

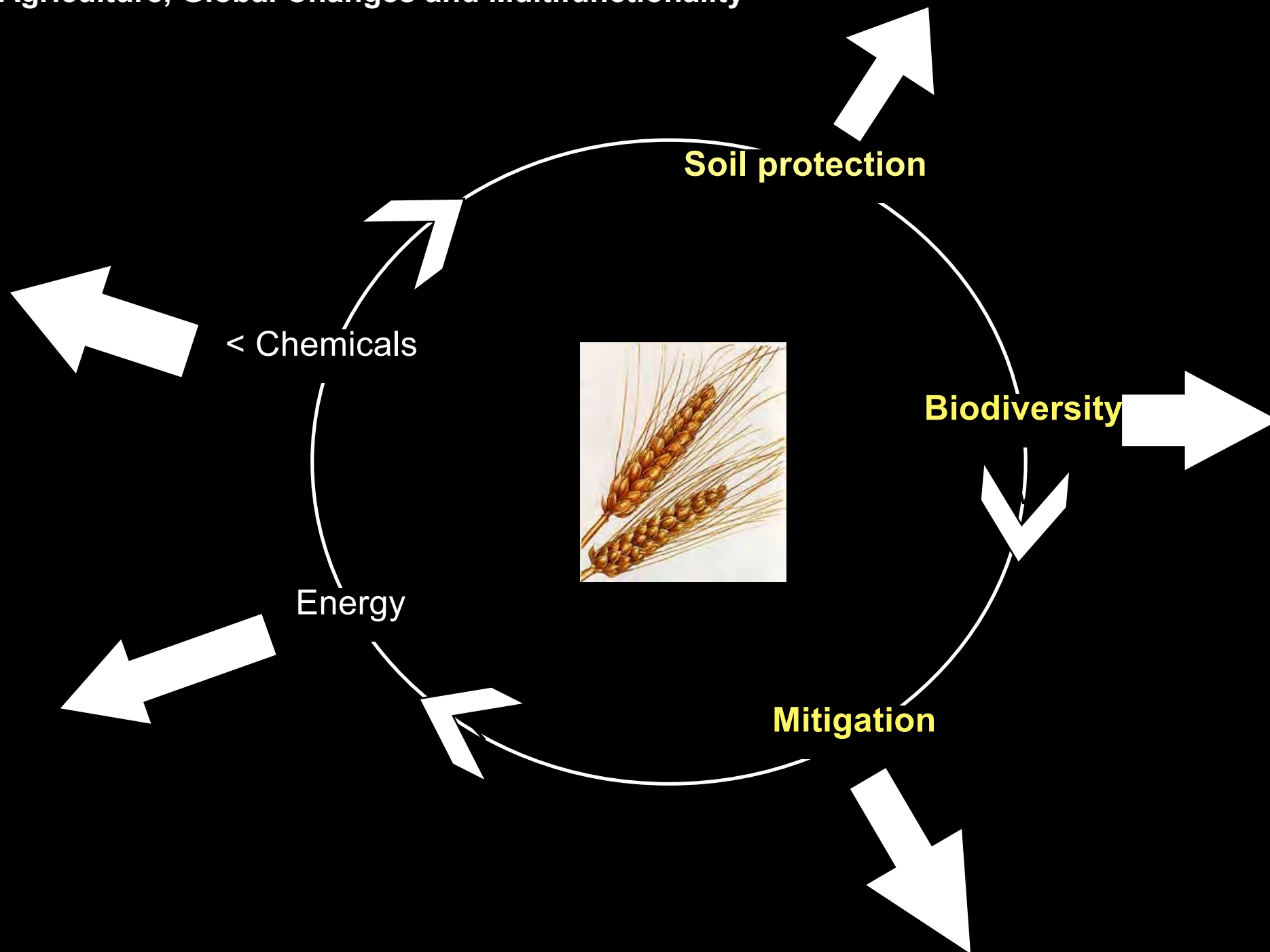


Le interrelazioni tra agricoltura e cambiamenti climatici

Franco Miglietta & co-workers

IBIMET-Cnr, Firenze - I

Agriculture, Global Changes and Multifunctionality

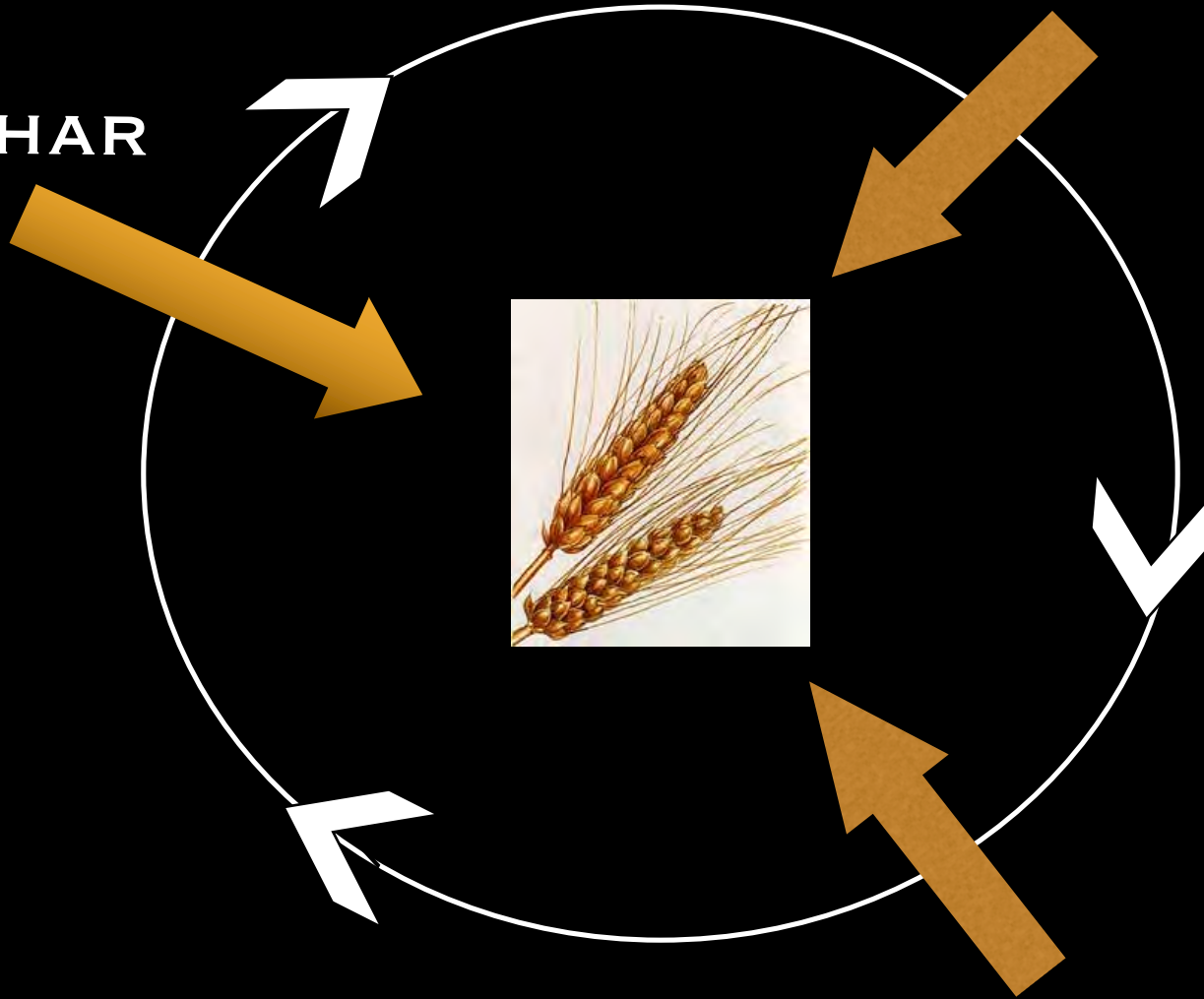


