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Sustainable Agriculture as a Means of Future Food Production

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Abstract: ***Several studies have reported sustainable Agriculture as a means of future food production. The purpose of this study is to understand sustainable agriculture as a remedy to conventional method of farming. The study is completely based on secondary data. This research will provide us with the advantages of sustainable agriculture it has over traditional agriculture. It will explain us about the yield difference between the two, and weather sustainable agriculture can be a replacement to conventional agriculture in feeding the world population. The study also explains the reasons for low adoption of sustainable agriculture. Conventional farming is the most common method of cultivation practiced all over the world, but it is accompanied with a number of negative consequences. Sustainable agriculture is sustainable way of producing crops, which is based on conserving the environmental resources as well as producing surplus food to feed the people. Moreover, sustainable agriculture plays a pivotal role in minimizing the input requirement along with producing yield. It has the capacity to produce enough food in terms of Kcal/person/day, for the entire planet. Good governmental support along national policies will help sustainable farming achieve its ultimate goal of feeding the world population.***

Keywords: Sustainable Agriculture, Conventional Farming, Feeding, adoption

1. Introduction

Agriculture has drastically modified, since the end of World War II. Adoption of new technology, mechanisation, increasing Agro chemical use, specialisation in food production, and numerous government policies that supported in increasing food production and lowering food costs have all contributed to increase food and fibre productivity. As a result of these improvements, fewer farmers are able to produce more food and fibre at cheaper prices. Introduction of latest chemicals within the agriculture market alongside genetically modified varieties have boosts the agriculture production. As, the population of the planet drastically multiplied, demand for food conjointly multiplied in a very similar manner. The green revolution of 1960's was attributable with averting widespread hunger crises by dramatically increasing agricultural production, whereas the negative consequences of its technological advancements were solely recognised in the years following Rachel Carson's Silent Spring in 1962**. (Chappel, 2007).** Gordon McClymont, an Australian agronomic, is said to have invented the term "sustainable agriculture. Globally one billion individuals area involved in agriculture sector. As, the practice of chemical used farming that is known as conventional farming increased to feed the planet population, detrimental effect associated with these methods started showing up in the later year of food production. Agriculture solely accounts directly for 11 - 13% of greenhouse emissions, along with soil erosion, soil, water and air pollution. With our climate being unsteady, the current technique of food production isn't feasible any longer. Several environmentalists support sustainable agriculture practices, as a remedy for chemical use farming.

Sustainable Agriculture

Sustainable agriculture is the production of plant and animal products, including food, in a way that is friendly to the environment, public health, local communities, and animal welfare. Sustainable agriculture enables us to produce and enjoy nutritious foods without jeopardising the ability of future generations to do so. The key to long - term success in agriculture is to find a method to make it more sustainable.

According to **Wikipedia** "Sustainable agriculture is farming in a way that meets society's current food and textile needs without jeopardising current or future generations' ability to satisfy their needs. It could be founded on a knowledge of ecological services.

In the US National Agricultural Research, Extension, and Teaching Policy Act, 1977 the term "Sustainable agriculture" is described as an integrated system of plant and animal production practises with a site - specific application that will:

- Meet human food and fibre needs in the long run
- Improve the quality of the environment and the natural resource base on which the agriculture economy is built
- Maintain the economic viability of farm operations
- Improve the quality of life for farmers and society as a whole by making the most efficient use of non - renewable resources and on - farm resources and integrating, where suitable, natural biological cycles and controls

Traditional farming produces a vast quantity of things for our consumption in front of us, but it depletes resources quicker than they can get replenished. If we keep on moving on the same road, we will eventually reach a point where our lands will be unable to produce adequate food. Sustainable agriculture is already demonstrating its ability to feed expanding populations. When compared to traditional agriculture, sustainable farming practises comprise a variety of methods that regenerate soils, save water and energy, and produce a greater diversity of nutrients for our consumption. This agricultural system operates in a variety of ways, which makes it adaptableto certain circumstances in various locales. In a country like India, where most of the farmers are poor, sustainable agriculture can play a vital role. This aids in the alleviation of poverty in rural communities where agriculture is their sole source of income. With the money they gain from selling their produce, these people can afford to buy a wider variety of nutritious food, keeping their families healthy and hunger - free for longer periods of time. Sustainable agriculture has the power to bring people together, meet their fundamental nutritional needs, and

safeguard their food supply in times of adversity without jeopardising future food production. Farming sustainability is led by three interwoven principles: economic viability for farmers, social justice for communities, and environmental sensitivity. These are the pillars of sustainable development that will be able to support the expanding population in the future. Sustainable farming attempts to have the least amount of environmental impact on agriculture while maintaining high yields.

