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A PROFILE AND PERFORMANCE OF OILSEED PRODUCTION AND PRODUCTIVITY IN KURNOOL DISTRICT OF ANDHRA PRADESH, INDIA

Dr.Y.Maddileti[1]

[1]Post-Doctoral Fellow, Dept. of Economics,Rayalaseema University, Kurnool, Andhra Pradesh, India.

ABSTRACT

India is a major oilseeds producing country in the world. The percentage share of India in the total area and production of oilseeds in the world is very considerable which accounts for 15.0 per cent and 7.0 per cent. Oilseeds in India constitute the principal commercial crop of India. Oils d fats, apart from forming an essential part of human diet, serve as an important raw-material for the manufacturing of soaps, paints and varnishes, hair oils, lubricants, textile auxiliaries, pharmaceuticals, etc. Oil cakes and meals are used in animal feeds and as manures. Groundnut, soybean and de-oiled meals are a source of high quality protein to both human beings and live stocks. The bulk of vegetable oil production in India is derived from nine oil seeds; namely, groundnut, rapeseed and mustard, sesame, sunflower, safflower, Niger and soybean, forming the edible oil group and linseed and castor forming the non-edible group. In addition, cotton seed, rice bran, seeds of some tree species, etc., are also being exploited for vegetable oils. Development of oil seeds and vegetable oils holds an important place in Indian economy. There has been some gap between supply and demand of vegetable Oils which has been met through imports annually. The per capita consumption of vegetable oils in the country is low as compared to the world average. In this next, the increase in production of oil seeds has been given a high priority under the new 20-point programme of the Prime Minister during the Sixth Plan. Every possible effort is being made to augment the production of oil seeds in the country. In this chapter, an attempt has been made to analyze the demand and growth trends in oilseeds production in India in general. As the produce of oilseeds is market-sensitive, the support price needs to be continued and strengthened. Provision of good market facilities, modernization of extraction facilities for better oil recovery and strengthening of processing facilities for value addition are critical in achieving the sustained growth in the oilseed sector. There is an urgent need for future trading in oilseed for stabilizing the prices in the long-run.

KEY WORDS: *India, Government, Agriculture, Marketing system, Green revolution, farmers*

INTRODUCTION

India is a major oilseeds producing country in the world. The percentage share of India in the total area and production of oilseeds in the world is very 4onsiderable which accounts for 15.0 per cent and 7.0 per cent. The percentage share of it in the total area and production of the world is highest which constitutes 54.4 per cent and 56.5 per cent in castor, 48.0 per cent and 38.2 per cent in safflower; 29 per cent and 15.4. per cent in groundnut; 23.0 per cent and 14.5 per cent in rape and mustard; and 21.0 per cent and 16.8 per cent in the case osesum. Owing to an increase in per capita income, population and other factors, the per capita consumption of oilseeds in India increased to 9.5 kgs in 2012-13 from 3.2 kgs in 1955-56, consequently, more area has been brought under the cultivation of oilseeds. Hence, the percentage share of oilseeds cropped area to the total cropped area increased to 12.9 per cent in 2000-01 from 8.1

per cent in 1950-51. But the planners have failed to achieve the targets of increasing the production of oilseeds during the various plan periods except in First, Sixth and Eighth Five Year Plans. Factors such as rapid industrialization increase in per capital supply. In producing oilseeds, the share of the State of Andhra Pradesh in India is considerably significant. The total area under the oilseeds, production in Andhra Pradesh increased to 2887 thousand hectares in 2012-13.

Oilseeds have been known for centuries, their importance as a major source of both fats and proteins has been realized only during 19th century especially after the end of the World War II. No other farm commodity can really meet in so large a measure the energy and protein requirements of human body as oilseeds do. Since oilseeds supply the major energy protein needs of the livestock population as well, they are the primary source of even such valuable animal fats and proteins as milk, meat and simultaneously eggs. Apart from their use in human foods and animal feeds, oilseeds also have a wide variety of industrial applications. The use of vegetable oils in soaps, paints and varnishes and even in lubricating oils has been known for quite some time. In recent years oil seeds are finding their way in such diverse industrial uses as fatty acids, glycerin, tannin and even chemicals, to mention a few. The industrial uses of oilseeds are actually increasing with new technological break-throughs. As a result, the developed and developing economies like India are trying to increase the production and productivity of oilseeds.