**1. NEW PERENNIAL
GRAIN CROPS**

3. BIOCHAR

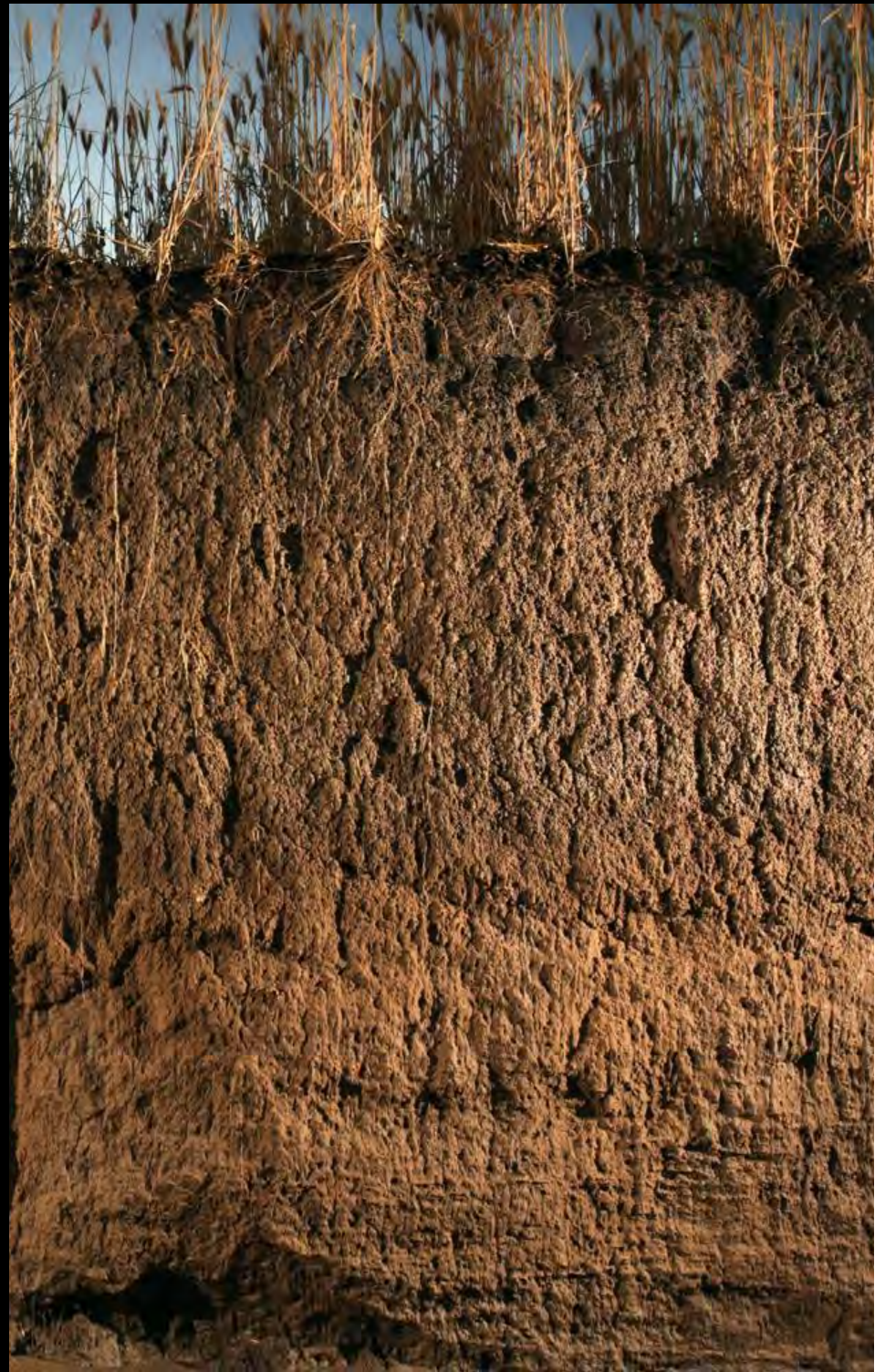


2. ALBEDO MODIFYING CROPS

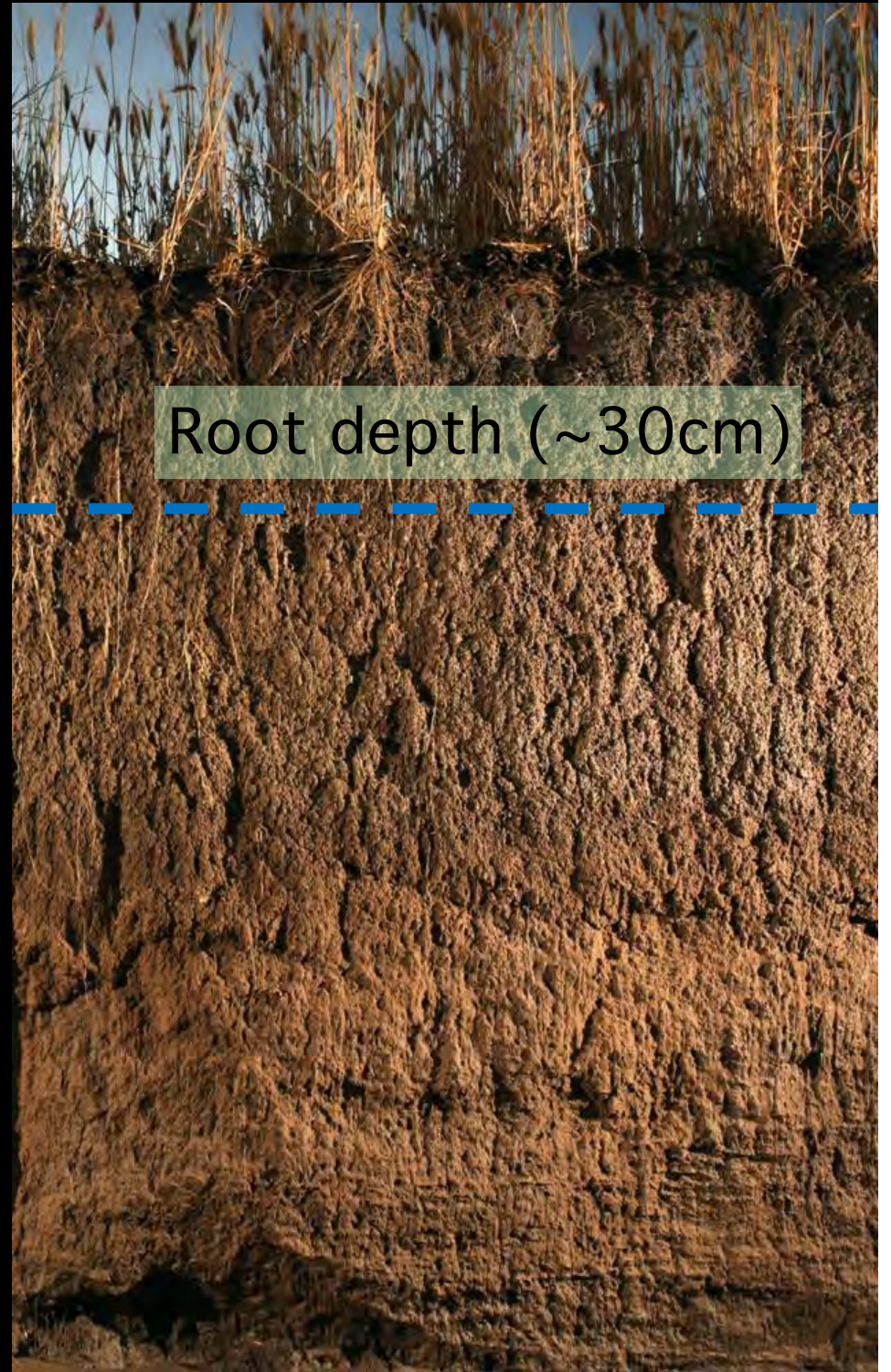




1. PERENNIALISMO

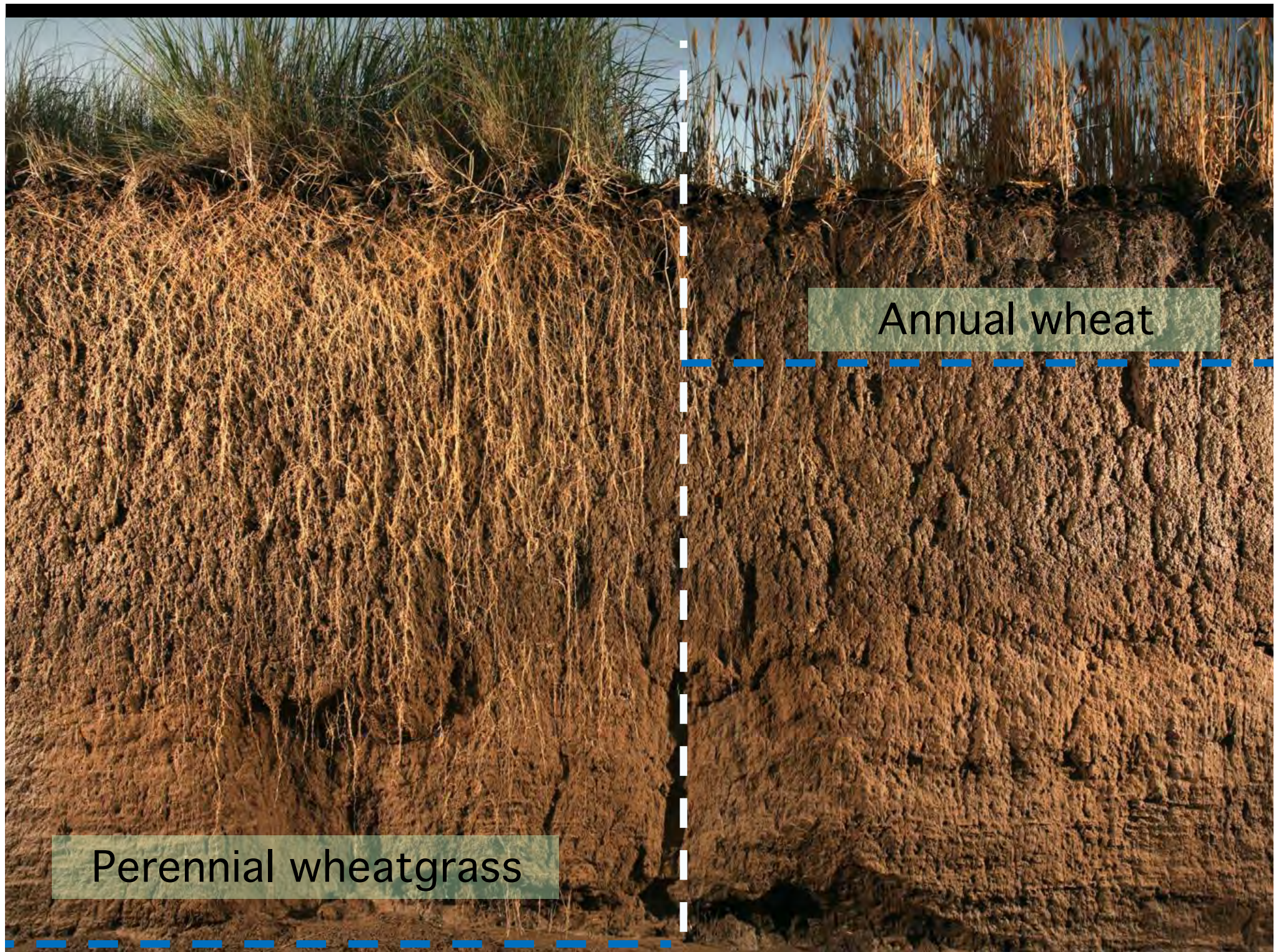


Root depth (~30cm)





