



# Where are we coming from? Where are we going to?

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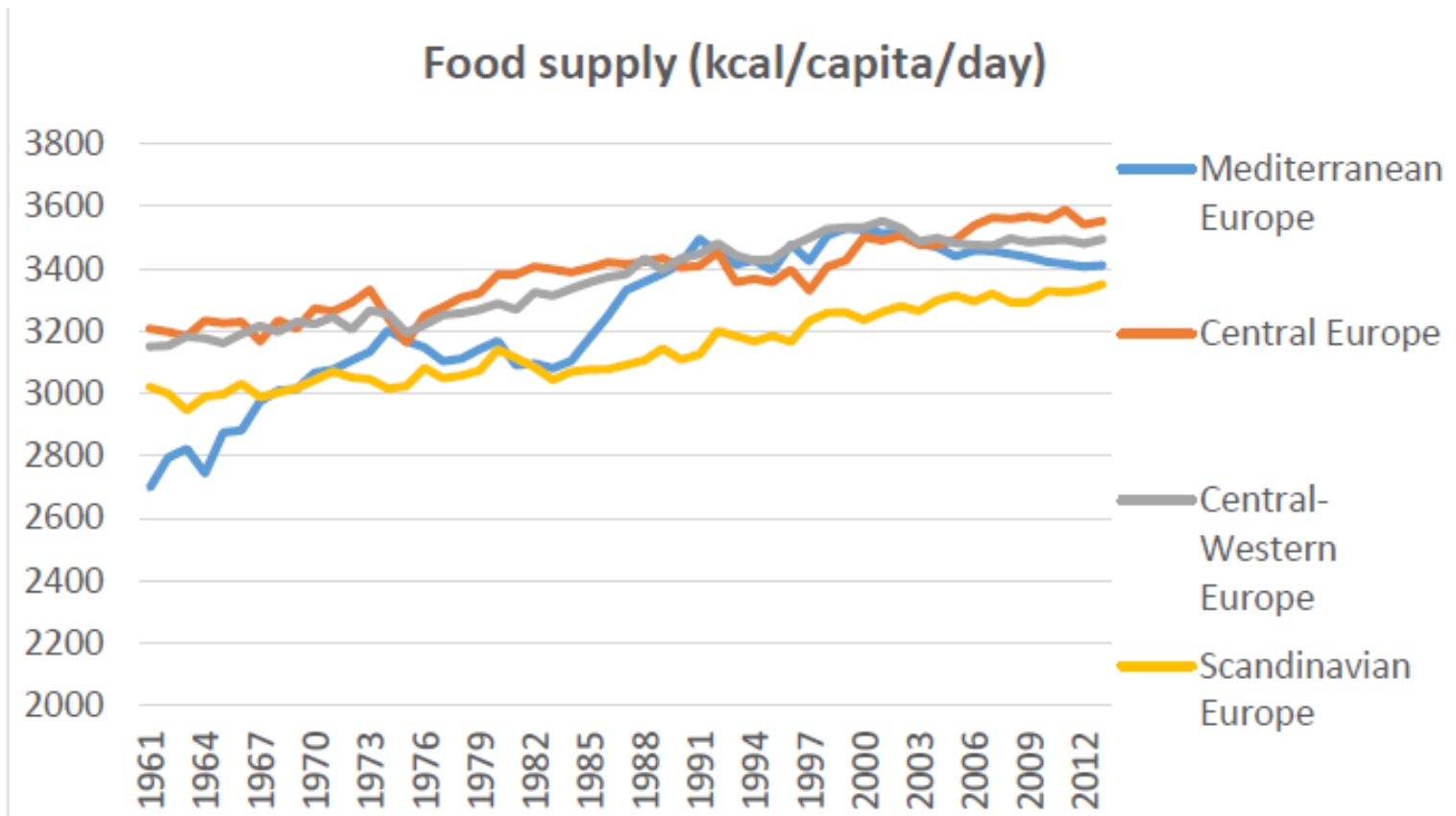


