

Processing Tomato cropping system sustainability pathways: state of the art and rules of thumb

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Sustainable development is a strategic objective of the European Union. The EU commitment to sustainable development was first set out in Gothenburg adopting the “EU Sustainable Development Strategy” (2001), which was endorsed by the Barcelona EU Council communication (2002) and recently confirmed as a core strategic objective as reported in the communication “Strategic objectives 2005-2009” (2005). From the 1990s “sustainability” has become a keyword for most of the social, economic and ecological issues, mainly with regard to mid or long-term regional/global development, however there is no generally acknowledged definition of “sustainable agriculture”. Even though several attempts to define the sustainable agriculture criteria were made during the last five years, the expression is still used especially in the context of analysing the negative effects of certain crop production methods. Such a “negative approach” to sustainable agriculture causes a sharp reduction of the overall view, focusing on some specific, and often partial, targets such as pest management, fertilisation and water use for irrigation. As a result, much of the applied sustainable agriculture techniques were based on a simple input substitution rather than an ecological system approach. A more holistic understanding of the cropping system and of the whole production chain is needed, following the Assets-Based Model proposed by Pretty (1999).

To reach and keep a good balance in the three-dimensional dynamic schema among Ecology, Economy and Social equity, proposed in the Brundtland report (1987), will be quite difficult in a complex reality such as the processing tomato production chain. Some aspects should be highlighted and discussed:

- The ending point of cropping systems shouldn't be considered the raw product but rather the tomato sauce or, even better, the pizza: sustainability should follow a “from field to fork” approach
- Thinking in terms of efficient use of non-renewable inputs, like energy from fossil fuel, could help a lot the whole production chain sustainability: any improvement of the energy balance in the field will have positive effects on the processing energy requirements as well
- Processing tomato waste are really waste? A longer production chain will help the economic sustainability and the social impact as well. A closed-loop system could minimize the processing tomato environmental impact
- Optimise the use of natural resources (water and soil fertility) and reduce the inputs (chemicals, fertilisers) restoring the complexity of the biological system in the field: the positive effects of biodiversity, organic matter supply and carbon sequestration, rotation, etc.
- From a sustainable standpoint the farm and the factory are just structural components of the same system: why in practice synergies are so difficult to build up?
- Sustainability could be perceived as another bureaucratic load that wouldn't produce any benefit?

Moving from traditional cropping systems to sustainable ones requires big efforts and, in practice, not all farmers are able or willing to take such a leap. However, as stated by MacRae (1993) “Everyone can take small steps, and small steps added together can bring about big change in the end”

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GENERAL FRAMEWORK

Environmental laws have broadened the traditional role of agriculture, now also called on to safeguard clean water, fresh air, biodiversity and natural landscapes.

Soon farmland will come to play a social as well as productive role.

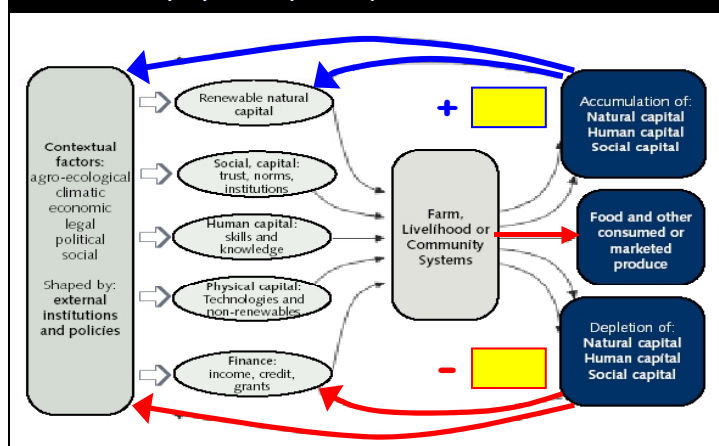
Processing tomato represents one of the most intensive forms of land use in terms of inputs.