- Water
- Nutrients
- Biodiversity
- Carbon



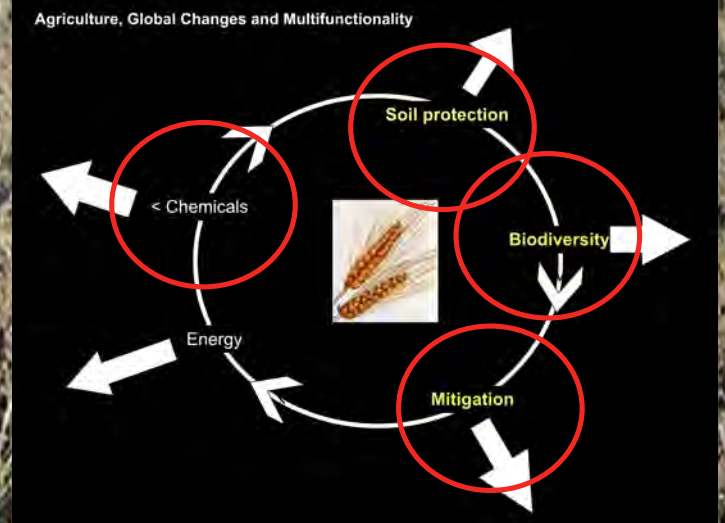
Annual wheat

Perennial wheatgrass

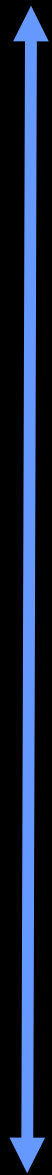
Late fall

Perennial
wheatgrass

Wheat



3 mt



Fall



Annual

Perennial



Winter



Spring



Summer





New Perennial Grains

Winter cereals



Sunflower



Sorghum



Rice



Oilseeds



Maize



Legumes





X



Zea diploperennis

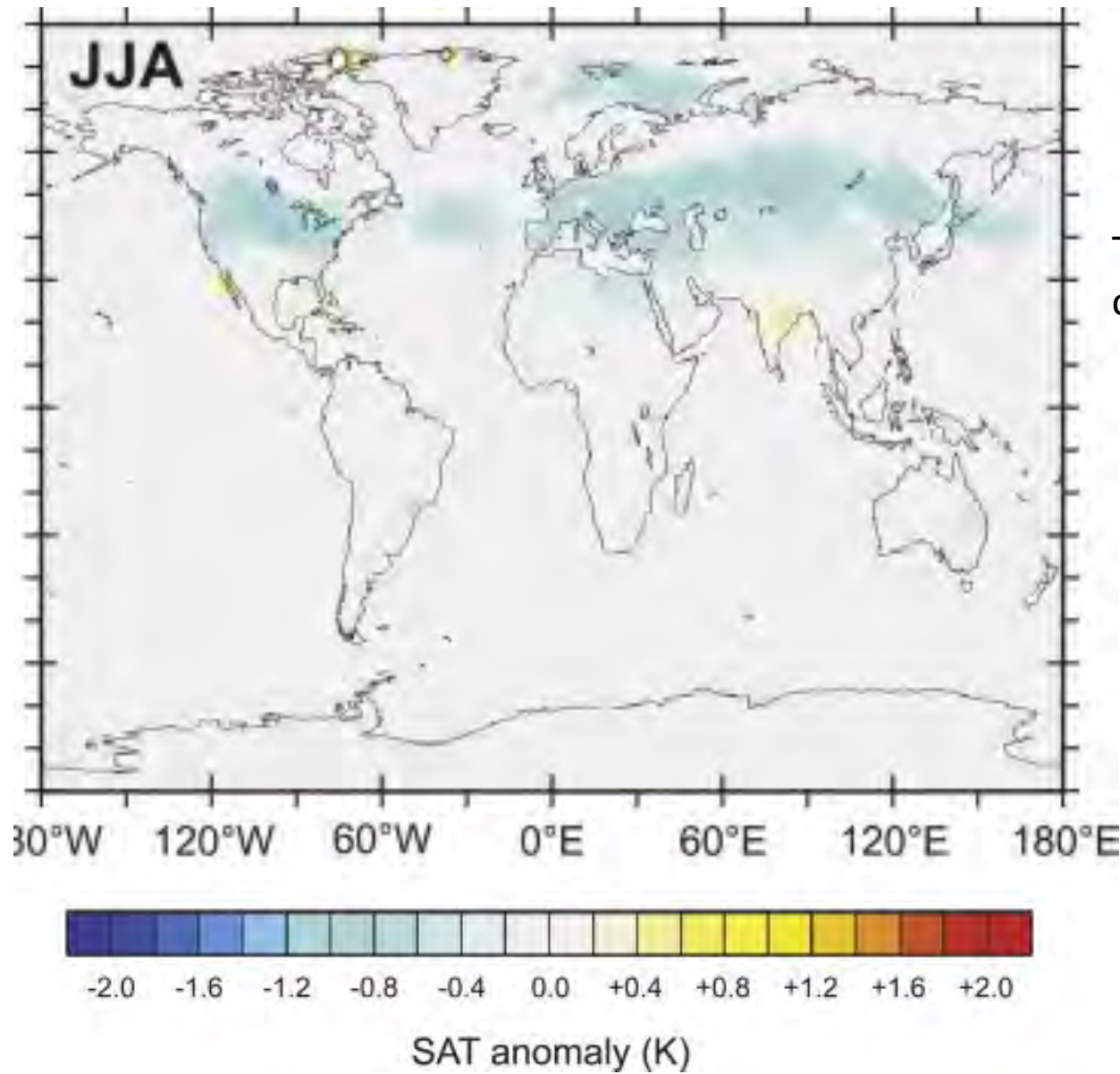
Zea mays





Experimentation in Italy



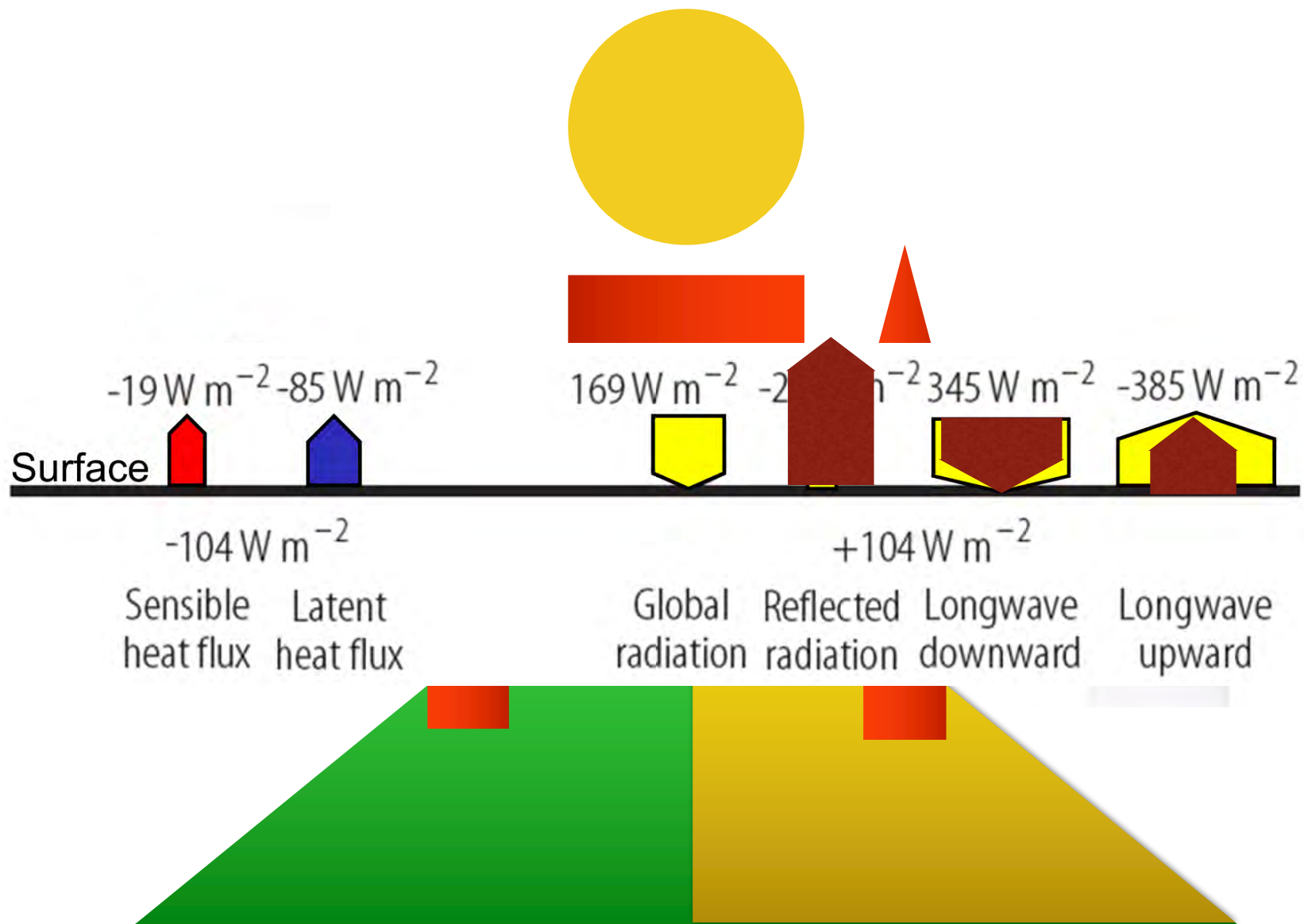


Surface albedo

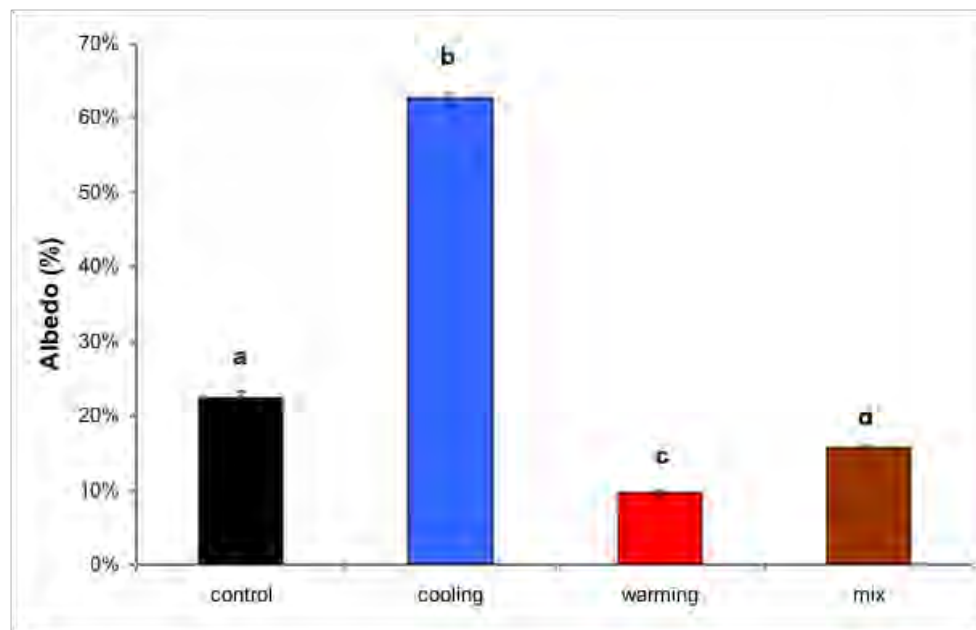
Thermal anomalies attributable to changes of 0.04 in surface albedo