Oilseeds in India constitute the principal commercial crop of India. Oils d fats, apart from forming an essential part of human diet, serve as an important raw-material for the manufacturing of soaps, paints and varnishes, hair oils, lubricants, textile auxiliaries, pharmaceuticals, etc. Oil cakes and meals are used in animal feeds and as manures. Groundnut, soybean and de-oiled meals are a source of high quality protein to both human beings and live stocks. The bulk of vegetable oil production in India is derived from nine oil seeds; namely, groundnut, rapeseed and mustard, sesamum, sunflower, safflower, niger and soybean, forming the edible oil group and linseed and castor forming the non-edible group. In addition, cotton seed, rice bran, seeds of some tree species, etc., are also being exploited for vegetable oils. Development of oil seeds and vegetable oils holds an important place in Indian economy. There has been some gap between supply and demand of vegetable Oils which has been met through imports annually. The per capita consumption of vegetable oils in the country is low as compared to the world average. In this next, the increase in production of oil seeds has been given a high priority under the new 20-point programme of the Prime Minister during the Sixth Plan. Every possible effort is being made to augment the production of oil seeds in the country. In this chapter, an attempt has been made to analyze the demand and growth trends in oilseeds production in India in general.

In the light of the empirical study, we put forth the following suggestions to enable the policy makers income burgeoning population and stagnation in yield have contributed the gap between demand and programmed implementers in deriving a suitable, location-specific strategy to augment production and productivity of sunflower an important variety of oilseed raised in the study area in particular and the drought-prone region in general. It is hoped that the suggestions made here, if implemented, by the Governmental departments and extension agencies, in letter and spirit, will ensure an increasing trend in production and productivity of sunflower by reducing the adverse impact of time-lags on production, minimizing costs of production and maximizing returns. An adequate and assured supply of water assumes greater importance in the strategy. The area under irrigation will have to be increased by constructing many more minor and major irrigation projects, ensuring adequate maintenance of canals, promoting efficient water management and developing a national water grid system so that water from the surplus areas may be diverted to water deficit areas.

There is an urgent need for evolving improved high yielding variety seeds which can be grown in rain-fed areas This requires intense and extensive research in dry farming techniques The supply of improved seeds of the right type by the Governmental agencies has to be stepped up to ensure its un-interrupted supply to all sections of the farm population. For this purpose, mere granting of subsidy is not enough. An efficient distribution system is the need of the hour. Improved varieties of seeds which can yield higher output per hectare require use of heavy doses of fertilizers. The soil in India has been found to be deficient in many micro nutrients. This must be removed at once. Thus, serious efforts must be made to increase availability and consumption of fertilizers to raise productivity.Introduction of machinery in agricultural operations helps increase agricultural productivity many folds. But since India is a land of small and marginal holdings with ever increasing pressure of exploding population on land, the use of machinery will have to be selective, especially during peg formation and pod development stage when the farmer has to apply pesticides by using sprayers and other implements. Hence, the Government has to take steps to open mechanical shops within the reach of the farmers.

In order to motivate the farmers to help raise production and productivity of Sunflower crop, he must be provided with incentives such as enhanced procurement price, subsidiary inputs, free training programmers, timely demonstration extension service (programmers such as Lab to Land, Training and Visit which play a very vital role in increasing the farm productivity. Further, in order to educate the farmers in efficient farm

management, the extension agents have to demonstrate an ideal cropping pattern so that farmer can learn and adopt new technology of cultivation which helps augment production and productivity. Not that the Government is unaware of these incentives or does that, not provide these, but that machinery which is responsible for implementation and extension has never so far geared itself up to the task. Efficient machinery for effective implementation is an essential pre-requisite for raising farm productivity.

