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### Vegetable Cultivators in the Present Scenario: Issues and Challenges

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#### Abstract

In our country's domestic economy, agriculture plays an important role. It's our economy's blood of survival. India is a wide nation with significant agricultural diversity (Kumar S.Siva, 2013). The nature of the soil, the magnitude of rainfall, availability of water, etc. Differ considerably between different regions. Considerable areas face drought conditions in a particular year, some areas encounter the fury of floods, and some areas face the problem of waterlogging and salinity. Practically the entire cultivated area of the country suffers from the deficiency of nitrogen. There are substantial regional inequalities, and the presence of large diversities in the agricultural sector makes it is necessary to devise separate agricultural policies for different regions. It is not possible to generalise and formulate a single agricultural policy for the entire nation as a whole as such generalisation is bound to gloss over inter-regional differences and fail to deliver the goods. The nature of Indian agriculture reveals that Indian agriculture was backward and qualitatively traditional on the eve of the First five-year plan. The agrarian sector's output in our economy was very significant at the time of independence. The importance of agriculture has been disvalued and at the same time, the cultivators are forced to sell their lands for some other activities. (Misra and Puri, 2011). There has been vast change taking place in the agriculture sector since the 60s. The policy of the Government has brought many changes in the pattern of cultivation. The lands were once used traditional cultivating methods in various agriculture crops like food grains and other food-related crops are slowly losing their importance, and the same is used for the development of high yielding seeds and fertilizers in this sector. The lands used for the farming of food grains have now been cultivated in the agriculture field itself, such as tea, coffee, and other cash crops in Nilgiris. The researcher has highlighted the problem relating to the cultivation of vegetables, climatic challenges, on non-availability transportation of agriculture commodities particularly the tomatoes, carrots, mushroom, cabbages, and potatoes of lands once used for cultivating vegetables are slowly reduced due to insufficiency of irrigation facility, awareness towards usage of modern farming methods, agricultural techniques, and widespread indebtedness. The researcher has taken up the issue to find out the reasons for the shift in methods of cultivation of Horticulture crop. She has taken up the Nilgiris district in Tamil Nadu as her study area. Tamil Nadu district of Nilgiris was once designated as a vegetable cultivator. The cultivators have shifted the cultivation methods more towards organic in the place of chemicals. The field used for vegetable growing has declined and the area used for tea farming has increased. The research has used both primary and secondary data for her study.

**Keywords:** Agriculture 2. Cultivation 3. Vegetables 4. Vegetable cultivators 5. Horticulture 6. Farm land 7. Nilgiris

#### 1.1 Introduction

The cultivation of vegetables is the cultivation of plants for human consumption. The tradition possibly began ten thousand years ago in many parts of the world, with families cultivating plants consumption and for local commerce. At first manual labour was used, but in time the animal was domesticated and the soil was changed by the plough. More recently, mechanisation has

revolutionised vegetable agriculture with almost all computer methods. Unique crops in their locality are cultivated by expert farmers. New techniques are being employed- like aquaponics raised beds and glass cultivation. In producers, conventional markets, or pick-your-own practices, selling can be done locally or farmers can buy their entire crops from wholesalers or supermarkets.

Initially, hunter-gatherers gathered vegetables from the wild and cultivated them in many parts of the world, possibly from ten thousand BC to seven thousand BC, when a new agricultural lifestyle was established. In the beginning, some plants were grown locally, but with time the passage of time, trade brought exotic crops from abroad to the household. Today, most plants are cultivated worldwide, as the climate allows (Wikipedia).<sup>1</sup>

Vegetable crop diversity requires a variety of techniques to maximise the growth of each plant type. Therefore, some farms are concentrated on one vegetable; others are very varied. Given the need to sell fresh crops, vegetable gardening requires a high level of labour. The invention of maturation technology and cooling has minimised the problems of bringing products on the market.

It was usually done in soil with a surplus sold in the surrounding cities, mostly on a farm for consumption. Farms on the outskirts of major cities were then able to specialise in vegetable processing, enabling farmers to sell their products while still new.

