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FUTURE PROSPECTS FOR SUSTAINABLE AGRICULTURE, THROUGH UNDERSTANDING PRESENT PRACTICE OF INTENSIVE AGRICULTURE

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Abstract

Traditional approaches to agricultural science present a number of barriers to increasing our understanding of sustainable agriculture. As of late, as a method for accomplishing higher farming result while decreasing the adverse consequence of rural creation on the climate, horticultural reasonable strengthening has drawn in overall consideration. It is generally accepted that maintainable strengthening has the qualities of expanding creation and lessening natural harm, and is broadly utilized in horticultural, organic and ecological sciences. The impacting elements of horticultural manageable strengthening can be generally separated into four viewpoints: financial variables, ranchers' own qualities and regular elements, among which populace pressure is the expected main impetus for agrarian economical heightening; the clearest component of rural reasonable escalation is the decrease of the yield hole. The procedure of executing rural reasonable increase can be ascribed to the successful utilization of information sources and the reception of economical practices and innovations. different territorial models, motivator component for ranchers, influence assessment and framework plan of farming economical heightening ought to be reinforced in future.

Keywords: agricultural; sustainable intensification; measuring method; implementation path; research progress and prospect.

INTRODUCTION

Sustainable agriculture is the system of raising crops for greater human utility through utilization of resources with better efficiency without disturbing, misbalancing or polluting the environment. India has achieved green revolution due to the increased use of high yielding variety seeds. This collaboration with the Food and Land Use Coalition (FOLU), provides an overview of the current state of sustainable agriculture practices and systems (SAPSs) in India. It plans to help policymakers, chairmen, givers, and others add to a proof based increase of SAPSs, which address a crucial option in contrast to traditional, input-concentrated horticulture with regards to an environment compelled future. The review distinguishes 16 SAPSs - including agro ranger service, crop pivot, water collecting, natural cultivating and normal cultivating utilizing agro biology as an insightful focal point. In view of a top to bottom survey of 16 practices, it reasons that maintainable horticulture is a long way from standard in India. Further, it proposes a few measures for advancing SAPSs, including rebuilt government support and thorough proof age. Economical farming offers a genuinely necessary option in contrast to regular information concentrated horticulture, the drawn out effects of which incorporate corrupting dirt, declining groundwater levels and diminished biodiversity. It is imperative to guarantee India's nourishment security in an environment compelled world. While different meanings of manageable farming exist, this study utilizes agroecology as a focal point of examination. This term broadly refers to less resource-intensive farming solutions, greater diversity in crops and livestock, and farmers' ability to adapt to local circumstances.

Sustainable agriculture is far from mainstream in India, with only 5 (crop rotation; agroforestry; rainwater harvesting; mulching and precision) SAPSs scaling beyond 5 per cent of the net sown area. Most SAPSs are being embraced by under 5,000,000 (or four percent) of every single Indian rancher. Many are drilled by short of what one percent. Crop pivot is the most well known SAPS in India, covering around 30 million hectares (Mha) of land and roughly 15 million ranchers. Agroforestry, basically well known among enormous cultivators, and water reaping have moderately high inclusion 25 Mha and 20-27 Mha, separately. Natural cultivating at present covers just 2.8 Mha or two percent of India's net planted area of 140 Mha. Normal cultivating is the quickest developing maintainable horticultural practice in India and has been embraced by around 800,000 ranchers. Coordinated Nuisance The executives (IPM) has accomplished an inclusion area of 5 Mha following quite a while of supported advancement, Agroforestry and arrangement of rice heightening (SRI) are the most well known among scientists concentrating on the effect of SAPSs on monetary, ecological, and social results. Proof for the effect of practices, for example, biodynamic horticulture, permaculture and drifting cultivating are either extremely restricted or non-existent, The existing literature critically lacks long-term assessments of SAPSs across all three sustainability dimensions (economic, environmental and social). Other research limitations include a research gap concerning landscape, regional or agroecological-zone level assessments and a relative lack of focus on evaluation criteria such as biodiversity, health and gender,

The financial plan expense for the Public Mission for Reasonable Agribusiness (NMSA) is just 0.8 percent of the Service of Horticulture and Ranchers' Government assistance's complete spending plan - INR 142,000 crore (barring INR 71,309 crore spent every year on compost appropriations by the Middle) Eight of the 16 practices distinguished by the review get some monetary help under different focal government plans. Of these, natural cultivating has gotten the most strategy consideration as Indian states, as well, have formed selective natural cultivating arrangements. Most Considerate Society Associations (CSOs) engaged with SAPSs were dynamic in Maharashtra, Rajasthan and Madhya Pradesh. Natural cultivating, regular cultivating and vermicomposting get the most interest from CSOs.