# Structure

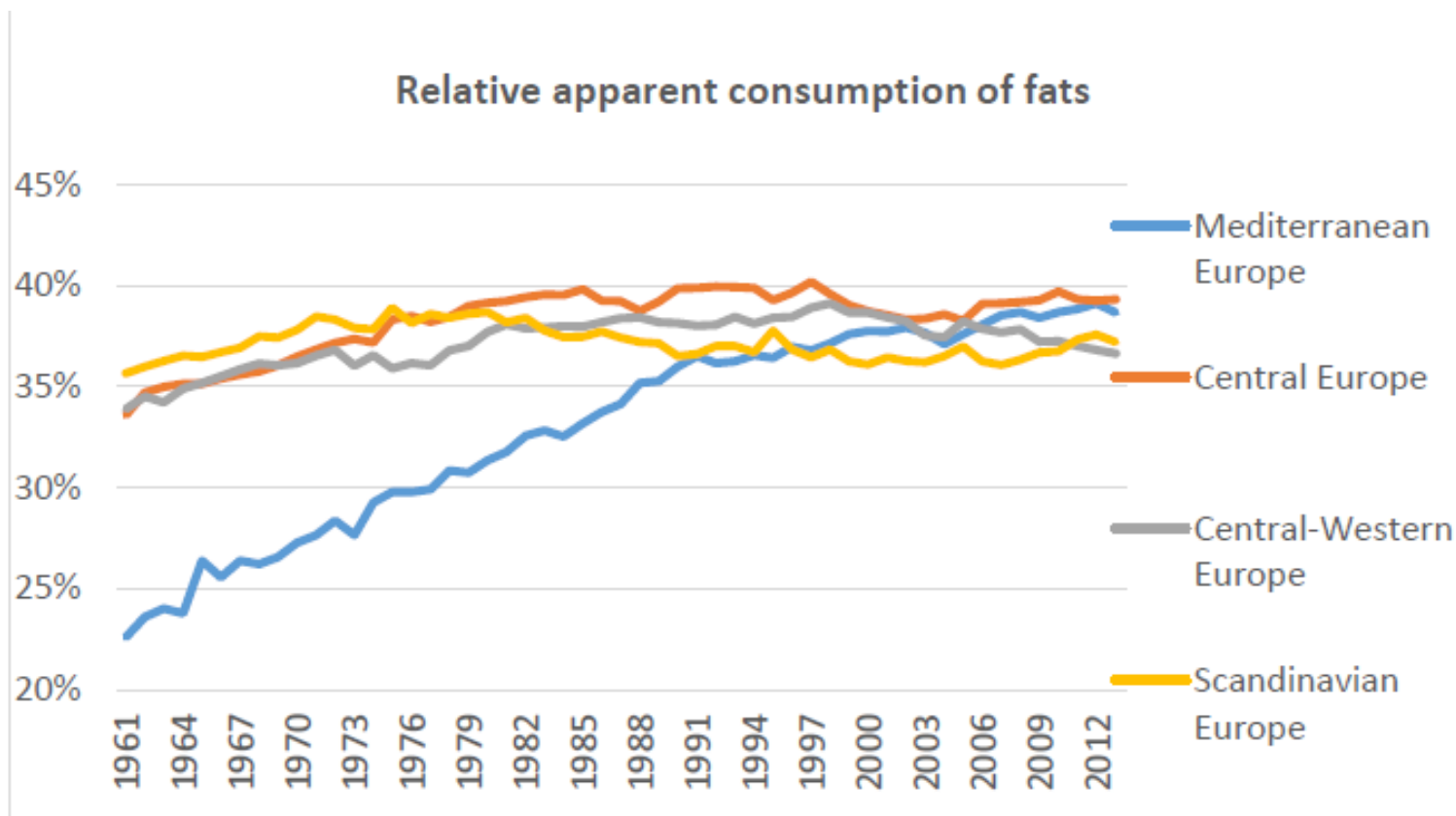
- Introduction
  - Achievements & challenges
- Research & development
- Agricultural extension
- Concepts and knowledge networks
- Conclusions

# Introduction

- Agriculture: Food, clothing and heating
- World population will grow further, more food needed
- Today people are better fed than in the past
- 10-15% world population undernourished
- Since 1950s in OECD-countries overproduction
- Less farmers, specialisation, productivity growth,...
- Technical progress



Source: Own elaboration based on FAOSTAT data.



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	<b>Arable farming</b>	<b>Horticulture</b>	<b>Stock breeding</b>
<b>1880</b>	47	7	46
<b>1895</b>	32	8	60
<b>1910</b>	28	7	65
<b>1925</b>	28	14	68
<b>1937</b>	16	15	69
<b>1950</b>	18	16	66
<b>1978</b>	14	19	67
<b>2000</b>	17	17	66

**Evolution agricultural output in Belgium, 1880-2000 (%)**

	The Netherlands	Belgium	Belgium %
1760		735.000	65%
1812		896.000	
1846	517.000	1.210.000	55%
1860	544.000	940.000	
1870	567.000	930.000	
1880	607.000	953.000	32%
1890	652.000	858.000	29%
1900	699.000	836.000	
1910	703.000	780.000	24%
1937		650.000	16%
1947	718.000	422.000	14%
1960	502.000	340.000	8%
1970	340.000	220.000	4.5%
1980	305.000	115.000	3%
2000	281.000	80.000	1.8%

Employment in agriculture in Low Countries (absolute & relative numbers), 1760-2000

## Yields arable products, ton per hectare

	Wheat	Rye	Potatoes	Barley	Sugar beet
1846	1418	1569	14392	1895	-
1880	1635	1505	10504	1871	34528
1895	1967	1967	16887	2113	31921
1910	2427	2220	17673	2609	28307
1937	2714	2370	28977	2532	28977
1950	3421	2638	22370	3154	31165
1984	6332	4256	34649	5788	51782
1996	8140		42110	7270	56920

