

VI Rosenberg Forum  
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**Lessons for Spain: a critical assessment of the  
role of science and society**

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# Lesson 1 The agricultural sector is the cornerstone of water policy

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As a practical approach, irrigation is crucial:

- Quantitatively
- For drought management
- For the implementation of the EU WFD (least cost means to achieve good ecological status by 2015?)

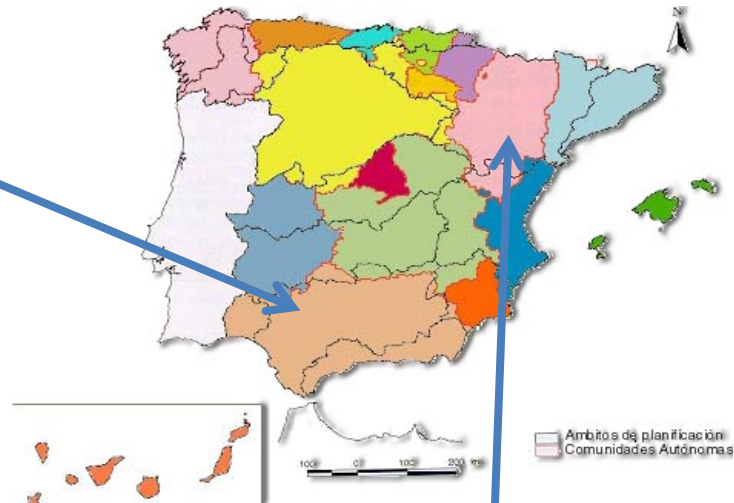
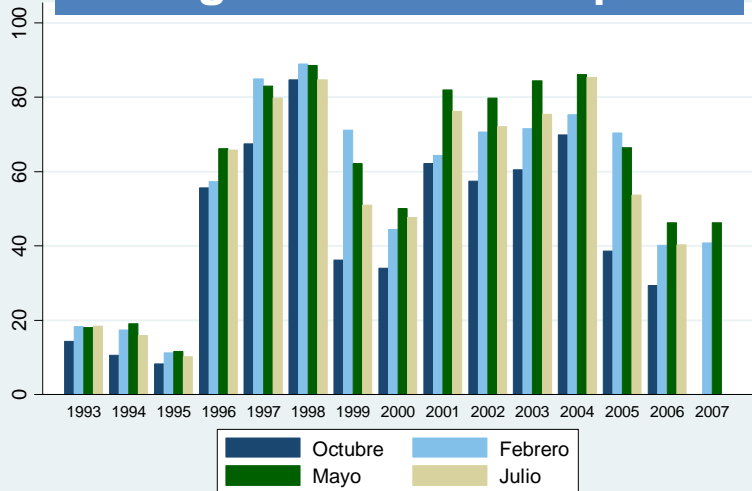
# LESSON 1 – Irrigation is the cornerstone of water policy in Spain

ACs	Agriculture	Total Uses Mm <sup>3</sup>
Andalusia	89.8%	6,077
Aragon	96.4%	2,992
Castile-Leon	91.4%	2,471
Castile-La Mancha	93.3%	2,471
Catalonia	73.8%	2,118
Valencia	87.4%	2,718
Extremadura	95.4%	2,822
Galicia	13.3%	1,648
Madrid	22.6%	264
Murcia	80.6%	663
Rest of ACs	33.3%	2,766
Spain	84.4%	23,853

