Sustainable Farming and Community Participation – Study from Anantapuram District – A.P

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Abstract

Foundation for Ecological Security (FES) has implemented innovative agricultural techniques, resulting in an increase in farmers' revenue. Anantapur district is a drought-prone region with minimal rainfall when compared to other parts of the country. FES, on the other hand, conserved the environment and aided farmers. Their work has transformed the way people thought about prosperity in Anantapur district. Their outstanding work has been featured on worldwide television channels such as the BBC. Results from our empirical study show that farming can be carried forward profitably provided there is a technical support and guidance to the farmers. FES has enabled the farmers in the dry region like Anantapur to reap returns from the farming.

Key words: *Sustainable Farming, Andhra Pradesh, Rayalaseema, Indian Economy, Development*

Overview of Indian Economy

India's economy is currently characterized by the growth of an economy. India is ranked 139th by nominal Gross Domestic Product (GDP) and 118th by purchasing power parity Gross Domestic Product (PPP) according the International Monitoring Fund (IMF) static report based on per capita income. India's GDP has grown at a rate of 6 percent to 7 percent each year since 21st century. As a result, India had the world's fastest-growing economy from 2014 to 2018. Domestic private consumption contributes over 60 percent of India's GDP. India is rated second in the world for food and agriculture, with agricultural exports totaling $38.5 billion. It indicates the importance of agriculture in India.

The service sector is India's leading sector. The service industry makes up 54.40 percent of India's entire "Gross Value Added (GVA) sector." Agriculture and associated sectors made for 14.39 percent of GDP in 2011-2012, according to prices. Similarly, the industrial sector and the service sector each had a 31.46 percent and 54.15 percent share of the total respectively. Agriculture, fishing, forestry, mining, and quarrying are all part of the primary sector. Gas, electricity, water supply, and other utility services make up the majority of secondary sector production. The tertiary sector is made up of persons who provide services. Primary, secondary, and tertiary sectors estimated 14.39, 31.46, and 54.15 percent of the total respectively. India is the world's second-largest agricultural producer, with a total value of 375.61 billion dollars. India's Gross Domestic Product (GDP) in the industry sector is $560.69 billion dollars. India's GDP in the service sector is $1500 billion. The Indian economy's agriculture sector is substantially greater than the global average of more than 6.4 percent. However, the contributions of the industry and service sectors are lower than the global average, with industry contributing for only 30 percent and services

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contributing for only 63 percent.

Overview of Indian Agricultural Economy

Agricultural economics is the main branch of economics like Macroeconomics, Micro economics and others. Agricultural economics deals with the production, consumption and transfer wealth. It concerns with theories of production and distribution of food grains. Agriculture sector plays a main role in country's GDP calculation. The growth of India agricultural economy determines overall growth rate of national economy. Agricultural economy is the backbone of Indian economy since early days. It contributes nearly 50 percent of the economy. Most of Indian population in India depended on agricultural activities directly or indirectly in most of the cases. Agricultural activities are very important in our Indian economy. India has seen tremendous growth in agriculture sector, and it's depended on sectors like transport in last few decades. Agriculture and it is associated sectors also have been improved to the global level exports and booming the economy.

Overview of Andhra Pradesh agriculture

Andhra Pradesh is known as "India's bejeweled rice bowl." Agriculture is important to people's livelihoods because 63 percent of Andhra Pradesh's population lives in rural areas and depends on agriculture and related livelihood possibilities. The agriculture sector contributes for 27 percent of the state's GDP. Agriculture is vital not just for the economy, but also for the state and country's food security. Andhra Pradesh, with its 13 districts, has a lot of potential in agriculture and related industries. Andhra Pradesh has six agro-climatic zones and five different soil types, allowing it to cultivate a wide range of crops year-round. The agriculture sector in Andhra Pradesh has undergone significant transition over the years. Over time, the nature of the transformation has changed as well. Agriculture shifted from a traditional cereal-based system to commercial commodities such as oil seeds, sugarcane cotton, and cotton during the 1980s. Despite considerable uncertainty in the agriculture sector due to successive droughts and declining crop yields in the 1990s, the shift to high-value commodities such as vegetables, fruits, poultry, milk, meat, and fish continued. High-value commodities, in fact, looked strong and saved the farm industry to a large extent.