- The job of information: Most SAPSs are information escalated and fruitful reception require information trade and limit working among ranchers.
- The dependence on ranch work: Since SAPSs are specialty, the motorization for different info arrangements, weed evacuation, or in any event, gathering in a blended trimming field isn't standard yet. Subsequently, SAPs are work escalated, which might ruin their reception by medium to enormous ranchers.
- Inspiration: The negative long haul effects of ordinary horticulture are pushing ranchers to look for options. Further, ranchers in asset compelled conditions who don't utilize huge outer data sources are likewise able to make the gradual shift to SAPSs.
- Job in food and sustenance security: SAPSs further develop ranchers' food security by broadening their food and pay sources. They likewise upgrade nourishment security for families remaining alive on agribusiness. Notwithstanding, both these viewpoints call for additional exploration.

The scale-up could begin with rainfed regions, as they are as of now rehearsing low-asset agribusiness, have low productivities, and essentially stand to acquire from the change. Rebuild government backing to ranchers by adjusting motivating forces towards asset preservation and by compensating results, for example, absolute homestead efficiency or improved biological system benefits as opposed to simply results like yields. Support thorough proof age through long haul near appraisals of ordinary, asset escalated horticulture from one viewpoint and practical farming on the other. Do whatever it takes to widen the points of view of partners across the farming biological system and make them more open to elective methodologies. Stretch out momentary change backing to people obligated to be unfavorably affected by an enormous scope progress to manageable horticulture, Make maintainable farming noticeable by coordinating information and data assortment on SAPSs in the common public and state-level farming information frameworks.

The advantages of agribusiness have been tremendous. Before the beginning of agribusiness, the agrarian way of life upheld around 4 million individuals worldwide . Present day farming currently takes care of 6,000 million individuals. Worldwide grain creation has multiplied in the beyond 40 years essentially from the expanded yields coming about because of more prominent contributions of manure, water and pesticides, new

harvest strains, and different advances of the 'Green Upset'. This has expanded the worldwide per capita food supply, decreasing yearning, further developing nourishment (and hence the capacity of individuals to more readily arrive at their psychological and actual potential) and saving normal biological systems from transformation to horticulture. By 2050, worldwide populace is projected to be half bigger than as of now and worldwide grain request is projected to twofold. This multiplying will result from an anticipated overlap expansion in per capita genuine pay and from dietary movements towards a higher extent of meat (quite a bit of it grainfed) related with higher pay. Further expansions in horticultural result are fundamental for worldwide political and social strength and value. Multiplying food creation once more, and supporting food creation at this level, are significant difficulties. Doing as such in manners that don't think twice about uprightness and general wellbeing is a more noteworthy test still. We center here around logical and strategy challenges that should be met to support and expand the net cultural advantages of escalated agrarian creation.

Reasonable Methodology Rural creation is helped out through the choice of harvests reasonable for the environment of a particular locale and utilization of legitimate cultivating techniques. In this manner, horticulture is a climatedependent bio-industry with outstanding territorial qualities. Local qualities allude to the not entirely settled by the environment of the area. Environmental change upsets the farming biological system, bringing about the adjustment of horticultural climatic components like temperature, precipitation, and daylight, while further impacting the arable, animals, and hydrology areas. The progression of the effects of environmental change on the farming area can be represented as displayed in . The effects of environment, most importantly, change on the arable and domesticated animals area are spread the word about by natural changes including the difference in blooming and collecting seasons, quality change, and shift of regions reasonable for cultivation. Environmental change influences the agrarian biological system, giving.

Sustainability and net benefits

Agricultural practices determine the level of food production and, to a great extent, the state of the global environment. Agriculturalists are the central chiefs of earthly 'useable' lands, which we comprehensively characterize as all land that isn't desert, tundra, rock or boreal. About portion of worldwide usable land is as of now in peaceful or concentrated agribusiness. As well as causing the deficiency of normal biological systems, agribusiness adds universally huge and ecologically adverse measures of nitrogen and phosphorus to earthly environments, at rates that might significantly increase assuming that previous practices are utilized to accomplish one more multiplying in food creation. The negative natural effects of agrarian practices are costs that are regularly unmeasured and frequently don't impact rancher or cultural decisions about creation techniques. Such costs bring up issues about the manageability of current practices. We define sustainable agriculture as practices that meet current and future societal needs for food and fiber, for ecosystem services, and for healthy lives, and that do so by maximizing the net benefit to society when all costs and benefits of the practices are considered. If society is to maximize the net benefits of agriculture, there must be a fuller accounting of both the costs and the

benefits of alternative agricultural practices, and such an accounting must become the basis of policy, ethics and action. Additionally, the development of sustainable agriculture must accompany advances in the sustainability of energy use, manufacturing, transportation and other economic sectors that also have significant environmental impacts.