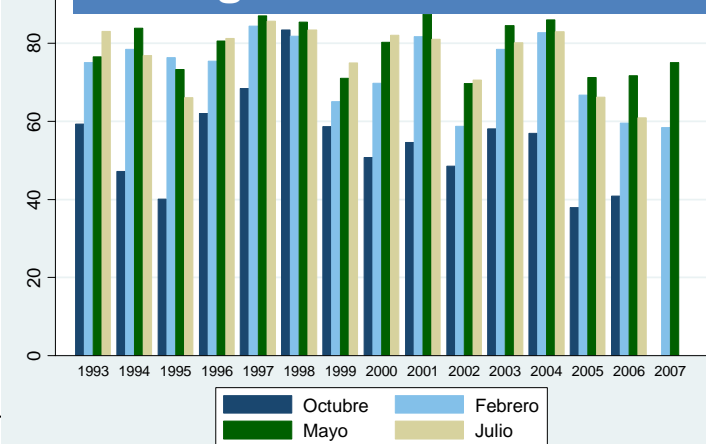


# LESSON 1 – Irrigation is the cornerstone of water policy in Spain

## Storage levels Guadalquivir

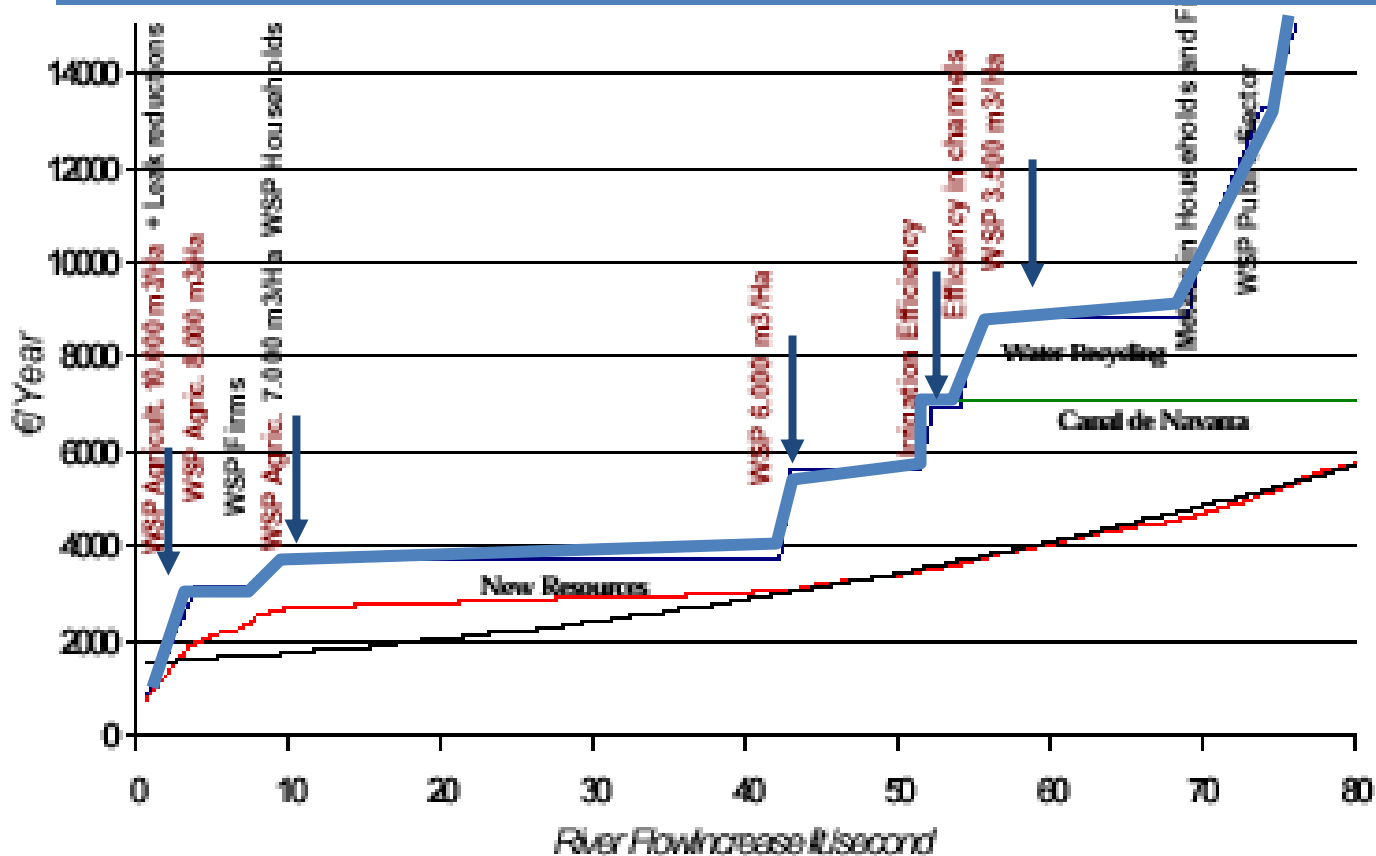


## Storage levels Ebro



# LESSON 1 – Irrigation is the cornerstone of water policy in Spain

Marginal and average cost of increasing river flows



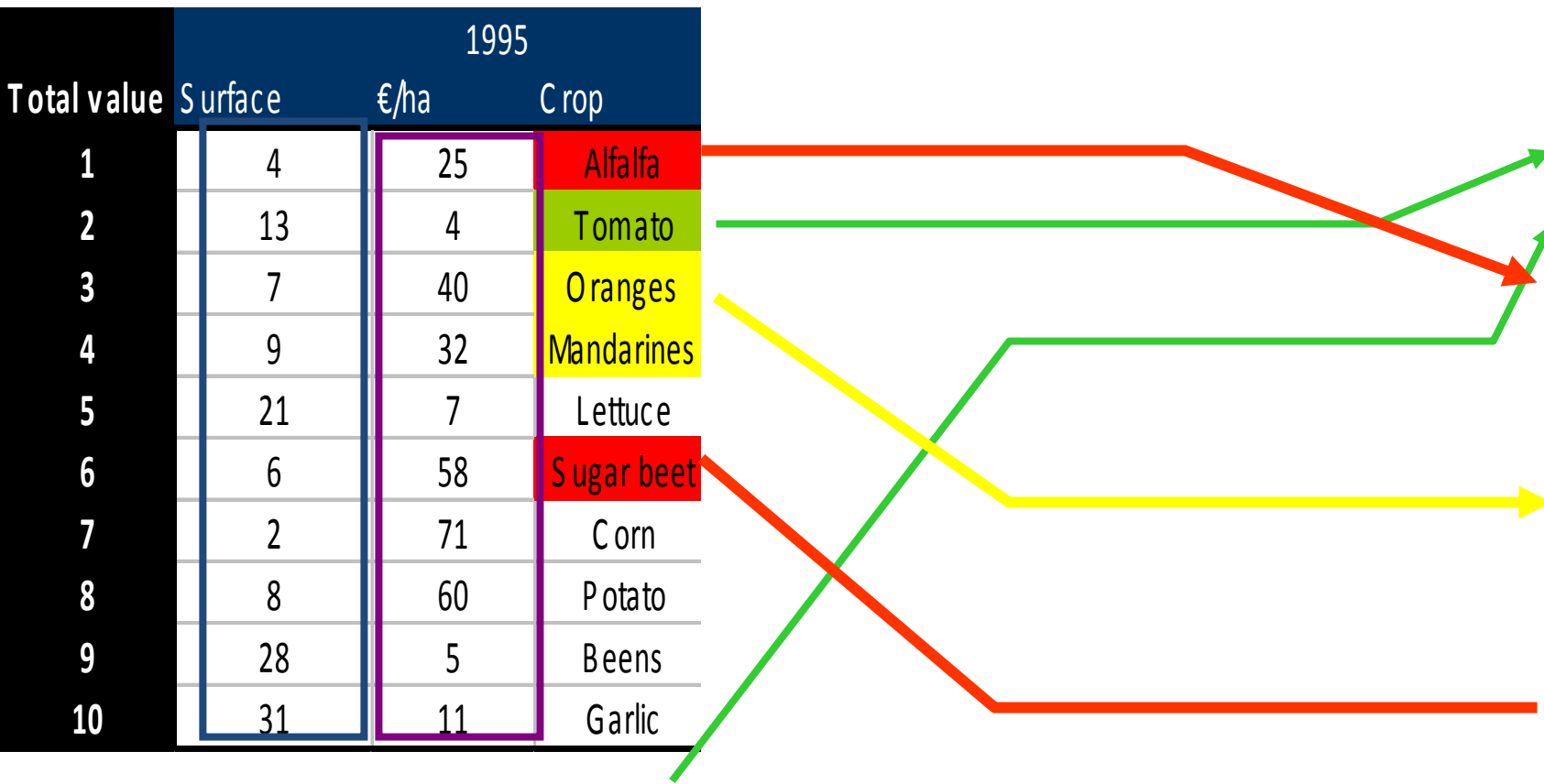
# Lesson 2 Let growers' be driven by Commodity markets

