

Vegetables for meeting Sustainable Development Goals

The United Nations has set 17 Sustainable Development Goals for the year 2030. The vegetables and allied enterprises have an important role to play in achieving these goals. The ICAR-IIVR, Varanasi is putting in its effort to contribute in achieving these goals, particularly the goals of no poverty, zero hunger, good health and well-being and climate action through development of improved varieties, production and protection technologies, trainings and hand holding the farmers as well as their groups.

THE 2030 Agenda for Sustainable Development involving 17 Sustainable Development Goals (SDGs) which were adopted by world leaders at a historic UN Summit officially came into force on 1 January, 2016. Though the time in hand to achieve these ambitious goals by 2030 is limited, yet the vegetables can play a very vital role in achieving many of these SDGs directly or indirectly. The available data indicates that nearly 86% farmers in India are small and marginal ones, which cultivate around 47% of total cultivable land accounting for more than half of the agricultural production. Interestingly, it is also a well-known fact that most of the vegetable growers in India belong to this small and marginal category and even after having such limited land holdings, the vegetable cultivation being a remunerative enterprise compared to others, helps them earn their livelihood from that small piece of land. Though India has achieved food security, much needs to be done to achieve nutritional security, and vegetables are a viable option for the purpose.

The 17 SDGs are 1-No Poverty, 2-Zero Hunger, 3-Good Health and Well-being, 4-Quality Education, 5-Gender Equality, 6-Clean Water and Sanitation, 7-Affordable and Clean Energy, 8-Decent Work and Economic Growth, 9-Industry, Innovation and Infrastructure, 10-Reduced Inequality, 11-Sustainable Cities and Communities, 12-Responsible Consumption and Production, 13-Climate Action, 14-Life Below Water, 15-Life on Land, 16-Peace and Justice Strong Institutions, and 17-Partnerships to achieve the Goal. The vegetables vis-a-vis IIVR play a key role for SDGs 1, 2, and 3. For many other goals also, the vegetables play some role and the IIVR has been working for SDG 13 as well, by developing climate resilient technologies.



The vegetables are capable of providing higher returns per unit area due to shorter life cycle and high productivity. Most of the vegetables complete their life cycle in around

90 days thus providing more produce per unit area in a year. Vegetable production is a labour intensive enterprise that creates more jobs and new sources of income for small-scale farmers and landless labourers. The allied enterprises like vegetable processing, also create job opportunities thus helping in alleviation of poverty. The IIVR, Varanasi has been providing kitchen garden seeds to tribal and scheduled caste farmers so that they can grow some vegetables in and around their households to get nutritious food for themselves and their families. The excess produce can be sold in the local markets to earn some money. It is an endeavour of the institute to alleviate the hunger and poverty to some extent. The efforts of IIVR, Varanasi in this direction have been lauded in the local newspapers.

The vegetables also meet consumer demand for fresh, wholesome and nutritious food. Many vegetables like potato, sweet potato, cassava are rich sources of carbohydrate and serve to mitigate the hunger of a considerable number of people not only in India but in different parts of the world. The availability of potato per capita per year in the country is around 35 kg whereas that of tapioca



is around 3.3 kg. The vegetables from kitchen gardens in small area can give wonderful results for mitigating the hunger. A study at IIVR revealed that from a nutri-garden of 100 m² area, one can harvest 1064.81 kg of different vegetables round the year for 05 family members with a consumption of 583 g/capita/day, while 1412.72 kg of vegetables can be harvested from 150 m² area for 08 family members with a consumption of 484 g/capita/day. Rural households were also sensitized by the institute scientists for nutri-garden in villages as well as during 18 training programme conducted at institute along with distribution of 7420 kitchen garden seeds packets for different seasons. Demonstrations of 150 m² area nutri-garden were conducted at 107 farmers' field

of Eastern Uttar Pradesh, where an average amount of ₹1200-1400/- per month was gained by rural households after selling excess vegetables in villages itself.

