

# Hunger free and healthy world by 2030

## practice nutritionally smart and sustainable agriculture

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*Food is a physiological requirement of all human beings on the planet Earth and it is the bedrock of life and foundation of human physical, spiritual and emotional well being. Food, fibre and other bio-necessities of life are obtained through agriculture which needs farm, farmer and finance (inputs). Research has only recently begun to address the links between agriculture, food security and nutrition and the environment. Putting this in the context of world population which is likely to reach about 8 billion by 2030 and the changing dietary pattern, the challenge becomes even more daunting. Land and water are key limiting factors. Agriculture already dominates two-thirds of ice-free land and continue to be a key drive of habitat and ecosystem loss across the globe. Achieving zero hunger, the worldwide by 2030 is possible through adoption of a more sustainable life style, working with others, sharing knowledge and willing to help change the world, for the better. Zero hunger is the major mandate of the Food and Agriculture Organisation (FAO) as it works to ensure that all the people have access to enough high quality food to lead active and healthy life. FAO collects, analyses and disseminates data that aids development and works with countries both to devise and implement policies that take into account the multifaceted elements of zero hunger.*

**Key words:** Agriculture, Healthy world, Hunger free, Nutrition, Sustainable

As of now, the world population is about 7.6 billion and out of these over 815 million people are suffering with chronic under-nourishment on account of extreme weather events linked with climate change, economic slowdown, life styles and rapidly increasing overweight and obesity. Though world is producing enough food to feed everyone, but socio-economic inequality is leading to poor physical and financial access to food by the vulnerable groups.

According to Food and Agriculture Organization (FAO) agricultural production must rise by about 60% by 2050 to feed a large population (9.5 billion people). In the developing countries, up to 80% of the overall economic impact of drought, which climate change is expected to intensity falls on

agriculture 30 to 35% of the food produced worldwide is lost and/or wasted. The Global cost of food wastage are approximately US \$ 2.6 trillion/year. Achieving zero hunger, the world wide, is possible by working together to ensure everyone, everywhere, has physical and financial access to the safe, healthy and nutritious food they need.

### World Food Day, 16 October 2018

The 2015 Sustainable Development Goals and the United Nations Decade of Action on Nutrition Call on all countries to end hunger and prevent malnutrition in all its form by 2030. This is quite a challenge, with sustainable agriculture and food systems at its heart. The theme of the World Food Day, 16 October, 2018 is 'our actions are our future-a zero hunger world by

2030 is possible'. Zero Hunger – a global goal for the world to achieve together and end it for every child, woman and man around the world. Reaching it will save countless lives and build brighter futures for us all.

### Global population

The present global population is estimated to grow from 7.6 billion to reach about 9.5 billion by 2050 with a change in the demographic trends and specialty food requirements. It requires an integrated and sustainable farming system making best use of natural resources. The United Nations Population Division has estimated that the world population will rise to 11.2 billion by 2100 from the current 7.6 billion. A billion people are added since 2005, and another billion are likely to be added by 2030. Indian population, currently estimated at



Fig. 1. Soybean a grain legume has a great potential in achieving hunger free and healthy world. Soybean is an eco-friendly grain-legume crop and promotes soil, human and livestock health, at a low cost.

1.34 billion, is projected to rise to 1.51 billion by 2030, and further to 1.66 billion by 2050 before declining to 1.52 billion by 2100 AD.

An analysis of Indian population (1.34 billion) showed that it is a country of young people that largely lives in villages and there are more men (51%) than women (49%). About 69% of population live in villages and 31% in urban areas.

## Malnutrition and the solution

One of the main reasons for the malnutrition in India is the lack of physical and financial access to food by majority of the people and followed by, the poor knowledge about a good nutrition and the balanced diet. Even people from higher income group suffer from malnutrition mainly that of minerals and vitamins deficiencies which cause chronic diseases in a long run, necessitating medical aids. There is some progress in fighting with malnutrition in India during the last few years but to eradicate the problem, preferably by 2030, the government and public have to work together. Nutrition literacy will play

an important role in this struggle.