State Domestic Product (SDP), sometimes known as State Income, is an important indicator for measuring a state's economic development. State income and Per Capita Income (PCI) are significant factors in the formulation of policies by administrators, policymakers, and planners in the framework of the state's planned economic development. The aggregate of the economic worth of all commodities and services produced within the geographical boundaries of the state, counted without duplication over a specific period of tone year, is referred to as "State Domestic Product."

Foundation for Ecological Security (FES)

The FES is an organization it helps in construction and restoration of water and land resources in ecologically fragile, marginalized regions of the country and degraded through collective and concentrated efforts of village Communities. It was established in 2001 in Anand, Gujarat. The organization served in various like Rajasthan, Andhra Pradesh, Karnataka, Orissa, Madhya Pradesh, Gujarat, North - Eastern Region 30,201 villages level habitations strengthened 1618 million people are impacted. 9.12 million acres of commons secured.

FES works on the Papagni River's rain-fed zones areas in Anantapur and Chittoor districts, which are located in the Deccan Plateau, Eastern, and Western Ghats. This region, which was formerly known for its falling irrigation facilities, is now threatened by severe droughts and low water levels. Increased farmed acreage, the planting of water-intensive crops, growing cultivation expenses, and fluctuations of market

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prices has all contributed to distressed migration. FES also works in Visakhapatnam's Machkund river basin's tribal-dominated and forested uplands. The main goals are to protect Commons rights, restore ecological landscapes, and improve habitation-level institutions and their conglomerates. FES Collaborates with Panchayati Raj, other democratic village institutions and appropriate civil society organizations in their contributions to fulfill their objectives and also to provide financial and technical assistance to them.

These are 30 funding partners such as Arghyam, Azim Premji philat, Axis bank foundation, Housing Development Finance Corporation (HDFC), HOB, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Imperial Tobacco Company of India Limited (ITC), Liechtenstein Global Trust (LGT), International Food Policy Research Institute (IFPRI), Government of Rajasthan etc.…For their significant work with both communities and the government to promote local management of the commons and supportive policies for equity and sustainability, **The Elinor Ostrom Award** for Collective Governance of the Commons was given to FES in 2013.

Overview of FES organization

Commons include 205 million of acres, or a fourth of India's land area, and include community forests, grasslands, and water bodies. They are shared resources that provide crucial ecological functions while simultaneously meeting the critical livelihood needs of India's rural poor, which number more than 350 million. India's commons are suffering from widespread damage, resulting in lower yields, higher agricultural costs, low groundwater, decreasing forests, and unrestricted grazing use. It is now widely recognized that the degradation of commons is a major cause to poverty, corruption, and violence and slow in economic growth around the world.

The main concept of FES is based on three interconnected elements: connecting individuals to the Commons, understanding and respecting the interdependencies of various living forms and ecological systems. We want to help local communities keep their Commons rights, transition to more sustainable land-use techniques that benefit generates economic opportunities and conservation.

Ecological security by FES

Finding ways to create ecosystems that are similar to those seen in nature FES strives to restore and conserve degraded grasslands, water bodies and forests. The interconnections between the agriculture, Commons, and animal production systems are viewed at a landscape level, and livestock keepers with natural resource conservation and linking a wider constituency of farmers. FES works with the rural communities to:

> Maintaining nutrient and hydrological cycles and to improving soil health

> Conserving indigenous biodiversity

> Promoting local land-use decisions since ecological security is critical to social and economic well-being.

According to FES, better forest and grassland management is linked to increased water, feed, and pollinator availability for animal production systems and farming. Crops are guaranteed, revenue is varied, and returns are higher as a result. FES supports ecologically sound, socially just, and economically gratifying livelihoods. Through

> Effective use of public funding

> Improves the leadership and reduced conflicts

> Enhanced collective action for cost-effective natural resource management.

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Core model of FES

Community rights, governance plans, access to resources resource management and financing are all interconnected problems that lead to enhanced ecological health and sustainable livelihoods.