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- Changes in cropping patterns
- CAP Decoupling measures of support

# Lesson 2 Let growers produce to the markets

Rank of crops in total value, surface and pland productivity  
Spain (95 crops)



# Lesson 3 Don't expect too much from irrigation in terms of income generation

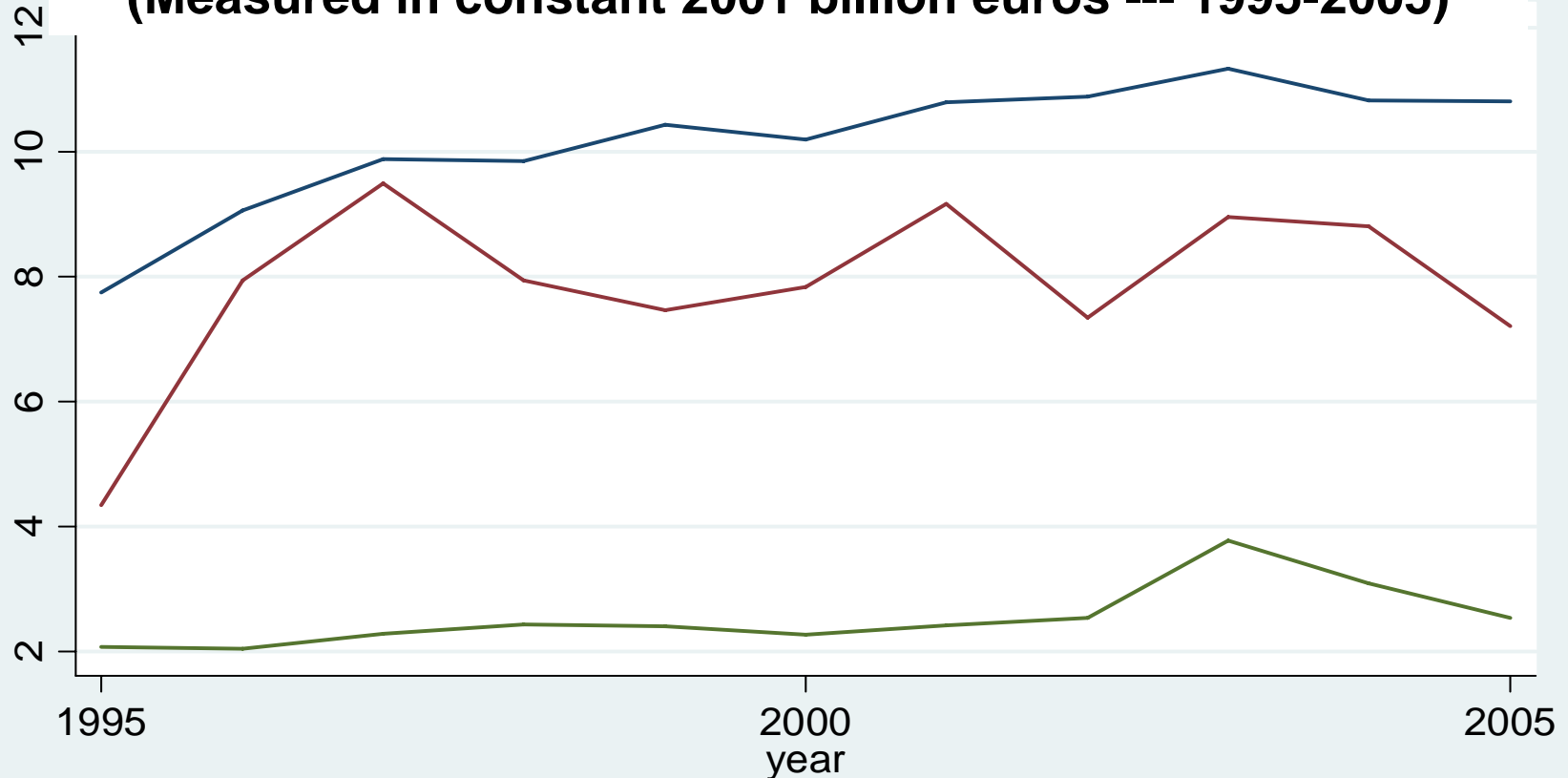
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- Stabilised Farm prices (except cereals,...)
- Growing input prices (fertilizers, fuel, labor,...)
- Intense land-consolidation process
- Intense capitalisation (2006 farm outstanding debt €21 billion, from €15 b. in 2004)