After the introduction of high-yielding drought resistant seeds, plant protection measures must be implement for boosting farm production. According to the present estimate, the loss in yield due to time-lags i.e., failure of the farmers to protect their produce during various stages of production is high. Majority of Indian farmers, being illiterate, are unaware of the timely application of insecticides, weedicides and pesticides. It is, therefore, necessary that the Government, through its extension staff, and mass media, carryout the distribution of insecticides and pesticides at subsidized rates and educate the farmers in the use of them at proper time. An efficient system of agriculture requires a number of non-agricultural services or non-farm services like credit, marketing, ware-housing, transportation facilities, etc. In the absence of adequate institutional credit support, it will not be possible for him to use the improved varieties of seeds, fertilizers, pesticides, insecticides and other improved agricultural inputs. The rural market needs the structure so as to ensure timely supply of inputs. An efficient extension service is greatly needed in this direction. The small and marginal farmers have to be made aware of these facilities and induced to secure the services from the Government agencies as and when required.

The Government has to introduce mobile marketing system, during the peak selling season, the respective marketing yard has to arrange the transportation to collect all the produce from the village by giving notification so that the marginal and small farmers will get benefits as they are selling their produce to local middleman or to commission agents at an un-remunerative price and getting low incomes. Agricultural research is primarily impossible for bringing about green revolution in different parts of the world. Nobel economist Prof. Schultz attached prime importance to farm research in the transformation of traditional agriculture hence, efforts should be made to transfer new farm technology from lab to land. As the produce of oilseeds is market-sensitive, the support price needs to be continued and strengthened. Provision of good market facilities, modernization of extraction facilities for better oil recovery and strengthening of processing facilities for value addition are critical in achieving the sustained growth in the oilseed sector. There is an urgent need for future trading in oilseed for stabilizing the prices in the long-run.

OBJECTIVES

- To examine the impact of time-lags on production of sunflower; and
- To analyse the acreage response and profitability of sunflower.

HYPOTHESES

- There is no significant impact of time-lags on production of sunflower.
- There is no significant variation in acreage response and profitability of sunflower.

METHODOLOGY

Out of the 54 mandals in the District, two mandals purposively choosed with a high acreage of sunflower for the present study. Two Hundred Twenty Five (225) sample farmers in the sample two mandals was selected on the basis of proportional stratified random sampling procedure based on the size of their holdings. The Three size groups are Small (0-2 hectors) Marginal (2-4 hectors) and Large (above 4 hectors). Sample farmers comprise (225) of 103 small 75 marginal and 47 large farmers. Data from the sample farmers were collected through personal interview by administering the schedules to them, and the schedules elicited data pertaining to production procedures, various Stages of production, the gap between actual and excess time taken for completion of the production and impact of on production and profitability of the farmers.

SAMPLE DESIGN

S.NO	Size of the Farmer	Total Farmers	Sample Farmers	Per Cent
1	Small	1028	103	45.77
2	Marginal	747	75	33.33
3	Large	468	47	20.88
	Total	2243	225	100

Source: *Field Data*

SOURCE OF DATA

The study has made use of both the secondary and primary data. The Primary data were drawn from the various reports published by the Government of Andhra Pradesh such as Reports cm Statistical Abstracts of India and Statistical Abstracts of Andhra Pradesh. Secondary data were also drawn from various sources such as Season and Crop Reports, Agricultural Situation in India, Handbook of Statistics, published and unpublished data, books, documents, files of the Chief Planning Officer of Planning and Agricultural Departments. Further, primary data were collected by administering the schedules among the sample farmers of the District.

LIMITATIONS

In order to test the hypotheses postulated above pertaining to the stagnation of productivity, the impact of time-lags, acreage response and profitability of sunflower an attempt has been made to study it with reference to sunflower in Kurnool District in the state of Andhra Pradesh. The District of Kurnool and production of sunflower have been chosen specifically for reasons such as,

- Kurnool one of the four districts of the drought-prone area of Rayalaseema region in the State of Andhra Pradesh.
- The District ranks first in production of sunflower in Andhra Pradesh.
- The share of sunflower, in the total production of oilseeds is more than fifty per cent in the district.