2. Literature Survey

Dumanski *et. al* (1998) concluded that sustainable agriculture will provide economic and social opportunities for current and future generations while preserving and improving the quality of the environment and the natural resource base that supports production and provides a foundation for all terrestrial life on the planet. The concept of sustainability as opportunity emphasises that decisions made today do not affect future production systems. . According to **Francis *et. al* (2011)** sustainable farmers increasingly rely on thoughtful redesign of production systems to provide internal management of soil fertility and pests, careful use of contemporary energy and rainfall, and reliance on internal resources rather than imported inputs, as opposed to chemicals used in conventional farming. Future sustainable farming and food systems will rely heavily on system evaluations based on productivity, long - term economic return, viable environmental indicators, and fair social repercussions of agricultural production. **Hobbs *et. al* (2008)** concludes that CA is a more sustainable, lucrative, and environmentally beneficial management strategy for farming crops, according to the report. In order to meet expanding population demands, he also predicts that agriculture will have to produce more food from less land in the coming decade through more efficient use of natural resources and with little environmental damage. Promoting and adopting CA management systems can only meet this goal. Sustainable agriculture integrates biological, chemical, physical, ecological, economic, and social sciences in a comprehensive way to develop new farming practises that are safe and do not degrade our environment, whereas conventional agriculture is almost entirely driven by productivity and profit. **Lichtfouse *et. al* (2009).** . Reported by **Noble *et. al* (2010)** that future food production demands will necessitate technical innovation and improvements in agricultural practises in order to satisfy future food production goals without consuming additional land and water. In order to increase the productivity of degraded agricultural systems, he examines future global food demands and emphasises the importance of addressing soil chemical and physical restrictions. According to **Robertson (2015),** education, cultural norms, and access to technology all play a role, but the major obstacle to farmers adopting more sustainable practises is the cost of doing so. The lack of economic incentives is also a barrier to farmers adopting more sustainable practises. **Spiertz (2009),** research on many scales, from single crops to diversified cropping and agricultural systems, is required to achieve the aims of sustainable agriculture. In order to attain higher agronomic N - use efficiency, he concluded that N supply should meet N demand in time and space, not only for single crops but for a crop rotation as an integrated system. To produce more ecologically friendly agricultural systems, a mix of quantitative systems research, creation of best practises, and legislation will be required

Objectives

The main purpose of this research is to know the importance of sustainable agriculture and how it benefits the environment. This research has the following objectives: -

1) How does sustainable agriculture differ from traditional farming?
2) Is sustainable agriculture capable of feeding the world's expanding population?
3) Why is there such a low rate of sustainable agricultural adoption?

3. Methodology

The entire research paper is based on secondary data. Data has been collected from different sources such as previous research done by different researcher, research paper, journals, newspaper, articles etc. Data has also collected from different private as well as government website about the research topic.

4. Results

From viewing different literature and going through researches these are some of the major advantages sustainable farming has over traditional farming.

- It conserves natural resources
- It protects soil nature and increases soil fertility
- It prevents and minimize different pollution causing to the earth’s surface
- It minimises the use of non renewable energy
- It ensures pest control by natural or biological methods
- It ensures degradation of the environment
- Reducing costs by reusing natural resources and focus on profits
- It reduces greenhouse gas emission

The major difference between Conventional and sustainable agriculture has been summarized below in table no 1

Table 1: Difference between conventional and sustainable agriculture

S. No	*Conventional Agriculture*	*Sustainable Agriculture*
1.	Main Goal of conventional agriculture is high profit and High Yield	Main Goal of Sustainable agriculture is sustainability which is to secure the future
2.	Agriculture chemicals are used in production of the crops	No agriculture chemicals used
3.	High environmental damage such as soil pollution, water contamination.	Low environmental damage
4.	GMO crops are used	GMO crops are not used
5.	Promotes monoculture	Promotes polyculture
6.	Reduce Biodiversity	High biodiversity
7.	High yields	Low yields
8.	Reduce soil fertility	Increase soil fertility
9.	Increase soil erosion	No soil Erosion
10.	Easy to manage	Difficult to manage
11.	Relatively Easier	Relatively Difficult

Sustainable agriculture refers to farming practises that meet society's current food and textile needs without jeopardising current or future generations' ability to meet those needs

The following are the goals of sustainable agricultural development (**Conway et al, 1987):**

1) Increased productivity in terms of yields or net earnings.
2) Variability around average yield or net income is used to gauge stability.
3) Income distribution is used to determine equitability.
4) Sustainability, which is difficult to quantify in terms of quantity.