# Lesson 3 Don't expect too much from irrigation in terms of income generation

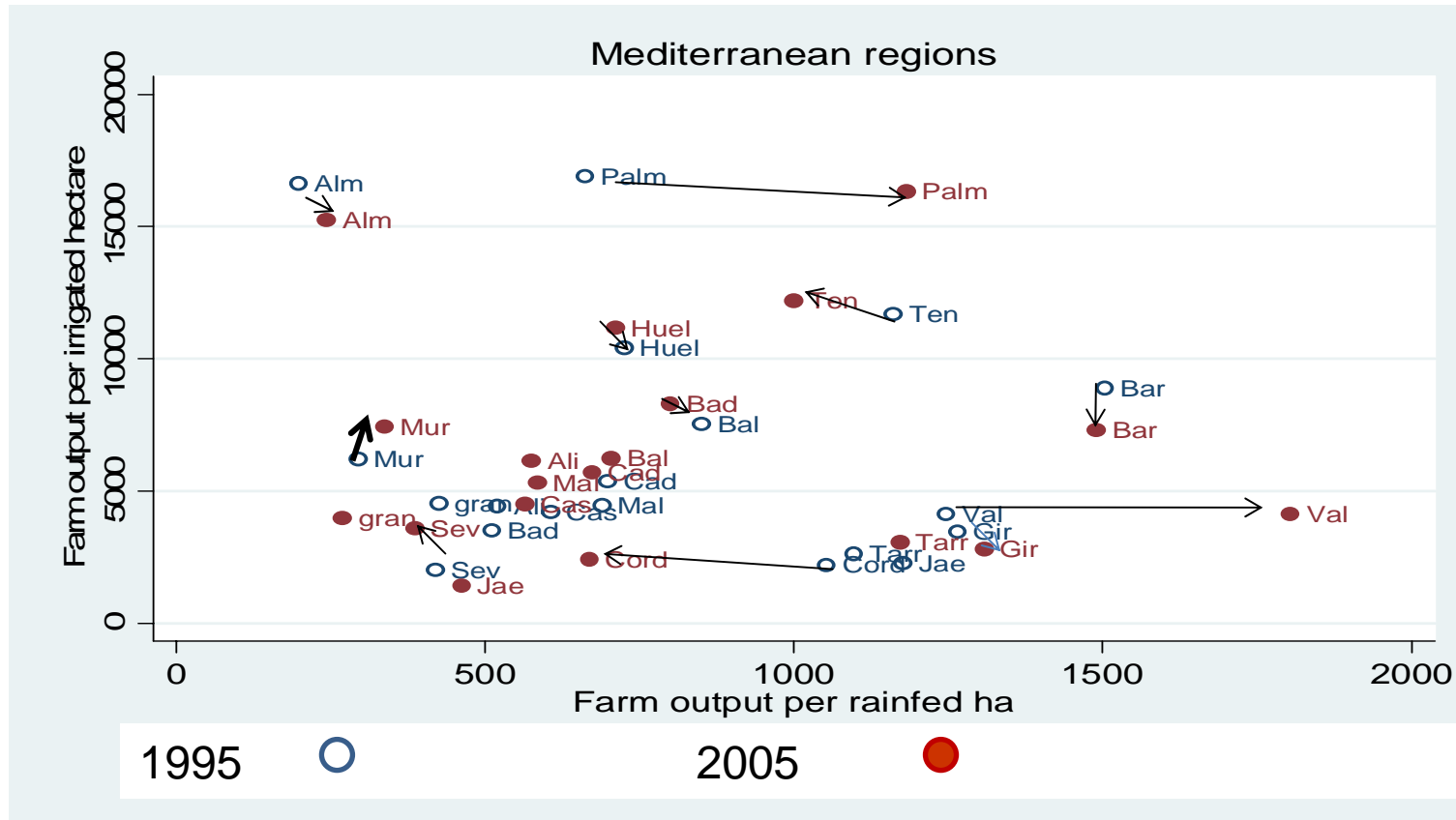
**Crop production in rainfed, irrigated land and greenhouses  
(Measured in constant 2001 billion euros --- 1995-2005)**



Rainfed  
Irrigated land  
Greenhouses

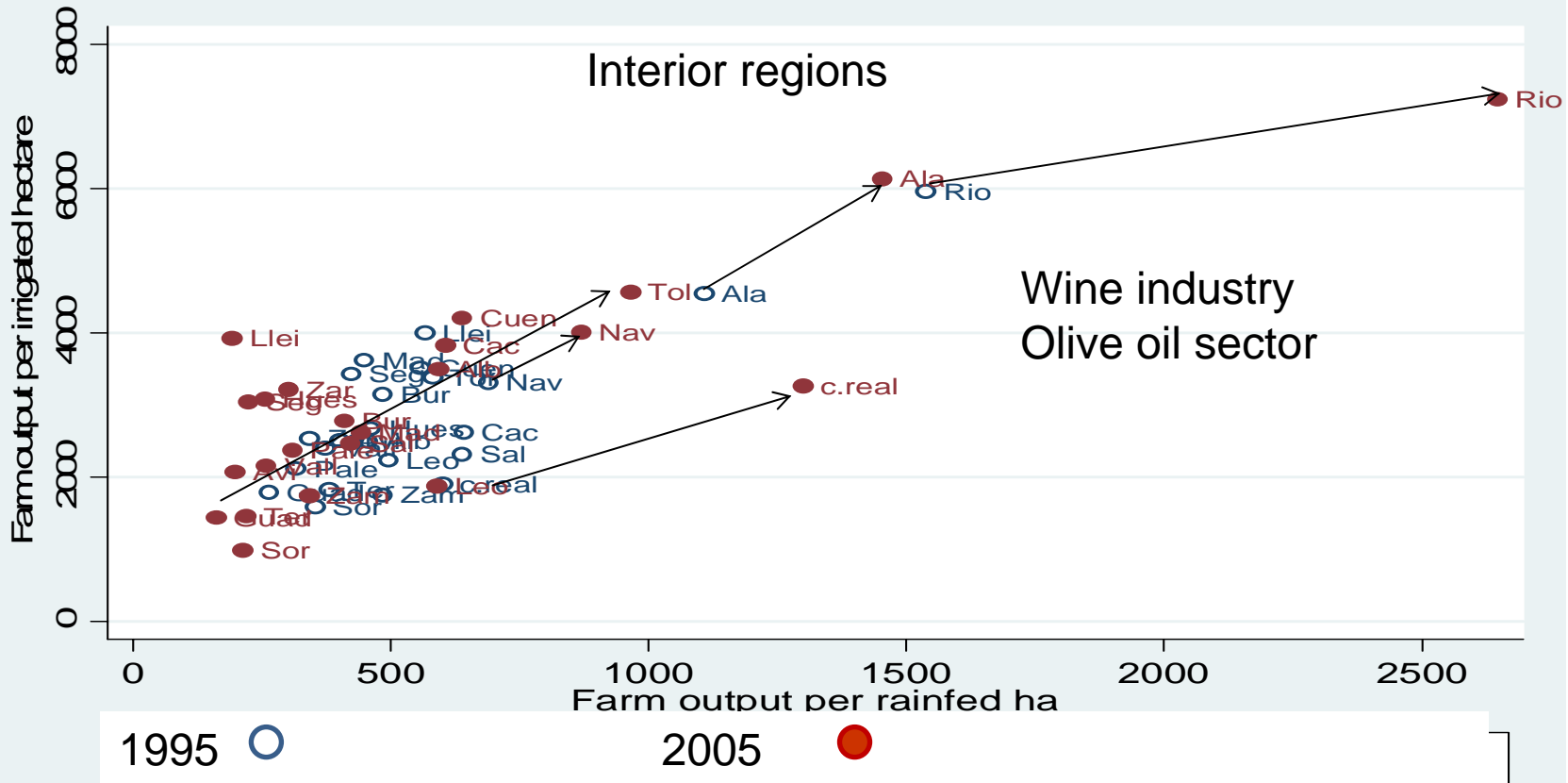
# Lesson 3 Don't expect too much from irrigation in terms of income generation in terms of income generation