Evolution yields arable products in Belgium, 1846-1996



# R&D – Agricultural extension



Justus von Liebig,  
1803-1873



Rothamstead, UK

# R&D – Agricultural extension

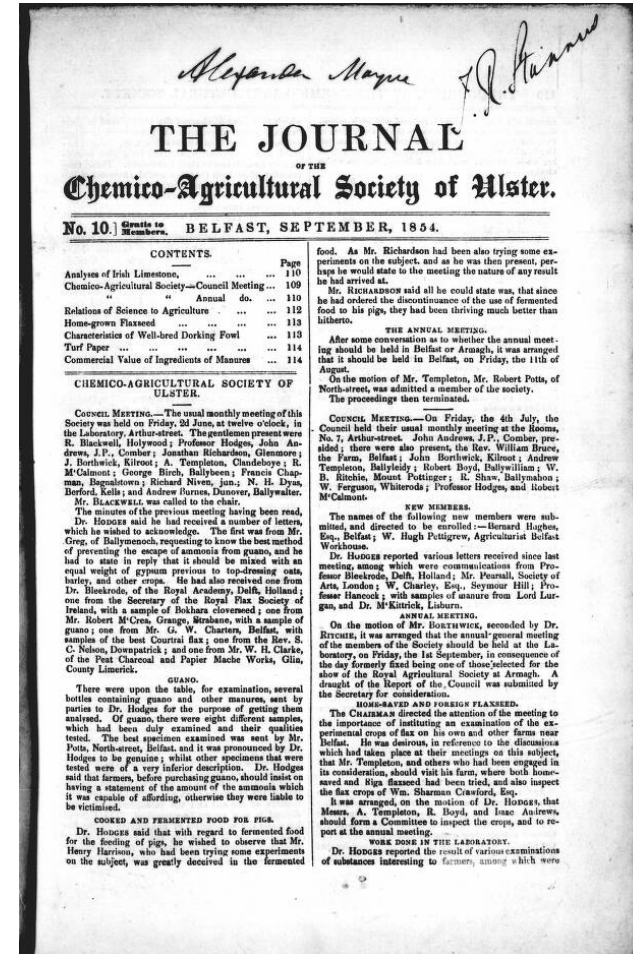
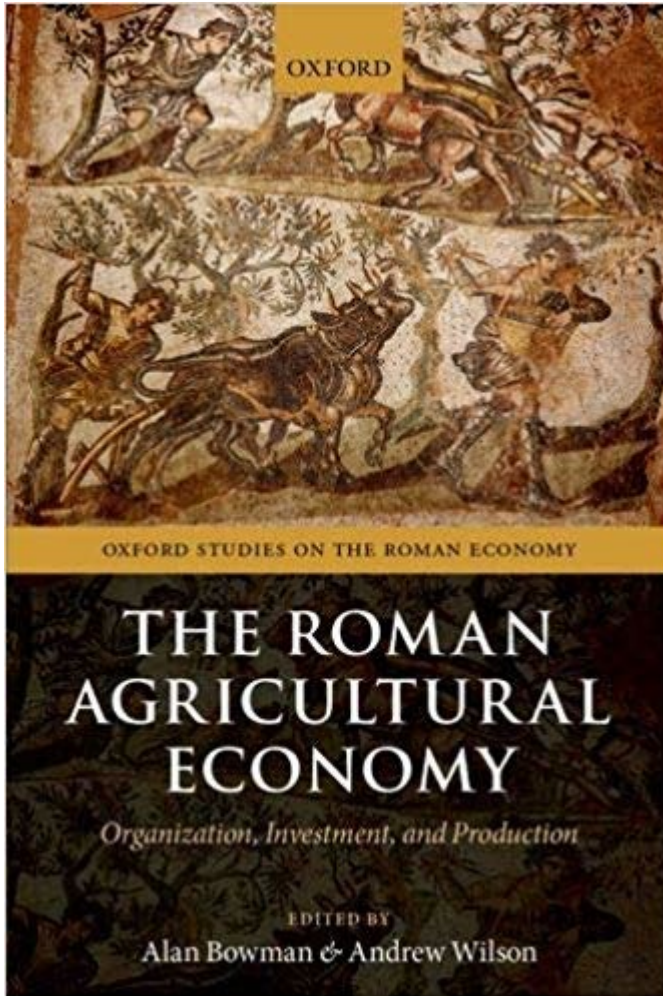