The current production methods are linked to the following environmental and public health concerns: (**Horrigan, 2002)**

- Plant and animal biodiversity is being eroded by monocultures.
- Synthetic chemical pesticides and fertilisers pollute soil, water, and air, endangering both human health and the ecosystem.
- Soil is degrading at a rate far quicker than it can be restored, resulting in the loss of valuable resources.
- Many agricultural areas consume water at unsustainable rates.

Sustainable agriculture as a means of feeding the world

To feed a worldwide population predicted to reach 10 billion by 2050, food production must increase by 50% in the next 30 years. In 2050, an additional 7, 400 trillion calories will be required per year compared to 2010. If current trends continue, food production will require a landmass twice the size of India. What can we do it reach such a high demand for food?

Bringing more land

Filling the gap by putting more land under agricultural production is one solution, but it isn't enough. Finding so much land under ideal conditions would mean the end of many of the world's remaining forests, peat lands, and wild regions, as well as the release of carbon locked up in them, hastening Intensive agriculture has already had a significant impact on biodiversity and the environment around the world. Pesticides, which have helped increase cereal and fruit production, have also killed a vast number of bees and other insects. Along with insect, with the degradation of forest to bring large amount of lands under agriculture, it will also destroy habitats of large numbers of animals and will eventually lead to the extinct of some species from the face of the earth, hence destroying the ecosystem. Fertilizers that have helped to feed the world by increasing production had negative impact on the ecosystem. Last year, the largest known maritime "dead zone" was identified in the Gulf of Mexico, the result of fertiliser and manure runoff from the meat sector. Chemical fertilisers also contribute directly to climate change and air pollution by emitting the greenhouse gas nitrous oxide.

Comparing the yields of sustainable agriculture with conventional farming

A group of researcher from university of Michigan were able to demonstrate the current scientific knowledge that doesn't support the conversion of conventional farming into sustainable farming, which will lead to starvation. Instead, they discovered that, even with conservative estimations, present information predicts that organic agriculture might offer nearly as much food on a worldwide scale as is currently produced (2, 641 kcal/person/day after losses vs.2, 786 kcal/person/day). Another realistic estimation is that organic agriculture increases global food production by as much as 50% (to 4, 381 kilocalories/ person/day). They discovered considerable differences in yield ratios between developed and developing countries when we compiled data for the entire world, "developed" countries, and "developing" countries (using the FAO categories for nations). Based on our estimate of food production based on ten food categories and 160 instances in developed nations, they discovered that organic farming could hypothetically provide enough food to meet 92% of current caloric requirements (or a yield ratio of 0.92). (**Chappell, 2007)**

A group of experts from the University of Michigan were able to show that existing scientific knowledge does not support the notion that switching to organic and sustainable agriculture would substantially reduce food supply and lead to starvation. Instead, they discovered that, even with conservative estimations, present information predicts that organic agriculture might offer nearly as much food on a worldwide scale as is currently produced (2, 641 kcal/person/day after losses vs.2, 786 kcal/person/day). Another realistic estimation is that organic agriculture increases global food production by as much as 50% (to 4, 381 kilocalories/ person/day).

According to **Badgley *et. al* (2007)** a new kind of food principle based on agroecological production, they have demonstrated two critical points. The first is that the relative yields of organic farming are sufficient to feed the whole human population at their current levels of consumption. Based on a global dataset of 293 yield ratios for plant and animal production, this result was reached. The second argument is that nitrogen fertility is important. According to data from 77 studies, nitrogen - fixing legumes applied as green manures can produce enough organically fixed nitrogen to replace all synthetic nitrogen fertiliser now in use.

