

NON-CONVENTIONAL PRODUCTION SYSTEMS

THE NEW APPROACH TO PRIMARY FOOD PRODUCTION AND DISTRIBUTION

FOOD 2030: NUTRITION, CLIMATE, CIRCULARITY



After the third agricultural revolution in the 20th century, the mass production of agricultural goods has promoted conventional farming. Non-conventional farming refers to methodologies which use different approaches, from hydroponics to vertical agriculture and urban farming, agroecology, permaculture, and organic production, among others.

SPECIFIC R&I BREAKTHROUGH TOPICS

Hydroponics: Is the art of growing plants without soil, instead using a water solution with the exact amount of nutrients needed. This technology allows the growth of plants without depending on soil and weather conditions.

Vertical agriculture: Also called vertical farming because it uses shelving on which plants are nurtured in a controlled environment.

Intelligent cropping: Includes techniques that use smart management of agricultural concepts like smart crop rotation, reduced tillage, predator pest control or nutrient optimisation.

Agroecology: By definition, agroecology applies ecological principles of environmental sustainability to agriculture. It incorporates a scientific approach as well as a social movement into crop management.

Permaculture: With an emphasis on the ecological aspects of agriculture, it incorporates a social movement and a code of practice. Many associate it with agroecology, although there are slight differences on design and implementation.

Organic awareness: Organic production is characterised by the use of fertilisers with organic origin. It usually merges with techniques of crop rotation and biological pest control. Very often agroecology and organic

production are inter-related. However, legislation in Europe is very clear in its definition and considerations of organic production, requiring application all along the value chain, including processing.

Urban farming: Urban agriculture is considered within or near-by large urban populations. It includes many different perceptions where hydroponics and vertical farming are also included. But generally speaking, it is perceived as an urban community movement that promotes the value of cropping in urban areas.

EXPECTED IMPACT

Although these new techniques have different methodologies and ideologies, overall they try to bring more environmentally and socially sustainable approaches. Higher quality of crops, better use of resources and land, less intensive use of chemicals, and use of waste streams, all create a greater sustainability within the agricultural ecosystem.

MARKET OPPORTUNITIES / CHALLENGES

- There is a social and ideological aspect to most of these agricultural practices, the market of the obtained products addresses not only economic aspects but also social and environmental issues.
- The associated costs and efficiency of these practices is generally higher than the market standards. However, there are more consumers in Europe willing to pay the extra costs.
- The legislation that applies to the production and labelling of the products, obtained through these practices, can be challenging for new farmers that want to enter the business (e.g. organic production).
- There is the opportunity to develop circular business models in well-defined territorial contexts.

EXAMPLE REFERENCES

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ASSOCIATED TRENDS IN FIT4FOOD2030 (URL)

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|---|---------------------------------|
| ○ Climate change | ○ Health and food consciousness |
| ○ Malnutrition | ○ Changes in farm structures |
| ○ Demographic change | ○ Agricultural pollution |
| ○ Scarcity of natural resources | ○ Organic farming |
| ○ New and game-changing digital technologies in agriculture | ○ Indoor cultivation systems |
| ○ Engaged consumers | ○ Urban farming |
| | ○ Permaculture |

ASSOCIATED CASES IN FIT4FOOD2030 (URL)

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| ○ Kipster | ○ Infarm |
| ○ High tech Green House 2020 | ○ Bioware Planting Organics |
| ○ Losaeter | ○ Nemo's garden |
| ○ Ballymaloe Cookery School | ○ Seedforward: Freya |
| ○ Foodmeters | ○ Smart floating farms |
| ○ GrowUp Urban farms | ○ Agrophotovoltaics from Fraunhofer |
| ○ Herbert | ○ Farmers Cut |
| ○ Micro gardens Dakar | ○ Rootwave |
| ○ Soilfood | ○ Viro Vet |
| ○ Lufa farms | ○ Bee flow |
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