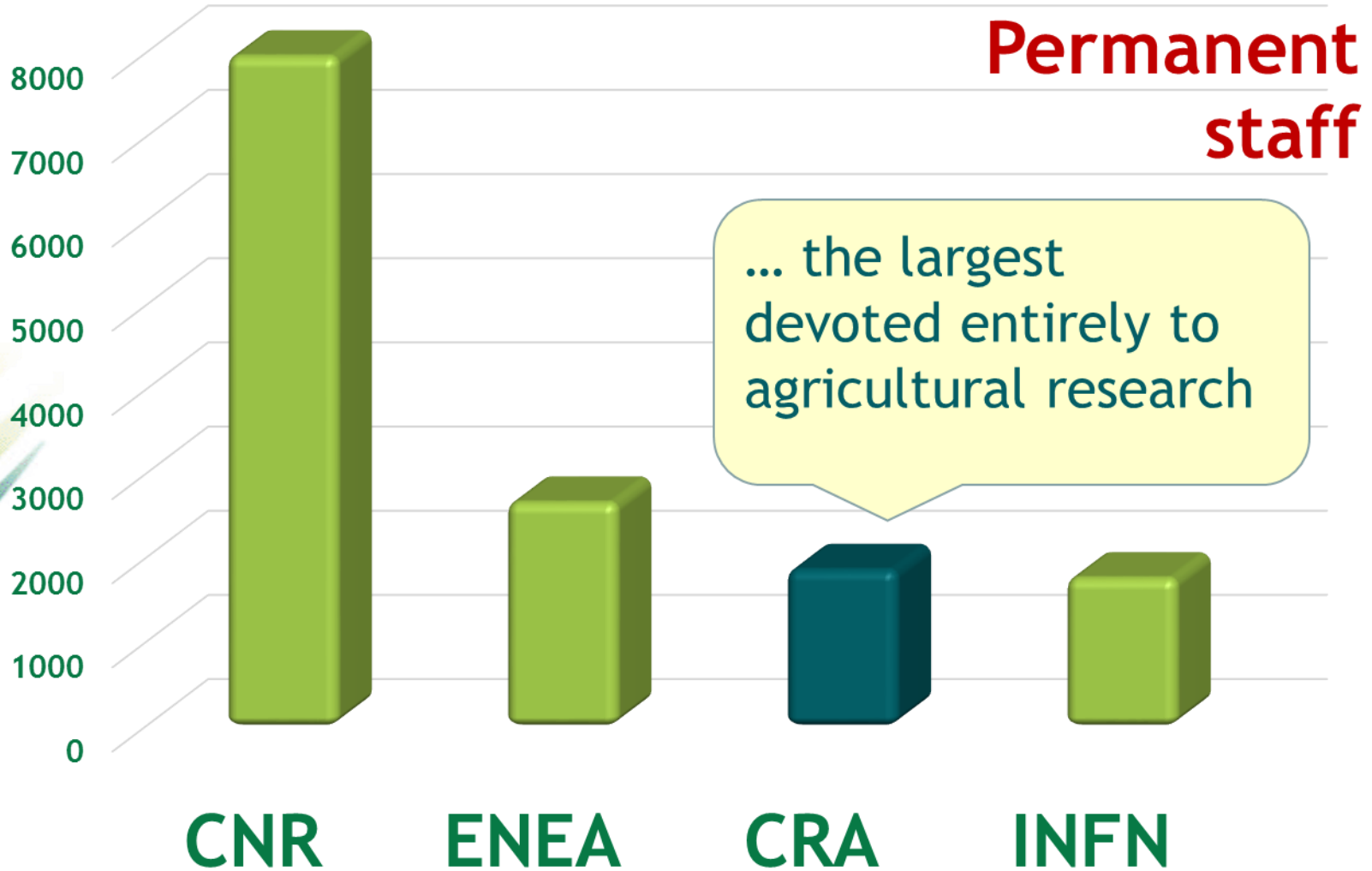




Agroecology and ecological intensification: key approaches for OFF research at CRA

Stefano BISOFFI

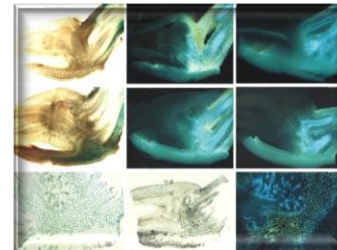
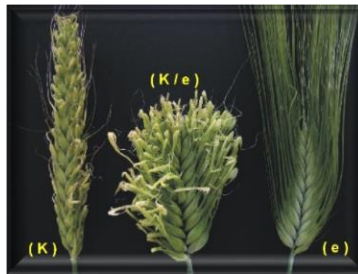
... the third largest Public Res. Organization in Italy ...