### 1.2 cultivator

A Person was called a cultivator because either he or she had been interested in cultivating land owned or held by the government or private individuals or entities to pay for cash, sort, or share of crops. A Person was considered an employer and single worker or family worker. Cultivation involved cultivation management or guidance.

A person who had offered his/her land to another person or people for cultivation or income, crop form, or crop share, and who had not even supervised or cultivated land directly was not considered as a grower. Similarly, a person who worked for compensation in cash or kind in other people's land or both were not regarded as a farmer.

Cultivation includes ploughing, sowing, and harvesting and the production, but does not include fruit-growing, cultivation, growing of vegetable orchards or groves, work on plantations such as tea, coffee, casserole, or any other medicinal plantation; Cereal and millet crops such as maize, paddy, jowar, bajra, ragi, and pulsing (vanneman).<sup>2</sup>

### 1.3 Agriculture scenario of tamil nadu

Tamil Nadu has a total geographic area of 130,33 Lakh Ha, 4 percent of the National geographic area, and is sub-humid for Semi and Dry. The state of Tamil Nadu is 6 percent of the population of the country (2011 Census). The estimated number of agricultural households in Tamil Nadu is 32.44 Lakh according to the 2012-2013 survey conducted by NSSO (Agriculture Statistics of GOI 2018)<sup>3</sup>. According to the 10th census on agriculture 2015-2016, the State has 79,38 Lakh, a 59,73 Lakh Hectare working cultural property. Around 93% of the land ownership of 62% of the total cultivable land were owned by small (2 ha) or by marginal (1 ha). The remaining 38% of the total land holdings are occupied by 7% of semi medium, medium, and large farmers. The average size of the landholding in the State is 0.75 hectares which are less than the average size of landholding of the country (1.08 Hectares). The Tamil Nadu land use pattern is as per the latest statistical report (2018-2019) is given below:

**Table 1.1**

**Land use pattern in tamil nadu 2018-2019 (provisional)**

<sup>1</sup> [en.wikipedia.org](https://en.wikipedia.org), 14 Jan 2021 Last edited

<sup>2</sup> [vanneman.umd.edu](https://vanneman.umd.edu) of cultivators, Last updated Oct 1,2000

<sup>3</sup> Agricultural Statistics at a Glance (2018), Government of India, Ministry of Agriculture & Farmers Welfare, Department of Agriculture, Cooperation & Farmers Welfare Directorate of Economics and Statistics.

S.No	Details	Area (Lakh Ha)	% with reference to total Geographical area
1	Forest	21.57	16.55
2	Net Cropped Area (*)	45.82	35.16
3	Area under Misc. Tree crops	2.26	1.73
4	Permanent Pastures	1.08	0.83
5	Current fallow	10.47	8.03
6	Other fallows	19.30	14.81
7	Culturable Waste	3.23	2.48
8	Land put to non-agricultural use	22.02	16.90
9	Barren and Uncultivable land	4.58	3.51
	<b>Total Geographical Area</b>	<b>130.33</b>	<b>100.00</b>
	<b>Cropping Intensity (%)</b>		<b>124</b>

(\*) Difference between Gross Cropped Area (56.72 Lakh Hectare) and Area sown more than once (10.90 Lakh Hectare)

Source: Department of Economics and Statistics, Government of Tamil Nadu

#### 1.4 Trend in land use pattern

The Total geographical area of the State is 130.33 LakhHa. The Barren and unculturable land area which was around 7.05 Lakh Ha in 70's has come down to 4.58 Lakh Ha in 2018-2019. Thus, there was a reduction of about 2.47 Lakh Ha of cultivable land in 4-5 decades. The area under cultivable waste which was 4.17 Lakh Ha in 70's, also came down to 3.23 Lakh Ha in 2018-2019.