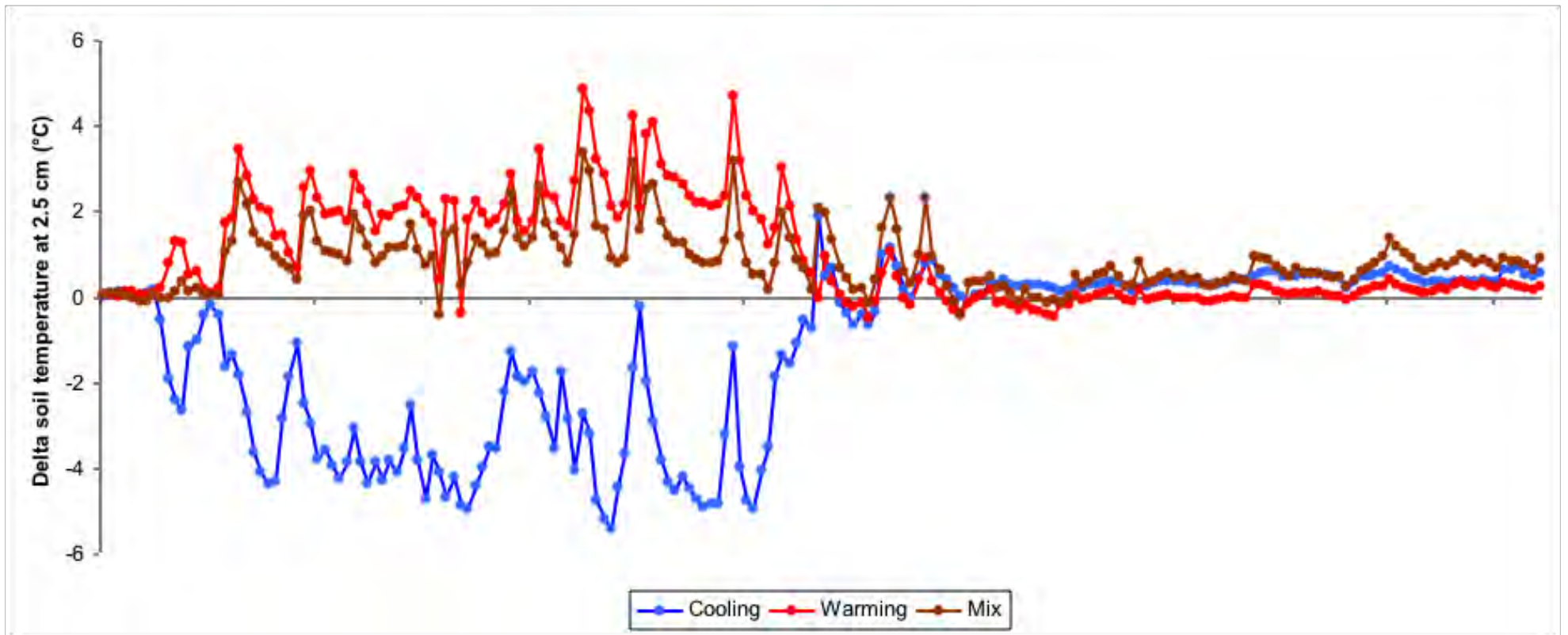
Ridgwell et al., 2009

2. ALBEDO-MODIFYING CROPS



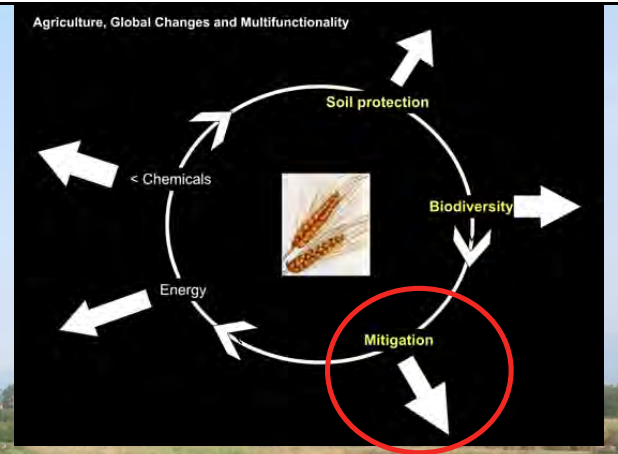
ALBEDO, Reflected radiation



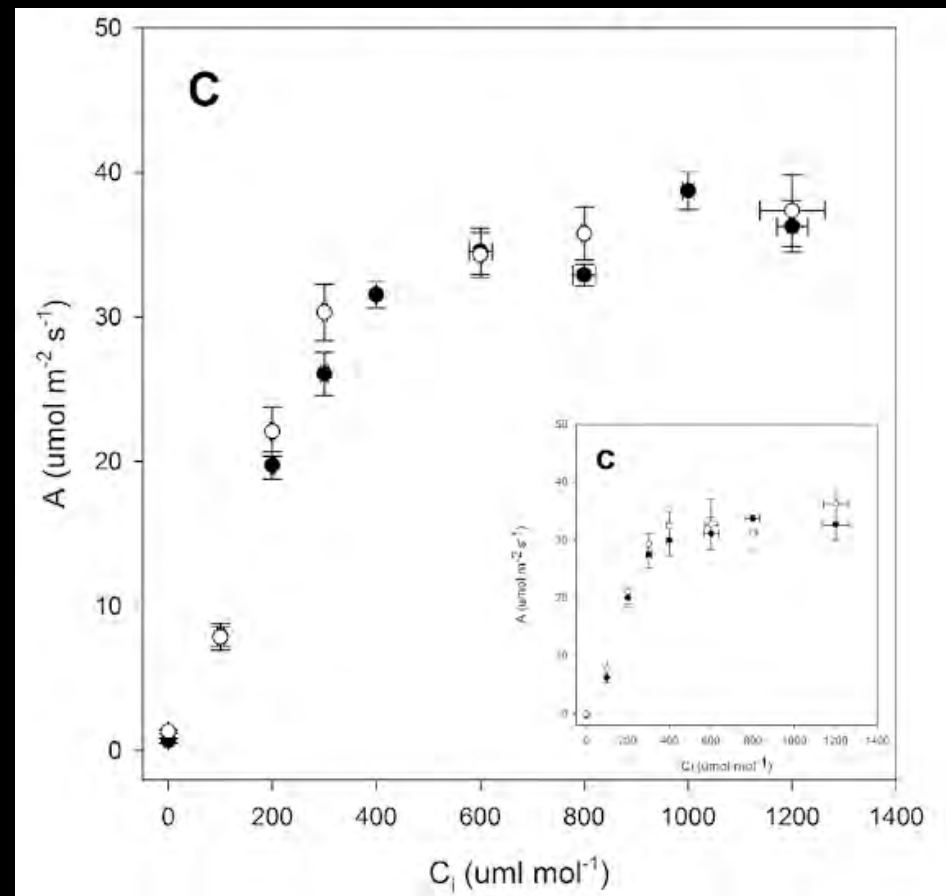
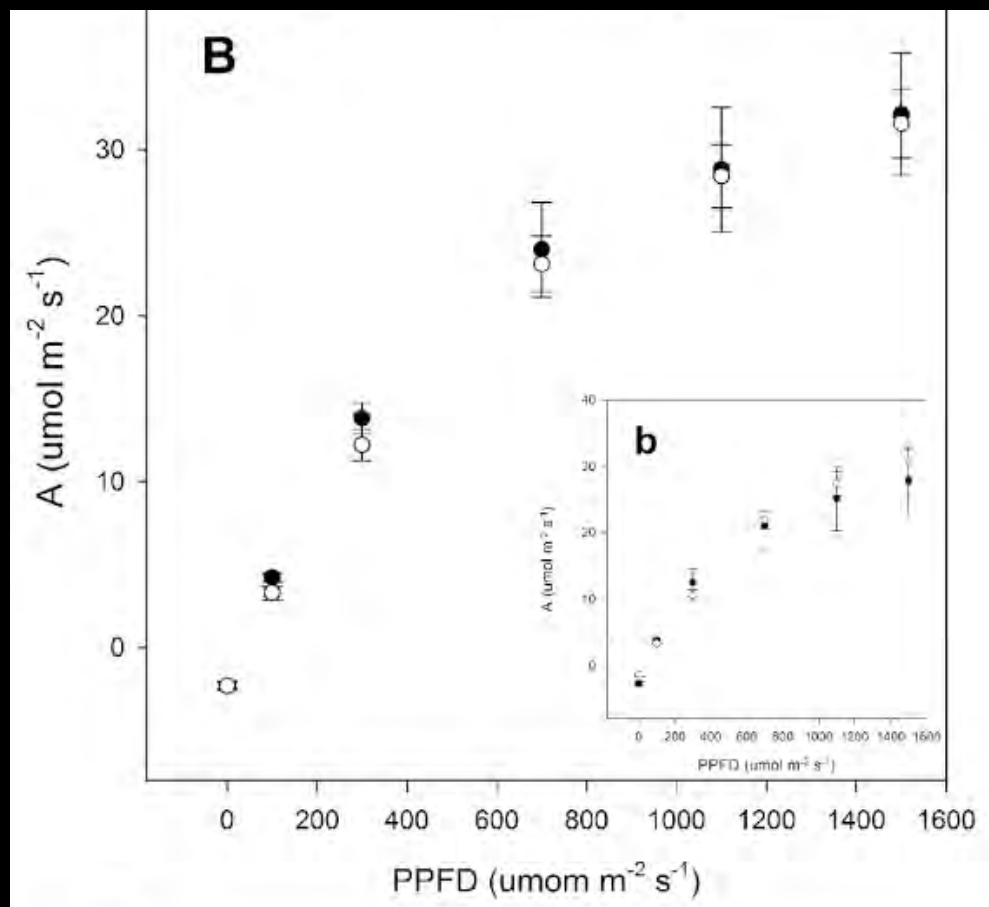


