

## **Sustainable Agriculture: Need of the Hour**

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### **Abstract**

Since time immemorial agriculture has played a vital role and is the key factor for running the economy of our country. Due to the efforts of researchers, we have been able to overcome the difficulties of famine and have become self-sufficient as far as food production is concerned. Various milestones like green revolution, White revolution, Blue and Golden revolutions have completely revolutionized our agriculture. Efforts are still on in this direction as India is a populous country and the population is on the rise day by day. We have not only become self-sufficient, but we have been exporting many agricultural and horticultural products, as such have experienced a gain in foreign exchange. The bumper cash crop production has been achieved by the virtue of conventional rather industrialized farming techniques. The soils have been supplemented with chemical nutrients, fertilizers, insecticides, pesticides, and herbicides etc. The health of the soil has been affected a lot first monoculture and later pollution. Soil health is very essential for the health of the crop and the people who consume it. Some places in Kolhapur in Maharashtra have experienced a devastating effect in the form of arsenic pollution. It is not restricted but is getting magnified and reaching toxic levels. Soils in Punjab are also put to lot of stress because of monoculture. Still one can think of remedy and the remedy is none other than sustainable agriculture. Which really is the need of the hour. In the present study various measures which can be taken in order to restore the fertility rather healthy soil health for agriculture will be discussed.

**I**ndia gained self-sufficiency long back that is why today the scenario is altogether different. Exports have increased the quality has improved a lot and lots of research is going on simultaneously. Even horticulture export has increased. India ranked ninth in 2019 with the share of 3.1% in global

agricultural exports and 2<sup>nd</sup> largest producer of fruit after China as per National horticultural Board. (Agricultural & Processed Food Products Export Development Authority. It is a known fact and facts, and figures are available at the click of a mouse, all thanks to internet. The production is huge the go downs

fall short of storage facilities. What led to this increase in the production is no doubt the conventional farming techniques and indiscriminate use of chemical fertilizers, pesticides, insecticides, herbicides etc. It did boost the production at what cost? The answer being at the cost of pollution of natural resources the air, soil, and water. It did not remain limited to one level only but became a cause of worry as the health of the soil got affected. Health of the soil affects the soil ecosystem and thereby many other ecosystems related to it, including the crops these soils support and the crops pass it on to the individuals who consume the produce. One of the examples being that of Arsenic pollution in Kolhapur which leads to toxicity and ultimately health hazard<sup>1,3,4&7</sup>. In order to safeguard the health of the people indiscriminate use of these chemicals need to be reduced if cannot be stopped completely or by finding ways and means to overcome the present crisis. Population is increasing world over as such production has to be increased but without compromising the quality of the natural resources which directly or indirectly determine the health of the people<sup>6</sup>. The healthier the people the prosperous the country. With this backdrop in the present study various research findings have been studied and conclusion drawn for taking measures.

*Soil* – Soil is the most important factor in all agricultural and horticultural practices. It is soil only which protects, sustains the plants and milieu of other microorganisms involved in the functioning of soil ecosystem. Plants absorb through root hairs the nutrients, minerals and even water from the soil. Thus, soil sustains

crops in other words agriculture and soil ecosystems and the other group of organisms in various higher up trophic levels associated with it.

Pollutant levels include salts, toxic metals, metalloids, organic effluents, and other industrial pollutants<sup>8,12</sup>. Even groundwater is also polluted and already the consequences are very well studied and alarming<sup>8,10</sup>. Heavy metal pollution has been observed and studied in detail this includes Ni, Co, Cr, Cu, As, Cd, Pb and Hg Pollution<sup>12</sup>.

In order to improve the overall characteristics of soil rather quality of soil, various measures need to be taken care of. As healthy soils determine the health of agriculture and the consumers.

#### *Sustainable Agriculture :*

Keeping in mind the present-day scenario we need to think about tomorrow in fact future generations. We should improvise agriculture and agricultural produce in such a way that future generations should also be able to sustain themselves. The soil which because of monoculture has started losing many nutrient needs to be taken care of. As there is a need for continuing monoculture if it cannot be stopped completely but it needs to be reduced. Monoculture often leads to poor growth, low yield and many soil borne diseases in plants<sup>4,6</sup>. As per FAO, 2016 sustainable agriculture is defined as production which fulfils food security, environmental protection, and economic and social needs in rural areas. It involves protecting natural resources, which

with the passage of time and if used recklessly result in their complete depletion. Soil nutrients like Phosphorus is getting depleted and it is alarming situation. It is because of these problems there is no choice but to go for sustainable agriculture<sup>2</sup>.

Various studies conducted so far one comes to the conclusion that it is not only one parameter which needs to be taken care of. Multiparameter steps are to be taken care of for sustainable agriculture.

In order to improve the nutrient loss problem due to monoculture multi cropping can be started instead of monoculture<sup>5</sup>. It should not completely replace monoculture but started partially. Soils which are polluted need to be bioremediated in an ecofriendly manner especially micro and mycoremediation<sup>9</sup>. Instead of using chemical fertilizers, insecticides pesticides, herbicides etc. micro and Myco-inoculants can be utilized<sup>10,11</sup>. It is because of conventional farming methods production has increased, as such conventional farming need not be replaced completely by organic farming. Infact organic farming practices and latest machinery of conventional farming need to be employed together to get the maximum benefit in an environment friendly manner by maintaining the natural ecosystem homeostasis especially soil ecosystem. If one natural resource soil is taken care of, it will ultimately help in maintaining rather conserving the other natural resources.

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