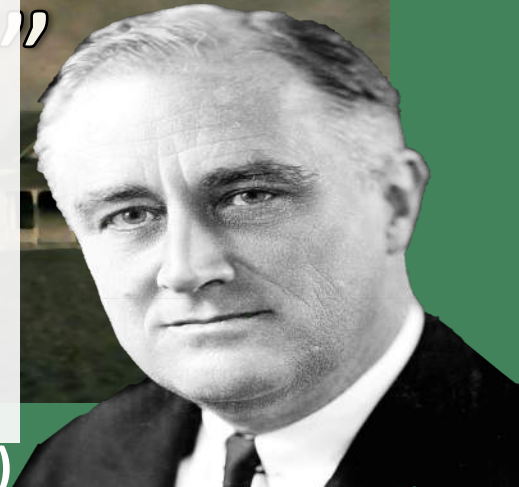
Franklin D. Roosevelt (1937)



Soil loss is an unfolding global disaster

- Nearly 33% of the world's arable land has been lost to erosion or pollution in the last 40 years.
- Erosion rates from ploughed fields averages 10-100 times greater than rates of soil formation.
- Erosion leads to preferential removal of organic matter and clay, removing nutrients and releasing CO₂.
- It takes about 500 years to form 2.5 cm of topsoil under normal agricultural conditions.

"The Nation that destroys its
soil destroys itself"

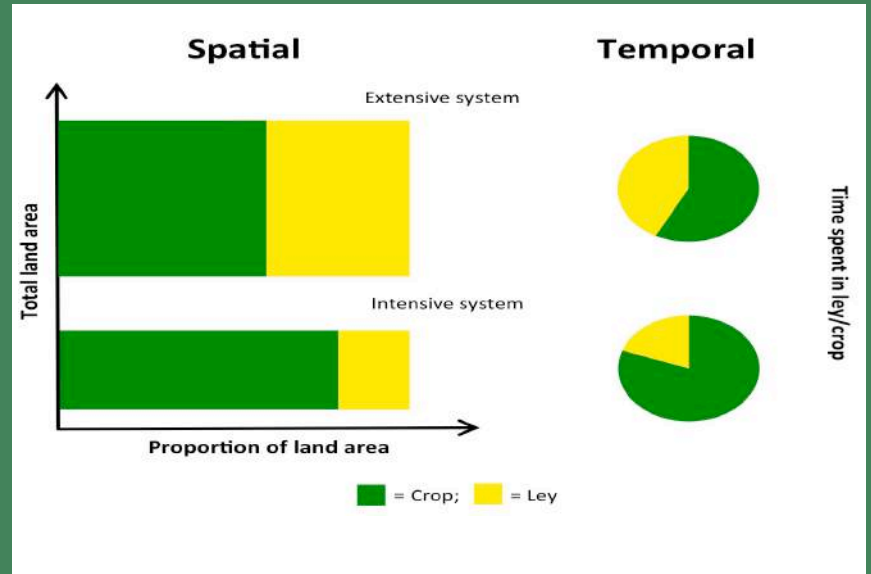
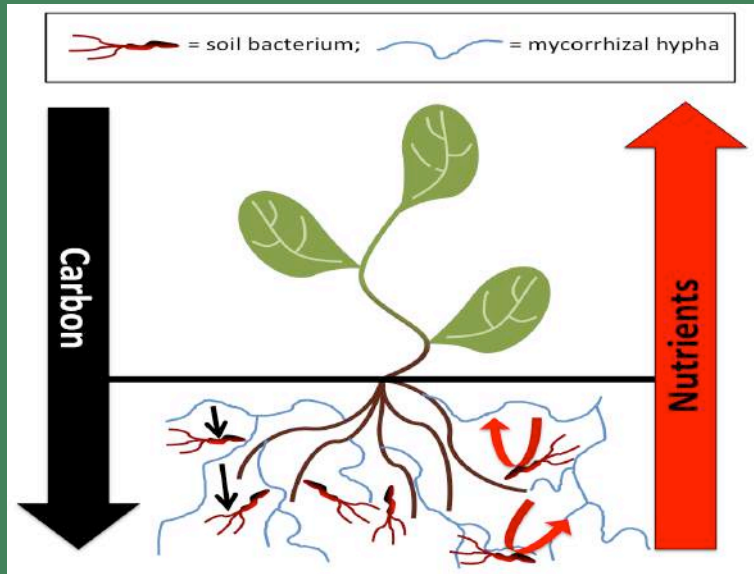


Franklin D. Roosevelt (1937)



Sustainable intensification –vs– extensification

- Intensive cultivation degrades soil C and microbes
- Leads to increased requirements for fertiliser and pesticides to maintain current yields
- Many crops have reduced genetic ability to interact with soil microbes due to breeding
- Soils can be restored by long-term rotation and fallow periods
- Bringing managed pasture into production (integrating dairy and crop production)
- Further enhanced by crops that interact with soil microbes and that add C to soils (GM?)



Sustainable intensification –vs.– extensification

- Intensive cultivation degrades soil C and microbes
- Leads to increased requirements for fertiliser and pesticides to maintain current yields
- Many crops have reduced genetic ability to interact with soil microbes due to breeding
- Soils can be restored by long-term rotation and fallow periods
- Bringing managed pasture into production (integrating dairy and crop production)
- Further enhanced by crops that interact with soil microbes and that add C to soils (GM?)

