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"Impact of organic farming in Sikkim"

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Introduction

Organic farming is agriculture that makes healthy food, healthy soils, healthy plants and healthy environments a priority, along with crop productivity Organic farmers use biological fertilizer inputs and management practices such as cover cropping and crop rotation to improve soil quality and build organic soil matter. By increasing the amount of organic matter in the soil, Organic farmers enhance the soil's ability to absorb water, reducing the impacts of drought and flooding. Improving soil organic matter also helps it to absorb and store carbon and other nutrients need to grow healthy crops, which, in turn are better able to resist insects and diseases.

organic production systems do not use genetically modified (GM) seed, synthetic pesticides or fertilizers. Some of the essential characteristics of organic systems include design and implementation of an organic system plan that describes the practices used in producing crops and lives stock products.

Approaches to assess the environmental impacts of organic farming.

Many changes observed in the environment are long- term, occurring slowly over time. organic agriculture considers the medium and long-term effect of agricultural interventions on the agro- ecosystem. It aims to produce food while establishing an ecological balance to prevent soil fertility or pest problems. Organic farming takes a proactive approach as opposed to treating problems after they emerge.

Soil- soil building practices such as crop rotations inter- cropping symbiotic associations cover crops, organic fertilizers and minimum tillage are central to organic practices. These encourage soil fauna and flora, improving soil formation and structure and creating more stable systems. In turn nutrient and energy cycling is increased and the retentive abilities of soil for nutrients and water are enhanced compensating for the non use of mineral fertilizers. Such management techniques also play an important role in soil erosion control. The length of time that the soil is exposed to erosive forces is decreased, soil biodiversity is increased, and nutrient losses are reduced, helping to maintain and enhance soil productivity, crop export of nutrients losses are reduced, helping to maintain and enhance soil productivity. Crop export of nutrients is usually

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compensated by farm derived renewable resources but it is sometimes necessary to supplement organic soils with potassium, phosphate, calcium, magnesium and trace elements from external sources.

Water- in many agriculture areas, pollution of groundwater courses with synthetic fertilizers and pesticides is a major problem. As the use of these are prohibited in organic agriculture, they are replaced by organic fertilizers (e.g. compost, animal manure, green manure) and through the use of greater biodiversity (In terms of species cultivated and permanent vegetation), enhancing soil structure and water infiltration.Well managed organic systems with better nutrient relative abilities, greatly reduce the risk of groundwater pollution, IN some areas where pollution is a real problem, conversion to organic agriculture is highly encouraged as restorative measure (e.g.by the government of France and Germany).

Air and Climate-

Organic agriculture reduces the non-renewable energy use by decreasing agrochemical needs (these require high quantities of fossil fuel to be produced).Organic agriculture contributes to mitigating the greenhouse effect and global warming through its ability to sequester carbon in the soil. Many management practices used by organic agriculture (e.g. minimum tillage, returning crop residues to the soil. the use of cover crops and rotations and the greater integration of nitrogen-fixing legumes),increase the return of carbon to the soil, raising productivity and favouring carbon storage. A number of studies revealed that soil organic carbon contents under organic farming are considerably higher. The more organic carbon is retained in the soil, the more the mitigation potential of agriculture against climate change is higher. However there is much research needed in this field yet. There is lack of data on soil organic carbon for developing countries, with no farm system comparison data from Africa and Latin America and only limited data on soil organic carbon stocks, which is crucial for determining carbon sequestration rates for farming practices.

Ecological services-

The impact of organic agriculture on natural resources favours interactions with in the agro-ecosystem that are vital for both agriculture production and nature conservation. ecological services derived include soil farming and conditioning, soil stabilization, waste recycling carbon sequestration, nutrients cycling predation, pollination and habitats. By opting for Organic products the consumer through his/her purchasing power promotes a less polluting agricultural system. The hidden costs of Agricultural to the environment in the terms of natural resources degradation are reduced.