The area under current fallows which was 16.18 Lakh Ha during 80's has been reduced to 10.47 Lakh Ha during 2018-2019. This was due to judicious use of water and adoption of water- saving technology like Micro Irrigation to bring more area under irrigation. Further reduction of current fallows is quite possible by the modernization of irrigation systems and the adoption of water harvesting techniques. The net sown area has reduced considerably from 61.36 Lakh Ha in 70's to 45.82 Lakh Ha in 2018-2019. This might be due to a marked increase in lands put to non-agricultural uses, due to rapid industrialization and urbanization. (Tamil Nadu Lifeline).<sup>4</sup>

Tamil Nadu with 6 percent of the population in the country is endowed with only 3 percent of the water resources of India. The State's water resources are dependent on rainfall and the release of water from neighbouring States. The Government focuses on creating more water harvesting structures and emphasizing the need for utmost efficiency in water utilization through massive promotion of Micro Irrigation and water conservation technologies viz., Direct sowing, System of Rice Intensification, System of Pulses Intensification, machine planting.

#### 1.5 rainfall

The State's average annual rainfall is around 947.4 mm which is less than the National average rainfall of 1,200 mm. The quantum of rainfall obtained during Winter (January- February), Summer (March-May), South - West Monsoon (June – September) and North - East Monsoon (October - December) is 3 percent, 14 percent, 36 percent, and 47 percent, respectively amount and distribution of rainfall affect the cropping pattern and crop development in a locality. The agricultural production mainly depends on the timely onset of South-West and North-East monsoons.

#### 1.6 irrigation potential

The total water potential of the State including groundwater is 46,540 Million Cubic

Meter (MCM). The total surface water potential of the State is 24,864 MCM. (tnenvis.nic.in)<sup>5</sup>**Groundwater** is, the only alternative source available for further Agriculture development. However, the recent developments in the status of availability of groundwater across the regions are of great concern. The groundwater availability is found to be in safe condition only in 429 Farkas (38 percent) of Tamil Nadu State.

### 1.7 sources of irrigation

The details of net area irrigated using various sources of irrigation across the State (2017-2018) are as follows:

**Table 1.2**  
**Water source wise net area irrigated 2018-2019 (provisional)**

Source	ailability (Nos)	Net Irrigated (Lakh Ha.)	Area% with reference to Net Area Irrigated
Canals	2,248	6.36	24.80
Tanks	41,124	3.22	12.55
Wells and Bore wells	18,69,660	16.03	62.49
Others	133	0.04	0.16
<b>Total</b>		<b>25.65</b>	<b>100.00</b>

Source: Department of Economics and Statistics, Government of Tamil Nadu

The area irrigated by wells and bore wells accounted for 62% followed by Canals (25%) and Tanks (13%).

### 1.8 trend in source of irrigation

The percentage of canal area irrigated has come down from 34% in 1970-1971 to 24.80% in 2018-2019. Similarly, the percentage of area irrigated by tanks declined from 35% in 1970-1971 to 12.55% in 2018-2019. On the contrary, wells have shown a constant rise from 30% in 1970-1971 to 62.49% in 2018-2019. The other sources of irrigation had shown a constant declining trend.

### 1.9 agro climatic zones of tamil nadu

Tamil Nadu State has been categorised in 7 distinct agro-climate regions based on rainfall distribution, irrigation patterns, soil properties, and crop patterns, including administrative divides, and other geographical, ecological, and social characteristics.

**Table 1.3**  
**Agro climatic zones of tamilnadu**

Sl. No	Agro Climatic Zones	Districts covered	Soil Type	Avg. Rainfall (mm)
1	North Eastern Zone	Kancheepuram, Tiruvallur, Cuddalore, Vellore, Villupuram and Tiruvannamalai	Red sandy loam, clay loam, saline coastal-alluvium	1,105

<sup>5</sup>tnenvis.nic.in, Database.

2	North Western Zone	Dharmapuri, Krishnagiri, Salem and Namakkal (Part)	Non-calcareous red, non-calcareous brown, calcareous black	875
3	Western Zone	Erode, Coimbatore, Tiruppur, Theni, Karur(Part), Namakkal(Part), Dindigul, Perambalur and Ariyalur(Part)	Red loam, black	715
4	Cauvery Delta Zone	Thanjavur, Nagapattinam, Tiruvarur and	parts of Tiruchirapalli, Karur, Ariyalur, Pudukkottai and Cuddalore	Red loam (new delta), alluvium (old delta)
5	Southern Zone	Madurai, Pudukkottai Sivagangai, Ramanathapuram, Virudhunagar, Tirunelveli and Thoothukudi	Coastal alluvium, black, red sandy soil, deep red soil.	857
6	High Rainfall Zone	Kanyakumari	Saline coastal alluvium, deep red loam.	1,420
7	Hilly Zone	The Nilgiris and Kodaikanal (Dindigul)	Lateritic	-