Provincial changes of land productivity irrigated land vs rainfed region (constant €/ha)



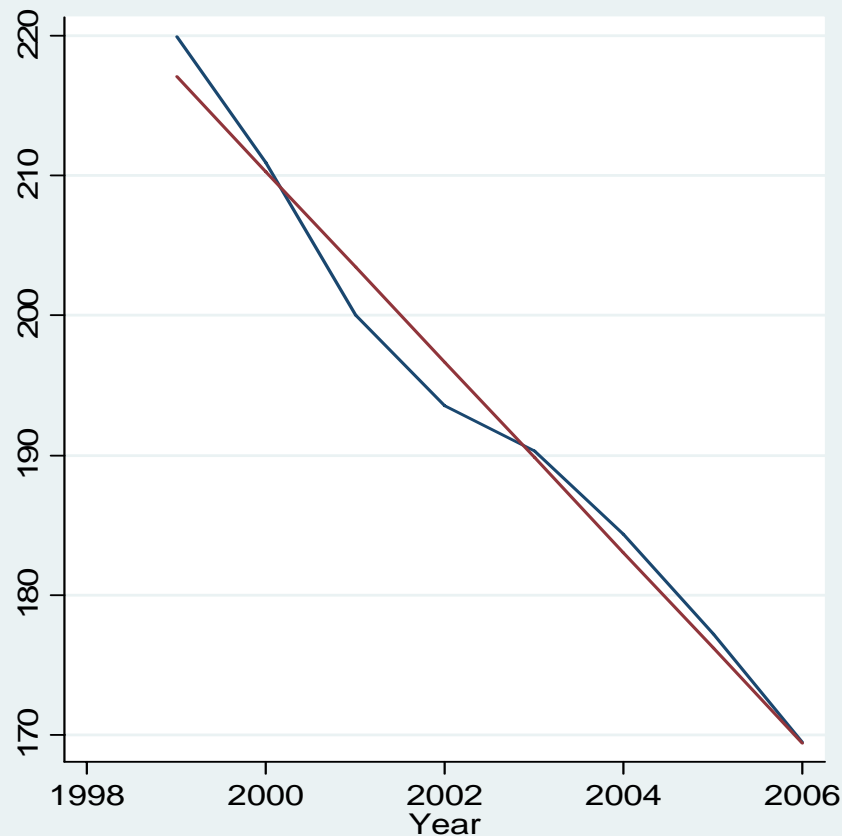
# Lesson 3 Don't expect too much from irrigation in terms of income generation in terms of income generation

Provincial changes of land productivity irrigated land vs rainfed region (1995-2005) (constant €/ha)



# Lesson 3 Don't expect too much from irrigation in terms of income generation

## Labor utilisation and farm operators (1000 persons, measured in December each year 1996-2006)



— Contracted farm workers — Tendencia

— Farm owners — Trend

Only 17 provinces

# Lesson 4 Focus on non-point pollution

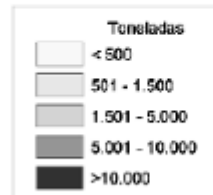
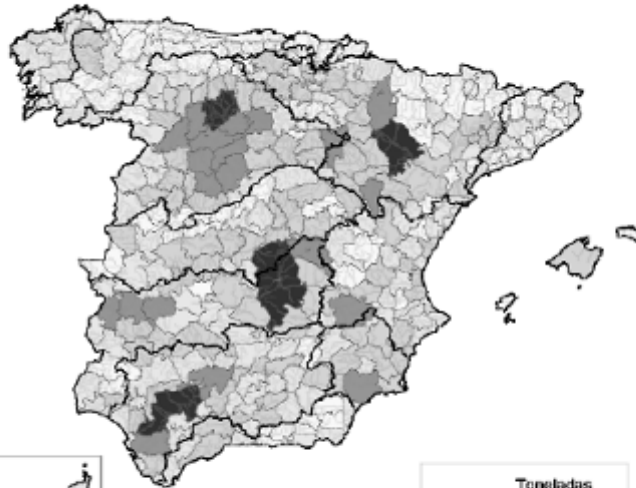
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- Use of Nitrogen and other fertilizers
- Livestock density (Spain tops EU pork production)