Aim and Scope

This research is focusing on the organization called Foundation for Ecological Security (FES) and it is impact on Nambula Pulakunta Mandal, which is in Anantapur district. Mainly focusing agriculture and changes living standards of the research area. The FES organization helped the farmers in all aspects to increase their crop yield and to increase their social infrastructure to increase their living standards. The organization makes a huge difference in farmer's fields, agriculture land and farmers living standards. Due to heavy agricultural loss, loans and less returns in agriculture so many farmers left agriculture and migrated to nearby cities.

Area of research

This research was based on the primary data collected. The data is collected through the sampling method. The sample for this study was selected from a Mandal named Nambula Pulakunta, Anantapur district, Andhra Pradesh. This place was chosen because of the FES working in N. P. Kunta Mandal under Thambalapally block.

Population

The sample consists of **70 random farmers** who are getting benefit from FES. These 70 samples collected from 4 different villages in N. P. Kunta Mandal which is under Thambalapally block in FES, Anantapur District, state of Andhra Pradesh.

Table: 1.1 Distribution of Samples

District	Mandal	Village	Sample size
Anantapur	**Nambula Pulakunta**	Somarajukunta	24
		Dhaniyalacheruvu	18
		Kottamvari palle	12
		Golla palli	8
		Kuntla palli	8
		Total	**70**

Source: Collected by the researcher through field visit

Methods of Data Collection

This study's data is entirely based on primary data collected from the research area. The purpose of this research was to learn about the transformation that occurred in agriculture and farmers' livelihood once FES began working.

Primary Data

The primary data is collected through a basic questionnaire and by personal interview. The survey was done for the data collection for this study. The questionnaire was prepared in English, but during the personal the conversation interview, was taken place in local language (Telugu). The questionnaire consists samples education and job profiles, method of cultivation, changes brought by the FES, new methods introduced by FES in their fields and changes in their life, agriculture after FES started working and related to migration etc.…

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Tools for Analyzing the Data

In order to analyze the primary data in this study, software such as Excel was used. The data was mostly entered into an excel spreadsheet. The statistical methods, like mean, median, were used to analyze the data. The graphs like histograms, bar graphs and line graphs were also used here for the representations of some of the data.

Geographic location of Nambula Pulakunta

Nambula Pulakunta is a village in the Anantapur district, state of Andhra Pradesh, India. It is the administrative center of Kadiri revenue division's Nambula Pulakunta Mandal. Pyrophyllite and chloritoid radiating crystals are found in the valleys to the north of Nambula Pulakunta, according to the Geological Survey of India. N. P. Kunta located the west of Kadiri town from 29 km away.

The Ultra Mega Solar Park in the Nambula Pulakunta area, which generates 200 Megawatts (MW), is the world's largest solar power plant. With a total capacity of 1,500 megawatts (MW), the projected park is the world's largest solar plant. National Thermal Power Corporation Limited (NTPC) is building a 1,000 megawatt solar power plant, comprising 250 megawatts in the first stage and 750 megawatts in the second.

Anantapur District Profile

The name Anantapur originates from the enormous tank 'Anaatasagaram,' which means "Endless Ocean." The villages of Anaantasagaram and Bukkarayasamudram were created by Anantaras Chilkkavodeya, the minister of Vijayanagar monarch Bukka-I. Some historians say Anaantasagaram has been named after Bukka's wife, while others believe it was named on Anantarasa Chikkavodeya himself, as Bukka had no such queen. When Bellary District was broken up in 1882, Anantapur District was formed.

Between the eastern latitude of 76° 47' and 78° 26'E and also north latitude of 13° 41' and 15° 14'N, the district was located. The district is located in the northern part by Kurnool District, on the southeast by Chittoor District, on the east by YSR District, on the southwest and west by Karnataka state. The district has a population of 40, 83,315 people, representing for 4.82 percent of the state's overall population and a 12.16 percent decadal growth, according to the 2011 census.

The district was established in 1882 after being detached from Bellary district. The Revenue Mandals of Kadiri, Nallamada, Obula Devara Cheruvu, Mudigubba, Gandlapenta (old Kadiri Taluk), Nallacheruvu, Tanakal, Amadagur, Nambula Pulakunta and Talupula from Cuddapah District were added in 1910. The current Bellary District Revenue Mandals of Bommanahal, Rayadurg, Kanekal, Gummagatta, and Dhirehal were amalgamated into Anantapur District in 1956. There are five revenue divisions in the District, each with 63 revenue mandalas (Anantapur-19, Kadiri-12, Penukonda-13, Kalyandurg-11 and Dharmavaram-8).