... we operate through four Departments ...

Plant and Crop Science

... with R&D structures distributed all over Italy



... we operate through four Departments ...

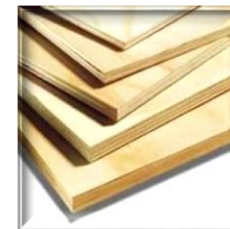
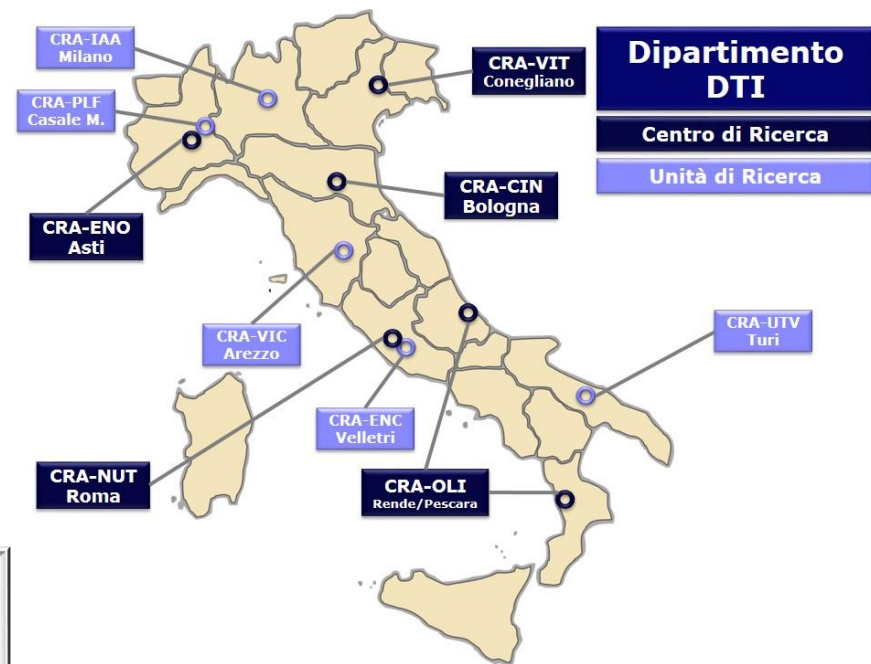
Livestock ... with R&D structures distributed all over Italy
Science & Animal Products



... we operate through four Departments ...

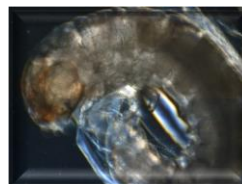
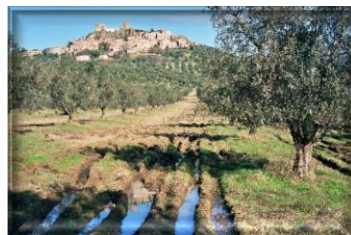
Agro-Industrial Productions and Processing

... with R&D structures distributed all over Italy

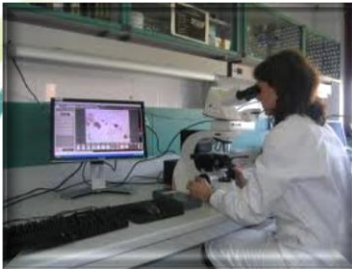
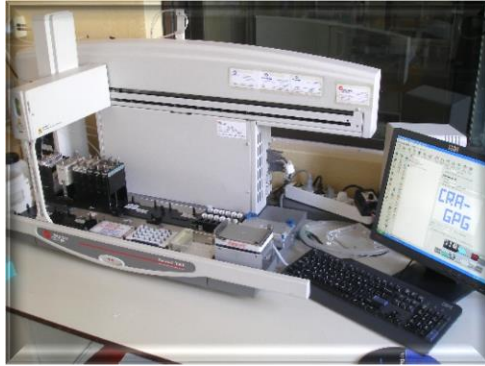


... we operate through four Departments ...

Agronomy, ... with R&D structures distributed all over Italy Forests and Environment



... advanced laboratories and equipment ...