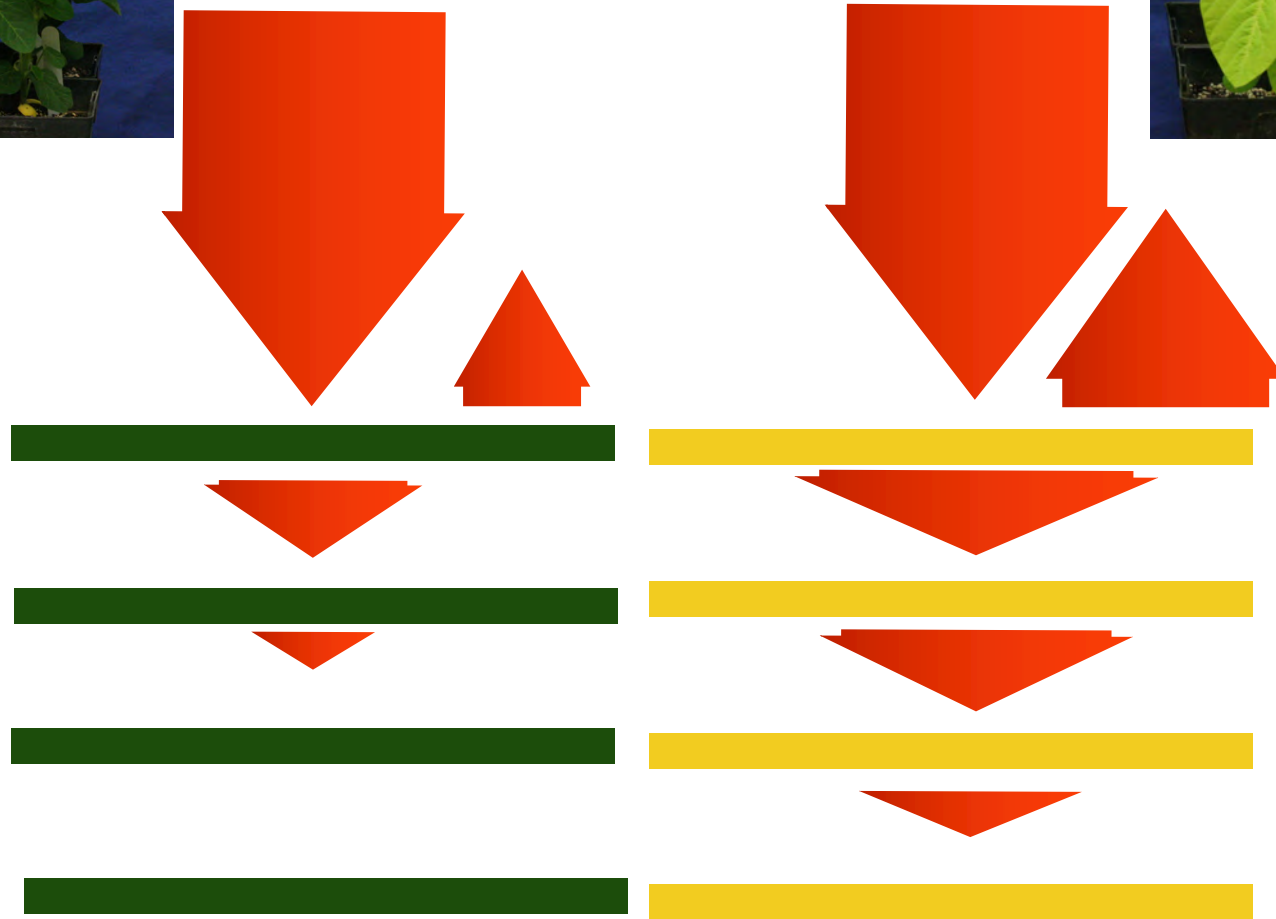
... but can we actually modify the albedo of agricultural land and at what cost for yields?