Land Utilization

Anantapur district soils are made up of 87.4 percent red soils, 12.5 percent black cotton soils and 0.1 percent problematic soils. Groundnut accounts for 86 percent of total land, paddy for 3.3 percent, and other crops for 10.7 percent. Groundnut is the main crop, which is farmed on 7.0 lakh hectares in red soils under rainfed conditions. The district's overall geographical area is 19.13 lakh acres. The entire area seeded is 9.70 lakh acres, or 51 percent of the total area. The total cultivated land area is 10.16 lakh hectares. Only 0.39 lakh hectares have been seeded multiple times. The district's cultivable area is 10.15 lakh ha, with 8.69 lakh ha in kharif and 1.45 lakh ha in Rabi season. The main crop is groundnut, which is grown on 7.5 lakh hectares under rain - fed conditions during the kharif season. Canals account for 19.3%

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of the 1.72 lakh hectares of gross irrigated land, tanks 3.2 percent, tube wells 39.6 percent, wells, and other sources 37.9 percent. The district's irrigation sources include the Upper Pennar Project, Guntakal branch canal, Bhairavanithippa project (BT project), Chennaraya Swamy gudi project, Tungabhadra Project High level canal (TBHLC), tanks, wells, bores, and filter point.

Rainfall

Anantapur district receives the lowest average rainfall in the country, with 552 mm per year, with 57 percent comes from the Southwestern Monsoons (June to September) and 30 percentage from Monsoon Period (October to December). Sometimes due to massive rains during the growing and harvesting stages of the crop, as well as cold temperatures during flowering, groundnut yields were poor.

Andhra Pradesh State Profile

When India gained independence, the Telugu speaking population was spread throughout roughly 20 districts. Nine in the Nizam's Domination and eleven in the Presidency, Madras could contain largely Telugu speaking areas with Kurnool as their capital in response to Telugu-speaking people's wish. Andhra Pradesh was founded on November 1, 1956, following of the recommendations of State Reorganization Commission, with the accession of nine districts that were formerly under the Nizam's dominion.

Andhra Pradesh is a state in southern India. Tamil Nadu is to the norther part, Karnataka is to the eastern side, Odisha is to the south and Telangana is to the southeast. With a population of 54 million inhabitants, Andhra Pradesh is India's ninth most populous state. It covers 160,205 square kilometers, making it the seventh-largest state by land. On June 2, 2014, the state's northwestern region was divided to form Telangana, a new state.

The rural population accounts for 70.4 percent of the overall population, while the urban population accounts for 29.6 percent. The female to male ratio is 996, which is greater than the national average. Andhra Pradesh had a literacy rate of 67.41 percentage in 2011, which was lower than the national average. By 2021, however, this figure is predicted to rise to 91.1 percent. Andhra Pradesh has four official languages. Telugu is the official language, and it is spoken by 83.55 percent of the population. Additionally3.69 percent Hindi, 8.87 percent speak Urdu, 1.01 percent Tamil, and 2.88 percent speak other languages. Hinduism is the state's predominant religion, with Hindu's accounting for 90.87 percent of the population. Muslims account for 7.32 percent of the population, while Christian's account for 1.38 percent. Other religions or no religion are practiced by the remaining 0.43 percent of the population.

1.2 Age Distribution of samples

Age (years)	Frequency	%
20 to 30	2	2.9
30 to 40	4	5.8
40 to 50	20	28.5
Above 50	44	62.8
Total	70	100

Source: Collected by the researcher through field visit

The above table 5.1 describes about the age distribution of samples. 2 respondents belong to the age group of 20-30 years. 4 belong to 30 - 40 years, 20 from 40 - 50 years. 44 respondents are above 50 years. Nearly, 63 percent are above 50 years. From this we can understand that 50 years above people are participating in agricultural activities compared to young people. The age group of 30 to 40 years

