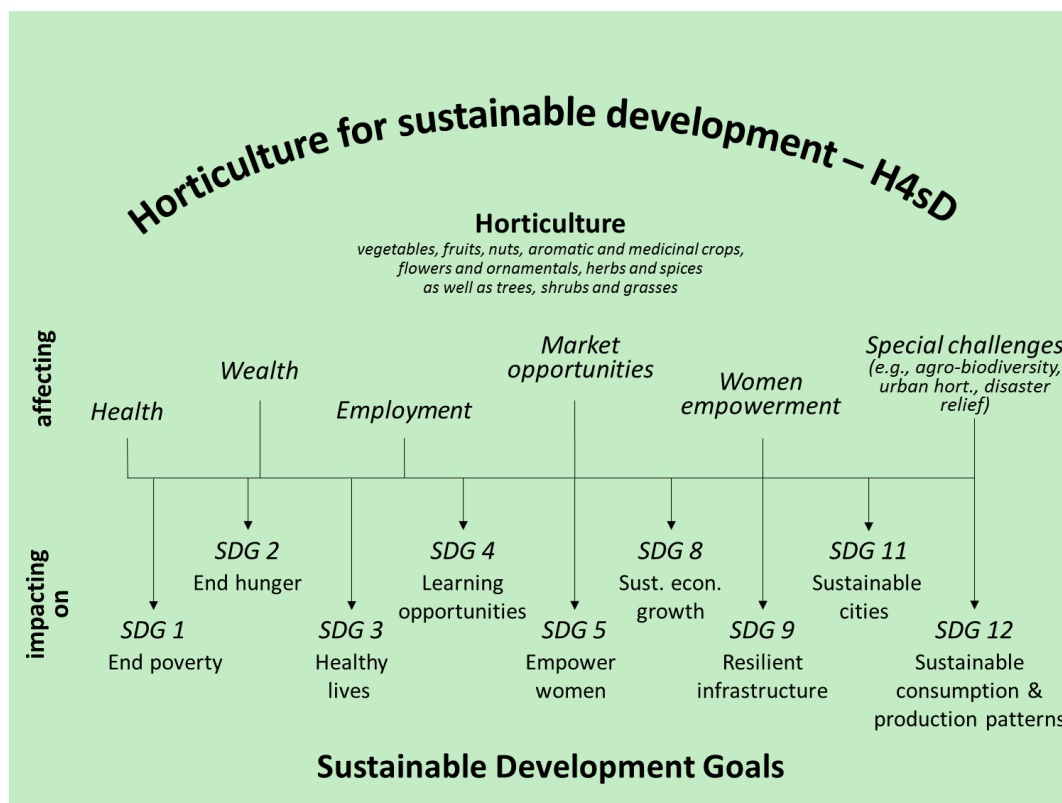


Horticulture for sustainable development: How horticulture contributes to the Sustainable Development Goals

As the world population is projected to reach 9 billion by the year 2050 and pressures such as changing weather patterns, increasing water scarcity, loss of soil fertility and productive land are limiting the options to increase food production in an environmentally and socially sustainable way, there are increasing calls for novel approaches to sustainable development. The UN Sustainable Development Goals (SDGs) are one approach to focus global efforts. Thanks to direct and indirect benefits of production, processing, marketing and consumption of horticultural crops, horticulture can make a significant contribution to the achievement of several of the SDGs. These diverse benefits are captured in the concept of 'Horticulture for sustainable development – H4sD'.



Horticultural activities pave the way for the integration of subsistence farmers, the landless and other resource-poor people once excluded from markets into broader economic activities, and thus play a significant role in sustaining rural communities and improving the living conditions of the poor. In addition, fruits and vegetables play a pivotal role in any approach to fight the threats of hunger, micronutrient deficiency and over nourishment and hence contribute to better health. Because horticultural products are generally high-value crops, they directly create wealth via higher incomes due to higher market

prices compared to staples. In addition, processing, trading and other elements of the value chain for horticultural crops create comparatively more employment and open additional new market opportunities than can be realized with staple crops. Moreover, horticulture has positive impacts on the empowerment of women and contributes to the protection and enrichment of agro-biodiversity and livable cities.