The Cauvery delta region is the rice bowl of Tamil Nadu. It also accounts for a large part of the production of food grains and other agricultural products in the State and ensures food security for the State. The multi various farming activities also ensures a decent standard for the living of farmers and agricultural labourers. To protect the delta zone and to increase production and productivity of crops by the adoption of improved technologies, integrated farming system, integrated pest management practices and augmenting water resources, creation of water storage structures, improving soil health, and improving the livelihood of farmers by the formation of farmers market outlets for FPOs and also for the promotion of adequate employment opportunities for agricultural labourers (Tamil Nadu Protected Agricultural Zone Development Act, 2020).<sup>6</sup>

### 1.10 tamil nadu horticulture scenario

The horticulture sector is a productive sector with the ability to improve agricultural revenue, provide security of livelihood, and export trade. The growth of horticulture in areas of different crops, increases in production and productivity, crop diversification, technical interventions, management of post-harvest operations, potential linkages through value-added, marketing and export, have made tremendous progress and have played an integral part in ensuring nutritional stability.

The dynamic agro-climatic conditions and rich diversity in crops and genetic capital allow Tamil Nadu to develop a wide range of Horticulture crops round the year facilitating the growing population at large to enjoy a diverse and nutritious diet for healthy living.

<sup>6</sup>Tamil Nadu Protected Agricultural Zone Development Act, 2020, and published in the Tamil Nadu, Government Gazette on 21.02.2020

### 1.11 Vegetables

The vegetables alone contribute to 33% of the total production of Horticulture. The major Vegetables grown in Tamil Nadu are Tapioca, Onion, Tomato, Brinjal, and Ladies finger. These crops alone account for over 70% of the total area. Every year Hybrid vegetable cultivation is being promoted by assisting in cultivation through the Horticulture Schemes.

Special focus is given for Onion in which Onion cultivation and Storage structures for Onion are promoted through schemes like National Horticulture Mission and National Agriculture Development Programme. Quality vegetable seedlings are grown and spread through subsidies to farmers in-state horticulture farms to expand their surface area under vegetable farming. During 2018-2019, 1312.63 Lakh numbers of portray seedlings of Vegetables were produced in State Horticulture Farms and distributed to the farmers under various schemes.

During 2019-2020, Chief Minister's Rural Vegetable Production Programme (CMRVPP) is being implemented at an outlay of Rs.3 crores by distributing 12 Lakh seed kits. Under this programme, each Village Panchayat is provided with 100 seed kits. Each seed kit comprises seven kinds of Vegetable seeds and 1 kg of organic manure. Thus Tamil Nadu is at the forefront at The National level towards the area, production, and productivity of Horticultural crops by implementing various Government policies, developmental schemes, and transfer of technologies (Government of Tamil Nadu).<sup>7</sup>

**Table 1.4**  
**Details of major vegetable growing districts 2018-2019**

Sl. No.	Name of the Crop	Total Cultivated Area (Ha)	Major Vegetable Growing Districts (in Ha)
1	Tomato	27,058	1. Krishnagiri(7,954) 2. Dharmapuri (6,173) 3. Salem(3,324) 4. Coimbatore(1,684) 5. Dindigul(1,568)
2	Brinjal	15,813	1. Salem (1,925) 2. Dharmapuri(1,815) 3. Vellore(1,426) 4. Krishnagiri(1,421) 5. Villupuram (1,335)
3	Beans	8,068	1. Krishnagiri (2,745), 2. Vellore (1,888), 3. Dindigul (1,287), 4. Dharmapuri(356), 5. Erode(334)
4	Potato	3,932	1. Dindigul(2,601) 2. The Nilgiris(620) 3. Erode(543) 4. Krishnagiri(165)
5	Carrot	3,671	1. Krishnagiri(1,682) 2. Dindigul(1,166) 3. The Nilgiris(785)