... 5000 ha of experimental farms ...



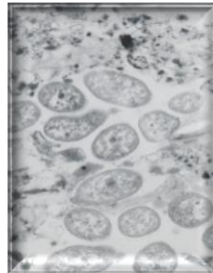
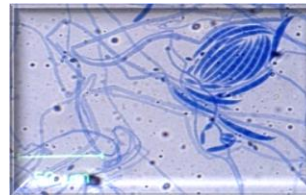
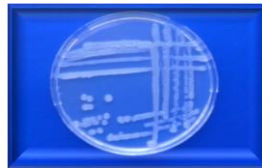
Main research lines in OFF

- Preservation of biodiversity (local cv, landraces, microorganisms, link w. local food specialties, ...)
- Breeding and selection of cultivars suited to OF (resistance, adaptability, stability, ...) with a participatory approach
- Support to the creation of an OF-oriented seed industry



Main research lines in OFF

- 'Soft' techniques for seed coating
- Plant-derived chemical products for crop protection
- Alternatives to copper



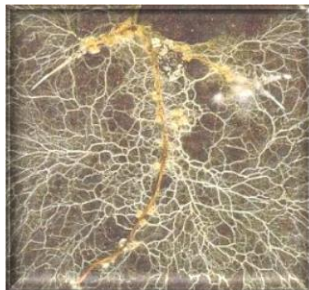
Main research lines in OFF

- Relationship between animal welfare, animal health and food safety/quality (pig, poultry, dairy cows, farmed fish, ...)
- Effluents: reduction of GHG emissions, anaerobic digestion, use of digestate
- Compost from residues



Main research lines in OFF

- Soil biota and the rhizosphere: bacterial communities, mycorrhizae
- Plant-plant interactions at the root level: complementarities, layers
- Weed management: cover crops, mulching, crop residues
- Green-manuring
- Rotations, sequencing, intercropping, agroforestry
- Factors affecting re-planting success in fruit orchards



Main research lines in OFF

- Agroecosystem management in greenhouse plant productions

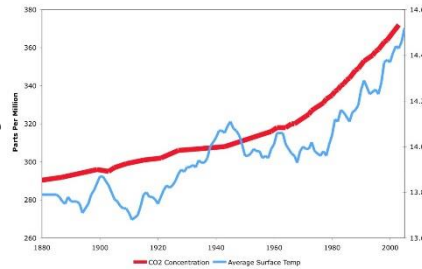


A look forward: the big challenges



2050:
 +30% population
 +70% production
 Same land available

CO₂ and temperature



Produce more with less

- Genetics
- Soil fertility management
- Resource efficiency
- Exploit natural interactions

Resilience

- Risk management
- Diversification
 - In time
 - In space (3D)
 - Biodiversity

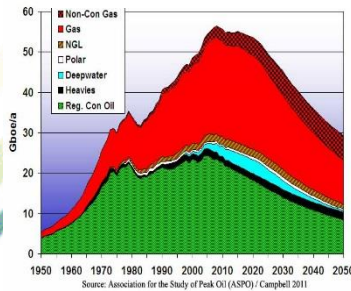
Focus on the territories

- Typical products
- *Specialty vs commodity*
- Cultural/social factors

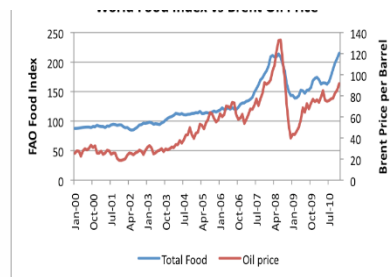
Sustainability

- Ecological intensification
- Rural development (Rural Renaissance)
- Food, Diets, Lifestyles, Health

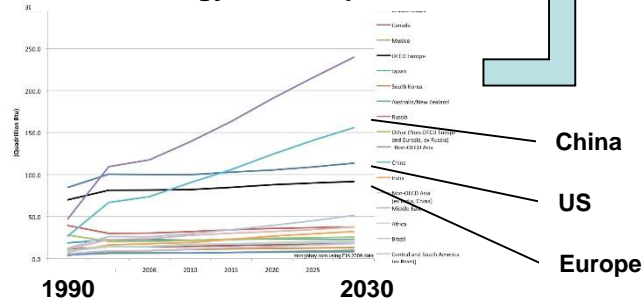
Oil & Gas 1950-2050



Cost of 1000 vs Oil



World energy consumption



A look forward in Agroecology



FEEDING THE WORLD AGROECOLOGICALLY

A MOVEMENT, A PRACTICE AND A SCIENCE
APRIL 5 2013 09.30-14.30

SPEAKERS:
 David Pison - UC Coahoma, Oregon
 Ingrid Isenhardt, Member of Dutch Food Farming & Forestry
 Gert-Jan van der Wal - Wageningen University
 Anders Hovgaard, Danish - GIM, Chair and FAO Food Policy Panel
 Hans van der Werf, Wageningen University
 Margot van der Werf, Wageningen University
 Peter van der Werf, Wageningen University