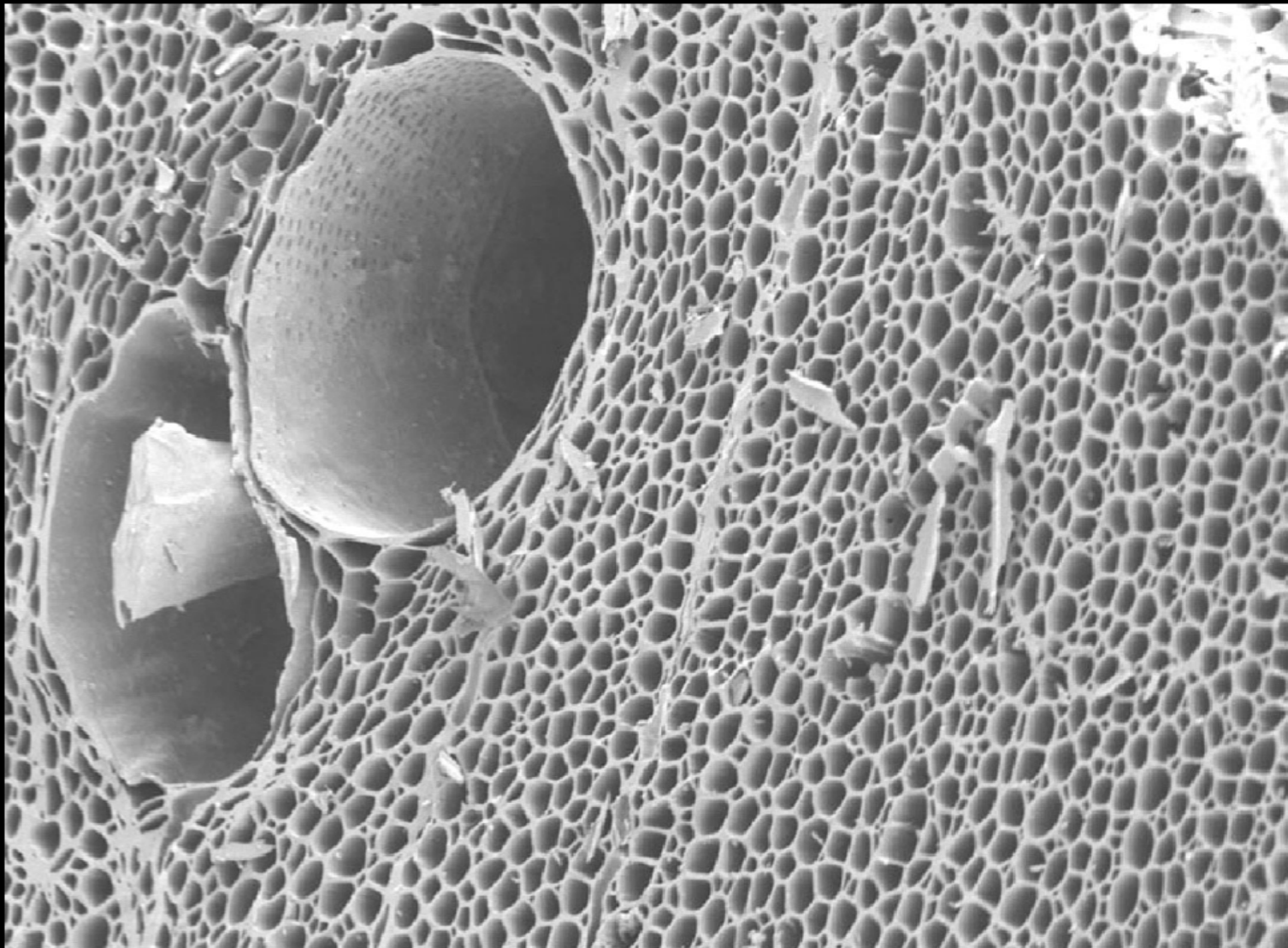






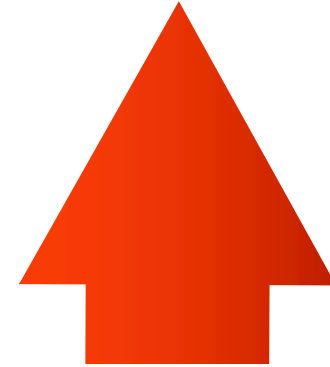
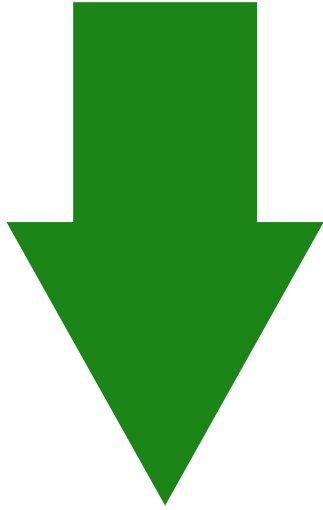
Grain yield

12.2 t/ha **11.4 t/ha**

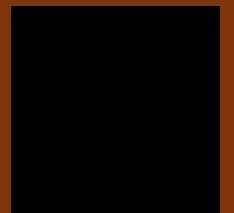
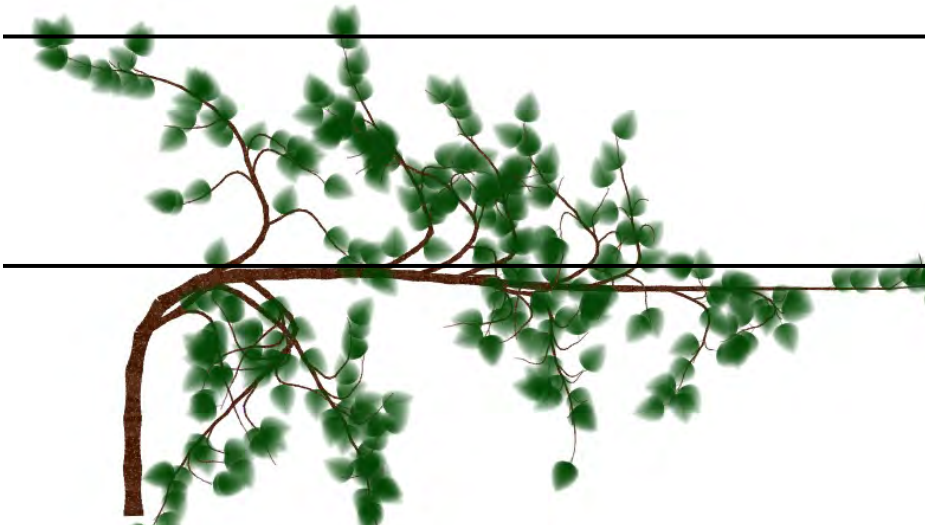


