

# Growth Trends of Palm Oil Production and Policies in India

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**Abstract:** The oil palm cultivation is one of the important commercial crops and it gives upliftment among the farmers in India. Oil Palm Development Programme was started under the “Technology Mission on Oilseeds and Pulses. The scheme focused on area expansion in the states like Andhra Pradesh, Karnataka, Tamil Nadu, Orissa, Gujarat and Goa. It is being implemented as part of the “Integrated Scheme of Oilseeds, Pulses, Oil Palm & Maize” (ISOPOM) and provides support for Oil Palm cultivation in twelve states like Andhra Pradesh, Assam, Gujarat, Goa, Karnataka, Kerala, Maharashtra, Mizoram, Orissa, Tamil Nadu, Tripura, and West Bengal. Even though, Assam, Maharashtra and West Bengal did not undertake Oil Palm cultivation though Maharashtra has now undertaken oil palm area expansion from 2010-11.

The paper is divided into five sections. The first is introductory in nature; the second deals with materials and methods and Thirds deals with growth trends of oilseeds in India level. Fourth describes the result and discussion especially, growth trends of oil palm production in India at state level. Lastly provides concluding remarks and policy suggestions.

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## 1. Introduction

Palm oil is one of the most important oils in the world economy. Malaysia, Indonesia and Nigeria and are the leading producers of palm oil in the world. The average area under palm oil in Malaysia is stagnated. There is no significant improvement over the last few years. Global consumption of palm oil stands at 48.7 Mn MT in 2011-12.

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Consumption has been increasing by 6.1 percent over the last five years owing to the growing demand for the oil, especially from developing countries like India and China. The demand for palm oil increased because of increases in world consumption. The high cost of other edible oil prompted people to opt for the palm oil. According to WWF Report, 2015, the expansion of oil palm plantations is estimated to increase 4 million ha (USDA, Foreign Agricultural Service, 2015).

It is the highest produced vegetable oil in the world. It increased from 15.2 million tonnes in 1995 to 54 million tonnes in 2011. The area under oil palm increased from 4 million ha. in 1980 to 17 million ha. in 2014. In, Malaysia, it increased from 3.25 million ha. in 2000 to 5.1 million ha. in 2013. In Indonesia, it increased from 4 million ha. to 9 million ha. in the same period. Indonesia, China, European countries and India are the major consumers of the palm oil in the world. During 2012, India, China and European countries imported 8.75 million tonnes, 6.6 million tonnes and 6.3 million tons of palm oil respectively. It accounted for 52 percent of the global imports in the world (Facts and Figures on Palm Oil, 2014).

The palm oil accounted for a third of the world output of major vegetable oils. Even though, the palm oil markets are facing main challenges in the world. It is highly profitable in the global agro industry. This oil retains its position in the numerous global supplies of vegetable oils because of the competitive nature of business. The oil palm yield per hectare is 5 to 10 time higher than other oils in the world.

### ***1.1. Roundtable on Sustainable Palm Oil (RSPO)***

At the global level, the organization was set up on 2004 in the name of Roundtable on Sustainable Palm Oil (RSPO). The objective is to promote the growth and sustainable use of palm oil. This organization held discussions with palm oil growers, oil processors, manufacturers, retailers, and palm oil investors. It set the goal for maintaining the quality product of palm oil plantation. They have independent system for auditing the plantations, mills and supply chain. The organization is to address the issue like soil erosion, pollution, health and safety, labour conditions and others (WWF: India, 2013).

After 2013, again the Roundtable on Sustainable Palm Oil (RSPO) met and discussed about the balance between the economic benefits and environmental and social cost of clearing tropical rainforest to make way for palm oil cultivation. The motive of the discussion is the coalition of business and civil society. It issued guidelines to the cultivation and trade of sustainable palm oil. In recent years, about 20 percent of all palm oil production is now certified under RSPO's standards. Some of the guidelines followed by European markets is considered the minimum requirement for

consumers. RSPO is supporting to improve the production standards as also increasing production efficiency. The supply chain is increasing by the way of legal safeguards and certification (WWF, 2012).