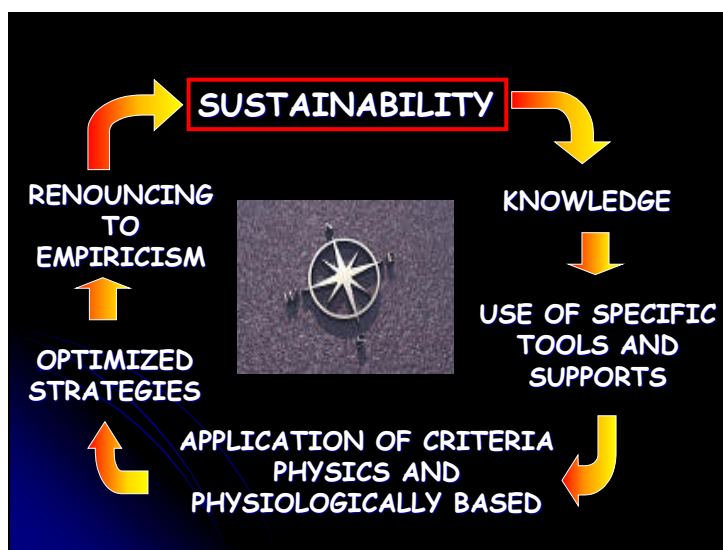
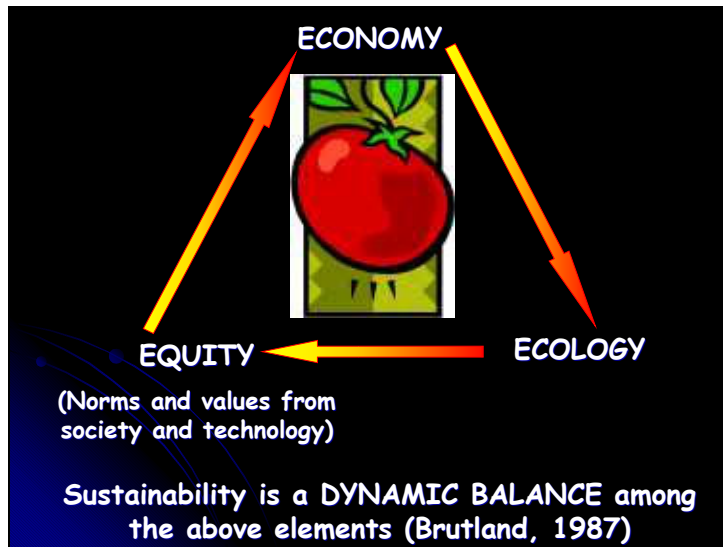
Growers must comply with regulations governing the use of technical inputs, minimising their impact on the hygienic and nutritional quality of tomato derivatives

Labelling and traceability systems are being developed which may serve to penalise nonconforming crops and reward those obtained using sustainable techniques.

Water and nutrient supplies are cost-effective because of the tomato high potential profitability; however, the brevity of the cycle, varietal characteristics and the quantity of crop residues imply a high environmental risk.

A more holistic understanding of the cropping system and of the whole production chain is needed, following Assets-Based Model proposed by Pretty (1999).





Sustainable development is a strategic objective of the European Union. Several attempts to define the sustainable agriculture criteria was made but the expression is still used mainly as a result of the applied sustainable agriculture techniques was a keyword for most of the social, economic and ecological issues, mainly with regard to mid-term or long-term of regional/global development, however there is no generally acknowledged definition of sustainable agriculture.

ICM

WERE WE ARE AND CONSUMERS/LAWMAKER'S EXPECTATIONS

To reach such a difficult goals a
strong multidisciplinary effort must
be done.

Are we ready?

NON CONVENTIONAL WATER/NUTRIENT/OM SOURCES

SUSTAINABILITY, FOOD SAFETY, CONSERVATION OF
NATURAL RESOURCES

4th STEP

SOME CRITICAL POINTS

The ending point of cropping systems shouldn't be considered the raw product but rather the tomato sauce or, even better, the pizza: **sustainability should follow a "from field to fork" approach**

STATE OF THE ART:

Actually few researches and informations are available to manage efficiently such a difficult and complex approach.

A new EU Project will focus some hot topics related to the sustainable use/reuse of water resources on tomato's derivatives

SOME CRITICAL POINTS

Thinking in terms of efficient use of non-renewable inputs, could help the whole production chain sustainability: any improvement of the energy balance in the field will have positive effects on the processing energy requirements as well

STATE OF THE ART:

In a context of water, energy and other inputs shortages, there can be no competition for resources between the cropping and processing stages. Specific environmental objectives to obtain ecolabels must thus be set for the entire production chain.

SOME CRITICAL POINTS

Processing tomato waste are really waste?

A longer production chain will help the economic sustainability and the social impact as well. A closed-loop system could minimize the processing tomato environmental impact

STATE OF THE ART:

Researches recently carried out indicated that the by products value could be a significant forward integration of the processing tomato core business.

New markets could be opened and a better image of the "tomato chain" created.

SOME CRITICAL POINTS

Optimise the use of natural resources (water and soil fertility) and reduce the inputs (chemicals, fertilisers) restoring the complexity of the biological system in the field: the positive effects of biodiversity, organic matter supply and carbon sequestration, rotation, etc.

STATE OF THE ART:

Several researches were focused on that direction during the past decade: now the available knowledge should be reorganized and applied.

Some tools (DSS) already available for growers.

SOME CRITICAL POINTS

From a sustainable standpoint the farm and the factory are just structural components of the same system: why in practice synergies are so difficult to build up?

STATE OF THE ART:

Public bodies are asking to Research Institutes to be more integrated with Growers and Industries. When asked Growers Associations and Industries are putting in a claim the need of researches.

Nobody is trying to cooperate!

SOME CRITICAL POINTS

Sustainability could be perceived as another bureaucratic load that wouldn't produce any benefit?

STATE OF THE ART:

That could be the feeling of most of producers and factories, on the other hand the sense of EU consumers is that "healthy foods are produced in an healthy environment" and only sustainable productions can assure about food safety.