The changing life style, food habits, materialism and changing social customs and behavior have led to exploitation of natural resources making soil nutritionally deficient which is leading to the production of nutritionally deficient plant and livestock-based food commodities and when such produces are processed and eaten provide poor nutrition resulting into poor human health and, thereby, low capacity to work and earn their livelihood. The need is to have nutrition sensitive/smart agriculture through an integrated and sustainable farming along with social awareness towards a good nutrition through a balanced diet prepared by combining various food commodities/sources in an appropriate proportion to get all the needed nutrients for a better health at a low cost. One of the potential options is production and utilization of soybean, a grain legume, rich in protein, fat and health promoting phytochemicals (Figs 1 and 2).

## Zero-hunger programme

The Government of India

identified three districts, namely Gorakhpur in Uttar Pradesh, Koraput in Odisha and Thane in Maharashtra and launched India's ambitious, Zero Hunger Programme through appropriate interventions in farm sector on 16 October, 2017, the World Food Day. This will be followed by an expansion of the Zero Hunger Programme to cover more districts and it will work in synchrony with United Nations mandated Sustainable Development Goals to end hunger by 2030 AD. This will serve as the model for an integrated approach to deal with hunger and malnutrition by adopting sustainable agricultural and horticultural practices coupled with livestock farming/husbandry.

The pilot programme on zero-hunger is likely to be initiated by the Indian Council of Agricultural Research in association with the Indian Council of Medical Research, M.S. Swaminathan Research Foundation, and the Biotechnology Industry Research Assistance Council. Also, the concerned state government will be involved in the programme which will consist of:

- Organizing farming systems for nutrition;
- Setting up genetic gardens for biofortified plants/crops;
- Post-harvest management and value addition in the production catchment;
- Remunerative procurement price for agriculture and livestock produces; and
- Training and financial incentives to farmers for integrated farming systems and to small agri-entrepreneurs for post-production management.

A genetic garden for bio-fortified plants/crops contains the germplasm of naturally biofortified crops or such crops through plant breeding. It has plants and crops that help supplement micro-nutrient deficiencies, including iron (Fe), iodine (I), vitamin A and zinc (Zn) among others. It is visualized that such an integrated programme will help farmers to enhance their income and achieve the zero hunger district goal surely and speedily. The Zero-Hunger Programme Planned in three

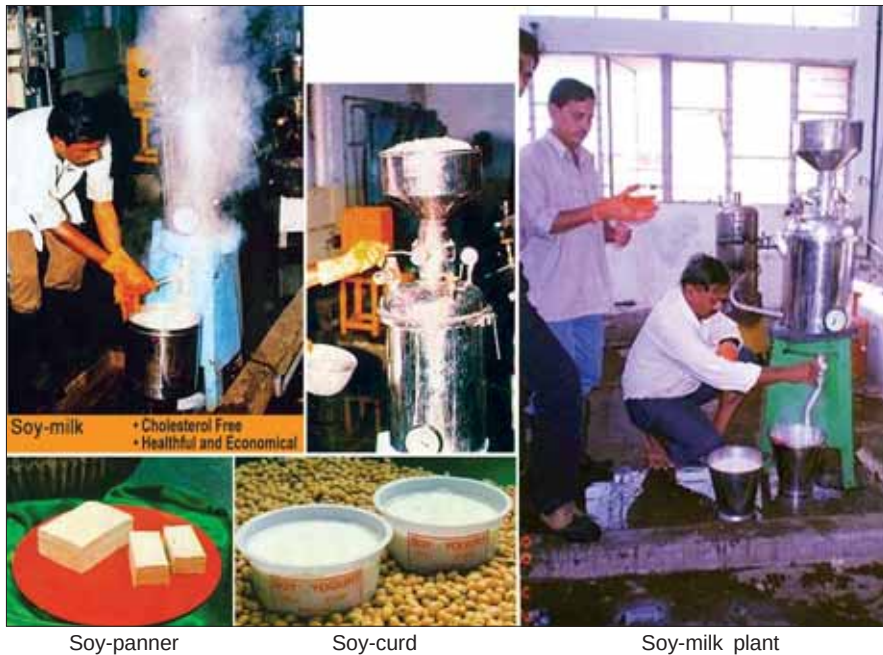


Fig. 2. Soybased entrepreneurship for dairy analogs leading to income generation and health promotion

district, Gorakhpur, Koraput and Thane will focus on agriculture including livestock, nutrition and health in a symbiotic manner and serve as a pilot project on zero-hunger to be adopted countrywide in the near future to achieve the goal of Zero-Hunger by 2030.