# Lesson 4 Focus on non-point pollution

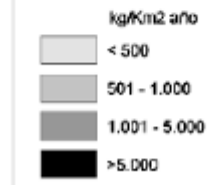
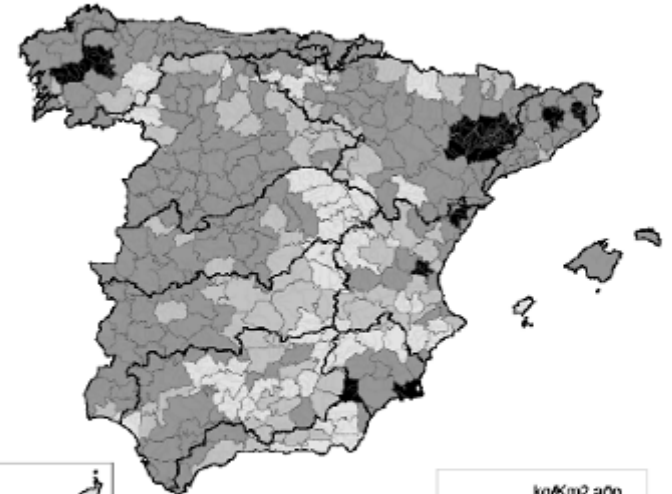
## Nitrogen use

Agriculture (Tn/comarca)



ESTIMACIÓN

Animal (Kg/km2)



ESTIMACIÓN

## Lesson 5. Listen to what scientists have to say

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- Yearly growth in papers produced by Spanish scientists 9%.
- Spain is #5 in EU and #9 in world, in number papers
- Spain is #10 (March 2008) in total citations (12 in Sept. 2004)
- Spain in #6 world ranking in agricultural sciences (13 in Geology, 11 in Chemistry, 15 in Engineering)

# Lesson 5bis. Stimulate researchers' outreach and popular dissemination

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- To reach
  - Gov't agencies
  
- To work with
  - The private sector



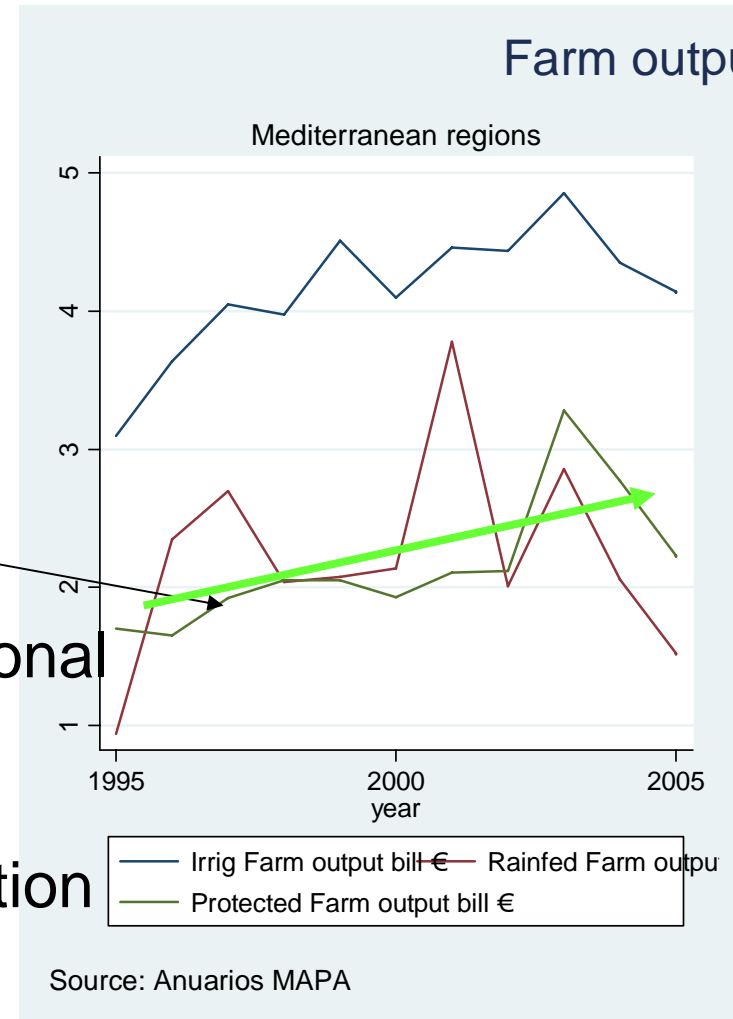
# Lesson 6. Prepare for intense pressures for water trading