Implementing sustainable practices

Farmer incentives are a central issue facing sustainable agriculture. Farmers grow crops or raise livestock to feed their families or to sell and earn a living in a market economy that is becoming increasingly global and competitive. Although some environment administrations, like fertilization or control of rural bugs, are of direct advantage to a rancher, other biological system administrations might help the general population overall however be of practically zero direct advantage to the farmer. Similar potential open doors for a critical expansion in manure productivity exist for limited scope escalated rice trimming frameworks in the non-industrial nations of Asia. In any case, numerous natural issues and biological system administrations are challenging to screen and measure. For nitrogen or pesticide overflow or carbon sequestration, surveying natural execution of individual farms might be expensive. As opposed to putting together motivation installments with respect to natural execution itself, intermediaries for execution, like the reception of specific auditable practices, might be just about as close as strategy can get. The accomplishment of such targets will require coordination among government organizations or services for agribusiness and for climate, which frequently have various goals. Practical agribusiness requires tending to the worries of the two gatherings. The quest for economical horticulture will likewise require significant expansions in information serious advances that improve logically steady decision making at the field level. This can be implanted in actual innovation (for instance, gear and harvest assortments) or in people (for example, equipment and crop varieties) or in humans (for example, integrated pest management), but both are essential. However, the challenges of disseminating information on new technologies or on efficient input use and management are enormous, especially in cases where extension programmes are ineffective or completely lacking. The earlier paradigm of science being developed at the international or perhaps national level and then disseminated to farmers should be replaced by an active exchange of information among scientists and farmers. Scientists in developing countries who understand the ecosystems, human culture and demands on local agricultural systems must be actively trained, promoted and brought into the international scientific community.

Substantially greater public and private investments in technology and human resources are needed internationally, especially in low-income nations, to make agricultural systems more sustainable. Global research expenditures are less than 2% of agricultural gross domestic product (GDP) worldwide, being roughly 5.5% of agrarian Gross domestic product in created nations, however under 1% in non-industrial nations (where the vast majority of the expanded food request will happen during the following 50 years). As of now, there are not many motivations for the confidential area to increment interests in lower-pay agricultural nations. Furthermore, unless

reward structures also reflect the value of ecosystem services, there will be little incentive for the private sector to invest in sustainable agricultural methods. Without adequate investments, yield gains and environmental protection may be insufficient for a transition to sustainable agriculture.

Objective

To make agriculture more productive, sustainable, remunerative and climate resilient by promoting location specific Integrated/Composite Farming Systems. To conserve natural resources through appropriate soil and moisture conservation measures.

1. To make agriculture more productive, sustainable, remunerative and climate resilient by promoting location specific Integrated/Composite Farming Systems.
2. To conserve natural resources through appropriate soil and moisture conservation measures.
3. To adopt comprehensive soil health management practices based on soil fertility maps, soil test based application of macro & micro nutrients, judicious use of fertilizers etc.
4. To optimize utilization of water resources through efficient water management to expand coverage for achieving 'more crop per drop'.

REVIEW OF LITERATURE

The concept sustainable agriculture is recently emerged phenomena, due to realization of harmful effects of mechanical chemical agriculture throughout the world. Many researchers have propounded various theoretical implications on the practice of sustainable agriculture. This has created a situation to analyze the content and meaning of the term sustainable agriculture in various angles.

Warren D, M. and Cashman K. (1989) have emphasised the need of indigenous knowledge for practicing sustainable agriculture. Its development among the farming community depends on six major scenarios. It includes 1) over coming biases in extension communication 2) improving existing production systems 3) incorporating new technology into existing knowledge 4) designing the activities and research and development programmes and also changes from within societies and creation of indigenous technical foundation.

Smith, N.J.H (1990) has pointed out the need for role of political leaders, donors, NGOs, farmers and consumers in practice of sustainable agriculture. The crop production and animal production could be based on conservation of natural resources. Stenholm C.W. and Waggoner, D.D (1990) have refers that sustainable agriculture is an intensive resource conserving management practices. They urged the need of flexibility in new agricultural practices to allow more creative, profitable and locally acceptable strategy of sustainable agriculture.