Africa faces enormous food security challenges; to tackle the challenge sustainable practices has been adopted to increase the food production. Hence, an assets - based model of agricultural systems, together with a typology of eight improvements that are currently in use in sustainable agriculture projects. In the 45 projects/initiatives spread across 17 countries that are investigated, some 730, 000 households have substantially improved food production and household food security. In 95% of the projects where yield increases were the aim, cereal yields have improved by 50–100%. Total farm food production has increased in all **(Pretty, 1999)**

It is false, however, that the yield differential between organic and conventional crops is significant, or that organic crops never yield as much as conventional crops. In fact, organic crops outperform conventional crops by up to 40% in harsh climatic circumstances like drought.

The above given are some research carried out by researchers, which shows that even though the yield of sustainable farming is bit low when compared to conventional method of farming, but it shows that the yield is enough to feed the growing population. Moreover, organic foods are more resistant to harsh climate.

Some of the major methods of sustainable agriculture which are a way to increase food production and reach the food requirement are as follows:

1. Crop Rotation 2. Permaculture 3. Cover Crops 4. Soil Enrichment 5. Natural Pest Predators 6. Bio intensive Integrated Pest Management 7. Polyculture Farming 8. Agroforestry 9. Organic Farming 10. Biodynamic Farming 11. Better Water Management

Policy for sustainable agriculture in India

India has had a National Mission for Sustainable Agriculture (NMSA) to promote sustainable agriculture since 2014 - 15, which is an amalgamation of many programmes focusing on agroforestry, rainfed areas, water and soil health management, climate impacts, and adaptation. Besides the NMSA, the Pradhan Mantri Krishi Sinchai Yojana encourages precision farming techniques like micro - irrigation, while the Integrated Watershed Management Program encourages rainwater harvesting. However, NMSA's budget allotment is insignificant (0.8%) when compared to the Ministry of Agriculture and Farmers Welfare's entire budget (MoAFW). The Central government spends roughly INR 71, 309 crore (USD 10 billion) on fertiliser subsidies each year, in addition to the MoAFW's budget of INR 142, 000 crore (USD 20 billion). While the Indian government recognises the necessity of supporting sustainable agriculture, the emphasis remains on green revolution - led agriculture.

Under the NMSA, various sub - programs receive the following for the year 2021 - 22: National Project on Organic Farming – INR 12 crore (USD 1.6 million); Mission Organic Value Chain Development for North East Regions – INR 200 crore (USD 27.5 million); Rainfed area development – INR 180 crore (USD 25 million); National Project on Agro - Forestry – INR 34 crore (USD 4.7 million); Paramparagat Krishi Vikas Yojana (PKVY) - INR 450 crore (62 million). Beyond NMSA, the Central allotted INR 2, 340 crore (USD 321 million) to the Pradhan Mantri Krishi Sinchayee Yojana schemes aim to adopt precision - irrigation water - saving technologies.

Eight of the 30 SAPS practises receive some budgetary support from the federal government through various programmes. These practices include organic farming, integrated agricultural systems, rainwater collection, contour farming (terraces), vermicomposting, mulching, precision farming, and IPM. Organic farming has gotten the most attention from policymakers, with several Indian states establishing specific organic farming legislation.

In states like Rajasthan support to soil management along with incentives to biofertilizers were emphasized to promote people to adopt sustainable agriculture. The Rajasthan government realised the importance of involving local people and has subsequently enabled the development of 15 000 watershed users groups, covering at least three million hectares (perhaps as much as 10 - 15 million ha) with sustainable practises. Low - cost methods, such as strips of vetiver and other grasses on the contour, are based on indigenous and biological technologies, contour bunds and contour cropping; field bunds; drainage line treatment; and shrub and tree regeneration on common lands Sorghum and millet yields have increased by more than half to 400 - 875 kg/ha (without fertilisers), while grass strip yields have increased by 50 - 200 percent to 450 - 925 kg/ha.

Policies for sustainable agriculture by different countries

Despite the fact that practically every country today claims to promote sustainable agriculture, the evidence shows only uneven reforms. Only two enabling policies have explicitly supported sustainable agriculture at the national level: putting it at the centre of agricultural development policy and integrating policies accordingly. Cuba and Switzerland are the two countries in question. Cuba has a national alternative agricultural programme, and Switzerland supports both types of sustainable agriculture and rural development on three levels. Organic agriculture has received explicit national backing in Austria, Denmark, Sweden, and Finland, but this has not always impacted conventional farmers.

