

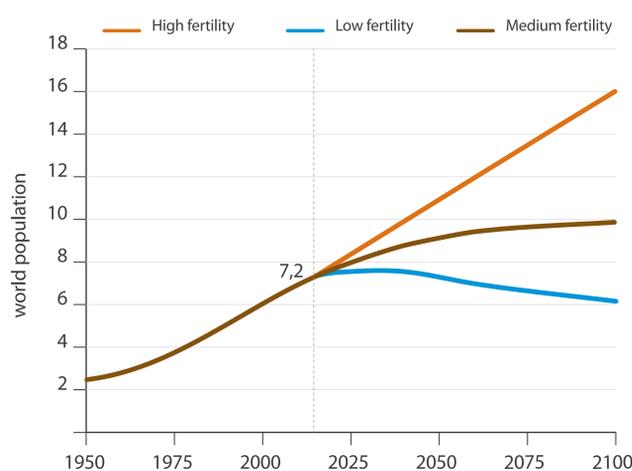
SUSTAINABLE INTENSIVE AGRICULTURE

The global demand for agricultural crops is increasing and may continue to do so for decades propelled by **3 billion** person increase in global population (United Nations's forecasts considering a medium fertility index (son per woman) and the greatest global per capita incomes expected.

Analyses foresee that the global demand for crop calories (cereals and tubers) would increase by 100% and that for crop (legumes) and animal proteins would increase by 110% from 2005 to 2050.

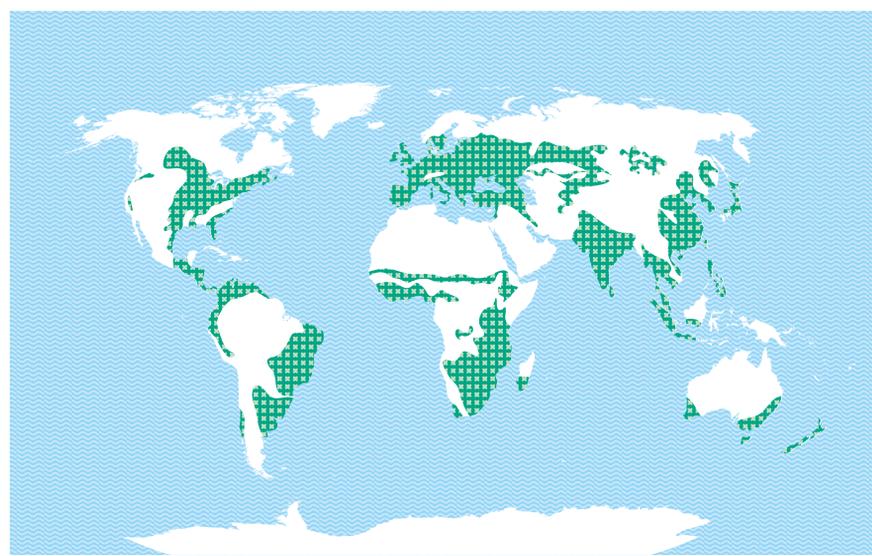
Food producers are experiencing increasing competition for land, water, and energy, and the need to curb the many negative effects of food production on the environment is becoming increasingly clear.

Population growth



In the past, the primary solution to food shortages has been to bring more land into agriculture. For example, in the past five decades, while grain production has more than doubled, the amount of land devoted to arable agriculture has globally increased by only about 9%. Today, about 25% of the global land is under agriculture and no further significant increase is reasonably to be expected in the future. As a consequence, in order to satisfy the dramatic increase in the global demand for food, the most likely scenario is that more food will need to be produced from the same amount of (or even less) land.

Cultivated areas

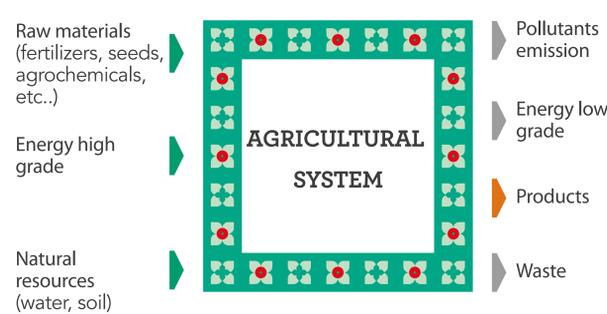


Cultivated areas

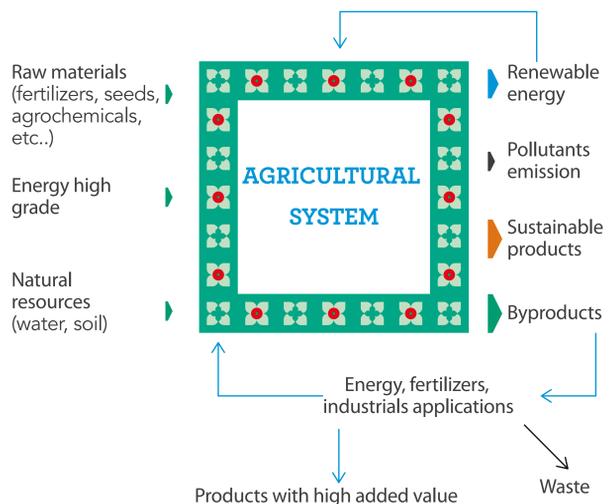
Without innovation, the goal of doubling crop yield per arable land surface unit would require dramatic amounts of water, fertilizers, pesticides and fuel-derived energy. Nevertheless, this solution is **economically and environmentally unsustainable**.

Producing more food from the same area of land reducing at the same time the energy inputs and the environmental impact requires what has been called **sustainable intensification**.

TRADITIONAL INTENSIVE AGRICULTURE



AGRICOLTURA INTENSIVA SOSTENIBILE



Sustainable intensive agriculture provides for the development of:

- crop varieties characterized by high yield at low resource (i.e. water and fertilizers) availability, able to grow under adverse environmental conditions, tolerant to pest attacks thus limiting the need for chemical pesticides;
- technologies and processes for the energetic valorisation of agricultural wastes, through their re-use as fertilizers and/or new chemicals for industrial purposes;
- new, high-throughput and automatized technologies for monitoring the real crop needs for water, fertilizers and pesticides, allowing consequently their optimal distribution in terms of amounts, timing and site within the field (precision farming), in order to limit resource wastefulness and environmental impact;
- predictive models for foreseeing crop needs in the future climatic scenarios expected.

The scientific research is largely active on these topics. This exhibition will present some examples.

Progetto



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