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1. Italy in the Eu
2. Water and irrigation
3. Irrigation efficiency at the field level
4. Management and technology to improve system performance

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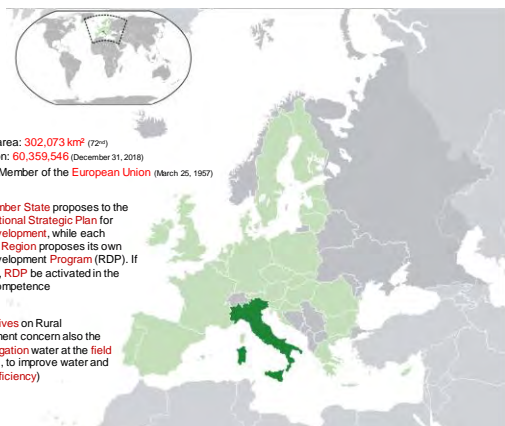
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National territory



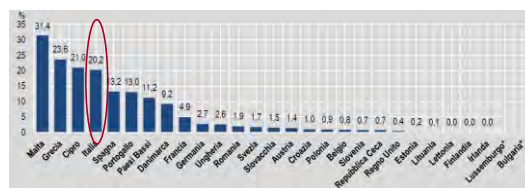
Divided into 20 Regions, which are public authorities with their own statutes

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IRRIGATED LAND IN THE EU COUNTRIES (2016)
% of cultivated area



After Spain, Italy is the European Country with the largest irrigated area.

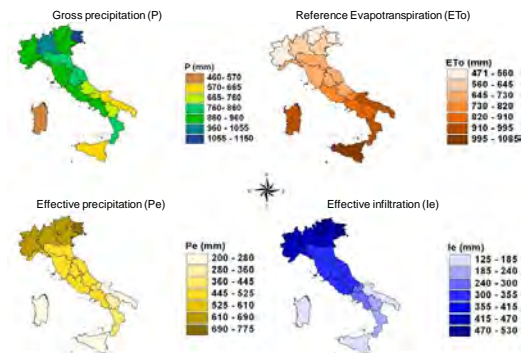
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WATER RESOURCES IN ITALY(2006)



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Water and Irrigation

- Farms >700,000
- Irrigated farms - 500,000
- Cultivated land: 125,764 km² (41.8% the Italian territory)
- Irrigable land: 41,230 km²
- Irrigated land (2016): 25,530 Km² (20.2% the national cultivated land)
- Compared to 1982: irrigated land increased by 1.7%
 farms number decreased by 20.9% (e.g., larger farms)
- Compared to 2012: irrigated land increased by 5.5%
- About 50% of withdrawn water is allocated to agriculture (2016)
- According to the 6th General Census of Agriculture (2012), water used in agriculture amounts to 11.6 billion m³/yr
- On average, 4,666 m³/ha applied



Irrigation type (2012)

Irrigation type	Irrigated area (ha)	%
Border, furrow	748,390.88	30.9
Basin	221,024.76	9.1
Sprinkler	958,535.14	39.6
Micro	422,534.39	17.5
Others	68,435.53	2.9
Total	2,418,920.70	100

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Water source and delivery type

- ✓ 63% of irrigation water is delivered to farms by Irrigation Consortia (public authorities operating upon associative basis). About 34% is delivered on turn, the remaining 29% is on demand
- ✓ 18% is taken from wells within (or close to) the farms
- ✓ 11% is from external surface water bodies (e.g., lakes, rivers)
- ✓ 5% is from internal surface water bodies



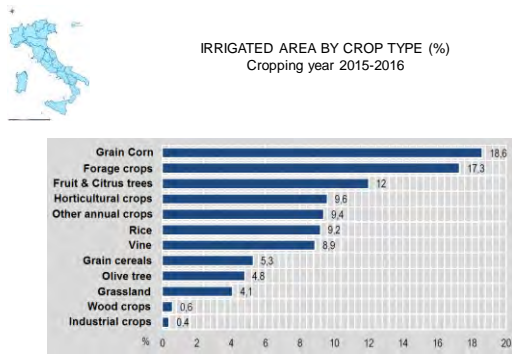
Influence of farm size, water source, delivery system, and irrigation type on irrigation water use (m³/ha)