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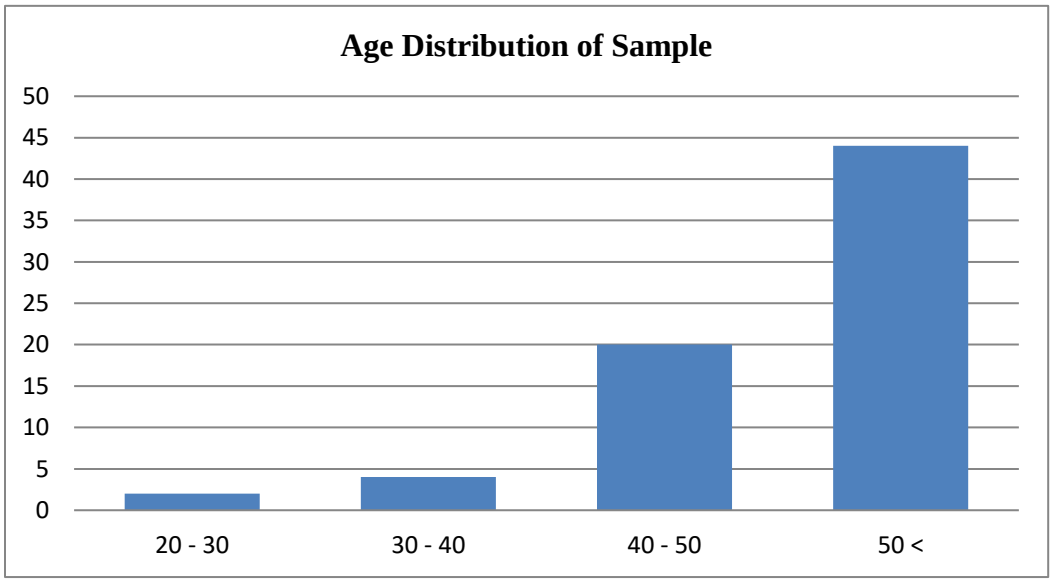
population is mostly interested in 10 am to 5 pm works or office works. This age group people are not interested in to do office works. In future it may very hard to find the people working in agriculture sector. By this, priced of daily usable and agricultural goods increases and leads to inflation in economy.

Graph 1.1



Source: Collected by the researcher through field visit

Table: 1.3 Gender Distribution of Samples

Gender	Frequency	%
Male	60	85.7
Female	10	14.3
Total	35	100

Source: Collected by the researcher through field visit

The above table 5.2 depicts above the gender distribution of 70 samples. Nearly, 85 percent are male in 70 respondents and remaining 14 percent are female. Male-dominated societies are common in India. The table above represents the Indian labour market scene. Female labour force in India has always been lower than male labour force. However, this is slowly changing in the Information Technology (IT) and other industrial sectors. In several fields, females compete with males. An increase in the female labour force is always a good indicator for the economy of a county.

Table: 1.4 Category distribution of respondents

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Category	Frequency	%
General	16	22.8
OBC	44	62.9
ST	10	14.3
Total	70	100

Source: Collected by the researcher through field visit

The above table 5.3 illustrates the caste composition of respondents. In which 44 respondents belong to OBC, 10 belong to ST and remaining 16 belong to general category. In the research area, the percentage of people in the OBC category is higher than in other categories. SCs make up a small percentage of the population, and there are no SC samples in any of the 70 samples. OBCs account for over 63 percent of respondents. In the OBCs, the Vadde family has a larger presence in the research field. According to the figures, the Vadde family dominates the research field.

Table: 1.5 Level of Education

Education level	Frequency	%
I – IX	10	14.3
X – XII	12	17.2
Graduation	13	18.5
Illiterate	35	50
Total	70	100

Source: Collected by the researcher through field visit

The above table 5.4 explains about the level of education of 70 samples. In that 50 percent respondents are illiterates, only 19 percent completed their graduation, remaining 31 percent occupied till pre-university level. 50 percent of those questioned are illiterate. The majority of persons in the Indian agriculture industry are illiterate or have only had primary school education. As a result, they are unlikely to be aware of new technologies or farming methods. They continue to use the same old methods passed down from generation to generation. It may occasionally benefit, but in most situations, the production from conventional farming methods is quite low. They may be misled by fertilizer shop proprietors into paying a high price for low-quality fertilizers. They don't have access to cutting-edge technology or real-time weather reports. However, it has been proven incorrect in other circumstances. By virtue of their extensive farming expertise, even illiterate farmers may be aware of new farming practices, fertilizers, and weather forecasts. 19 percent of the samples had graduated and were involved in agricultural activities. It's welcome news for Indian agriculture. They may inspire other farmers to experiment with new technologies and practices in their fields. They share mutual regard and trust for one another.