Horticulture guarantees health

Fruits and vegetables play a significant and crucial role in a balanced diet, which is a precondition for addressing “hidden hunger”, the consequences of micronutrient deficiencies, which is suffered by over two billion people. It is crucial to highlight the role of horticulture in the fight against micronutrient deficiencies, taking into account that the prevailing part of the international agricultural research community has still a strong focus on staple crops. At present, hidden hunger is to a large extent tackled by bio-fortification of staple crops. A more sustainable approach is by addressing micronutrient deficiencies through sustainable crop and diet diversification, especially through a balanced consumption of a variety of fruits and vegetables. However, challenges regarding availability, affordability and food safety of fresh fruits and vegetables and the conservation of processed produce have to be considered and solved to optimize the contribution of horticulture to health, while accepting that the high-value horticulture crop can at the same time become a high-risk production system.

This aspect of H4sD contributes to SDGs 2 and 3.

Horticulture creates wealth

The production and sale of fruit and vegetables, especially at a small scale, is a powerful tool for alleviating rural poverty and for enabling poor people to grow out of poverty. Due to its high per area productivity, horticulture is an effective tool in poverty alleviation for people with insecure land tenure and also in urban / peri-urban settings with limited land availability. Being of high value, fruits and vegetables not only enable small-scale farmers to escape poverty, they also open the door to farmers and others becoming agricultural entrepreneurs / “agripreneurs” throughout the whole food value chain. However, growing and selling perishable crops demands a high level of knowledge and pre-consideration regarding production, storage and transport as well as marketing and utilization.

This aspect of H4sD contributes to SDG 1 and SDG 4.

Horticulture creates employment

Due to its high labor intensity, horticulture has the potential to create employment throughout the value chain from production to processing. Besides utilizing family labor in an optimal way, the horticultural value chain creates employment for non-family labor. Also, there are manifold and increasing employment opportunities in a growing agribusiness supply and service sector for horticultural produce which includes operations like washing, grading, packaging, storing, transporting and further processing. By creating viable rural employment opportunities, horticulture

has an important role in reducing the migration of young people from the rural areas into the urban centers. In the medium term, most employment generated through horticultural value chains will be based on the local, national and regional market integration. Internationally traded horticultural produce also has an important role to play and will increasingly create demand for skilled personnel, mainly in food processing and packaging.

This aspect of H4sD contributes primarily to SDG 8.

The SDGs to which horticulture can directly contribute

- 1: End poverty in all its forms everywhere.**
- 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.**
- 3: Ensure healthy lives and promote well-being for all.**
- 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
- 5: Achieve gender equality and empower all women and girls.**
- 8: Promote inclusive and sustainable economic growth, employment and decent work for all.**
- 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation.
- 11: Make cities inclusive, safe, resilient and sustainable.
- 12: Ensure sustainable consumption and production patterns.
- 13: Take urgent action to combat climate change and its impacts.
- 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity

Horticulture fosters market integration and creates new market opportunities

The majority of smallholders are aiming for a double purpose of consumption and sale of horticultural produce. In this way, these smallholders are integrated into local and

national markets and are enabled to break away from subsistence farming. Furthermore, the diversification of the local markets creates business opportunities for new products based on horticulture. This includes novel products of primary processing, such as juices, ice creams, biscuits etc. and the use of fruit and vegetable extracts in various health-related products, such as nutraceuticals, cosmetics, etc.

This aspect of H4sD relates specifically to SDG 9.

Horticulture empowers women

Horticultural production, marketing, processing and consumption not only leads to nutritional and economic benefits for those involved, but also behavioral changes are observed. The production, handling and marketing of horticultural crops can provide safe and rewarding work for women and girls. In many cases, their engagement in the production and sale of fruits and vegetables has enabled women to take up a more self-confident role in their families and communities. Especially the opportunity to become entrepreneurs rather than being laborers can empower women in their communities. Because female household income is spent to a much bigger proportion for family matters, for instance for improved diets and supporting the school attendance of the children, especially permitting the education of girls, horticulture has a significant effect on female empowerment. It is also proven that, whereas in many cultures women can only lead the family farm when the male household head has passed away or abandoned agriculture, women can take over the control of horticultural activities much easier.