Institut agronomique, Gembloux

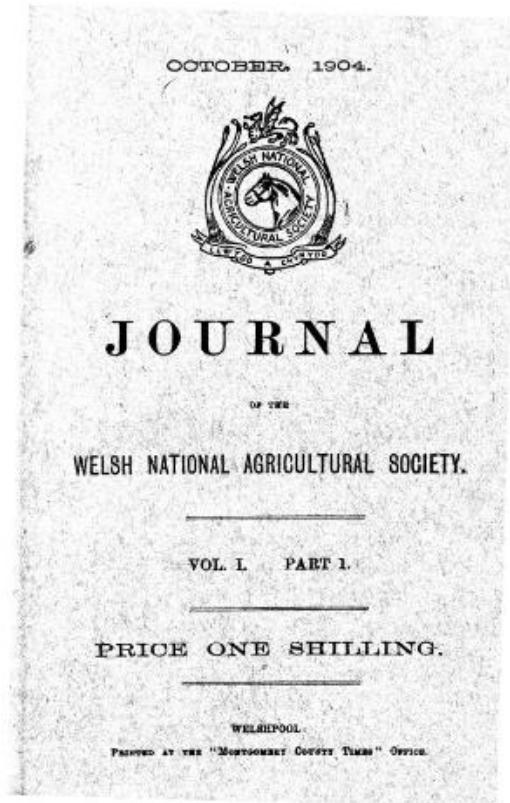


Researchers at KU Leuven,  
Ca. 1895

# R&D – Agricultural extension



# R&D – Agricultural extension



# R&D – Agricultural extension



The Durham Fair, ca. 1930



The Royal Winter Fair, Toronto,  
1922



# R&D – Agricultural extension



Tuinbouwschool Melle, ca.  
2000

# R&D – Agricultural extension



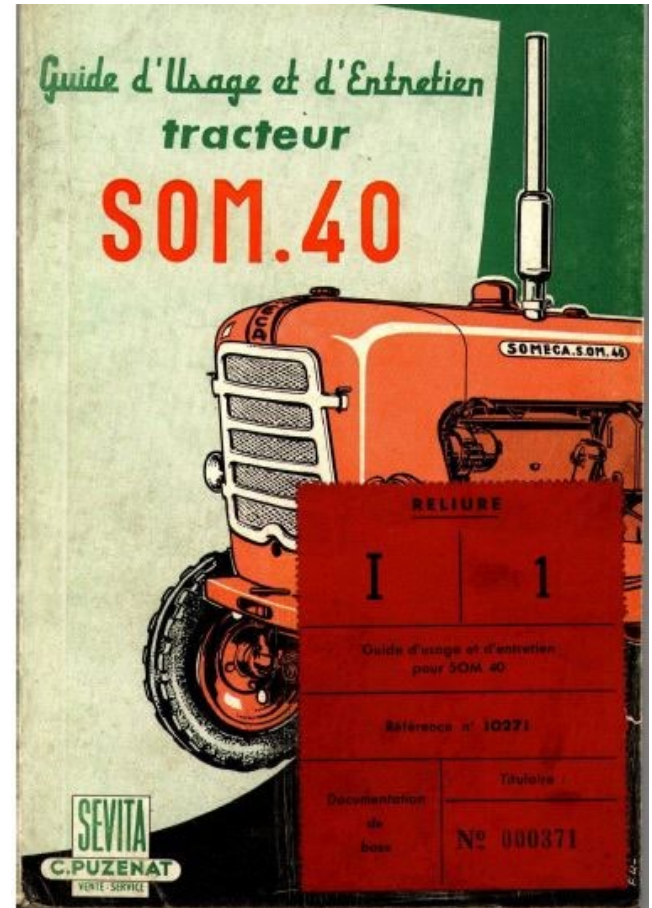
Among the first UC buildings was South Hall (left), first home of the College of Agriculture; it still stands on the UC Berkeley campus, just southwest of the Campanile. The 1873 image shows South and North Halls, looking west toward the San Francisco Bay.