3. BIOCHAR

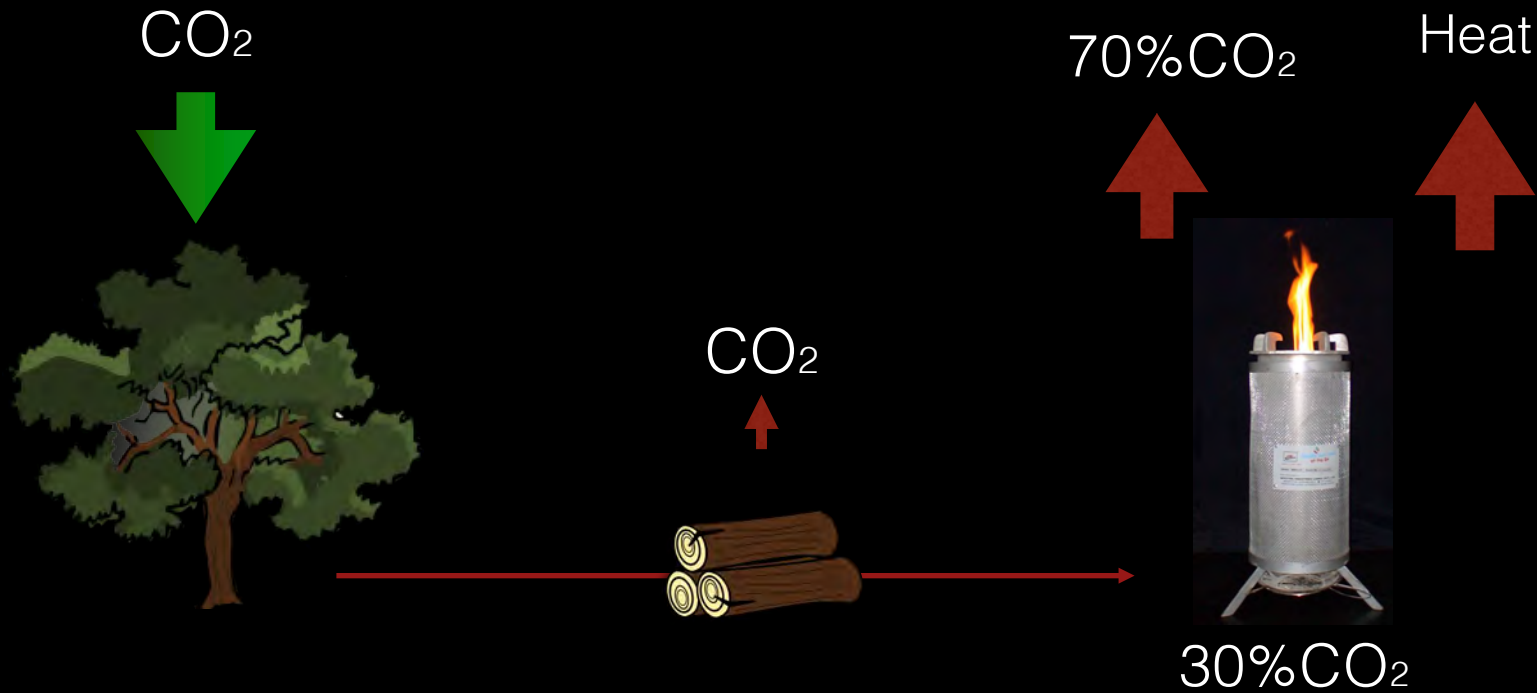
CO₂



CO₂



Pyrogassification: CO₂ - Negative



30%CO₂



Biochar

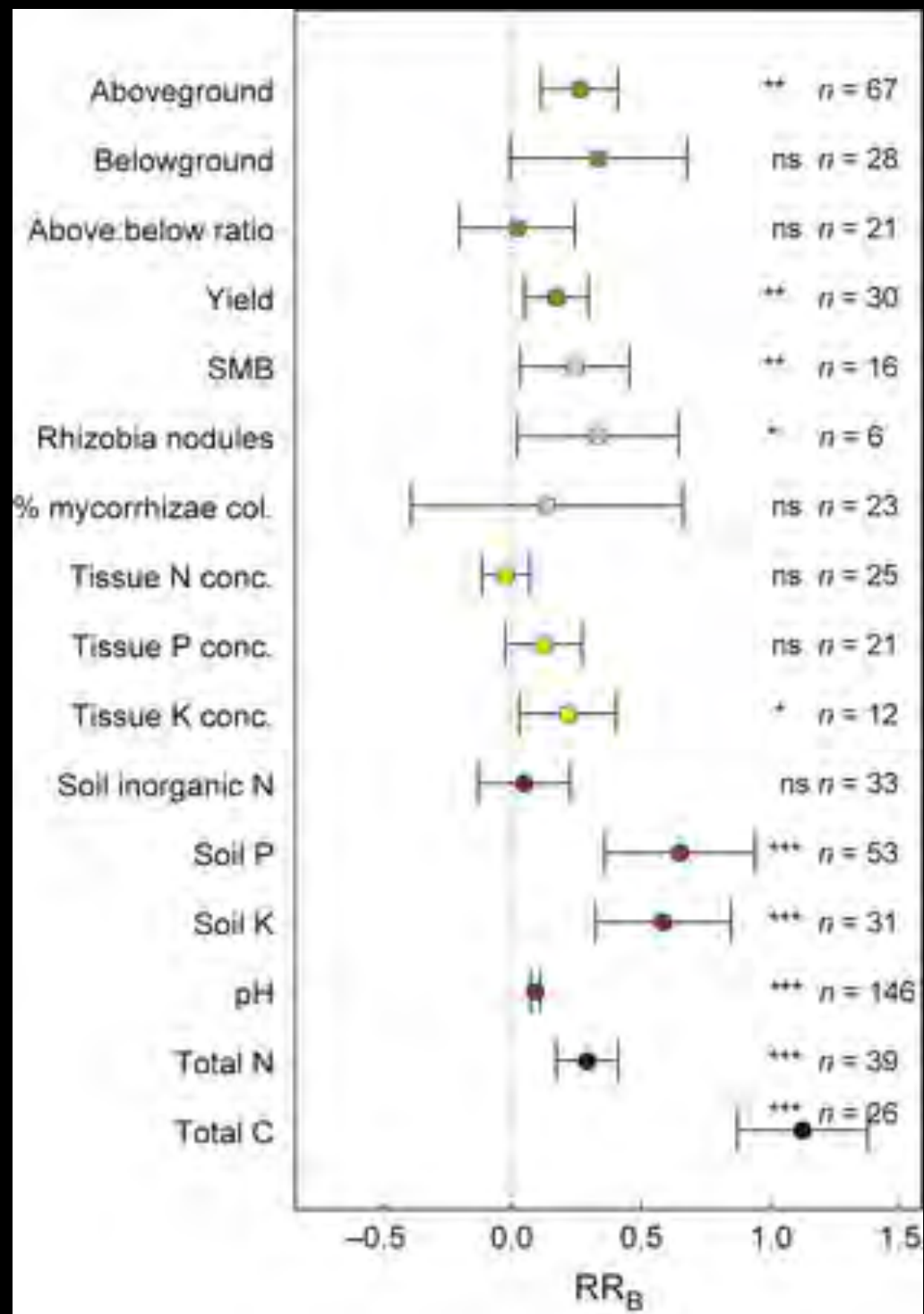


The feasibility and costs of biochar deployment in the UK

Carbon Management (2011) (UK) 150-160

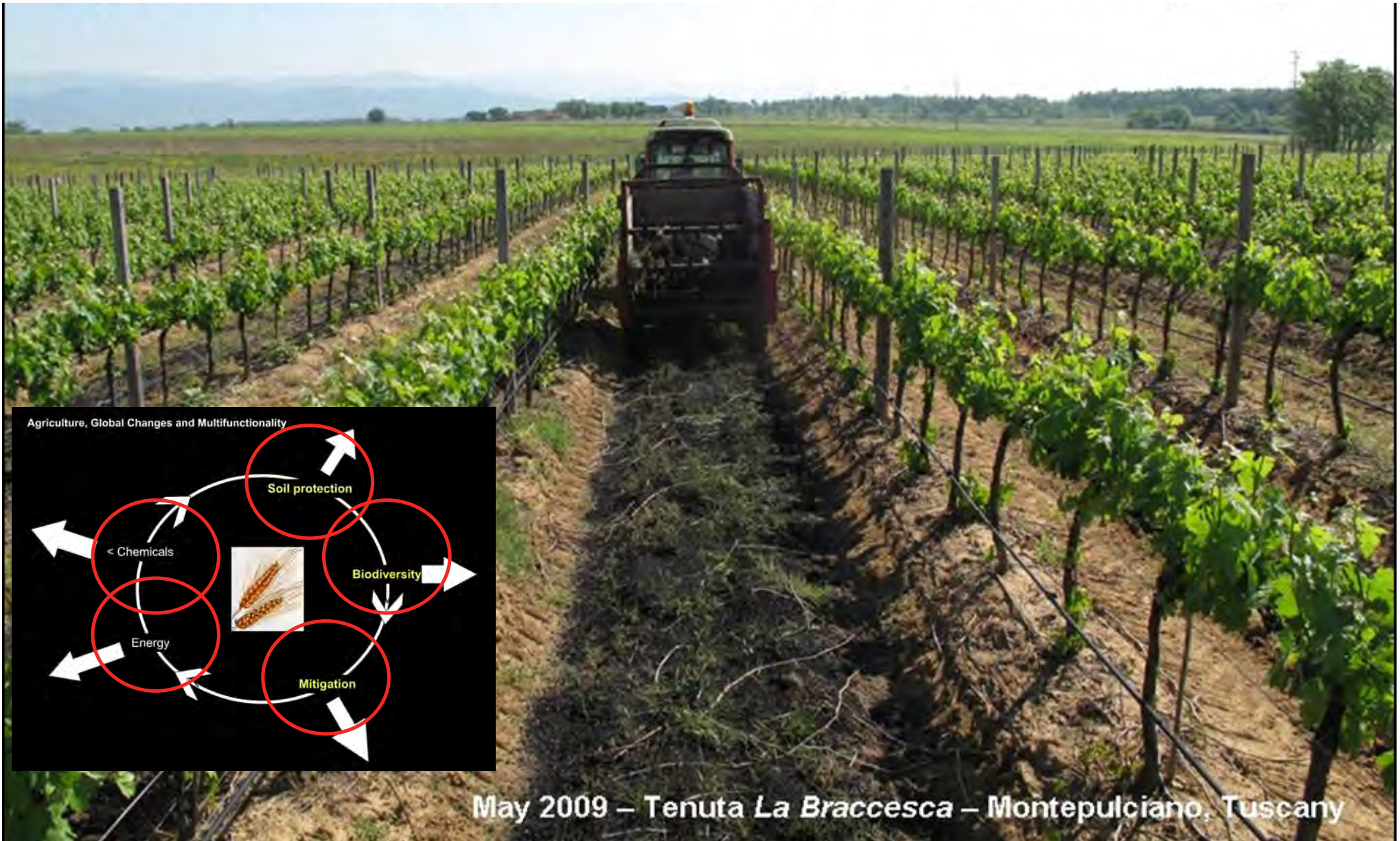
Simon Shackley¹, Jim Hammond², John Gaunt² & Rodrigo Ibarrola¹

Biochar allows long-term (multi-centennial) soil carbon storage, with potential benefits for agricultural sustainability (e.g., productivity, reduced environmental impacts and water retention). Little is known about the costs of producing biochar and this study attempts to provide a 'break-even selling point' for biochar, accounting for costs from feedstock to soil application and revenues from electricity generation and gate fees. Depending on the assumptions used, biochar in the UK context may cost between GBP-148 t⁻¹ and 389 t⁻¹ (US\$-222 to 584) produced, delivered and spread on fields, which is a provisional carbon abatement value of (GBP-144 tCO₂⁻¹ to 208 tCO₂⁻¹). A negative cost indicates a profit-making activity. The most profitable source of biochar is from wastes, but such materials will face complex regulatory issues and testing.



Net CO₂-sequestration: 54 t CO₂ / ha

- Increased yield
- Same quality of grapes/wine
- Improved water relations



May 2009 – Tenuta La Braccessa – Montepulciano, Tuscany



Fiera delle
Utopie Concrete

Città di Castello 3/6 Novembre 2016

AGRICOLTURA CIBO & CLIMA

Accelerare la conversione ecologica