FREE ENTRY FREE FOOD
 www.feedingtheworld.nl

Agroecology in the Netherlands

Is there a movement?

Thu 4 July
Forum 19:30

Eric Goewie
 Emeritus professor ecological agriculture
Kees van Veluw
 Farming systems ecology group and chief editor Ecoland

agroecology

cultivating a beneficent agriculture

HOME
 ABOUT AGROECOLOGY
 ACADEMIC PROGRAM
 MEET PEOPLE
 NEWS & EVENTS
 CONTACT US

Food movements, agroecology, and the future of food and farming

Public event: Tuesday 13 December, 7 - 9pm
 Deelenzaal @ University of Amsterdam, Singel 421-427, 1012 WP Amsterdam
 Co-organised by TNI, ISS and the Real World Economics Group. For more info contact Melissa Wilson, m.wilson@tni.org, Tel: 31 20 662 66 08

Guest speakers: Tony Weis (Dep Geography, University of Western Ontario); Miguel Altieri (Dep of Environmental Science, Policy & Management, University of California Berkeley); Eric Holt-Giménez (Executive Director of Food First / Institute for Food & Development Policy).

AGROECOLOGY

The Need for Transformation in Policy and Science

A public panel of the conference
 Opportunities for Transformative Food Systems in Europe & Transatlantic Agenda

with the support of the Green's/EU
Wednesday 26 June 2013
 11:00-13:30
 European Parliament, Brussels, Room A2011

Sustainable agro-ecology

with small-scale women and men farmers NOW!

The Future we want!

- Self-reliant, advanced, healthy, healthy, profitable, and productive food production and processing
- Making access to and control over our lands, water, seeds, products, resources, people and services
- Handling our foodbanks, the institutions, networks, and economic diversity practices, and technologies
- Participating in development processes through community groups, locally responsive, culturally sensitive, and environmentally sound, etc.

Support Family Farming!

Agroecology: Applying Ecological Principles to Agriculture

Caroline Wrobel
 ES8912 - Applied Ecology
 March 7th, 2012

HARRY R. HUGHES CENTER FOR
 AGRO-ECOLOGY, INC.