Graph 5.4

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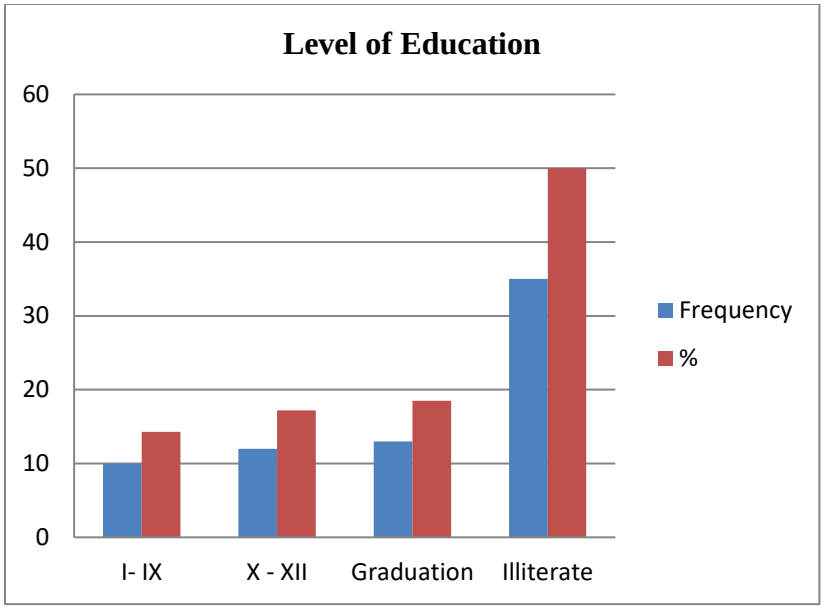

Source: Collected by the researcher through field visit

Table: 1.6 Size of Family

Size of Family	Frequency	%
1 – 4	48	68.5
>5	22	31.5
Total	70	100

Source: Collected by the researcher through field visit

The above table 5.5 shows about the size of the family. The families which have 1-4 members are known as nuclear family and above 5 are big families. Nearly 69 percent are nuclear families and remaining 31 percent are big families. From this, we get to understand clearly that nuclear families are more in this generation. People in Indian society used to give great value on large, blended households. However, due to people's stated thinking with an economic mind rather than sentiments and relations, the trend is changing day by day. With comparison to small families, the expense of living for the family head is extremely high in large families. In comparison to large families, even small households get more benefits from the government. Some states, for example, only provide a pension to one family member.

Table: 1.7 Ownership of land

Size (acres)	Frequency	%
1 – 3	28	40
3 to 6	28	40
6 to 9	8	11.4
9 to 12	4	5.8
>12	2	2.8
Total	70	100

Source: Collected by the researcher through field visit

The above table 5.7 analyses about the ownership of land. 80 percent respondents are having land below

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6 acres and 12 percent have 6 - 9 acres. Only 8 percent respondents have more than 9 acres. Small farmers are more in the 70 samples. Huge land is concentrated by very few members and more people had very less land. The same thing is happening with Indian agriculture. Small farmers with less than 6 acres of land are more likely to be involved in agriculture. It is apparent that a tiny group of people own a large percentage of the land. People in the village believe that those who own the most land are the leaders and can control anything. It is impossible to expand or increase because the area is so limited. However, the population is growing by the minute, and everyone wants to buy a piece of property. According to the table, two out of every 70 respondents own more than 12 acres.