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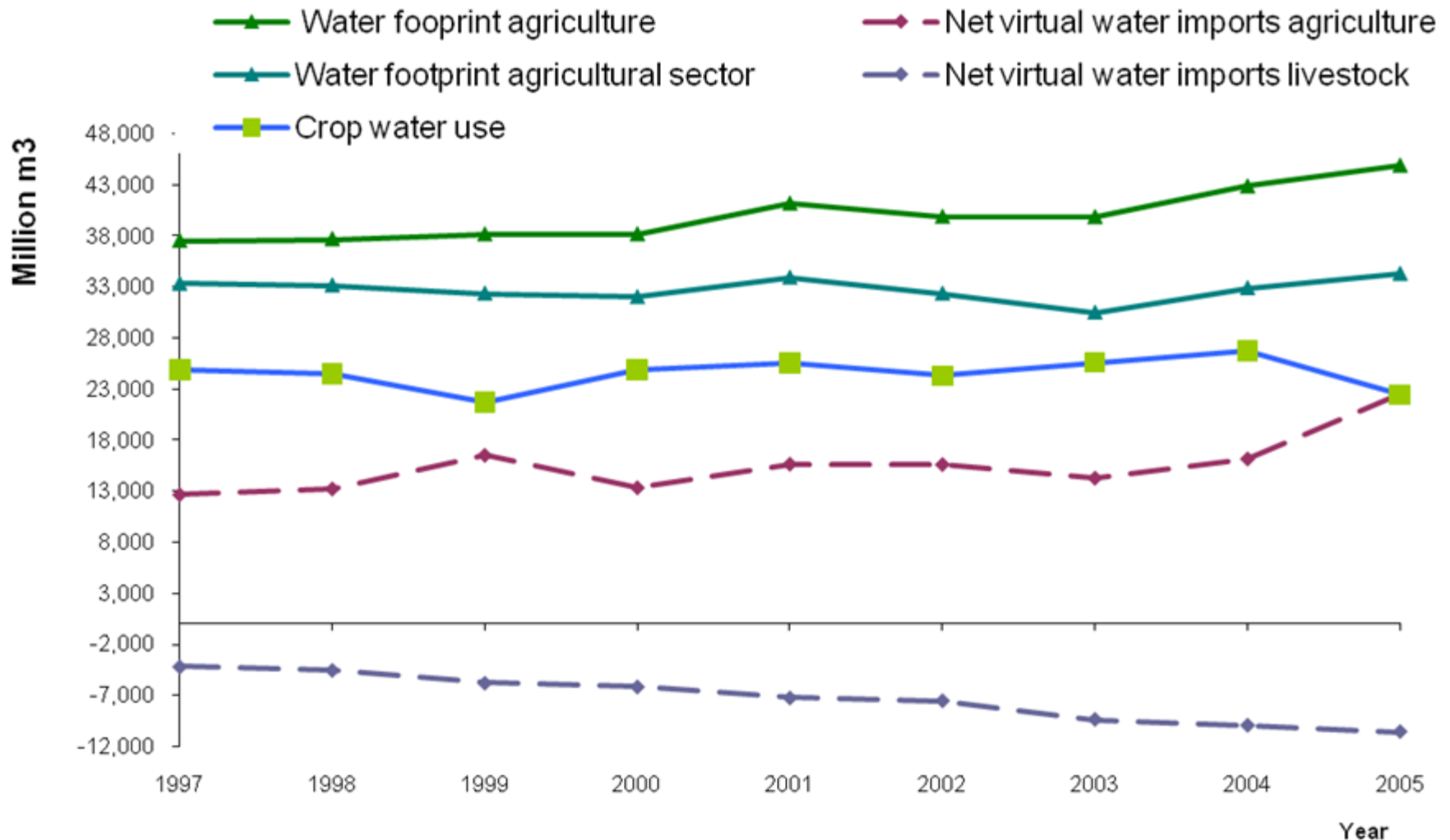


- Trading means not only spot or occasional
- water exchanges, but also risk-sharing instruments
- Note that trading requires revised definition of water rights