<sup>7</sup>Government of Tamil Nadu, (2020), Agriculture Department Policy note Demand no. 5 – Agriculture 2020 – 2021, Pg. 3-14

### 1.12 horticulture scenario in nilgiris

In Tamil Nadu's hilly area, Nilgiris is a horticultural district of particular importance. The territory of 2545 km<sup>2</sup> contains 6 taluks and 56 percent of the area is protected by natural vegetation, a special characteristic of this district. The whole neighbourhood sits 900-2636 meters above MSL. The district has an annual precipitation of 1522.7 mm per year. Here you can find plants grown in all hilly areas, such as tomatoes, berries, bulbs, spices, and planting crops. The farm is mostly grown on terraced soil, and also on narrow paths often in villages.

The cultivation of Horticulture crops is being practiced in the following 3 main seasons.

- Irrigated
- Main
- Autumn

Vegetable crops can be cultivated in all three seasons. There are 83,125 farm households, are cultivating different crops in an area of 73406.00 Ha during the year 2019-2020. It is a horticulture department; to the benefit of Nilgiris farmers, the following schemes are introduced.

- Mission for Integrated Development of Horticulture (MIDH)
- Micro Irrigation – (MI) Pradhan MantriKrishiSinchayeeYojana (PMKSY)
- Supplementary Water Management Activities (SWMA)
- Revamped Pradhan MantriFasalBhimaYojana (RPMFBY)
- Collective farming
- Special Area Development Programme (SADP)
- National Agricultural Development Programme (NADP)
- Integrated Horticulture Development Scheme (IHDS)

#### a. Mission for Integrated Development of Horticulture (MIDH)

The Mission for Integrated Development of the Horticulture is being implemented in the Nilgiris District to promote Holistic growth of the Horticulture sector by various activities that includes distribution of planting materials, Creation of water resources, Protected cultivation, Promotion of INM/IPM, Provision of apiary units, horticulture mechanization, Post-harvest management and provision of training to farmers. Apart from these in view to promote organic farming in the Nilgiris subsidies for the construction of permanent vermicomposting units and purchase of vermi beds and incentives are given to farmers who are following organic cultivation.

#### b. Pradhan MantriKrishiSinchayeeYojana (PMKSY)

Pradhan MantriKrishiSinchayeeYojana has been launched with the motto of “Per Drop More Crop” through manipulation of irrigation supply chain by providing accessories for precise irrigation methodologies. Effective use of available water plants by adopting sprinkler systems is being provided at following subsidy pattern in the Nilgiris District.

This scheme assures the following:

- 100% subsidy to small and marginal farmers.
- 75% subsidy to large farmers.
- Subsidy is extended to tea growers of the district

#### c. Supplementary Water Management Activities (SWMA)

This scheme i.e., Supplementary Water Management Activities is being provided as assistance to the farmers who are beneficiaries of PMKSY. This scheme is eligible only for the farmers who are availing subsidy under PMKSY.

Components under SWMA:

- Shallow tube well/Borewell : Rs.25,000/unit/person
- Diesel motor/pump set : Rs.15,000/unit/person
- Conveyance pipe : Rs.10,000/person
- Storage structure : Rs.40,000/person

#### d. Revamped Pradhan MantriFasalBhimaYojana (RPMFBY)

Revamped Pradhan MantriFasalBhimaYojana is being implemented in the district with a view of providing crop insurance for the notified crops to minimize financial losses occurring due to natural

calamities. In this district, crops like Potato, Banana, Garlic, Carrot, Cabbage, Tapioca, and Ginger crops are notified under this scheme to avail the insurances. Herein focus is given to ensure specific notified crops in the notified village only. Potato, Garlic, Carrot, Cabbage are notified to be insured in Udhagai, Coonoor, and Kotagiri Blocks whereas Banana, Tapioca, and Ginger crops are notified in Gudalur Block.

