

Chapter 5

Future challenges for good health and well-being

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Introduction

For a long time, good health and absence of diseases were considered as synonyms. Today, it is believed that good health goes far beyond disease absence, encompassing good physical and mental availability and social well-being, in addition to the normal organism functioning. Thus, an individual's good health relates not only to human physiology itself but also to its interaction with the physical, social, and economic environment associated with its eating habits and other behaviors that may be beneficial or harmful.

From this perspective, the challenges to promote the population's good health and well-being are enormous and depend on several aspects. By 2030, factors such as the population's growth and aging will require more and more intensification in the actions aimed at this aspect.

Challenges and solutions

In order to minimize current problems, it is necessary to face these challenges working in a preventive way. In this sense, the sustainable agriculture will play a fundamental role, given its direct connection with good health, poverty and food production, as well as its relation with natural resources, clean power generation and climate changes.

Scenarios still predict the prevalence of low-quality diets associated with malnutrition and micronutrient deficiencies. However, the demand for healthy, enriched and innovative foods will increase with reduced substance content, such as sugars, salts and fats, considered harmful to good health if ingested in excess.

Thus, technologies aimed at the development of these products will be fundamental. The consumer market will be more demanding and more conscious and will have strong influence on quality food production. In addition, these

consumers will be more attentive to environmental issues, especially those focused on production with less impact on the environment and human health.

Research aimed at the improvement of sustainable production systems will be necessary, as well as those aimed at expanding efforts for the development of agrochemicals with lower environmental impact, and also biological control for pest and disease handling.

Another demand that is growing is for foods targeted at specific publics, such as those free from sugar, gluten or lactose, as well as those produced in alternative systems, with lower level of processing and that are concerned with animal well-being. The native biodiversity of the Brazilian biomes is another field to be explored as a source of exclusive, authentic, and singular products that will allow adding value to the agricultural production.

Contributions of Embrapa

With the growing concern with nutritional values and food quality, Embrapa has been developing more nutritious and biofortified varieties, seeking to provide solutions to health problems associated with nutritional deficiencies. Thus, cultivars of rice, sweet potato and cowpea bean have already been launched on the market, while others are in the final stages.

Concerning this theme, research aimed at target compounds to be added/increased, such as vitamins, minerals, proteins and unsaturated fatty acids, have been carried out and will contribute to the generation of unique products that can serve as alternatives for the industry. The identification of compounds to be added (bioactives, proteins, fibers) or to be reduced (salt, sugars, saturated fats) in food continues to be investigated by Embrapa, thus impacting the quality of products and, consequently, human good health.

[Chapter 3](#) presented some of these technologies although a significantly larger number represents the Embrapa's collection. Related to the theme, around 90 cultivars, 110 agricultural practices, 60 agroindustrial processes, 40 methodologies, 80 solutions from other categories, and 90 services were generated, including analyzes, training, qualifications and consultancy.

Regarding sustainable production systems, the search for more resilient alternatives with reduced greenhouse gases (GHG) emissions stand out in Embrapa programming. [Chapter 4](#) presented some of these systems, such as the

integrated crop-livestock-forestry system; organic and agroecological agriculture (OA and EA). Others, such as no-tillage systems, biological nitrogen fixation, biological control of pests and diseases, planted forests, recovery of degraded areas, treatment of animal waste, recovery, restoration and environmental adequacy of rural properties are also among research priorities.

In accordance with the new trends in the food industry, Embrapa has focused its research activities on the advancement of knowledge and innovative technologies in the search for solutions to these issues. Nanotechnology, through the manipulation and optimization of nanometric-scale properties of matter, has demonstrated enormous potential for improving the performance of various products and processes as well as facilitating traceability processes. In addition, it can also be applied in the industry of inputs, veterinary medicine, as well as in the sectors related to food processing and conservation.

Biotechnologies are another field that has been emerging, highlighting the prospection of new products through genomic, proteomic, metabolomic and metagenomic technologies. Among the main contributions are the development of superior genotypes, the dominance of metabolic routes of plants, animals and microorganisms, as well as the development of materials and substances of high value, which will allow an increase in productivity in agricultural production systems.

In recent years, Embrapa has its strategic vision focused on anticipating trends, seeking to adjust its performance to offer solutions that meet future demands. The food-nutrition-health integration and sustainable production have become a reality for quality of life improvement. Thus, research actions will effectively contribute to improving the population's health and well-being. In this respect, through the generation of knowledge, technologies, services, and processes aimed at improving agricultural production and food quality, Embrapa will continue to contribute to this theme and, consequently, will be collaborating to reach the goals proposed for SDG 3.