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Agroecology Program

at Florida International University

Research, Education, Outreach

Agroecology in practice: resources uses

From La Via Campesina and MAP's visions

Agroecology

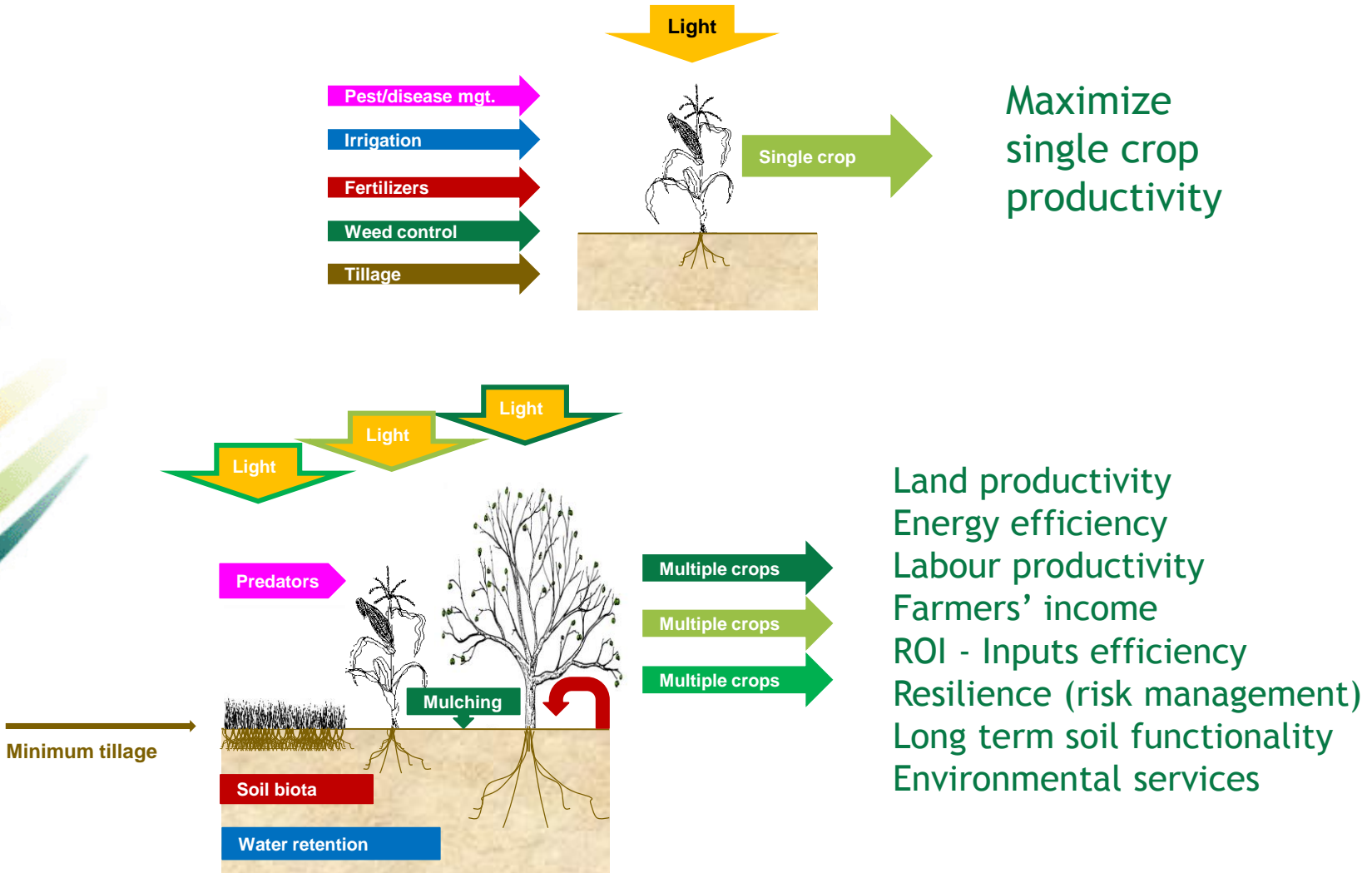
We study interactions:

At the plant level
 At the soil level

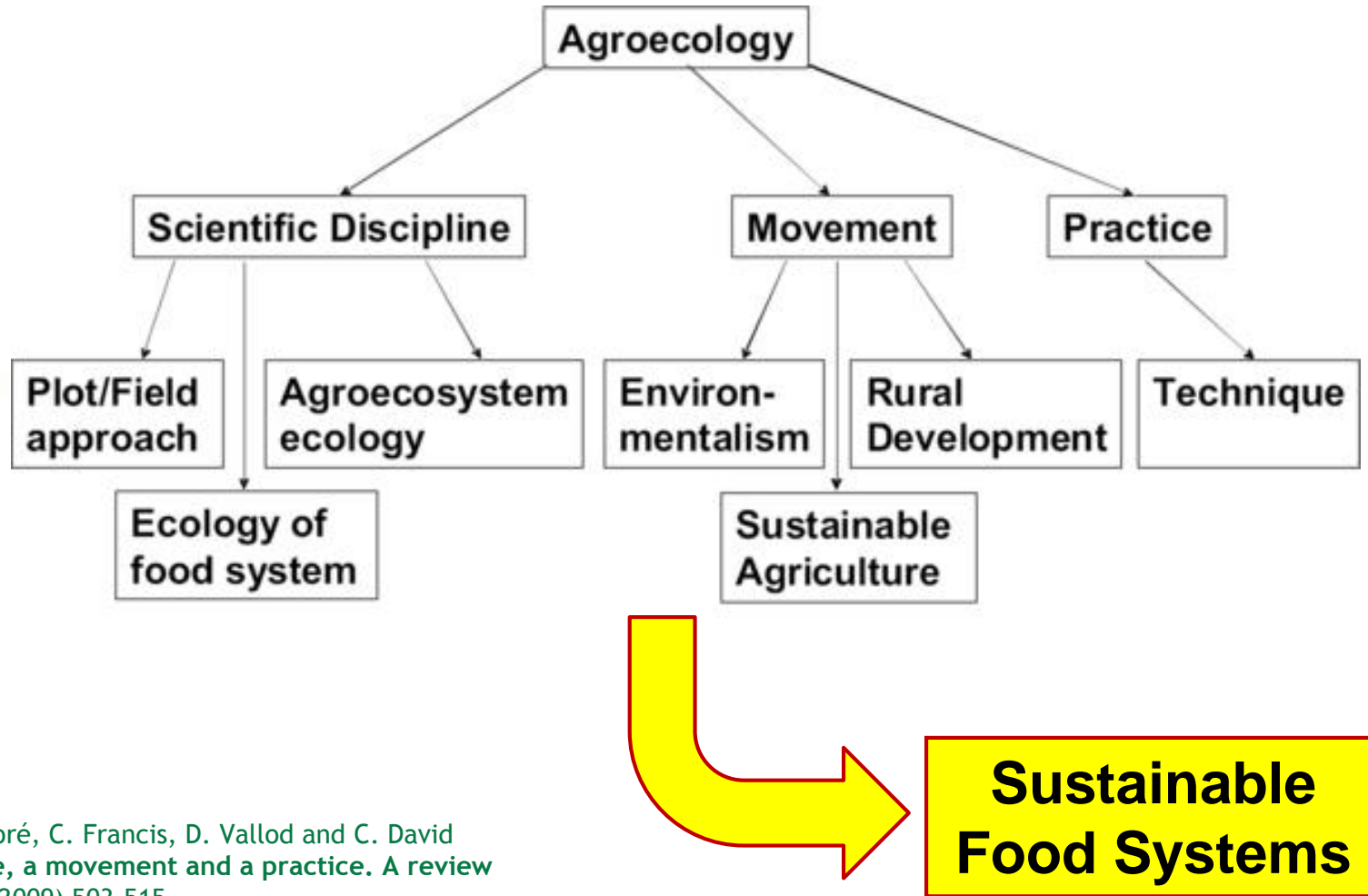
Agroecology
 Asks: How can we integrate natural systems to create farming systems that have a low environmental impact?
 This is done by using:
 Biodiverse hedgerows & crop margins
 Integrated Pest Management (IPM)
 Biological control
 Specifically, we study:
 Populations of insects, fungi etc.
 Soil biology - fungi & microorganisms
 Ecosystems around & within farmland
 Bee and other insect behaviour
 Dynamics of pest species
 Invasive species & migration