The activities of the organization are focused on expansion of production, finance and use of sustainable palm oil products. It is implementing periodical review of global standards for palm oil products and also provides certificate for the standard products. The roundtable discussion is to evaluate and assess the economic, environmental and social impacts of the palm oil market. It is also done with the cooperation between the multinational companies and WWF. The plantation of palm oil is to 11.1 million tonnes in the 12 countries during 2014. The share of global palm is to about be 18 percent in the year. The organization is ensuring good delivery systems, which impact the social, economic and environmental benefits to the stakeholders (Roundtable on Sustainable Palm Oil, Impact Report, 2014).

The paper is divided into five sections. The first is introductory in nature; the second deals with materials and methods and Thirds deals with growth trends of oilseeds in India level. Fourth describes the result and discussion especially, growth trends of oil palm production in India at state level. Lastly provides concluding remarks and policy suggestions.

## **2. Materials and Methods**

The study is based on secondary sources in Government of India publication. It obtained from Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, New Delhi (Various Issues and Years) and Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, New Delhi relating to area, production and yield at state level in India were used. The compound growth rates, simple percentage and triennium ending analysis were applied.

## **3. Palm Oil Scenario in India**

In India, the share of palm oil consumption in the global consumption increased from 13 percent in 2007 to 15 percent in 2012. The growth trend is significant. Nearly 90 percent is imported from foreign countries. It is used for domestic food consumption. Palm oil is the most significant in consumption among the vegetable oils. The change of consumption pattern, availability, pricing and policy changes of imports is the main determining factor in the economy. The oil is consumed in the country in refined form in the food industry (World Wide Report, 2013). After 1990s, the oil consumption increased among the public and it is imported. The share of imports increased at 17.09 percent (7.4 million metric tonnes) in 2011-12. The share of oil contribution in total

edible oil is around 77 percent, in the imports. The oil price is mainly depending upon imports from Malaysia and Indonesia. They are fixing the price rate. The share of our economy in palm oil production is at a very meagre level. It accounts for 0.2 percent of the world production. The area under palm oil is 15 million ha. in the world, of which, India stands at 1, 55,202 ha. It contributes 1 percent of the global average area. The area is growing at a tremendous rate of 21 percent during the last five years.

During 2013, we imported 83, 42, 285 million tonnes of palm oil. The total demand for edible vegetable oils is 17.5 million metric tonnes in 2012-13. It is estimated to increase at the rate of 3 to 4 percent per annum to 26.78 million metric tonnes in 2025 (The Solvent Extractors Association of India, 2013). We are mainly depending upon the imports of edible and palm oil to meet domestic demand. Andhra Pradesh is leading in contribution of palm oil production in India. It accounts for 86 percent and Kerala, Karnataka contributes 10 percent, 2 percent, respectively. Some of the States like Orissa, Tamil Nadu, Goa and Gujarat also contribute at a meagre level.

The total production of nine oilseeds in India during 1950-51 to 2015-16 is presented in Table 1. The area and production of nine oilseeds which was 10.73 million ha. and 5.16 million tonnes in 1950-51, reached 28.05 million ha. and 32.75 million tonnes in 2013-14. There was a significant increase in three fold level of area and six fold increase of production level. The area and production of nine oilseeds have increased consistently. The area and production of oilseeds is next to foodgrains production in India. We are the third largest producer of oilseeds in the world. The productivity of nine oilseeds crops has risen from 481 kg/ha in 1950-51 to 1168 in

**Table 1: Area Production and Yield of Oilseeds in India: 1950-51 to 2015-16**

<i>Year</i>	<i>Area Million Hectares</i>	<i>Production (Million Tonnes)</i>	<i>Yield (Kg./Hectare)</i>
1950-1951	10.73	5.16	481
1960-1961	13.77	6.98	507
1970-1971	16.64	9.63	579
1980-1981	17.6	9.37	532
1990-1991	24.15	18.61	771
2000-2001	22.77	18.44	810
2001-2002	22.64	20.66	913
2005-2006	27.86	27.98	1004
2010-2011	27.22	32.48	1193
2011-2012	26.31	29.8	1133
2012-2013	26.48	30.94	1168
2013-2014	28.05	32.75	1168
2014-2015	NA	26.68	NA
2015-2016	NA	19.89	NA

2013-14. The main reason for decline of nine oilseeds is because of drought conditions during that year. The oilseeds cultivations are mainly used marginal farming holds and rainfed farming.