Table: 1.8 Nature of land

Soil type	Frequency	% out of 70
Red soil	68	97.1
Black soil	6	8.5
Alkaline soil	6	8.5

Source: Collected by the researcher through field visit

The above table 5.10 explains about the nature of soil. Almost, 97 percent respondents are cultivating in red soil, by this we can understand that the survey area is under red belt. 6 respondents have the Black soil and another 6 members have Alkaline soil. Alkaline and black soil found near the lakes and ponds. Red soil is very fertile land useful for cultivation (agriculture). Some respondents have all types of soil, some are having types of soil such as red soil, black soil.

Table: 1.9 Irrigation facilities

Source	Frequency	%
Borewells	40	57.1
Rain fed	20	28.5
Wells	12	17.1
Lakes	14	20

Source: Collected by the researcher through field visit

The above 5.11 illustrates about the irrigation facilities such as Borewells, Rainfed, Wells and Lakes. In which 57 percent depend on Borewells for irrigation and 29 percent depend on rain and 17 percent depend on wells and remaining 20 percent depend on lakes. Majority depend on Borewells for irrigation. Water is an important element in agriculture. Borewells are important for irrigation. Those with enough water can grow two or three harvests every year. Borewells and wells existed prior to the FES, but their use was reduced due to low groundwater levels. After FES began working, and as a result of sustainable practices effort to raise groundwater levels, Borewells and wells began to fill up with water once more, and farmers began to reuse borewells. FES has restored the environment. The discount percentage has also increased. When there is more rainfall in the area, lakes, borewells, and wells are automatically filled with water. Although the FES did not participate in any new borewells, the level of groundwater increased as a result of their actions and practices. Farmers used the old abandoned borewells.

Table: 2.0 Crops under Cultivation

Type of crop	Frequency	%
Groundnut	66	94.2
Paddy	30	21.4
Vegetables	20	28.5

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Red gram	18	25.7

Source: Collected by the researcher through field visit

The above table 5.12 explains about the crops under cultivation. 94.2 percent respondents cultivate Groundnut, 42 percent paddy, 28.5 percent vegetables and 25.7 percent Red gram. Majority respondents cultivates groundnut because the red soil which is very fertile and suitable for groundnut cultivation. The respondents who are having borewell facility and gets water throughout the year are likely to cultivate paddy and vegetables. The respondents who depend on rain (rainfed) for cultivating are likely to produce red gram and groundnut.

Table: 2.1 Changes brought by FES in Famers fields

Changes	Frequency	%
Technology	66	94.2
Storage	60	85.7
Market Facilities	70	100
Providing Trees	16	22.8

Source: Collected by the researcher through field visit

The above table 5.13 manifests about changes brought by FES in farmer's field. Out of 70 respondents it helped 66 respondents it includes sprinklers, new type of fertilizers, tractors and etc... Technology was used in the field which leads to decrease in manpower. New technology was given as subsidies to them. Training and field work was also given to them to understand and operate the new technology. 86 percent respondents in 70 respondents are storing their crop in godowns, cold storage and selling them on season while storing them in off season because they can get super normal profit. 100 percent respondents use market facilities. FES organization is buying the produce of the farmers at a good rate than compared to the rate given by middleman. They sell the produce to Government or private enterprises. So, they can get good Price. FES credit the full amount without taking any commission (0 percent commission). In the study area, there is a threat of wild animals attacking so that they provide thorny plants to protect the crop. FES is committed to long-term development. It operates with and for the people. It is always looking to modify the agricultural sector in order to increase profits and output. FES holds field classes on how to apply new farming practices or technology in the field.

Table: 2.2 Exclusive Benefits under FES

Type of Benefit	Frequency	%
Decreased cost of cultivation	52	73
Soil fertility test	54	77.1
Storage/Godowns	42	60
Credit facility	42	60
Reduction in the usage of Chemical Fertilisers	16	22.8

Source: Collected by the researcher through field visit

The above table 5.14 explains about the exclusive benefits under FES. The cost of cultivation was decreased to farmers because organization provide machinery, seeds and fertilizers. Unnecessary usage of fertilizers and seeds are reduced by the farmers because the organization educate them on usage of fertilizers and pesticides. Nearly, 77 percent respondents did soil test in their field according to season (time). FES organization suggests what to produce according to the season. The crop loans are given with low interest rate and no security. It was provided by village community. 60 percent of respondents used

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the benefit in 70 respondents. The chemical fertilizers are reduced because FES organization to the farmers to cultivate the crop. These are the primary benefits acquired through FES. Not only do these FES support farmers in every element of farming and provide a standard of living for farmers.