Chalasan Dutt, *et. al*, (1998) have analyzed the role of vermiculture on sustainable agricultural practices. According to them earth worms are bioreactor in decomposition of soil organic content and humification of soil

and in this connection the selection of appropriate species of earth worms is an essential aspect. SCARM report (1998) has pointed out the indicators of sustainable agriculture. It includes (1) long term net real farm income (2) natural resource conditions (3) off site environmental impact (4) managerial skill and (5) socio-economic impact.

Leiche, C. and Carls, J. (1996) have reported the major challenges of sustainable agriculture with reference to Latin America and the Caribbean countries. It is based on a sound use of natural resources in consideration with social and economic criteria. Further it is expected to solve the problems of population growth and ensure full participation of people in production process.

Monreal *et al*, (1998) developed a conceptual model to assess soil quality in terms of physical chemical and biological components with a view to identify the sustainability of soil in practicing organic farming. Further, indicators relating to bio-diversity nutrient cycles, farming practices and molecular components of soil organic matter are discussed in relation to sustainable agriculture.

Singh, S.K. *et. al*, (1995) have analyzed sustainable agricultural system in India. They have referred that traditional farming was designed to support only a low population density and cannot sustain the rapidly increasing human and animal population. The failure of development projects and research programmes may be due to lack of knowledge about population resource dynamics and agricultural ecosystem they added. Napier, T.L. (1996) has analyzed the impact of socio-economic and political factors in adoption of soil and water conservation practices. The author has suggested that government can encourage the practice of soil conservation either by targeting subsidies or by enforcing environmental standards.

METHODOLOGY

For working on the creation, land changes are the first and overwhelming point. Machines, farm vehicles, and executes do land changes. These machines have the characteristics that make rough cultivating regions smooth to productively deal with the field. Dealing with the field is simple, that implies an improvement in efficiency is simple and these may incorporate air contamination decrease, work creation, further developed wellbeing, admittance to energy, neediness decrease, security of environments, and that's just the beginning. The systemic issues forced by the worldly idea of maintainability have frustrated the improvement of approaches for its portraying. Manageability includes future results that can't be seen in the time span expected for mediation. Ecological supportability is the upkeep of normal assets. These can be communicated as ecological targets: water, soil, and air quality and upkeep of biodiversity. . At the farm level, an agricultural system is sustainable if it conserves the natural resources provided by its ecosystem. In order to maintain the production, it would be useful to follow a method to evaluate the degree of approximation between different systems and identify aspects to improve on each farm.

This method should be broad and multidimensional and should address the management of animals, soils and vegetation, as well as environmental, economic, and social aspects. They ought to be communicated through markers to look at changed ranches in a district or nation and break down the development over the long run. The methodology taken to direct this study is a far reaching bibliometric examination of the recently distributed works of writing that consolidate the use of computer based intelligence in the field of reasonable horticulture between the term of 2000 and 2021. A total of 637 articles were extracted from the Scopus database as a CVS file, out of which only 465 relevant journal articles and review papers were considered for maintaining the veracity of the resulting conclusions. Scopus as a source index, is highly regarded amongst academicians and researchers for searching legitimate scientific articles as it facilitates searching and extraction of specific keywords from the titles, citations, abstracts or keywords from the publications listed in the database.

COCLUSION

Social, economic, and environmental sustainability are closely intertwined and necessary components for a truly sustainable agriculture. For instance, ranchers confronted with neediness are frequently compelled to mine regular assets like soil richness to earn enough to pay the bills, despite the fact that ecological debasement might hurt their vocations over the long haul. Simply by making approaches that incorporate social, ecological, and financial interests could social orders at any point advance more feasible farming frameworks. Maintainable horticulture and feasible provincial advancement are challenged ideas that hold various implications to various individuals relying upon the particular setting they regard themselves as in. To examine the alternate points of view on the idea of manageable farming inside the SOLINSA venture and spot them inside a relative structure, Q-technique was utilized. Six alternate points of view have been recognized: Elective Supporters, Manageable Food Creation, Independent Country Improvement, Latvian Natural product, Care Ranchers, Rancher Endurance First. The six different perspectives are united in their opposition to the utilitarian rurality discourse that emphasises competition on global markets, but they differ on issues like entrepreneurship, personal responsibility for sustainability, the role of the government, and technology as a potential solution.

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