**Table 2: Production of Oilseeds and other Commercial Crops in India  
(in Lakh Tonnes/Lakh Bales)**

<i>Crop</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>
Groundnut	82.65	69.64	46.95	97.14	66.48
Castor seed	13.50	22.95	19.64	17.27	18.24
Sesamum	8.93	8.10	6.85	7.15	7.70
Niger seed	1.08	0.98	1.02	0.98	0.85
Rapeseed and Mustard	81.79	66.04	80.29	78.77	67.57
Linseed	1.47	1.52	1.49	1.41	1.45
Safflower	1.50	1.45	1.09	1.13	0.64
Sunflower	6.51	5.17	5.44	5.04	3.82
Soyabean	127.36	122.14	146.66	118.61	107.05
Total Nine Oilseeds	324.79	297.99	309.43	327.50	273.80

*Source:* Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, New Delhi

Production of oilseeds and other commercial crops in India during 2010-11 to 2014-15 is presented in Table 2. The total production of nine oilseeds declined from 324.79 lakh tonnes in 2010-11 to 273.8 lakh tonnes in 2014-15. There were significant variations in the growth trend of production. Out of nine crops, soyabean is the top most crops cultivated in India during the five years (2010-11 to 2014-15). Groundnut was the second highest crops cultivated in this region. Rapeseed and mustard occupied the third place. The soyabean production declined from 127.36 lakh tonnes in 2010-11 to 107.05 lakh tonnes in 2014-15. The growth rate declined from 39 percent to 29 percent during the same period. The production of groundnut declined from 82.65 to 66.48 lakh tonnes in the same period. The growth of groundnut declined from 25 percent to 24 percent. But during 2013-14, the growth of oilseeds was 327.5 lakh tonnes of which, soyabean, groundnut and rapeseed recorded 118.61, 97.14 and 78.77 lakh tones respectively

### ***3.1. Policies Governing Edible Oilseeds in India***

India exported oilseeds and edible oil upto 1960s. Thereafter, there was stagnation in production. The country then began to import the edible oil during 1970s. During mid-1980s, edible oils were the highest of the imports from other countries. It accounts for

30 percent of the total imports. The Government was deciding to achieve self-sufficiency in edible oilseeds through technological inventions. The Government attempted to increase the stagnant oilseed production and introduce the new technologies in oilseed production through various schemes.

During 1984-85, the Government of India initiated the National Oilseed Development Project. Thereafter, Government of India launched Technology Mission on Oilseeds in 1986. The motives of the schemes were to increase oilseeds production and achieve self-sufficiency in edible oils. In 1991-92, Oil Palm Development Programme (OPDP) was launched under the “Technology Mission on Oilseeds and Pulses” with a focus on area expansion in Andhra Pradesh, Karnataka, Tamil Nadu, Orissa, Gujarat and Goa. During the Tenth Plan, Integrated Scheme on Oilseeds, Pulses, Oil Palm and Maize (ISOPOM) was implemented by converging earlier schemes like Oilseeds Production Programme (OPP), Oil Palm Development Programme (OPDP), National Pulses Development Programme (NPDP) and Accelerated Maize Development Programme (AMDP). From April 2010, pulses component of ISOPOM has been merged with National Food Security Mission (NFSM) to intensify efforts for production of pulses.

Oil Palm Development Programme was started on 1991-92 under the “Technology Mission on Oilseeds and Pulses. The scheme focused on area expansion in the states like Andhra Pradesh, Karnataka, Tamil Nadu, Orissa, Gujarat and Goa. From 2004-05 onwards, the scheme is being implemented as part of the “Integrated Scheme of Oilseeds, Pulses, Oil Palm & Maize” (ISOPOM) and provides support for Oil Palm cultivation in twelve states like Andhra Pradesh, Assam, Gujarat, Goa, Karnataka, Kerala, Maharashtra, Mizoram, Orissa, Tamil Nadu, Tripura, and West Bengal. Even though, Assam, Maharashtra and West Bengal did not undertake Oil Palm cultivation though Maharashtra has now undertaken oil palm area expansion from 2010-11. Under ISOPOM scheme, the government is giving support for planting material, cultivation cost, installation of drip irrigation system, diesel pump sets, training, development of waste land and technology transfer through demonstration and publicity in the respective states.