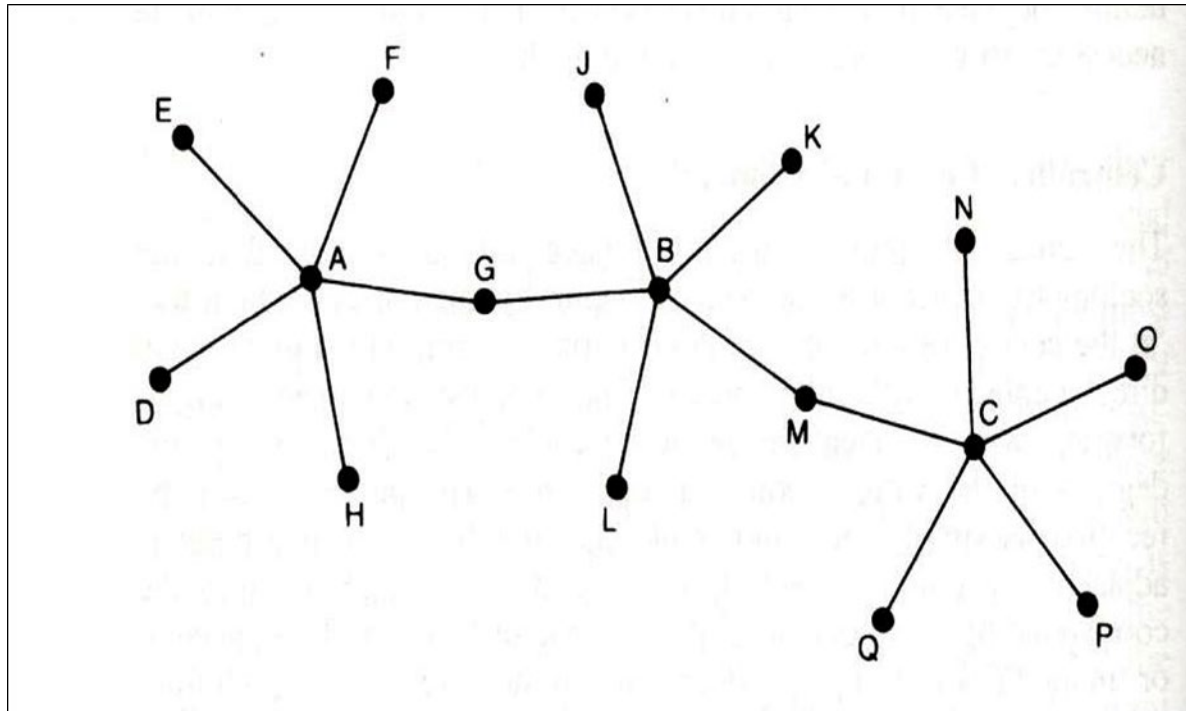
# R&D – Agricultural extension



Cattedre ambulanti, Italy, ca. 1930

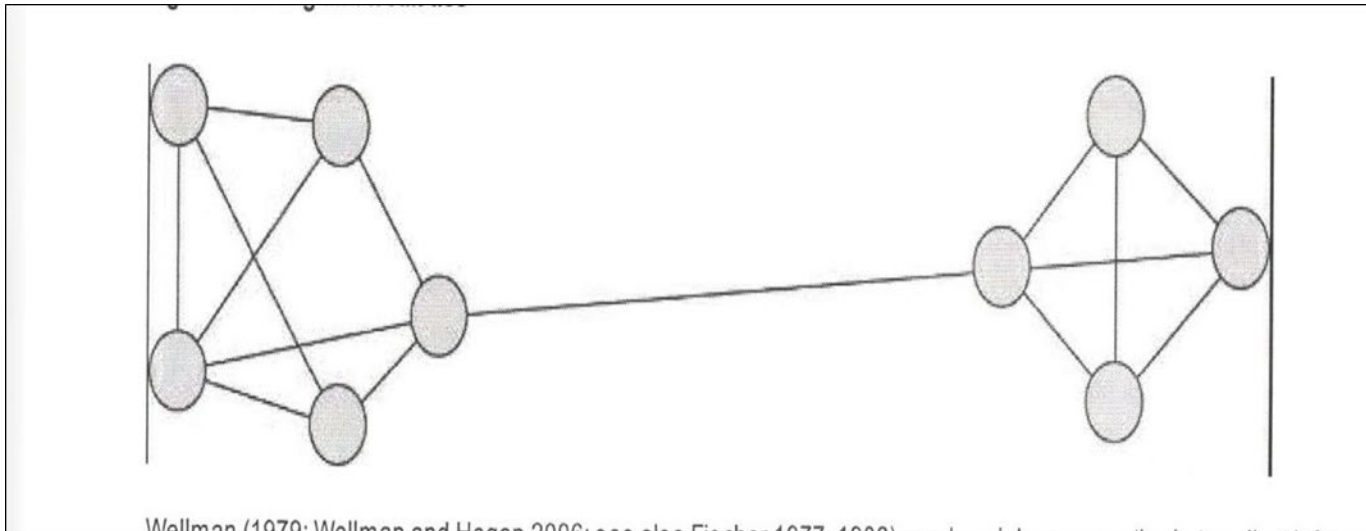


# Concepts & knowledge networks



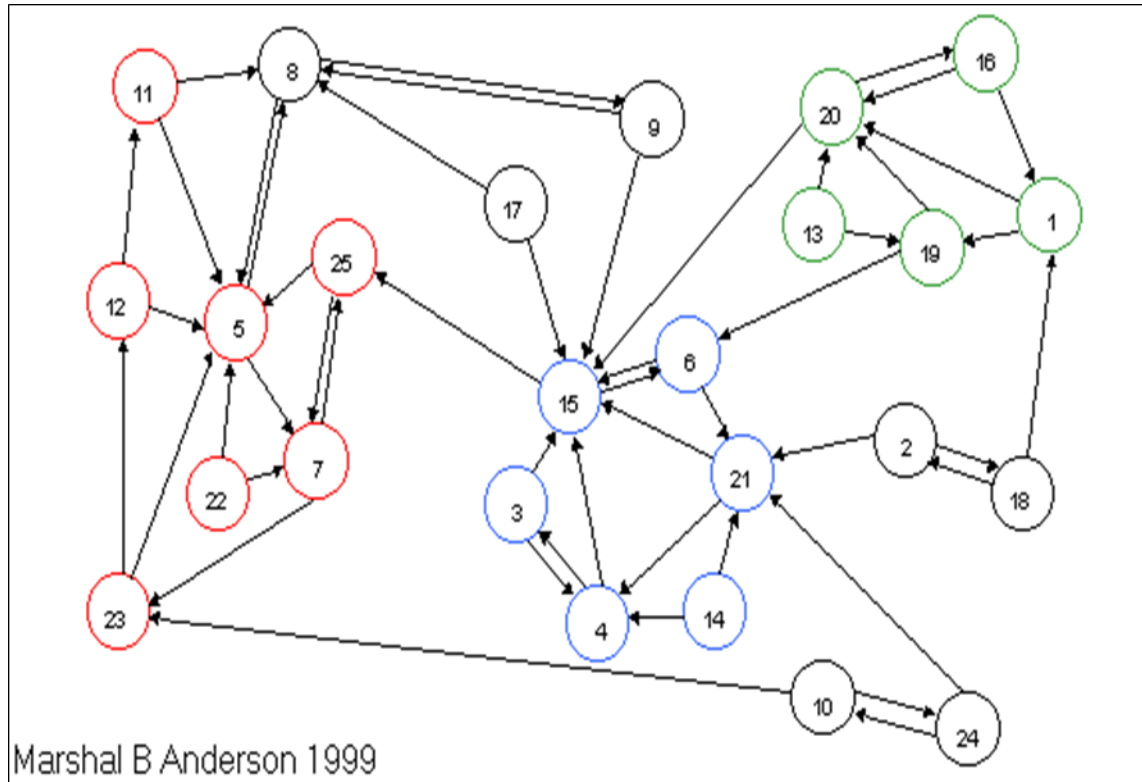
**Figure 1: Centrality** (J. Scott, 2000, fig. 5.1)