**e. Collective farming**

The purpose of collective agriculture is to classify small and marginal farmers in an adjacent region grouped with twenty farmers as farmer's interest groups (FIG). 5 FIG's with 100 farmers will become members of the Farmers Producers Party (FPG). To obtain loans, FIG and FPG are encouraged to follow mutual cultivation, collective purchasing of inputs, and business relations.

In Nilgiris, up to 2020-2021, there were 340 FIGs and 68 FPG's in collective farming. After approval of the DLC District Collector / President of the FPG, each FPG shall receive a corpus fund of Rs.5 lakh. The 48 FPG's in the Nilgiris were federated by the Agricultural Marketing Department into 3 FPO (Farmer Producer Organization).

**f. Special Area Development Programme (SADP)**

Under the SADP scheme, subsidies are provided for the farmers to procure tea clones @ 50% subsidy.

**g. National Agricultural Development Programme (NADP)**

To promote organic farming in the District incentives and subsidies are provided to the farmer who is growing greens, cabbage cauliflower, beans, and gourd organically under this scheme. Apart from these, financial assistance is also provided for farmers who are enrolled for organic certification.

**h. Integrated Horticulture Development Scheme (IHDS)**

The Horticulture Department of this district has planned to bring more area under fruits and Traditional vegetable cultivation. Under this scheme, farmers have been provided with planting material of Lime, avocado, Passion Fruit, Traditional beans, Chow Chow, inputs for INM/IPM, etc., at a subsidized cost. (Nilgiris.nic.in).<sup>8</sup>

### 1.13 Objectives

1. To study the economic conditions of the vegetable farmers.
2. To compare the productivity of High yielding variety of vegetable cultivators from organic users in Gudalur and Kotagiri taluk.
3. To identify the various problems encountered by the vegetable cultivators.

#### 2.1 Statement of the problem

The District of Nilgiris is located on the north-west side of the Ghats and is flanked on the Eastern, West, and north by the districts of Coimbatore, Erode, and Kerala. In Coimbatore, Salem, Erode, Tirupur, Koyambedu, and Kerala Markets, the vegetable is transported to markets of Mettupalayam and sold to traders that connect it to larger markets. Due to the destructiveness of commodities, the farmers eventually sell in distress because there are no cold storage facilities near the markets (District Diagnostic Study (DDS) - The Nilgiris District).<sup>9</sup>

Starting with seeding, weeding, harvesting till transporting, and marketing becomes quite challenging for all the hill farmers as the climate and changes in demand and Price factors forces them to sell at a meager rate which results in a loss in large terms and not helps in continuing the farming in near future and ends up in agricultural transformation in few cases. Thus the researcher boldly highlights the problems faced by the agriculture cultivators in largely spread in Gudalur and Kotagiri taluks, Nilgiris.

<sup>8</sup>[nilgiris.nic.in/departments.department-of-horticulture-and-plantation-crops](http://nilgiris.nic.in/departments.department-of-horticulture-and-plantation-crops)

<sup>9</sup>District Diagnostic Study (DDS)- The Nilgiris District, [tnrtp.org](http://tnrtp.org), PP.NO.58



### 2.2 Limitations of the study

Despite of detailed analysis made in the present study, this study is not free from limitations. The following are the important limitations:

1. The study is purely based on the views of 60 respondents only and hence their results may not be universally applicable.
2. The geographical area of this study is confined only to Gudalur and Kotagiri taluks.
3. The study period is specific.

### 2.3 Methodology

The study was conducted in the Nilgiris district of Tamil Nadu. The respondents to the study were selected from two taluks namely Gudalur and Kotagiri. The source of data is primary which has been collected from the cultivators through a pre-designed questionnaire method and secondary is collected through books, journals, and from the internet. The samples were chosen from the population using the convenience sampling technique.

### 2.4 Sample size:

A total of 60 cultivators were selected from two taluks Gudalur and Kotagiri who are engaged in the vegetable farming sector.

### 2.5 Statistical tools:

The researcher has used basic statistic tools like the Percentage method, Correlation, Chi-square, Anova, and Independent T-test for analysis purposes.

The present study has many characteristics and plays a significant role in determining the economic status of each cultivator has a direct impact on poor living conditions explained with the help of a table.