Fresh Fruit Bunches (FFBs) of oil palm are highly perishable and need to be processed within 24 hours of harvest. Realizing the special circumstances regarding the cultivation, gestation, sustainability, production, harvesting and processing of oil Palm, the State Departments of Agriculture/ Horticulture have tried to establish a linkage of oil palm farmers with oil palm processors and oil palm industry.

The States are implementing area expansion programme under ISOPOM in association with the oil palm industry. Identified areas are allocated to private

entrepreneurs for overall development of the sector i.e. from plantation to procurement of Fresh Fruit Bunches (FFBs) at the prices fixed by the Project Management Committee (PMC) constituted under OPDP. Presently Andhra Pradesh, Tamil Nadu, Mizoram and Goa have enacted Oil Palm Act while other States are yet to initiate such regulatory provision.

**Table 3: Area Coverage under Oil Palm during Five Year Plan Period in India**

<i>Period</i>	<i>Area (000 ha)</i>
Area covered upto Ninth Five Year Plan (Upto 2001-02)	62.73
Area covered upto Tenth Five Year Plan (Upto 2002-03 to 2006-07)	47.07
Area covered upto Eleventh Five Year Plan (Upto 2007-08 to 2011-12)	81.27
Cumulative Area Planted upto March, 2011	191.07
Area uprooted	-17.94
Net Available Area (March, 2011)	173.13

The area under oil palm cultivation in India was 8585 ha before the introduction of OPD Programme during 1991-92. The area under palm oil cultivation increased to 1.73 lakh ha during 2011. It is noted that the area expansion of palm oil is because of very successful implementation of the scheme by the Government. The area covered increased from 62730 ha during Ninth Five Year Plan period to 81270 ha during Eleventh Five Year Plan period. The total area cultivation during the three plan periods is 191070 ha. The area under palm oil cultivation increased twenty two times during the past two decades in India.

## **4. Results and Discussion**

### ***4.1. Oil Palm Area Expansion (OPAE)***

In order to bring 182500 hectares area under oil palm cultivation during 2014-15, it is proposed to provide incentives to growers with critical interventions like planting material, compensation for loss of income of the farmers during the gestation period, pump set, drip irrigation system, support for intercropping, vermi-compost pit, bore wells/water harvesting tanks/fertigation tanks, PP chemicals/INM/IPM/fertigation/tree guards etc. The States may also dovetail these components with other interventions under ISOPOM and other schemes for wasteland development, creation of irrigation facilities and publicity, contingency.

Oil Palm plantations will require to be maintained during the entire gestation period of 4 years before they start bearing fruit. Support for this purpose would have

to be provided to the growers. Further, oil palm growers would be encouraged to grow intercrops during the gestation period of 4 years till the oil palm start yielding FFBs to partially compensate them for loss of income. For this, funds of Rs. 151.50 crore will be required during next three years i.e Rs.43.50 crore in 2012-13, Rs.49.50 crore in 2013-14 and Rs58.50 crore in 2014-15.

The state-wise targets and achievements of area under oil palm development programme during 2005-06 to 2013-14 is given in Table 4. The total area under this scheme is increased from 12661 ha in 2005-06 to 22948 ha. in 2013-14. Out of that, Andhra Pradesh is registered as the top state among the various states in India. During 2005-06, the target was 4800 ha and 9563 ha was achieved under the programme. The state achieved more than the target area. Whereas, the target was 18081 ha, it achieved 11890 ha during 2013-14.

Karnataka is second state among the different states with highest cultivation of palm oil. During 2005-06, the target was 1500 ha and achieved 1591 ha. The area under palm oil increased to 6173 ha. of target and 2880 ha. during 2013-14. During the 2013-14, the state could not achieve the target. There is no positive feedback about the scheme among the cultivating farmers.

Tamil Nadu is third highest state for cultivation of palm oil. The state fixed a target of 2000 ha and achieved 1210 ha. during 2005-06. The state achieved less than the target fixed. During 2013-14, the state is targeted 6166 ha. and achieved 926 ha. The state totally neglected the expansion of area. The farmers do not know about the palm oil cultivation in India. This is a new crop and therefore, the farmers neglected and scheme which therefore did not reach the farmers.