- Soybean is a food legume and excellent source of nutrition and health promoting phytochemicals.
- Regular use of soybean in daily diet enhances and protects human health at reduced cost.
- Direct food uses of soybean is in the interest of mankind and need to be promoted.

### Integrated and sustainable farming

Integrated farming produces high quality plant and livestock base produces for food, feed, fibre etc. using natural resources such as soil, water, air, and nature as well as regulating factors to farm sustainability and with minimum polluting inputs as possible. Emphasis is placed on an integrated organic management approach looking at the whole bio-farm as cross-linked unit, on the fundamental role and function of agro-ecosystem, on nutrient cycles which are balanced and adapted to the demand of the crops, and on health and welfare of all livestock on the farm. Preserving and enhancing

soil fertility, maintaining and improving a diverse environment and the adherence to ethical and social criteria are indispensable basic elements.

An integrated and sustainable agriculture approaches towards increasing farm yield and managing resources to address the critical aspects of sustainability, such as economic, environmental and social. Integrated farming system approaches to stabilize income streams through natural resource management and livelihood diversification.

All over the world, farmers work hard but do not make money, especially small farmers because there is very little left after they pay for all inputs. The prosperity of any country depends upon the prosperity of farmers. This in turn depends upon the adoption of improved technology and judicious allocation of resources. Human race depends more on farm products for their existence than anything else since food and clothing, the prime necessities are products of farming. Even for industrial prosperity, farming forms the basic raw material. To sustain and satisfy as many as human needs, the farmers include crop production, livestock, poultry, fisheries, beekeeping etc. in their farms. Presently, the objective of farming is the sustainable economic

yields for the present generations without dislocating the natural resource base for the future generations.

### Agriculture and natural resources

Agriculture is an engine of inclusive economic growth and a source of metabolic energy to human survival and performance as well as a source of livelihood for millions of farmers and rural people. Sustainable agriculture, using natural resources like sun, air, soil, water, climate and inputs such as biomaterials, nutrients and energy, is an integrated system of plant and animal production practices having a site-specific application that will last over a long-term meeting human food, fibre and other needs and at the same time enhance environmental quality and the natural resource base upon which the agricultural economy depends, make most efficient use of non-renewable and on-farm resources and integrate natural biological cycles and controls, sustain the economic viability of farm operations, and enhance the quality of life of farmers and society as a whole. Sustainable agriculture depends on replenishing the soil while minimizing the use or need of non-renewable resources. It could be through an integrated farming system which has many economic, social and environmental advantages.

### Role of energy in food security and climate

Energy is needed in all unit operations along with agri-livestock food production to consumption value chain (Fig.3). Solar energy is converted into food, feed and fibre energy by plants using soil moisture and nutrients.

Globally, the agri-food chain consumes 30% of the world's available energy, with more than 70% consumed beyond the farm gate. The agri-food chain produces about 20% of the world's greenhouse gas emissions. More than 33% of the food produced is lost or wasted, and with it about 38% of the energy consumed in the agri-food chain. Developed countries use about 35 giga joules (GJ)/person/year, nearly half to cooking.