Agroecology vs conventional agriculture



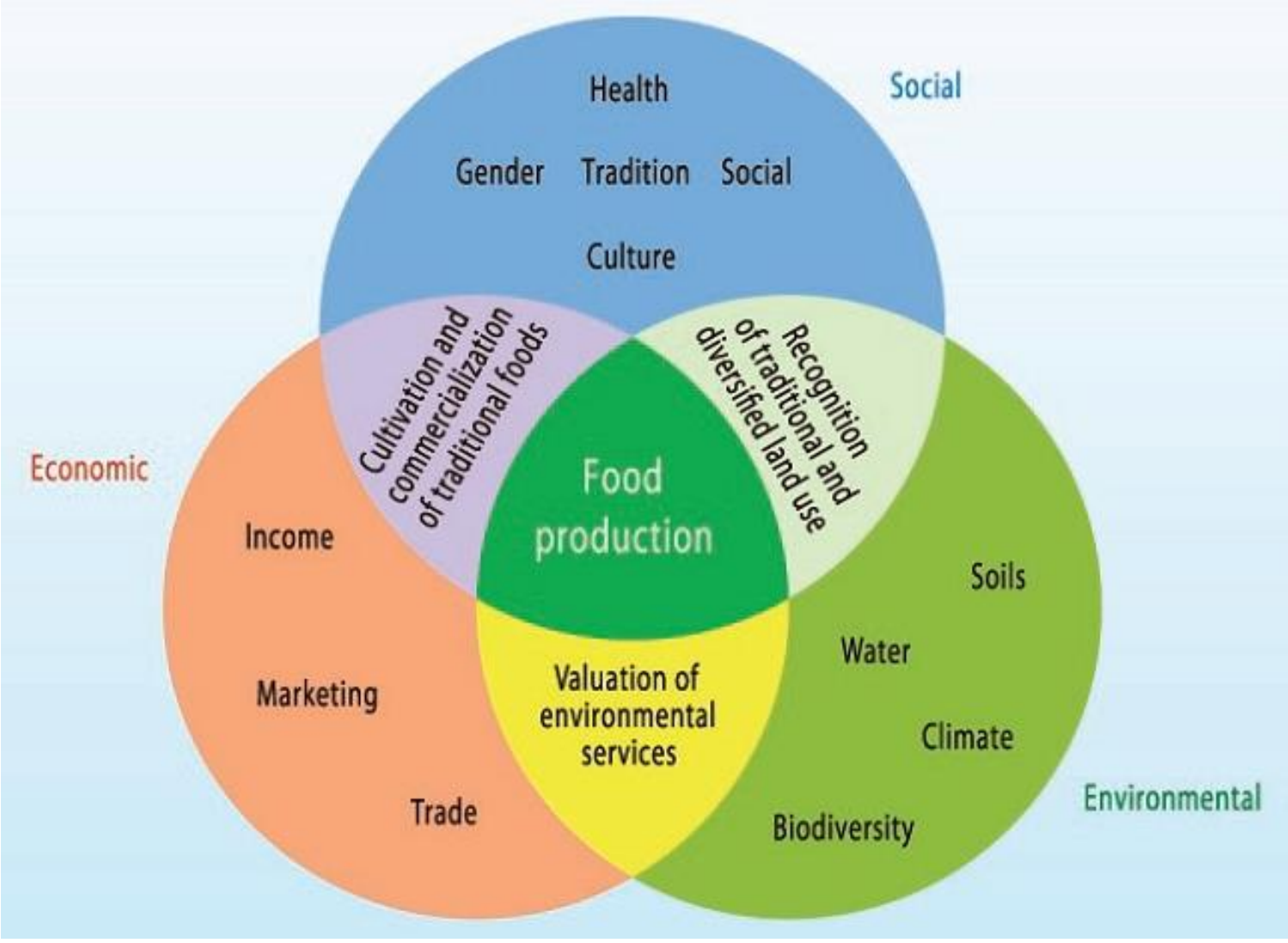
More than just complexity ...



From:

A. Wezel, S. Bellon, T. Doré, C. Francis, D. Vallod and C. David
Agroecology as a science, a movement and a practice. A review
Agron. Sustain. Dev. 29 (2009) 503-515

Agroecology and Sustainability



Participatory approach



**Problem
identification**

**«Agricultural
research and
development
begins and ends
with the farmer»**

**Solution
acceptance**

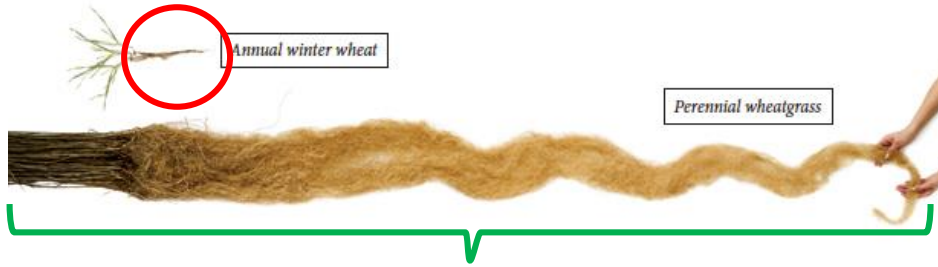
(Rhodes and Booth, 1982)