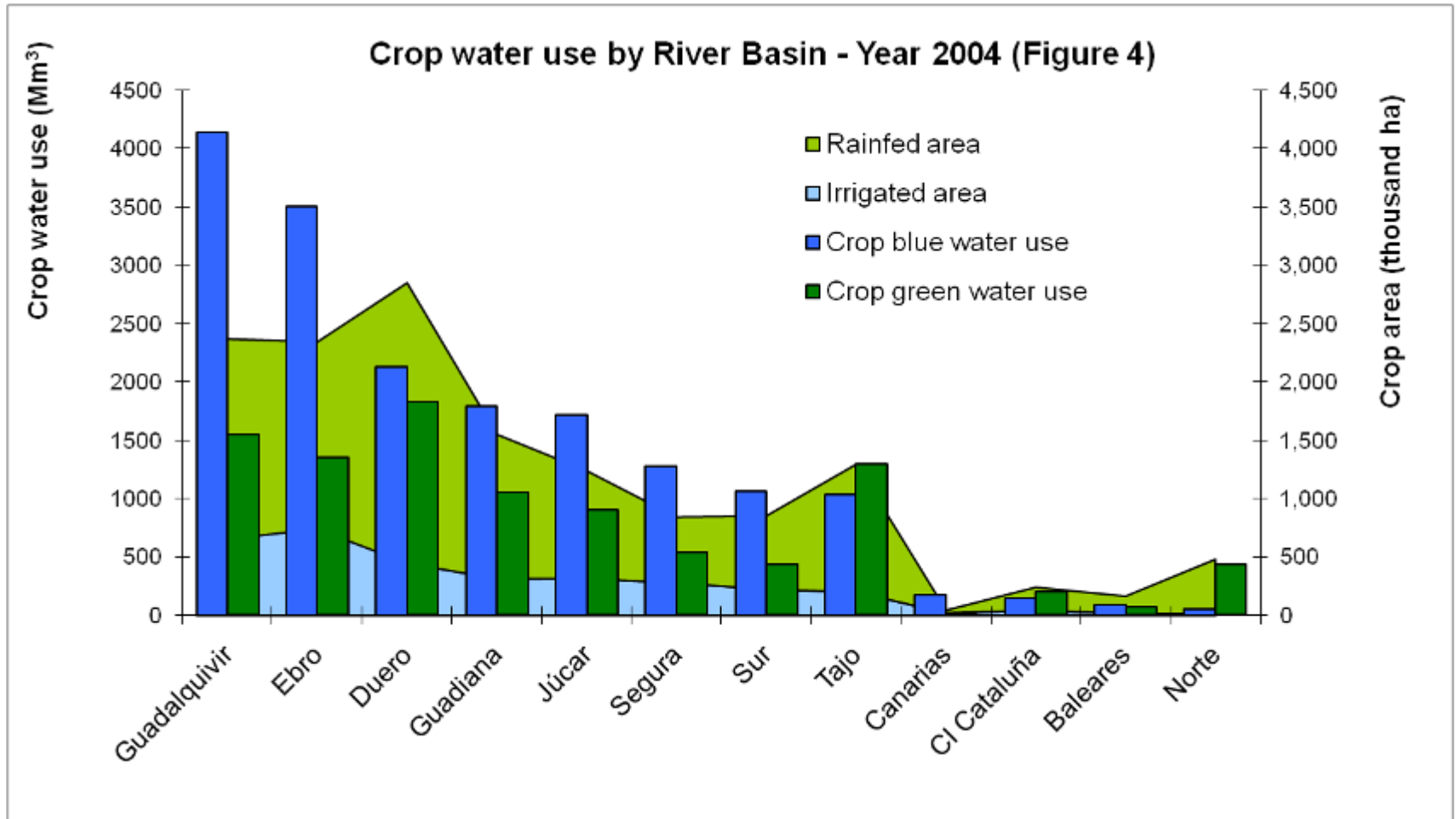


# Lesson 7. Frame evaluations of Water footprint and virtual water trade in policy contexts

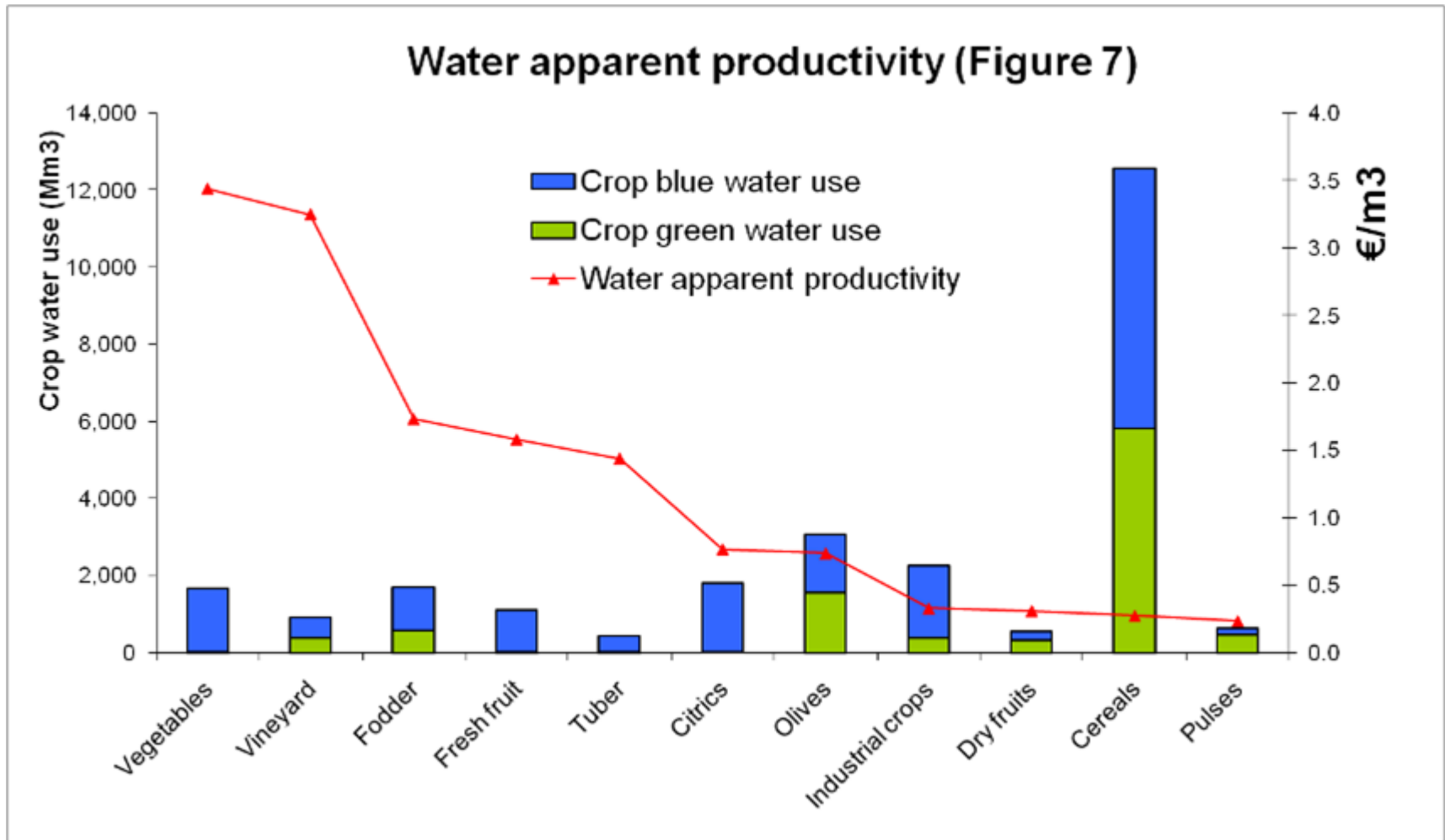
## Agricultural Water Footprint (Figure 1)



# Lesson 7. Interpret the Water footprint and virtual water trade



# Lesson 7. Interpret the Water footprint and virtual water trade



# Lesson 8. Communicate better what is agriculture and irrigation

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- During 2004-08, agriculture has been blamed for everything that went wrong
- Agricultural key roles are poorly explained:
  - Buffer to other users
  - Food production
  - Landscape stewards

# Lesson 9. Take into account that rivers are shared with others



The EU mandates that EU member states coordinate Water plans.