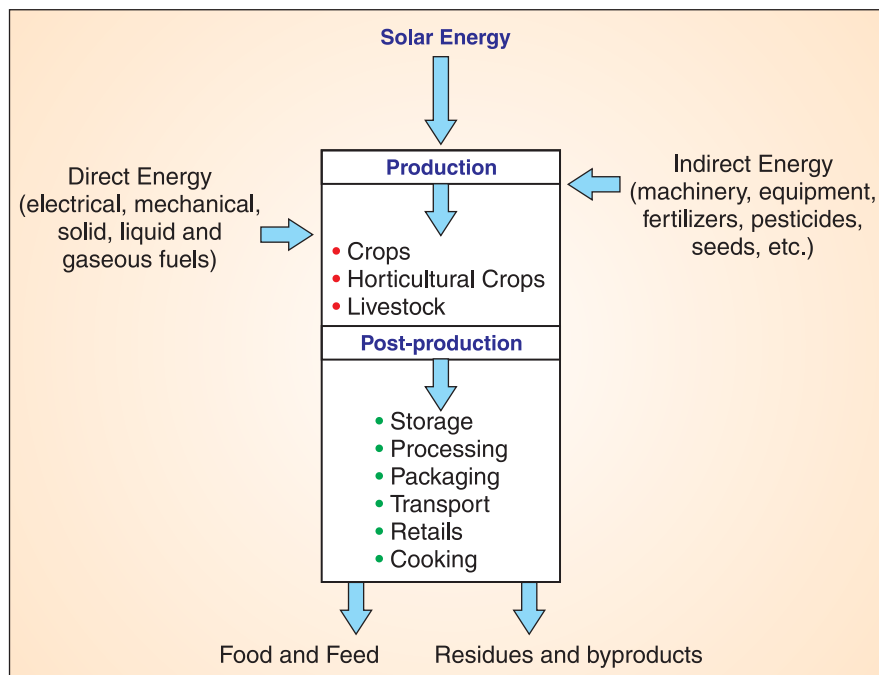


Fig. 3. Energy inputs and outputs in an agri-food value chain

FAO has launched a programme known as 'Energy-Smart Food for People and climate', a multi-partner initiative, to assist member countries make the shift to energy smart agri-food system. The programme focuses on three thematic areas, namely Energy Efficiency, Energy Diversification through Renewable Sources, and Energy Access and Food Security through Integrated Food and Energy Production. The Energy Smart Food Programme follows an inter-disciplinary nexus approach to ensure that food, energy, water and climate issues are jointly addressed, trade-offs considered and appropriate safeguards are put in place.

### Forest dwelling tribes

The traditional forests were a mixed forest that yielded a range of non-timber forest produces (NTFP), such as tree-/bush-borne oilseeds, fruits, flowers, roots, shoots, leaves, bark, herbs etc. These produces provided food, medicine, and a living ambience. Apart from subsistence needs of the community, non-timber forest produces helped them earn useful cash for other requirements of everyday living. As of now, many non-timber forest produces hearing forests are cleared to make way for timber plantation. This makes the provision regarding tribal ownership of non-timber forest produces more

symbolic than real. The challenge now is to reprofile the forest to make the tribals right real and meaningful.

Most of the reputed and heavily selling drugs, pharmaceuticals, fast moving consumer good items and confectionery contain raw materials picked by tribals from the forest floor. The estimated value of non-timber forest produces in raw form is around ` 0.2 million crore/year. This is when non-timber forest produces is dependent on the vagaries of nature and there is no input to nourish the crop/yielding trees. If non-timber forest produces forests are proactively developed, this value can rise to ` 1 million crore. Even now, in many districts the value of non-timber forest produces far exceeds total state spend on development.

Non-timber forest produces gatherers generally receive a dismal 20% or less of the value of their produce. The balance is cornered by a chain of middle men. The trading yards, a weekly *haats/bazars*, are hot spots of exploitation by sharp operatives of merchants in nearby towns. If the gatherer's share is increased to 50% or so, through enforcement of fair trade practices, and if primary level value addition is optimized, there will be no need for any other livelihood promotion schemes in tribal forest areas. The tribal's constitute about 8% of the

Indian population.

There is a need to develop a non-timber forest produces centric holistic development model for tribal forest areas to usher in *Gram Swaraj*. This revolves mainly around reforming the trade to make it fair and equitable to tribal gatherer, promoting local-level primary value addition to the non-timber forest produces, doing everything needed to increase production of non-timber forest produces, and the state facilitated technological upgradation of the entire non-timber forest produces chain from production to sale of processed produce at the best price through market intervention/intelligence. The focal point of such a model should be the Forest Wealth Development Centre (*Van Dhan Vikas Kendra*), a common facility where non-timber forest produces gatherers can add value to non-timber forest produces.