# Concepts & knowledge networks



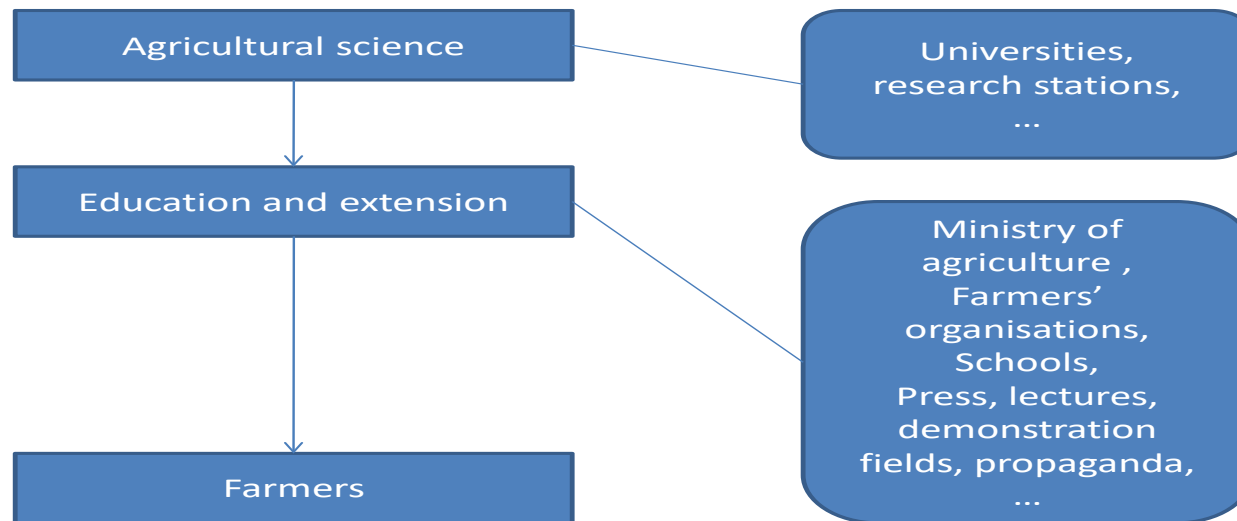
**Figure 2: Strong and weak ties** (Scott, 2012, fig. 3)