As the Sunflower crop is unduly dependent on erratic and uncertain rainfall and the crop is affected during the peg formation and pod development stages, especially in un-irrigated areas, the Government has to take the initiative and ensure the supply of irrigation water to the farmer by building up check dams, percolation tanks, common water tanks by sinking bore wells besides conducting soil surveys on the availability of water so that the farmers can increase production and productivity of Sunflower.

SHARE OF INDIA IN PRODUCTION OF OILSEEDS

Oilseeds occupy a vital place in the Indian economy. India is also a major oilseeds producing country in the world. The share of India in total area and production of the world oilseeds is shown in Table -1

Area and Production of Major Oilseeds in India (2012-2013)

S.NO	Oilseed	Area (Million Hectors)	Production (Million Tonnes)
1.	Groundnut	4.77	4.75
2.	Mustard	6.34	7.82
3.	Sunfflower	0.73	0.52
4.	Soyabean	10.84	14.68
	Total Oil seeds	26.53	31.01

Source: - *Statistical Abstract, Govt of India, New Delhi, 2012.*

From the Table – 1.Shows that the percentage shares of India in total area and production of oilseeds in is considerable. The share of India in area and production is highest, which account for soybean, mustard, groundnut, and sunflower in India.

DEMAND FOR OILSEEDS

Prior to the Second World War, India enjoyed a premier position in the world trade in vegetable oils and fats. Even today, it can claim to be the largest producer of groundnut and sesamum and the second largest producer of rapes / mustard, linseed and castor seed. Despite this, the country is now facing acute shortage of vegetable oils. From a net exporter, the country has become a net importer. The rising internal demand in the wake of increasing population, rising per capita income, rapid industrialization, the lack of availability of new which can be brought under oilseed cultivation and low stagnant level of productivity per hectare, could be some of the important factors which contributed to the observed shortage. No doubt, with burgeoning population, with rising per capita income, the demand for vegetable oils is likely to unabated in the coming years. The per capita consumption of oilseeds in India is very low in fifties and sixties. But, then, since 197O onwards, there has been an increase to a considerable extent.

OILSEEDS DURING THE PLAN ERA

Owing to rapid industrialization, the demand for vegetable oils has been increasing and thereby widening the gap between demand and supply. Hence, adequate efforts should be made to raise the output of oilseeds in the country, taking into account the growth of population and per capita income, the net demand for vegetable oils for direct house-hold consumption, including the vanaspathi, soap and other uses.

GEOGRAPHICAL FEATURES OF ANDHRA PRADESH

Andhra Pradesh lies between 12°41' and 22°N latitude and 77° and 84°40'E longitude, and is bordered by Telangana, Chhattisgarh, and Orissa in the north, the Bay of Bengal in the East, Tamil Nadu

to the south and Karnataka to the west. Among the other states, which are situated on the country's coastal area, Andhra Pradesh has got a coastline of around 972 km, which gives it the 2nd longest coastline in the nation. Two major rivers, the Godavari and the Krishna run across the state. A small enclave 12 sq mi (30 km²), the Yanam district of Pondicherry, lies in the Godavari Delta in the north east of the state. The state includes the eastern part of Deccan plateau as well as a considerable part of the Eastern Ghats.

Agriculture:-

Lush green farms in Konaseema, East GodavariWith an economy mainly based on agriculture and livestock, Andhra Pradesh is an exporter of many agricultural products and is also known as "Rice Bowl of India".Four important rivers of India, the Godavari, Krishna, Penna, and Tungabhadra, flow through the state and provide irrigation. Agriculture is the main occupation and 60 percent of population is engaged in agriculture and related activities. Rice is the major food crop and staple food of the state. Besides rice, farmers also grow wheat, jowar, bajra, maize, minor millet, coarse grain, many varieties of pulses, oil seeds, sugarcane, cotton, chili pepper, mango nuts and tobacco. Crops used for vegetable oil production such as sunflower and peanuts are popular.