- ✓ Water use increases with the irrigated area: from 3,000 m³/ha for small farms (<1ha irrigated) to more than 7,000 m³/ha for large farms (>100ha irrigated)
- ❖ 3,500 m³/ha when ground water is used
- ❖ 4,300 m³/ha when internal surface water is used
- ❖ 5,000 m³/ha when external surface water is used
- ❑ 4,500 m³/ha under on turn delivery system
- ❑ 6,000 m³/ha under on demand delivery system
- 3,000 m³/ha supplied by micro irrigation systems
- 3,500 m³/ha supplied by sprinkler systems
- 5,500 m³/ha supplied by traditional (border, furrow) systems
- 15,000 m³/ha supplied by basin

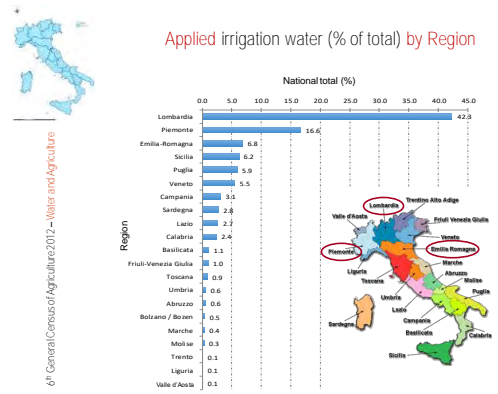
Where irrigation is supported by advisory services, water saving is >10%

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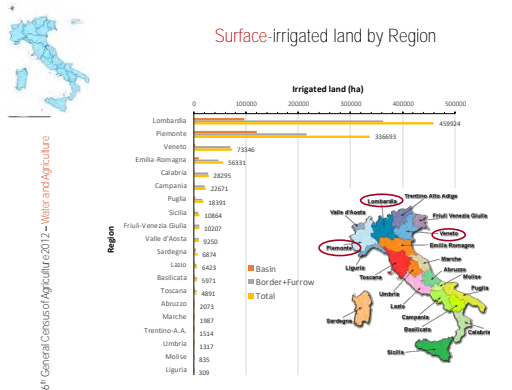
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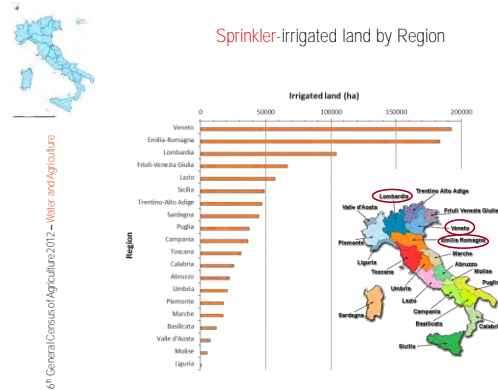
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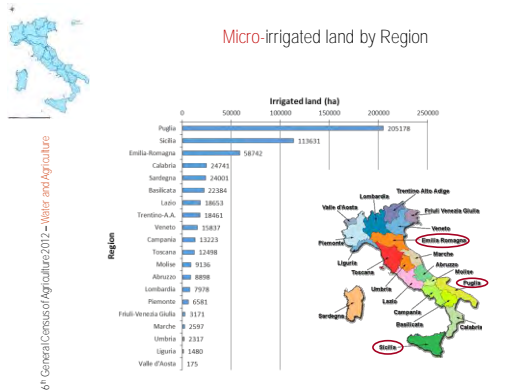
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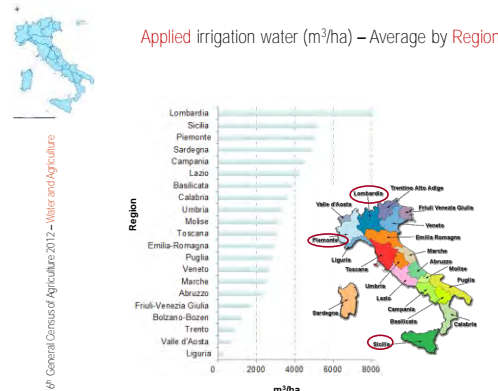
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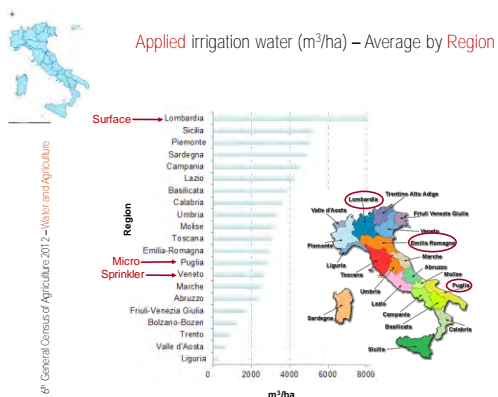
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Efficiency assessment at the field level