This aspect of H4sD contributes particularly to SDG 5 with relevance to SDG 4.

Horticulture protects and enriches agrobiodiversity

Horticultural production protects and enriches agrobiodiversity through the use of both modern varieties and – even to an increasing extent – indigenous and often neglected or underutilized horticultural crops. In addition, quite often indigenous vegetables are providing a high proportion of the nutritious needs of especially the poor in a country. Due to its high inter-species diversity, horticulture provides comparatively many options for diversifying smallholder agriculture to develop new markets, spread risk, and adapt to new realities associated with climate change. In addition, many indigenous species and landraces have the potential to be new horticultural crops, but they are at risk of being lost. Their survival can best be secured by promoting their use, besides conserving them in the relevant conservation facilities.

This aspect of H4sD contributes to SDG 12 and SDG 15.

Horticulture benefits livable cities

Horticulture has an increasingly important role in urban developments. This involves both the aspects of urban gardening which produces nutritious food within a short distance from the consumer and the role of horticulture in the creation of green spaces in cities, which have dual recreational and environmental benefits. Urban container gardening benefits particularly the urban poor who are often landless and have limited access to healthy food. By producing small amounts of fruits and vegetables for home consumption they can improve their nutrition. However, the misuse of sewage water, food production on polluted land areas and the risks of production in densely populated areas are significant issues to be addressed.

This aspect of H4sD contributes to SDG 11.

Constraints need to be addressed

There are many serious constraints that prevent different actors from fully exploiting the potential of the horticultural value chain as presented above. The most relevant limitations are:

- (i) lacking or inadequate capacity in all areas of the value chain (production, processing, marketing);
- (ii) lack of and insufficient access to technologies that are high quality, locally adapted, sustainable and productivity increasing (seed, fertilizer, pesticides, micro-irrigation, ICT);
- (iii) restricted access to affordable extension services;
- (iv) limited knowledge of food safety aspects;
- (v) restricted market access, including access to credit and insurance systems;
- (vi) imperfect infrastructure of which roads and cool chains are the most relevant ones;
- (vii) high requirements of (super-) markets concerning quality and quantity;
- (viii) unsatisfactory land tenure systems.

Moreover, the horticultural sector suffers from the lack of financial resources and commitment for research & development (R&D) in horticulture. One implication of this lacking commitment are inadequate innovation and dissemination systems. For instance, there are missing links between groups of researchers (and multipliers) for H4sD. Furthermore, the 'high-science' R&D for horticulture in high-income countries and in islands of high horticultural productivity in low-income countries are completely separated from the 'robust' R&D for the poor, small-scale farmers in low-income countries. In essence, political awareness and commitment to the horticultural sector are lacking so far and need to be improved to create an enabling environment for H4sD research and implementation.

Policy messages

1. Horticulture contributes directly to achieving the Sustainable Development Goals.
2. Horticulture contributes to create employment, market opportunities and wealth, it fosters employment, empowers women, protects and enriches agrobiodiversity and benefits livable cities.
3. However, to enhance the contribution of horticulture to achieving the SDGs, there is need to:
 - a) strengthen capacity in all areas of the value chain (production, processing, marketing);
 - b) improve access to appropriate technologies that are high quality, locally adapted, sustainable and productivity increasing (seed, fertilizer, pesticides, micro-irrigation, ICT);
 - c) facilitate access to affordable extension services;
 - d) increase knowledge of food safety aspects;
 - e) improve access to markets, including access to credit and insurance systems for producers and traders;
 - f) provide investment for better infrastructure, in particular roads and cool chains;
 - g) foster the dialogue between (super-)markets and producers concerning quality and quantity of horticultural product;
 - h) improve the prospects of stable land tenure for horticultural producers, especially in urban areas.
4. To achieve its full potential, full political commitment is needed and the horticultural sector needs to be strengthened through investments in education, training and research.

Further reading

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