There are many multi-state irrigation projects under development, including Godavari River Basin Irrigation Projects and Nagarjuna Sagar Dam.Livestock and poultry is also another profitable business, which involves rearing cattle in enclosed areas for commercial purposes. The state is also a largest producer of eggs in the country and hence, it is nicknamed as "*Egg Bowl of Asia*". Fisheries contribute 10% of total fish and over 70% of the shrimp production of India. The geographical location of the state allows marine fishing as well as inland fish production. The most exported marine exports include *Vannamei shrimp* and are expected to cross $1 billion in 2013-14.

LAND UTILIZATION

The category-wise land utilization of Andhra Pradesh is shown in the **Table-2**

Land Utilization in Andhra Pradesh

S.No.	Category	AREA (in Lakh Hectares)	Percentages ToTotal Geographical Area
1.	Total Geographical Area	275.04	100
2.	Forest	62.27	22.6
3.	Barren and Uncultivable Land	19.59	7.1
4.	Land Put to Non-Agri. Uses	28.73	10.5
5.	Culturable Waste	5.87	2.1
6	Permanent pastures and other grazing lands	5.15	1.9
7.	Land under miscellaneous tree crops and grooves not included in net area sown	2.79	1.0
8.	Current fallows lands	23.37	8.5
9.	Other fallow lands	16.10	5.9
10.	Net area sown (including Fish Culture)	111.17	40.4

Source: - Agricultural Statistics at A Glance 2012-13

SOILS

Andhra Pradesh has a wide variety of soils, which are classified into four broad categories. They soils are red soil, black soil, alluvial soil and laterite soil. Red soil covers about 70 per cent of the total area of the State. They Occur widely between the Godavari and the Krishna rivers, the southern tenor plateau and the transition upland zone between the plateau and coastal plains; black soils are the second important soil group to a great extent the black soils, the deep and medium black soils, which are also known as black cotton soils, are found in the western and north western portions of the State. The alluvial soils are distributed along the river courses and deltas of coastal plain. With high deposits of silt, the alluvial soils are very fertile and productive.

OIL SEEDS

Andhra Pradesh is one of the important state in the country in growing oil seed crops like groundnut, mustard, sunflower and soyabean . The area under Groundnut alone accounted for 64.02%of the total area under oil seeds during year 2012-2013.Out of 27.95 lakh tones of production of

oil seeds, Palm oil, Groundnut, Soyabean, Mustard, Sunflower and castor accountedfor production of 98.35% of the total oil seed production in the state. The Area, Production and Productivity for the last five years are given in the Table-3

Area, Production and Productivity of Groundnut in Andhra Pradesh (Area in Hectares, Production in Lakh Tonnes and Yield in Kgs)

SI. NO	YEAR	AREA in Lakh hectores			PRODUCTION In Lakh hectores			PRODUCTION In Lakh hectores		
		Kharif	Rabi	Total	Kharif	Rabi	Total	Kharif	Rabi	Annual Average Yield
1	2008-2009	15.00	2.66	17.66	4.49	5.24	9.73	300	1964	551
2	2009-2010	10.11	2.90	13.01	3.90	6.17	10.07	385	2126	774
3	2010-2011	13.47	2.75	16.22	8.87	5.70	14.57	658	2071	898
4	2011-2012	10.57	2.50	13.07	3.82	4.63	8.45	361	1849	646
5	2012-2013	10.59	2.86	13.45	5.64	5.51	11.15	533	1925	829

Area, Production and Productivity of Mustard in Andhra Pradesh (Area in Hectares, Production in Lakh Tonnes and Yield in Kgs)

SL. NO	YEAR	AREA in Lakh hectores			PRODUCTION In Lakh hectores			PRODUCTION In Lakh hectores		
		Kharif	Rabi	Total	Kharif	Rabi	Total	Kharif	Rabi	Annual Average Yield
1	2008-2009	-	0.06	0.06	-	0.04	0.04	-	640	640
2	2009-2010	-	0.04	0.04	-	0.03	0.03	-	598	598
3	2010-2011	-	0.07	0.07	-	0.17	0.17	-	2424	2424
4	2011-2012	-	0.07	0.07	-	0.16	0.16	-	2446	2446
5	2012-2013	-	0.04	0.04	-	0.02	0.02	-	475	475

Area, Production and Productivity of Soyabean in Andhra Pradesh
(Area in Hectares, Production in Lakh Tonnes and Yield in Kgs)