### Farmer's suicides

It has come back in the lime-light and is a burning social issue. Since 2010, farmers' suicide has been a perennial problem for the government. Surprisingly, rich states are more susceptible to farmers' suicide than poor ones. Agricultural distress is more prevalent in the rich states than in poor ones. A National Crime Record Bureau (NCRB) report revealed that Maharashtra, has the highest number of farmers' suicide in 2014 and 2015. This was followed by Karnataka and Telangana, in terms of GDP and per caput income. Seven states, four of which are rich Maharashtra, Karnataka, Telangana and Tamil Nadu accounted for 87.5% of the total farmers' suicide deaths in 2015, according to the National Crime Record Bureau Report. Poor states were relatively less prone to the problem. Notable among them were West Bengal and Bihar. In 2014 and 2015, both states did not record even a single instance of farmers' suicide, according to the report. The National Crime Record Bureau Report revealed that small-and marginal-farmers are prone to suicide. In 2015, small-and marginal-farmers account for over 70% of farmers' suicide.

# Our Actions are our Future.

These farmers were either landless cultivators or had only a pittance of land.

## Minimum support price

The present initiative of Government in India in fixing the minimum support price (MSP) for some of the major agricultural commodities is a big step in the interest of farmers and the Centre and State governments are jointly making efforts for the prosperity of farmers whose hard-labour and outputs feed the people of the country. The present MSP announced by the Government of India would help in accomplishing the target of the state and central governments to double the income of farmers by 2022, if implemented properly. The Government of India has increased the MSP of 14 crops to over 50% of the production cost, giving a big relief to farmers and in long-run, it may help to produce more to help in making hunger free world by 2030. Though the higher MSP is important to raise farmers' income but it is not the panacea for all woes as its penetration is limited to few states and that too largely among big farmers. The new MSP

will surely raise farmers' income but MSP alone is not a solution to generate adequate income for all farmers. The need is to promote, agro-processing in the production catchment at the Panchayat level along with procurement and storage policies and facilities as the agriculture is a large employer but it still remains unorganized and needs government support for improving farmers income and living conditions.

## SUMMARY

It may be summarized by saying that every human being born and living on the beautiful and dynamic planet earth, has full right to have the basic necessities of life such as food, clothes, shelter, education and medical aids and at the same time he or she has moral duty and responsibility to work as per his/her physical and intellectual ability/capacity in any one or more of livelihood sources e.g. agriculture, industry, trade or services. The respective national governments and international agencies have to work together and cooperate each other as per national and international rules and regulation and see that no citizen

of the world go hungry or malnourished. As of now, the world is producing enough food for everyone but on account of post-harvest losses and food wastages at various levels such as home, hostels, hotels, restaurants and so on, a sizeable proportion of world population suffer from hunger and malnutrition, especially those who do not have reasonable physical and financial access to food and other necessities of life. As of now, such people are 10 to 15% of the total global population. The need is to produce enough quality foods of plant and livestock origin using nutritionally smart, integrated and sustainable farming systems for which tools technology and resources are available, worldwide and make the world a healthy and happy place to live in and enjoy life and living by every citizen of the globe and leave enough quality natural resources for the coming generations.

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## Adopt: A more healthy and sustainable diet

Life is fast-paced and trying to fit in preparing nutritious meals can be a challenge if you don't know how. Nutritious meals don't have to be elaborate. In reality, they can be cooked in a quick and easy way while using only a few ingredients. Share your quick nutritious recipes with your family, friends, colleagues and online. Follow sustainable chefs and bloggers online to learn new recipes or talk to your local farmer to see how they cook their produce at home.

## Advocate for #ZeroHunger!

Everyone has a role to play in achieving #ZeroHunger, but countries, institutions and people need to work together to reach this goal. Establish ZeroHunger partnerships, share knowledge and resources, develop innovative strategies and discover new opportunities to contribute to the fight against hunger. Raise the topic with your local and national authorities, promote related educational programs in your community and amplify the #ZeroHunger message through your network.



(Courtesy, FAO)