# Concepts & knowledge networks



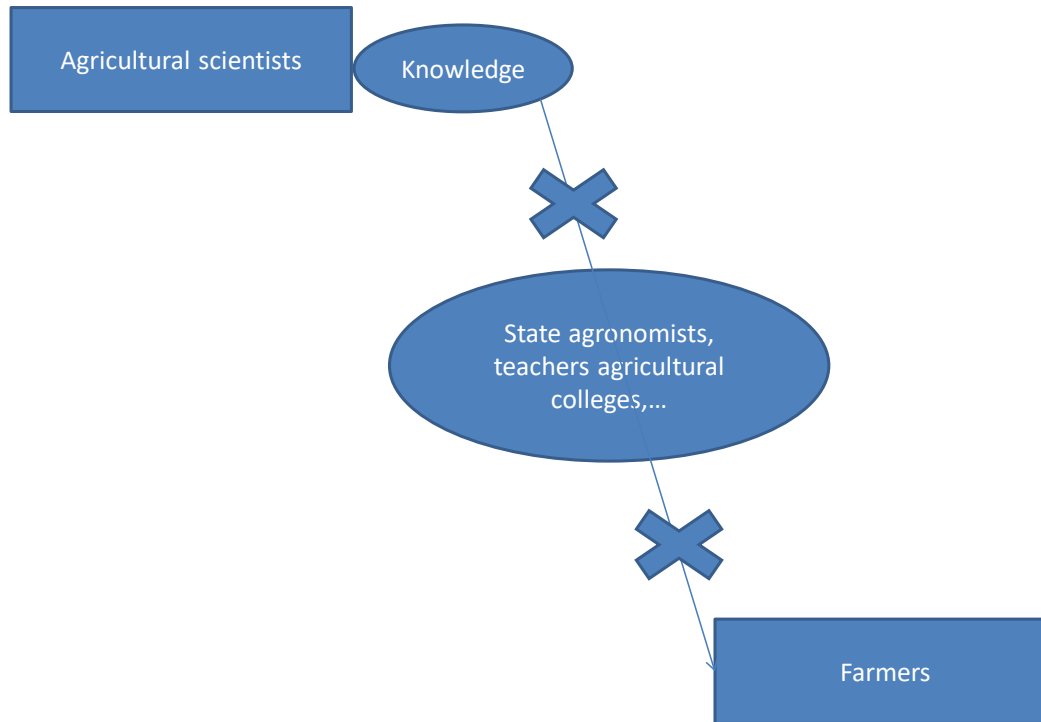
**Figure 3: Direction**

# Concepts & knowledge networks



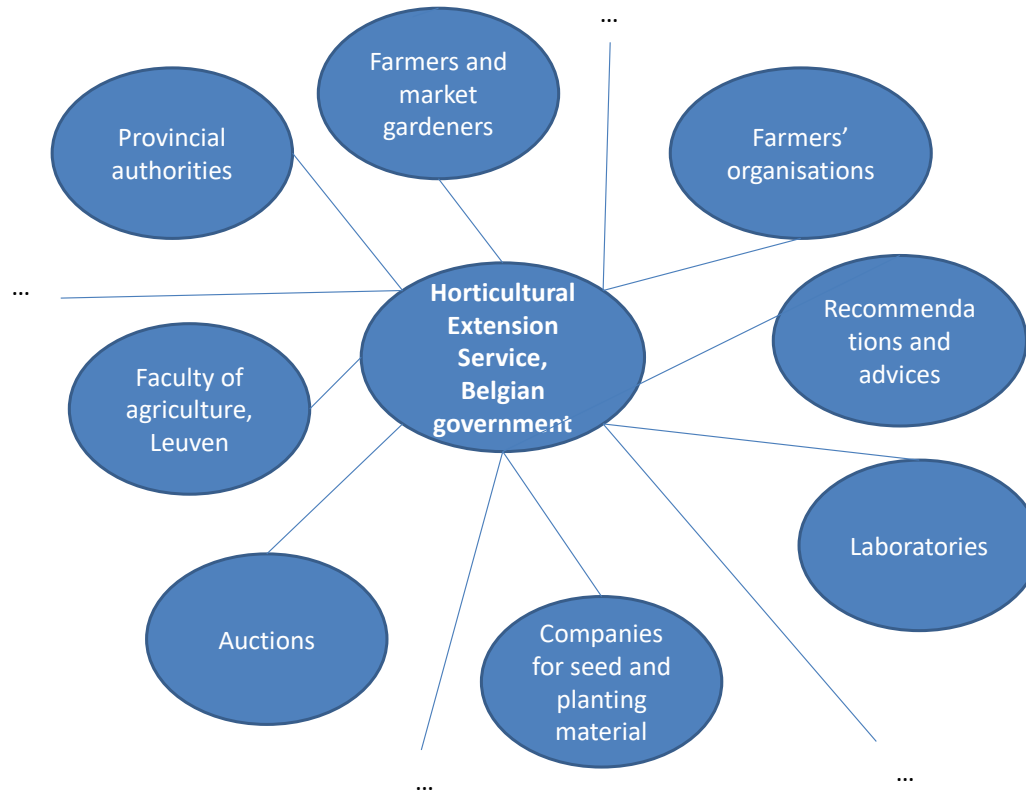
**Figure 4: The concept of the “knowledge chain”, adjusted for agricultural science**

# Concepts & knowledge networks



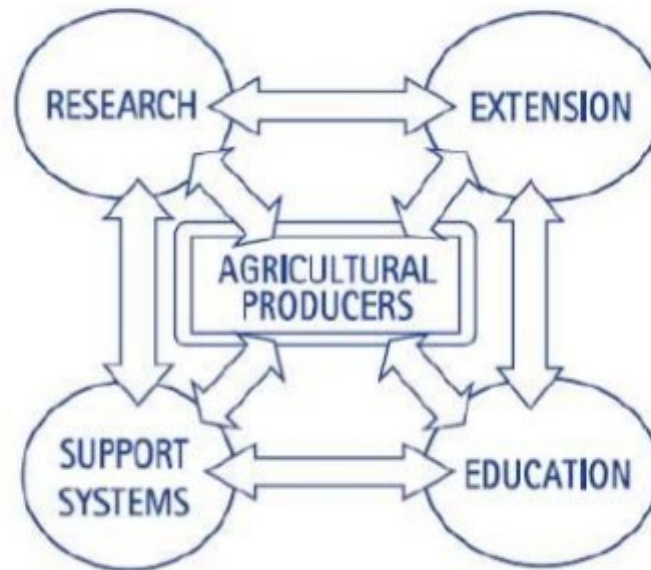
**Figure 5: The model of the “two cultures”, adjusted for agricultural sciences**

# Concepts & knowledge networks



***Figure 6: The 'Actor-network' model, adjusted for the Horticultural extension service, Ministry of Agriculture, Belgium (ca. 1910)***

## A networked Agricultural and Knowledge Innovation System



Government driven and funded integrated AKS → pluralistic and responsive AKIS  
EU SCAR AKIS Report 2012