SL. NO	YEAR	AREA in Lakh hectores			PRODUCTION In Lakh hectores			PRODUCTION In Lakh hectores		
		Kharif	Rabi	Total	Kharif	Rabi	Total	Kharif	Rabi	Annual Average Yield
1	2008-2009	1.42	-	1.42	1.94	-	1.94	1365	-	1365
2	2009-2010	1.56	-	1.56	1.29	-	1.29	824	-	824
3	2010-2011	1.28	-	1.28	2.18	-	2.18	1704	-	1704
4	2011-2012	1.30	N	1.30	2.11	-	2.11	1616	1616	1616
5	2012-2013	1.59	N	1.59	2.89	N	2.89	1817	1970	1818

Area, Production and Productivity of Palm Oil in Andhra Pradesh
(Area in Hectares, Production in Lakh Tonnes and Yield in Kgs)

SL. NO	YEAR	AREA in Lakh hectores			PRODUCTION In Lakh hectores			PRODUCTION In Lakh hectores		
		Kharif	Rabi	Total	Kharif	Rabi	Total	Kharif	Rabi	Annual Average Yield
1	2008-2009	0.22	-	0.22	4.49	-	4.49	20301	-	20301
2	2009-2010	0.45	-	0.45	9.17	-	9.17	20601	-	20601
3	2010-2011	0.48	-	0.48	10.66	-	10.66	22135	-	22135
4	2011-2012	0.49	N	0.49	10.51	0.02	10.51	21355	-	21355
5	2012-2013	0.54	0	0.54	11.36	-	11.36	20930	-	20930

TOTAL OIL SEEDS IN ANDHRA PRADESH
(Area in Hectares, Production in Lakh Tonnes and Yield in Kgs)

SL.NO	YEAR	AREA in Lakh hectores			PRODUCTION In Lakh hectores			PRODUCTION In Lakh hectores		
		Kharif	Rabi	Total	Kharif	Rabi	Total	Kharif	Rabi	Annual Average Yield
1	2008-2009	19.58	6.64	2622	12.40	8.17	20.57	633	1231	784
2	2009-2010	14.99	6.20	21.19	15.42	8.76	24.18	1029	1413	1141
3	2010-2011	18.33	5.34	23.67	23.35	7.39	30.74	1274	1383	1298
4	2011-2012	15.27	4.67	19.94	17.09	6.22	23.31	1119	1332	1169
5	2012-2013	15.19	4.79	19.98	21.10	6.85	27.95	1389	1430	1399

***Source**:-Agricultural Statistics at a Glance 2012-2013*

Profile of Kurnool District:-

This district derives its name from its chief town Kurnool the capital of former Nawabs, Capital of Andhra Pradesh State from 1st October 1953 to 1st November, 1956 and at presents the headquarters of the district. The name Kurnool is said to have been derived from Kandanavolu. Kurnool District lies between the northern latitudes of $14^0$54'and 16^0 18' and eastern longitudes of 760 58' and 79^0 34' the altitude of the district varies from 100 ft above the mean sea level. This district is bounded on the north by Tungabhadra and Krishna rivers as well as Mahabubnagar district, on the south by Kadapa and Anantapur Districts on the west by the Bellary district of Karnataka State and on the east by Prakasam District. The district ranks 10 in population with 8.47 cores of population with 7 per cent in national population according to 2011 provisional Population Census, while in area it occupies the 3rd place with 17658 Sq. Kms., which account for 6.41 % of the total area of the state. At present Kurnool District comprises 3 Revenue Divisions, 54 Revenue Mandals 53 Mandal Parishads, One Municipal Corporation, 4 Municipalities, 898 Gram Panchayats, 926 Revenue Villages and 647 Hamlet Villages.Nallamalas and Erramalas are the two important mountain ranges in the district running in parallel from North to South. The Erramalas divide the district into two well defined tracts from East to West.