Cuba

Up tothe year 1990 Cuba’s agriculture and food support were extremely dependent of external support. In the year 1990 when the trade with soviet bloc collapsed, the market faced severe shortage of imported goods So, there government wanted an alternative policy to be self sufficient, which was declared as “alternative model”: - an agriculture that focuses on resource - conserving methods that replace imported inputs with local knowledge, skills, and resources. It also promotes agricultural diversification, oxen breeding to replace tractors, IPM to replace pesticides, and the implementation of new scientific techniques. The need for extensive training; the promotion of improved farmer cooperation both within and between communities; and the reversal of the rural exodus by encouraging people to stay in rural regions. **(Funes, 2006)**

In Cuba, two major strands of sustainable agriculture have emerged:

- Self - provisioning gardens at schools and workplaces (autoconsumos), raised container - bed gardens (organoponicos), and intense community gardens (huertosintensivos) are three forms of intensive organic gardens in urban environments.
- In rural areas, TM sustainable agriculture is practised on both large and small farms.

The transition towards sustainable agriculture has been the Grupo de Agricultura Organica (formerly known as the *Asociación Cubana de Agricultura Orgánica*, and formed in 1993). Farmers, field managers, field experts, researchers, and government officials are brought together by the GAO to persuade farmers that organic - based alternatives can produce enough food for Cubans. There remain many difficulties though:

1) Demonstrating the viability of an alternative system to sceptic farmers, scientists, and policymakers
2) Developing new technologies quickly enough to address emerging problems;
3) Coordinating the many actors to work together
4) The need for continued decentralisation of food production to farmer level, as well as appropriate land reform to encourage local investment in natural asset - building.
5) Encouraging farmers of large scale rice, potato, sugar cane and citrus to reduce their use of pesticides and fertilizers.

Switzerland

In the year 1990 progressive swiss policy for agriculture was reformed. The swiss federal agricultural law was reframed in the year 1992 to target large subsidized. Policy now distinguishes three levels of public support based on the long - term viability of agriculture. Support for certain biotypes, such as extensive grassland and meadows, high - stem fruit trees, and hedges, is at the top of the priority list. Tier two encourages integrated production with fewer inputs that adheres to stricter environmental requirements than traditional farming. Support for organic farming is the third tier.

There are five minimum conditions necessary for farmers to receive payments for integrated production, the so - called 'ecological standard' of performance:

1) Show indications of nutrient balance, with fertiliser matched to crop demands and animal farmers forced to sell excess manure or reduce livestock numbers.
2) Soils must be safeguarded against erosion; erosive crops (such as maize) can only be grown in rotation with meadows and green manures.
3) At least 7% of the farm must be set aside for unfertilized meadows, hedgerows, or orchards to conserve species variety.
4) Using a variety of crop rotations.
5) Pesticides must be lowered to danger levels that have been established.

Brazil

The state government extension and research service, EPAGRI (Empresa de PesquisaAgropecuária e Difusâo de Technologia de Santa Catarina), works with farmers in the southern Brazilian State of Santa Catarina, from the flat coastal areas in the east to the rolling highlands and mountains of the centre and west. It is working with local farmers on a microwatershed level to establish low - input and productive agricultural systems. Each member of staff spends two years working in four microwatersheds with roughly 150 people, playing a significant social as well as technical role. Farmers are encouraged to experiment, and there is a lot of decision - making at the farm level. Countries like Denmark, Sweden and finland has also set up explicit policies for sustainable agriculture at national level. Denmark and Sweden has emphasized national support for inorganic farming aswell as reduction policies in inorganic pesticides and fertilizers. Whereas Finland has started agriculture and environmental schemes with incentives to farmers where 82% of the farmers have joined.

Other countries like Costa Rica, Australia, Kenya, Netherlands, Paraguay, Benin, Bolivia started with supportive policies but has not yet integrated with agriculture sectors. These policies include soil conservation, pesticide reduction, nutrient regulation,, water harvesting and support to land care programme.

Does Farmers hesitate to adopt sustainable agriculture or types of different farming

A study was conducted based on an exploratory agent - based model showing Philippine smallholder farmer decisions to use organic techniques in rice paddy systems, according to (**Olabisi et al., 2015).** The results proofed that land area and yield are major constrains which makes small landholders from adopting organic farming by giving up conventional farming, because farmers with small fields are not able to generate enough organic input to maintain yield.