System category	Crop Type*	Assessment criterion	Range (%)	Avg (%)	Publication
Micro	A, P	Uniformity	44-87	69.7	2006, ARSIA
Micro	A	Uniformity	50-90	75.7	2012, ICID
Micro	P	Uniformity	40-93	74.6	2012, ICID
Sprinkler	A, P	Uniformity	35-71	58.1	2009, AIA
Sprinkler	A	Balance	59-88	78.4	2013, WIT
Micro	A	Balance	39-81	63.2	2013, WIT

* A=Annual
P=Perennial

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Advisory services to support on-farm irrigation



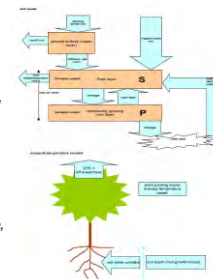
- **IRRINET:** Irrigation Advisory Services for Farm Water Management based on **water balance**. Information supplied to **farmers** by **Consorzia** (WUAs), the manager of the Service.
- **IRRISAT:** Irrigation Advisory Service based on **satellite data**. It is for:
 - ✓ **Farm business** and **water suppliers** and anyone which needs customized weather forecasts and irrigation maps, crop growth evaluations and distinguish between irrigated and non-irrigated fields.
 - ✓ **Water supplier managers, Water Authorities** and who needs information about crop growth, irrigation requirements and distinguish between irrigated and non-irrigated fields.

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Irrinet by CER

Consorzio di Bonifica di secondo grado per il Canale Emiliano Romagnolo

Irrigation Advisory Services for Farm Water Management service is based on a **water balance model** aimed at crop irrigation management at a field scale and therefore the processes and calculation simulated by the model reflect such aim. The model has a structure that is concerned with the **soil-plant-atmosphere continuum**. It includes the soil, with its water balance; the plant, with its development, growth; and the atmosphere, with its thermal regime, rainfall and evaporative demand.



Source: https://www.ardbame.it/files/ame/Consorzio/irrigazione_documento_inglese_version.pdf

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Irrisat by Ariespace

The platform is based on a technological innovation that combines **satellite** observations, at **high spatial and temporal resolution**, and **weather forecasts**. Irrisat provides **daily irrigation maps** with a forecast horizon of 5 days from the last irrigation, using **innovative computation methods**. Additionally, it helps in the analysis of **crop** and **weather data** (evapotranspiration, irrigation, rain, temperature, vegetation index), through a **simple and intuitive interface**. Both for **individual farmers** and **WUAs**



Source: <https://www.irisat.com/en/farmer/>

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Italian Micro and Sprinkler systems and equipments



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Italian Micro and Sprinkler systems and equipments



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Italian Micro and Sprinkler systems and equipments



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Italian Micro and Sprinkler systems and equipments



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Italian Micro and Sprinkler systems and equipments

https://www.icid.org/icid_webinar_13.html



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Conclusions

- Italy implements **EU directives** concerning irrigation. General aim is to improve the **performance** of agricultural systems
- Irrigation **equipment** is being **modernized** in the frame of the new orientation aiming to water saving and GHG emissions reduction
- Compared to the 6th General Census of Agriculture, the percentage of land irrigated by **pressurized** systems is **increasing**
- Compared to a decade ago, activity of **Irrigation Advisory Services** for Farm Water Management has spread over larger areas in the Country
- At the **farm level**, the conditions exist (e.g., advanced technology and management) for a **significant improvement** in resource use **efficiency**, environment **protection** and farm **income**

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