The Climate of the district is normally good and healthy. January, February and March months are usually pleasant with moderate winds from South-East. April and May are hottest months of the year, during these months the wind shifts to Southwest with increased force and brings welcome showers by the end of May. During the succeeding four months the wind blows from Western side in Major parts of the district and brings fair quantum of rainfall. By the end of September the wind is light and pleasant forecasting the onset of Northeast monsoon. In November and December the weather is fine, Rainfall is rare and wind is light with occurrence of heavy dew. District normal rainfall of the year is 670 mm.

Broadly speaking the Eastern portion of the District bears better vegetation while the western of especially the north western portion comprising of Adoni, Peddakadubur, Alur, Aspari, Chippagiri, Halaharvi, Holagunda, Koilakuntla, Sanjamala, Owk, Pathikonda, Devanakonda, Krishnagiri, Veldurthy, Kodumur and Kallur mandals presents a desolate appearance and the vegetation that exists is confined mostly to small pockets of reserve forests. The total area under forests is 340669 hectares.Accounting for about 19.29 per cent of total geographical area of the district. The major parts of the forest area are confined mainly to the Nallamalas including its extensions, the Erramalas and a part of the Velikondas. The forests covering the Erramalas and Velikondas are of interior type Bamboo with timber species occurs fairly over extensive areas in the district. Tamarind and Beedi leaves are the important minor forest produce of the District.

The principal rivers flowing in the district are the Tungabhadra (and its tributary is Hundri) the Krishna and the Kunderu. The Tungabhadra rises in the Western Ghats and after forming part of northern boundary for some distance separates Kurnool from the Telangana area flown in an Eastern direction receives Hundri and falls into the Krishna River at Kudali Sangam after winding northwards. The floristic composition of the district stands in direct relation to that climate and edaphic conditions and the biotic influence in various locations.

The sunflower is the main crop in Kurnool district of Andhra Pradesh. The Area, Production and Yield

of Sunflower in Kurnool district are presented in Table-4

Area, Production and Yield of Sunflower in Kurnool district of Andhra Pradesh (Area in Hectares, Production in Tonnes and Yield in Kgs)

YEARS	AREA	PRODUCTION	YIELD
2000-2001	98380	76245	775
2001-2002	133400	106854	801
2002-2003	192119	151197	787
2003-2004	216637	146447	676
2004-2005	201629	106460	528
2005-2006	180697	106120	587
2006-2007	174126	112485	646
2007-2008	157103	134166	854
2008-2009	165613	135786	898
2009-2010	165754	136991	912

***Source**:- Various Statistical Abstracts, Department of Economics and Statistics, Government Of Andhra Pradesh, Hyderabad, 2009.*

From the Table-3.1 shows that the sunflower crops year to year also increased. The area increased from 98380 to 165754 in 2001 to 2010. The production 76245 to 136991 and yield also 775 to 912 in 2001 to2010 in Kurnool district of Andhra Pradesh.

REFERENCES

1. *NCAER, Long Term Projections of Demand for and Supply of Selected Agricultural Commodities, 1960-61 to 1975-76, National Council of Applied Economic Research, New Delhi, 1962.*
2. *NCAER, Export Prospects for Vegetable Oils and Oilseeds, National Council of Applied Economic Research, New Delhi, 1965.*
3. *KamaIa Devi, P. and Rajagopalan, R. Price and Acreage Response — A Case Study of Groundnut Crop in the North Arcot District, Indian Journal of Agricultural Economics, 1965.*
4. *Sharma, V.V., An Analysis of the Market for Vegetable Oils in India, 1947-1961. The Indian Journal of Economics, 1969.*
5. *Reddy, J.M., Estimation of Farmer's Supply Response — A Case Study of Groundnut, Indian Journal of Agricultural Economics, 1970.*
6. *Alagh, Y.K., Subramanian, K.K. and Desal, R.D., Pricing Models of Edible Oils and Vanaspati Industries in India, Anvesak, 1971.*
7. *Hanumantha Rao, C.H., Technological Change and Distribution of Grains in Indian Agriculture, The MacMillan Company of India Ltd., New Delhi, 1975.*
8. *George, P.S., Srivastava, Uma Kapila and Desai, B.M., Oilseed Economy of India — An Analysis of Post Supply and Projections*