Farmers' innate proclivity to behave in various ways is referred to as dispositional factors. Farmers resistance to change and move by economic objective make farmers reluctant to convert to sustainable farming. The adoption rate of the farmers will increase if the general awareness towards environmentally healthy food increases and also if the consumers are willing to pay for organic or sustainable foods. The adoption of sustainable farming will also increase if the farmers start thinking that such practices will bring environmental and financial benefits with limited risks **(Dessart, 2019)**

Even though the advantages of sustainable agriculture far exceeds that of conventional agriculture practices, farmers hesitate to adopt sustainable agriculture practices, some of the main reasons are as follows: -

1) **Lack of Knowledge**: - In a country like India, where agriculture is the backbone of 138 million people, and 70% of the population are involved in farming or allied sectors, they have very less knowledge about sustainable agriculture practices and different methods.
2) **Small Landholding**: - Adopting sustainable farming is not suitable for farmers having small lands, because with small lands the nutrient required for crop growth cannot be fulfilled and the farmers need to rely on outside source for the nutrients.
3) **Avoid taking Risks**: - Almost 90% of the farms are family owned. They generally have a tradition of following the same pattern of crop production as followed by their fathers and grandfathers. Hence they avoid taking risks by adopting new practice and leaving out there old practice
4) **Risk bearing ability**: - In countries like India, where 82% of the farmers are small and marginal, in such a situation the farmers have very few assets of their own, and majority time of the year they remain in debt, hence farmers have a very less risk bearing ability, and they prefer to remain as they are rather than taking risk
5) **Demand**: - With the increase of demand of any good, the supply also increases, people have recently started preferring organic foods over conventional foods. So, the demand of organic foods have not reached to certain limit, which will drive the farmers to shift from conventional to sustainable practice.

6) **Price**: - Price of organic food are much high as compared to conventional food. The rich can only afford, hence the demand of organic food has not reached to certain limit.

5. Conclusion

Sustainable management of natural resources is one of the long - term aims of the Common Agricultural Policy, along with improved productivity and a stable supply of affordable food. Sustainable agriculture has more benefit when compared to conventional farming. Conventional farming has been practiced all over the world and is the main method of producing food. It is easier and has less complex methods when compared sustainable farming, but it comes with a lot of demerits such as soil, water and air pollution, environmental degradation, leads to soil infertility, loss of topsoil, and soil erosion. Conventional farming leads to high CHG emission in comparison to sustainable farming. Whereas when we consider Sustainable agriculture conserves natural resources, protects the soil nature and increase soil fertility, prevents different pollutions, minimises the use of non - renewable energy and reuses natural resources and focuses more on profit. Sustainable agriculture comes with advantages of its own, even though its yield is lesser when compared to traditional farming, but the advantages are much higher. With the ever increasing population of the world, feeding the people of the world and removing global hunger are the main priorities of any agricultural system. Sustainable agriculture can provide the world with enough food to feed the world population. It has the capacity to provide with enough kcalories/person/day according to a group of experts from university of Michigan.

When we go through different farms in our place, almost all of them are still following conventional method of farming. The adoption of sustainable farming is low among farmers. One of the major reasons is lack of knowledge about sustainable farming. In countries like India, where the farmers are poor and barely meet there basic requirement, they avoid taking risks due to lack of capital and prefer to stick with their old way of cultivation. Another reason for low adoption is due to small landholding, and adopting sustainable farming is not suitable in such scenario. Sustainable agriculture can be the future of food production, but it is not possible by just adopting it, or converting the conventional farms into sustainable ones. Proper policies regarding sustainable agriculture must come into act, with proper supervision from the government to support the farmers. Different countries have enacted different policies regarding sustainable farming. Countries like CUBA and Switzerland have implemented policies at national level, and have gained lots of success. Sustainable agriculture is the future of food production, with proper management, knowledge and support from every entity involved in this system of food consumption.

6. Future Scope

The above research will help us to understand to positive sides of sustainable agriculture, and the positive impact it has on the environment. It will help policy makers and law makers understand the importance of sustainable agriculture and it will be having in the future food production. Food production method is in the brink of its limit, land will get scarce in the future, and population will be exponentially increasing from year to year. We have already used up most of the resources from the environment; using more of the natural resources will lead to harming of the environment. Government employ will have clear ideas about the ill effect of modern day agriculture. This research will also help them understand the about the mind - set of farmers in adopting sustainable agriculture and what must be done in increasing the adoption rate. Which will ultimately lead to making of proper policies and schemes in favour of the farmers.

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