State-wise quantity of crude palm oil under oil palm development programme in Indian states during 204-05 to 2013-14 is presented in Table 5. Among 11 states, Andhra Pradesh recorded the highest production during the decade of 2004-05 to 2013-14. The production in the state increased from 23905 tonnes in 2004-05 to 161566 tonnes in 2013-14. There is a significant progress in production of crude palm oil, with some variations over the decade. The state increased the production five times. The state successfully implemented the scheme in an effective manner.

Kerala occupied the second place in production of crude palm oil. The production in the state increased from 5793 tonnes in 2004-05 to 6303 tonnes in 2013-14. The state is recorded 7400, 7500 and 7378 tonnes of production during 2008-09, 2011-12 and 2012-13, respectively. The state is stagnant in production of crude palm oil. Kerala was followed by Karnataka which occupied the third place in the production of crude palm oil. The production in the state increased from 681 tonnes to 1736 tonnes during the same period. The state recorded a three time increase in production.

Table 4: State-wise Targets and Achievements of Area under Oil Palm Development Programme (Area in Hectare)

State	2005-06		2006-07		2007-08		2008-09		2009-10		2010-11		2011-12		2012-13		2013-14	
	T	A	T	A	T	A	T	A	T	A	T	A	T	A	T	A	T	A
Andhra Pradesh	4800	9563	5200	11882	15000	12074	20000	17049	15000	7755	15000	7455	40000	14500	27000	14919	18081	11890
Karnataka	1500	1591	1800	3714	500	4314	5000	3005	3500	2325	3600	2936	7000	4314	5186	2513	6173	2880
Tamil Nadu	2000	1210	2200	1746	3500	1780	2000	1939	3375	1423	3000	2200	7000	2134	5866	1200	6166	926
Gujarat	500	24	550	57	1000	356	1000	518	1000	740	1000	286	1000	904	1130	377	1253	454
Odisha	500	0	500	300	1000	991	1000	1000	0	Na	3000	3000	3700	4300	5000	3150	4000	2000
Goa	350	7	400	3	100	9	25	5	20	7	20	2	20	6	0	0	0	0
Tripura	300	55	300	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Assam	300	0	300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kerala	400	188	400	270	480	182	475	115	350	91	400	89	250	60	250	36	50	54
Maharashtra	0	0	0	0	0	0	0	0	0	0	250	80	200	200	250	194	306	0
Mizoram	350	24	350	185	3500	1614	2000	2547	4466	3499	2500	1877	1000	1970	5000	3711	5000	4532
Chhattisgarh		0	0	0	0	0	0	0	0	0	0	0	100	0	250	200	318	212
Total	11000	12661	12000	18176	29580	21321	31500	26178	27711	15840	28770	17925	60170	28388	49932	26300	41347	22948

Source: Department of Agriculture and Cooperation, \* Implemented under OPAAE (RKVY). However, Kerala and Goa are not covered under OPAAE

Note: T refer for Targets, A refer to Achievements

Table 5: State wise Quantity of Crude Palm Oil under Oil Palm Development Programme (in Tonnes)

State	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Andre Pradesh	23905	43500	35509	38000	43953	57402	63487	97987	127570	161566
Karnataka	681	793	974	1037	1170	1118	1459	1740	1770	1736
Tamil Nadu	110	178	249	273	366	365	486	759	1035	820
Gujarat	NR	NR	NIL	NA	0	0	0	0	0	0
Odhisra	0	0	0	NA	476	589	871	2162	443	558
Goa	349	379	345	342	393	279	329	394	372	371
Tripura	NA	NA	NA	NA	NA	NA	NA	NA	0	0
Assam	0	0	0	NA	NA	NA	NA	NA	0	0
Kerala	5793	6478	6888	5750	7400	6600	6900	7500	7378	6303
Andaman & Nicobar	0	0	0	NA	NA	NA	0	0	0	0
Mizoram	0	0	0	0	0	0	0	0	0	0
Total	30838	51328	43965	45403	53397	66353	73532	110542	138568	171354