3 GOOD HEALTH AND WELL-BEING



This is the most significant goal where the vegetables can be utilized to play a great role. The vegetables are essential component of a balanced diet being rich in the vitamins, minerals and phytochemicals needed for good health. The consumption of minerals and nutrient rich vegetables alleviates the diseases linked to malnutrition. In India, currently 189.2 million people are malnourished and 34.7% of the children of less than five year's age are stunted. That means around 14% of the population is undernourished. The institute is also working to provide more nutrition through the vegetables by developing such varieties like red okra, which have higher nutrition. The vegetables are a perfect candidate for inclusion in the National Nutrition Mission (Poshan Abhiyaan) of Government of India to take care, in particular, of the nutritional status of adolescent girls, pregnant and lactating mothers as well as the children. The vegetables ensure availability of enough nutritious and diversified food that is produced locally. Thus, providing the employment as well as nutrition to the local masses.

The training programmes are organized regularly by IIVR, Varanasi to disseminate the knowledge and skills among the growers about different aspects of vegetables to enable them to improve their efficiency, thereby the lifestyle in a sustainable way. The training programmes for the officers are also conducted to spread the skills to a broader area. In addition to it, the research students from different educational and research organizations are also nurtured by the institute in the interest of quality education.

4 QUALITY EDUCATION



Most of the vegetable farms belong to small and marginal category and the women also have a major role to play in vegetable cultivation right from the sowing of the seeds, nursery raising, intercultural operations to harvesting, preservation and seeds extraction. The IIVR, Varanasi empowers them by imparting trainings for their skill development and to make them confident in small scale vegetable farming as well as allied endeavours like mushroom cultivation so that they may take up the enterprise at their own level. Some of the all women group have started vegetable nursery, mushroom cultivation, etc. by the efforts of IIVR, Varanasi. This makes them self-reliant and enthruse a sense of achievement and capability.

5 GENDER EQUALITY



The various improved varieties of vegetables developed from the institute as well as production, protection and preservation technologies help to reduce the drudgery, providing a decent work environment. The improved technologies also help



in enhancing their incomes which gradually contributes to the overall economic growth.

The institute strives to promote safe vegetable production and minimize the losses. For the purpose, various recommendations have been generated for responsible/safe use of pesticides, minimizing biotic stresses through non-chemical ways as well as regular trainings, etc. to farmers and officers to adopt the safer methods for production. Some post-harvest technologies have also been generated to minimize the post-harvest losses.

13 CLIMATE ACTION



The institute is also working towards SDG of climate action. Under this, two high temperature resilient hybrids (Kashi Adbhut and Kashi Tapas) have been developed in tomato for cultivation during the high temperature (>38°C day temperature) in summer months of northern India. Apart from tomato, a variety of spinach beet (Kashi Baramasi) has also been developed which can be cultivated round the year and a hybrid of radish (Kashi Rituraj) which is capable of performing under high temperature regimes, as during the summer months of northern India. All these have been released by the state government of Uttar Pradesh. Not only varieties but the grafting technology has also been used to mitigate the climatic effects. The tomato plants grafted on brinjal rootstocks tolerate water stress effectively. Such grafted plants are also provided to the tomato growers to mitigate the loss due to water stress in the field.

To promote a healthy life on land, the IIVR, Varanasi, working as an active germplasm repository of vegetables, provides the genetic resources to different research organizations in the country. In the year 2021, the institute provided 782 accessions in 15 vegetable crops to 30 different research organizations for research and development of improved genotypes for the overall well-being of the masses.

The IIVR, Varanasi has been promoting partnerships. In the last one year, eight partnership agreements have been executed with different research as well as development organizations. It will not only help to achieve the goal of quality education but will also be beneficial in delivering the farmer friendly technologies to the actual beneficiaries in larger areas. Some agreements have been executed especially with the private sector to multiply manifolds the improved varieties developed by IIVR, Varanasi so that the improved material is delivered to the beneficiaries. A collaborative programme with UNWFP and IIVR, Varanasi is also in the offing to develop model nutrition (kitchen) gardens and training of Master Trainers for schools of all the nine blocks of Varanasi district.

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