### 3.1 Results and discussion

The following tables show the results of the collected data.

**Table 3.1**  
**Frequency table – demographic profile**

S.No	Particulars	Number Respondents	ofPercent
1.	<b>Age</b>		
	20-25	6	10.0
	25-35	14	23.3
	35-45	21	35.0
	Above 45	19	31.7
	<b>Total</b>	<b>60</b>	<b>100.0</b>
2	<b>Sex</b>		
	Female	28	46.7
	Male	32	53.3
	<b>Total</b>	<b>60</b>	<b>100.0</b>
3	<b>MaritalStatus</b>		
	Married	33	55.0
	Unmarried	12	20.0
	Widows	15	25.0
	<b>Total</b>	<b>60</b>	<b>100.0</b>

4	<b>Education</b>		
	Illiterate	23	38.3
	Primary	24	41.0
	Secondary	13	21.7
	<b>Total</b>	<b>60</b>	<b>100.0</b>
5	<b>Nature of Work</b>		
	Vegetables Cultivation	49	81.7
	Fertilizer/Pesticide Sprayers	5	8.3
	Transport	6	10.0
	<b>Total</b>	<b>60</b>	<b>100.0</b>

Source: Primary data

From the above Table 3.1, it is inferred that majority (35%) of the respondents who fall between the age of 35-45. The majority (53%) of the respondent is male. The majority (55%) of the respondent is married. The majority (41%) of the respondent gained the primary level of education, and the majority of (82%) of the respondents were involved in Vegetable cultivation (ploughing, sowing, and harvesting).

**Table 3.2**  
**Difference between satisfaction of income and productivity gained by the cultivators**

ANOVA						
Variables		Sum Squares	ofdf	Mean Square	F	Sig.
Company seeds(HYV)	Between Groups	.723	2	.362	.380	.686
	Within Groups	54.210	57	.951		
	Total	54.933	59			
Vermi compost	Between Groups	2.056	2	1.028	1.306	.279
	Within Groups	44.877	57	.787		
	Total	46.933	59			
Favourable climate	Between Groups	2.640	2	1.320	1.460	.241
	Within Groups	51.544	57	.904		
	Total	54.183	59			
Water supply	Between Groups	.618	2	.309	.359	.700
	Within Groups	49.032	57	.860		
	Total	49.650	59			
Electricity	Between Groups	.279	2	.139	.131	.878
	Within Groups	60.655	57	1.064		
	Total	60.933	59			
Credit facility	Between Groups	.056	2	.028	.148	.863
	Within Groups	10.877	57	.191		
	Total	10.933	59			

Source: Computed data

**Hypothesis: 1**

**Null Hypothesis:** There is no significant difference between the satisfaction of income and Productivity gained by the Cultivators.

**Alternative Hypothesis:** There is a significant difference between the satisfaction of income and productivity gained by the Cultivators.

From the above table, it is transparent that there is no significant difference between the satisfaction of income and productivity reaped by the respondents. As income earned from the farm work doesn't

provide enough satisfaction from the productivity gained by the cultivators. So the null hypothesis is accepted and the alternative hypothesis is rejected.

**Table 3.3**  
**Gender wise various problems faced by the respondent**

Problems	Gender	N	Mean	SD	't' Value	'p' value
Health related Issues	Male	28	2.35	0.78	1.367	0.178
	Female	32	2.06	0.87		
Farm Work related problems faced by the respondent	Male	28	2.57	1.10	0.645	0.522
	Female	32	2.37	1.23		

**Source:** Computed Data

### Hypothesis 2

**Null Hypothesis:** There is no significant difference between various problems faced by the male and female Vegetable cultivators

**Alternative Hypothesis:** There is a significant difference between various problems faced by the male and female vegetable cultivators.

**Table 3.3** shows that there is no significant difference between Gender-wise classification on health-related and work-related problems faced by the respondents involved in the farmland. Both male and female respondents experienced common health disorders like body ache, Asthma, and skin allergy. Similarly, Work-related problems like (bad smell) high-priced seeds and Chemical oxidant pesticides, insufficient water, low productivity, irregular transport facility (due to hike in petrol/diesel), and insect bite/ animal attacks are experienced in the farmland. So the null hypothesis is accepted and the Alternative hypothesis is rejected.