A few comments

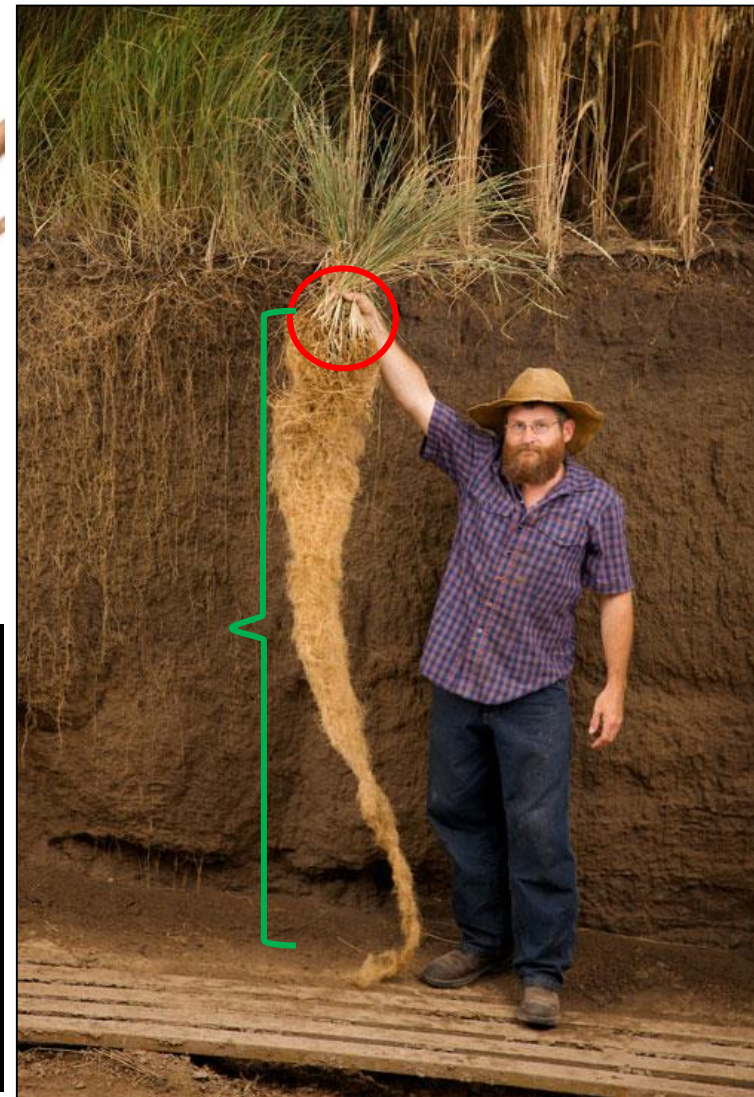
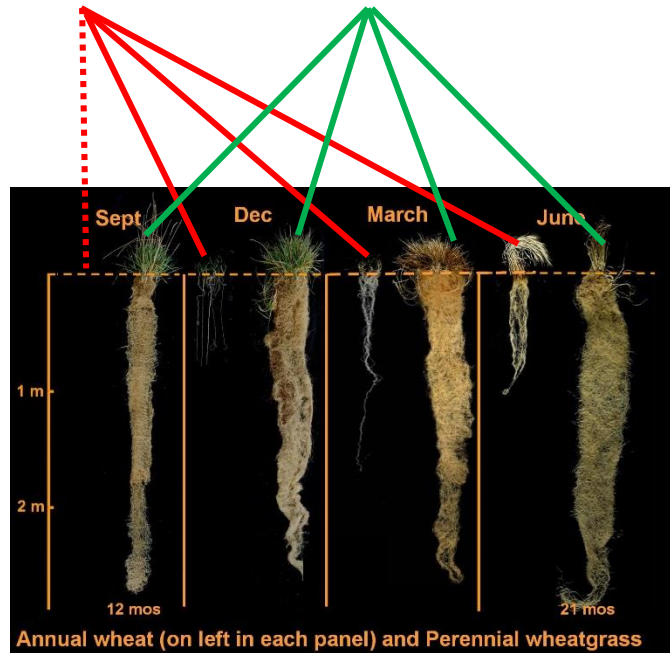
- Sustainability from concept to science; from narrative to metrics (*'Sustainability Readiness Level'*)
- Science to provide convincing evidence to support desirable transitions (agroecology, ecological intensification, sustainable food systems, ...)
- *'Is agricultural research too serious a matter to be left to agricultural scientists?'* (G.Clemenceau, mod.)
- Social awareness/responsibility of researchers, of research funding and performing Institutions
- New competencies needed: integrators, brokers ('silos breakers'), transdisciplinarity built into academic careers
- Break the boundaries; innovation occurs at the borders between knowledge fields (e.g. genomics, precision agriculture, robotics, nutrition)
- **Think bold!**

Think bold ...

(e.g. perennial grains)



Root systems of **annual** and **perennial** wheats



The way forward

- A ‘secular’ non-dogmatic approach
- Biological and social rather than ‘normative’ approach
- Tacit knowledge validation and valorization
- Social innovation (cooperation, market organization)
- Re-think the AKIS (EIP-Agri, OG, Thematic Networks, RDP) and the Innovation Support Services
- **Knowledge is probably the only resource that grows with use**

Complex agroecosystems are beautiful

(Chianti Hills, Tuscany)



Thanks!

06/03/2017