Source: Information from based on input provided by state governments and dept. of oilseeds development , Hyderabad, Compiled by Ministry of Agriculture, Notes P- Provisional, NR - Not Reported, NA-Not Available

Table 6: State-wise Production of Oil Palm Fresh Fruit Bunches under Oil Palm Development Programme

State	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Andhra Pradesh	138929	203000	215000	226200	259495	347892	385009	573024	790881	933981
Karnataka	4127	4528	5415	5764	6685	6387	8337	9942	10112	9917
Tamil Nadu	681	1202	1584	1659	1987	2080	2920	4743	5244	5495
Gujarat	6	20	10	12	2	6	26	91	134	158
Odisha	0	0	0	0	2799	3464	5128	12720	2920	3722
Goa	1994	2143	1951	1936	2236	1591	1878	2229	2056	2046
Tripura	465	NA	447	NR	0	NR	NR	NR	0	0
Assam	0	0	0	NR	NR	NR	NR	NR	0	0
Kerala	29940	33795	34496	29300	38400	35100	41000	43200	41350	38350
Andaman & Nicobar	0	0	NR	NR	NR	NR	NR	NR	0	0
Mizoram	0	0	0	0	2	32	88	480	1339	1544
Total	176142	244688	258903	264871	311607	396551	444385	6E+05	9E+05	995212

Source: Dept. of Agriculture and Cooperation, Note: P-Provisional, NA-Not Available, NR-Not Reported

Andhra Pradesh, Kerala, Karnataka, Tamil Nadu, Goa Odisha have successfully implemented the scheme and production level has increased substantially during this period of time. Out of 11 states, Gujarat, Tripura, Assam, Andaman and Mizoram have recorded zero level of production during the past ten years.

State-wise production of oil palm fresh fruit bunches under oil palm development programme during 2004-05 to 2013-14 is given in Table 6. The total production of major states of India increased from 176142 tonnes in 2004-05 to 995212 tonnes in 2013-14. There is improvement in production at six times over the period of ten years. Andhra Pradesh is the leading producer of the FFB in India. The state recorded 78 percent (138929 tonnes) of production during 2004-05, followed by Kerala with 17 percent (29940 tonnes) and Karnataka with 2.3 percent (4127 tonnes).

During 2013-14, again Andhra Pradesh dominated in production. The share of FFB is 94 percent (933981 tonnes) followed by Kerala with 4 percent (38350 tonnes), Karnataka with 1 percent (9917 tonnes) and Tamil Nadu with 0.56 percent (5495 tonnes). Andhra Pradesh is the leading producer of FFB. The state improved its production by 7 times over the ten years. There is little improvement in production in Kerala. Karnataka and Tamil Nadu have improved their production.

## 5. Summary and Conclusions

Oil Palm Development Programme was started under the “Technology Mission on Oilseeds and Pulses during 1991-92. The scheme focused on area expansion in the states like Andhra Pradesh, Karnataka, Tamil Nadu, Orissa, Gujarat and Goa. The scheme is being implemented as part of the “Integrated Scheme of Oilseeds, Pulses, Oil Palm & Maize” (ISOPOM) and provides support for Oil Palm cultivation in twelve states like Andhra Pradesh, Assam, Gujarat, Goa, Karnataka, Kerala, Maharashtra, Mizoram, Orissa, Tamil Nadu, Tripura, and West Bengal. Even though, Assam, Maharashtra and West Bengal did not undertake Oil Palm cultivation though Maharashtra has now undertaken oil palm area expansion from 2010-11. Under ISOPOM scheme, the government is giving support for planting material, cultivation cost, installation of drip irrigation system, diesel pump sets, training, development of waste land and technology transfer through demonstration and publicity in the respective states.

Andhra Pradesh is registered as the top state among the various states in India. Karnataka is second state among the different states with highest cultivation of palm oil. Tamil Nadu is third highest state for cultivation of palm oil. Among 11 states, Andhra Pradesh recorded the highest production during the decade of 2004-05 to 2013-14. The production in the state increased from 23905 tonnes in 2004-05 to

161566 tonnes in 2013-14. The state increased the production five times. The state successfully implemented the scheme in an effective manner.

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