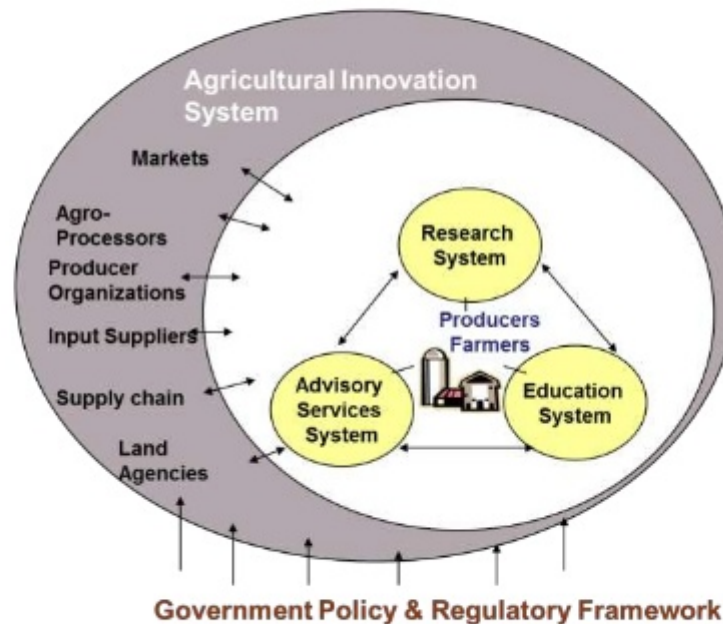


# Challenges in translating research

**Science** continues to be **essential** for innovation

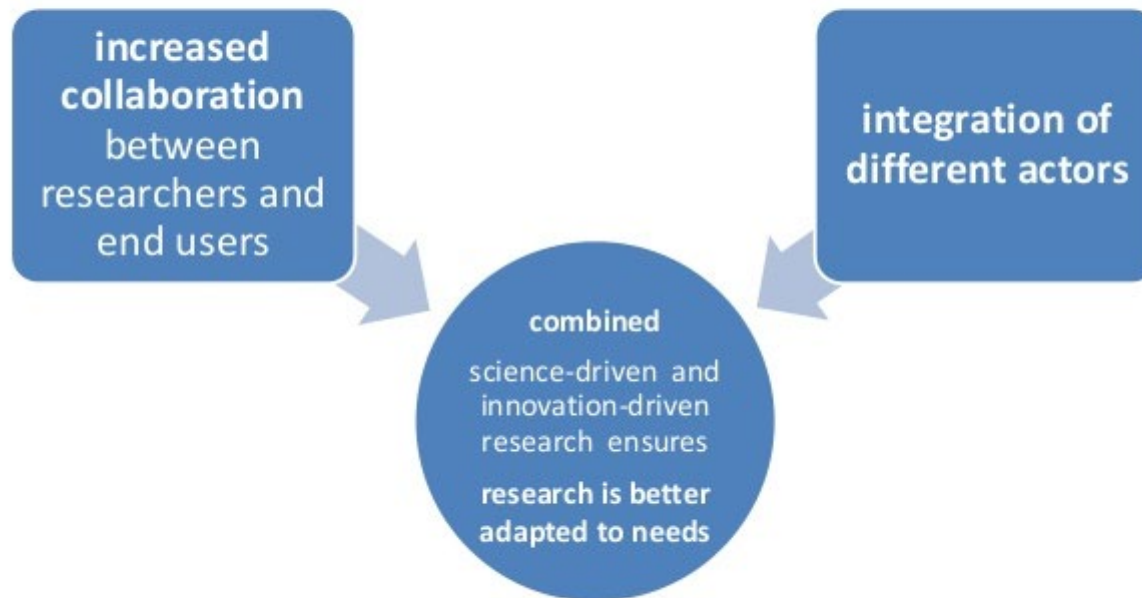
But challenges in **translating** research into practice

**Disconnect** between research and farming



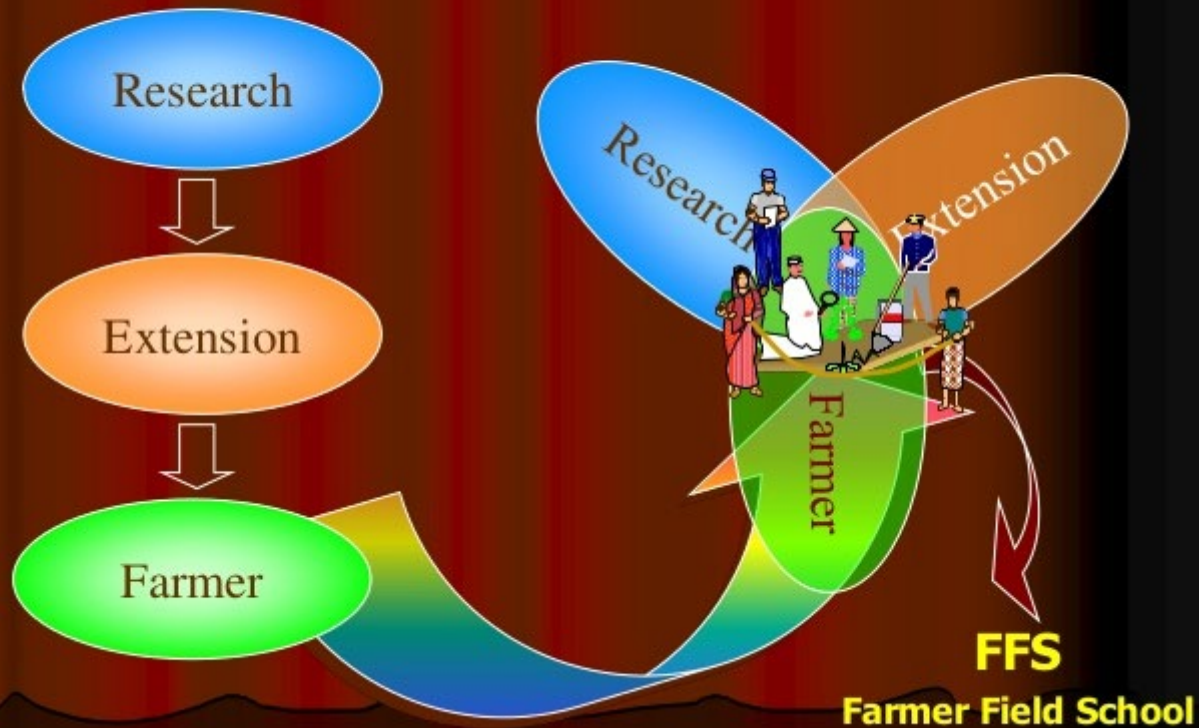
*DeMeyer 2014  
Modified from:  
Birner et al. 2006*

## Translating research more effectively



***Innovation:** the process of creating and putting into use combinations of knowledge from many different sources*

## Paradigm Shift: Research - Extension – Farmer Relationship



# Conclusions

- Paradigm shift
- Importance of historical research
- Three final considerations
  - Not all knowledge is positive
  - Rural vs. Urban knowledge
  - Transnational, comparative research