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Does organic farming benefits biodiversity ?

Organic farmers are both custodians and users of biodiversity at all levels. At the gene level, traditional and adapted seeds and breeds are preferred for their greater resistance to disease and their resilience to climatic stress. At the species level, diverse combinations of plants and animals optimize nutrient and energy cycling for agricultural production. At the ecosystem level, the maintenance of natural areas within and around organic fields and absence of chemical inputs create suitable habitats for wildlife. The frequent use of under utilized species (often as rotation crops to build soil fertility) reduces erosion of agro- biodiversity, creating a healthier gene pool-the basis for future adaptation. The provision of structures providing food and shelter, and the lack of pesticide use, attract new or re-colonizing species to the organic area (both permanent and migratory),including wild flora and fauna (e.g. birds)and organisms beneficial to the organic system such as pollinators and pest Predators.

Importance of organic farming in India.

Only 30% of area in India is cultivated with fertilizers where irrigation facilities are available. Farmer use organic manure as a nutrient for their own farms. North-Eastern region of India provides huge resource for organic farming due to low use of chemicals. About 18 million hectares of land is available in the North Eastern region of India where people do organic farming.

India has great potential to grow crops organically and can be a major supplier or organic products in the world. The task force on organic farming appointed by the government of India observed that vast area in the country is exploited with chemicals which give low yield.

These areas can be targeted to give high production through organic farming India has great scope to become world's number one organic exporter in the world. Organic farming can maintain soil quality. The chemical use is hitting the sustainability in soil and decreasing its potency. Applying organic manure is the only solution to improve the soil organic carbon productivity in the future.

Our country has 700 metric tons of agriculture waste but most of its not being use. There should be a method of large-scale conversion of organic agriculture which would decrease food shortage, as the yield of organic system relate to conventional agriculture on an average 10-15%, especially in intensive farming systems the yield is high. In traditional agriculture such as rain-fed, organic farming has potential to increase the yield. Since about 70% of the total cultivable land come in this category. 5-10% increase in farm production would help in achieving the targeted growth rate by 4-5% in agricultural production.

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Organic manure can be used as an alternative renewable resource for nutrients supply. A huge gap exists between the available quantity and utilized quantity. However it cannot be possible to meet the nutrients requirement in crops from organic sources, If the 100 percent of cultivable land is converted into organic farming. Organic farming system will be able to deliver agronomic and environment benefit both through structural change and tactical management of farming system.

The benefits of organic farming include to developed countries (environment protection, increase of bio diversity, reduce energy use and CO2 emissions) and for developing countries like India (efficient use of resources, increase in crop yields, environment and biodiversity safeguarding,etc.).Organic foods are proved to have superiority in terms of health and safety, but there is no evidence to prove this superiority in terms of taste and nutrition, as most of the studies done are often does not have conclusion. Combining lower input costs and favourable price can offset reduce yields and make organic farms more profitable than conventional farms. However, studies which did not include organic price gave mixed results on profit, the premium price on the organic food that decides the economic achievability of organic farming, at least at the present rate of development in organic agriculture. Organic farming systems have pest and disease management approach which are largely preventive than reactive. Pest and disease incidence is less in organic farms when compared to conventional farms.

Research models for maximizing the impact of organic research conducted with limited resources.

Research funds are limited for all sectors of agriculture, however research on organic farming systems receives a disproportionately small fraction of available funds. Low research budget necessitated that groups work together to maximize the impact of research dollars received. In California representative from the farming community, non-governmental organisations, state and federal agencies and industry have worked together to provide research that is pertinent to producers. The evolving research models involve direct and early participation of growers in the research process. These models have been used successfully to maximizing the impact of research conducted with limited funds for conventional farming needs. Participatory models will be more important for insuring that research conducted to address the needs of organic farmers has its maximum impact. A participatory research models is currently being used to conduct organic search in California.

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