**Table 3.4**  
**Association between satisfaction of income and organic farming benefits enjoyed by the vegetable cultivators**

Benefits	Calculated Chi-Square Value	Acceptance / Rejection of Null Hypothesis	'p' Value
Amount of income /per day	5.71	Accepted	0.223
Stability of profit	8.85	Accepted	0.065
Access to credit	6.95	Accepted	0.138
High Fuel price	6.89	Accepted	0.332
Water facility	12.6	Accepted	0.071
Working hours	3.10	Accepted	0.796
Large acres	10.0	Rejected	<b>0.039</b>
Vermi-compost	3.33	Accepted	0.504
Training, education for farm work	0.87	Accepted	0.646
Access to information	3.30	Accepted	0.507
Transport facility	19.0	Rejected	<b>0.004</b>
Pesticide	34.2	Rejected	<b>0.000</b>
Green Housing	7.82	Accepted	0.252
Well irrigation	10.6	Accepted	0.101
HYV seeds	18.1	Rejected	<b>0.020</b>

**Source:** Computed Data

### Hypothesis 3:

**Null Hypothesis:** There is no significant association between the satisfaction of income and organic farming benefits enjoyed by the Vegetable cultivators.

**Alternative Hypothesis:** There is a significant association between the satisfaction of income and organic farming benefits enjoyed by the Vegetable cultivators.

The above table shows there is no association between the satisfaction of income & organic farming benefits enjoyed by the Vegetable cultivators. A very few variables like Pesticide, HYV seeds, large acre land, and transport facility benefits improve the living standard of farm cultivators. So null hypothesis is accepted and the alternative hypothesis is rejected.

#### 4.2 Suggestions and conclusion

- There should be awareness on organic farming among cultivators regarding incentives should be expanded.
- A proper time management should be framed and willingness to pay the premium for organic produce must take utmost care.
- Role of NGOs and Environment & Agriculture scientist in chemical-free farming must be motivated.
- Government should frame a policy ensuring financial security to the farmers holding small-sized land and willing to convert from chemical-free.
- Vegetable cultivators must be encouraged to produce based on local needs to overcome transport bottlenecks.
- A proper awareness of “My Farm Guide” services in the Uzhavan app for guiding the farmers in cultivation aspects must be executed.

#### Conclusion

Agriculture continues to be the prime activity of the rural populace of the district with around 25% of the workforce directly dependent on it. During 2016-2017 the total area cultivated and the net area planted was 74928 hectares. The region seeded in the net represented 29.5% of the overall 2,54 lakh geographic area 99.6 percent of the net sown area is rain fed, with just a marginal 0.5% irrigating. The major perennial crops raised in the district are Tea, Coffee, and Pepper. Around 93% of the landholdings are small and marginal covering approximately 36% of the cultivated area. The surveyed data shows a temporal change in total the cultivated area and irrigated area for Nilgiris District. The cultivated area changed because of the conversion of the fallow land into cropland. Both the parameters are showing an increase in total area for cultivation as well as irrigation.

The district is essentially a district of horticulturists and hosts horticultural crops such as potato, cocoa, carrot, tea, cafe, spices, and fruit, and tourism depend on the whole district. Each area has its particular strengths and vulnerabilities and is facing a complex blend of risks and opportunities. The maximum vegetable production is under carrot followed by potato. But, as per the yield scenario, the cabbage is having the maximum followed by carrot, potato, beans, chow- chow. Vegetable as a commodity is linked to value chain which encompasses local, state and interstate boundaries.

Climate change has an impact on the district, Unseasonal and high-intensity rains create damages to crops. In the summers, frequent drought contributes to a rise in the struggle between man and animal. The great obstacle before farmers is to make customers aware of organic products that are not standardised in design, scale, and taste that are appropriate. It is certainly the most difficult challenge to achieve acceptance and recognition of this diversity. There is a need to climate-proof the cultivated area and habitations by creating a suitable ecosystem for the animals and humans to live in harmony.

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