Table: 2.3 Farming before F.E.S

Difficulty	Frequency	%
Low Productivity	34	48.6
Water scarcity	38	54.3
Inadequate Market Facilities	18	25.7
Insufficient Fodder	12	17.14
Non nutrient/spurious and Low-quality Fertilizers	14	20

Source: Collected by the researcher through field visit

The table 5.18 illustrates the farming before FES. The difficulties faced before farming FES where low productivity was faced by nearly 50 percent respondents, after FES advent productivity increased by giving quality fertilizers, soil testing, changing the top layer soil. Another issue, the study area had low ground water levels. FES has increased ground water levels by ecological restoration, by constructing check dams, constructing ponds to store rainwater under the hills, new plantation. Because of all these rains increased due to change in climate. There was also problem like inadequate market facilities, FES provided a solution to the issue by collaborating with government and markets. Insufficient fodder issue was also faced by the farmers earlier, which made them difficult to do animal husbandry; after FES came the food is available to the cattle due to the ecological restoration. FES provided high quality fertilizers earlier they used to face problem from low quality fertilizers. Organic fertilizers such as Neem oil, Navaamrutam, Neem cake, Samrum, and others were provided by the FES. They pressed neem leaves to make neem oil and stored the neem oil leaves for a long period. Neem oil is high in nutrients such as NPK. The yield from neem oil might be increased by 15 to 25 percent over normal. FES provides neem oil to farmers either for free or at subsidized pricing. Navvamrutha and Samrum are also beneficial to increasing yield. All of these fertilizers are provided by FES at a reduced cost or, on occasion, for free. These organic fertilizers can help farmers enhance their harvest output.

Conclusion

The FES was established because "ecological security" is the pillar of equitable development and sustainable. Committed to improving, revive, or where needed, restoring is process of the conservation and ecological succession in terms of forest, water resources country, and land. Ecological of land and water resources in the country's highlands and the other environmentally sensitive, degraded and marginal zones to initiate a coordinated human effort and governance process, especially to help the poor. Work towards recovery and conservation. Work with Panchayat Raj and other democratic village agencies and appropriate civil society organizations to achieve social and civil goals and provide technical and financial support. FES works with governments, civil society organisations on the ground and rural communities, at scale, and in a variety of settings. What began as a field-level experiment in a few villages in a few lands in 1986 has now grown to thousands of villages throughout 10 Indian states.

FES aims to make significant and demonstrable progress toward its long-term vision of gender equality and the inclusive community led by commons governance to improve rural people's economic outcomes and ecological. The institutional and governance factors to change, which influence the livelihood of the people who depended on the Commons, are fixed deeply. There is an urgent need to change the system so that ecosystems are linked to rural economic prospects through programmes and policies. The policy

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objective, legal mandate, local ability, and the agency and leadership of the local communities are all better aligned thanks to India's announced national and global commitments.

FES works directly with the village communities to protect strengthen collective action for inclusive natural resource governance, community land rights and rebuild landscapes with help of public funds. They reach scalability by integrating knowledge, information, and analytics to core activities, as well as landscape-level conservation planning. FES builds collaborations to utilise Commons into government and non-governmental organisation programmes, as well as to address local stewardship and conservation. FES collaborate with the local governments, International and national NGOs and with their networks to assist on-the-ground work and the policy's implementation, as well as to enable governments and NGOs access the power of information technology to take informed action at scale.

FES continued to work with NGOs as part of the Andhra Pradesh Drought Mitigation Project (APDMP) to make it easier to secure more Commons by registering their names in the Prohibitory Order Book (POB). To speed up the process, they collaborated with their partner organisations to improve their officials' grasp of commons and the laws for protecting and restoring them. Droughts and declining water levels expose the places where FES works. Distress migration has resulted from land appropriation for farming, water-intensive crops, increasing cultivation expenses, and market fluctuations. Land acquisition for farming, water-intensive crop yields, rising cultivation costs, and market fluctuations have all contributed to distressed migration.

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