# Production loss due to monsoon deficiency

**V.C.Vasanthakumar,** Statistical Officer, CDB, Kochi-11

Coconut palm provides livelihood security to vast population in the world particularly in Asia Pacific countries. Considering the versatile nature of the crop and the multifarious uses of its products, coconut palm is eulogized as Kalpavriksha (Tree of Heaven). Coconut is closely associated with the socio economic life of a large number of small and marginal farmers across the country especially in peninsular India. It is estimated that about 12 million people in India are dependent on coconut and its allied activities. As per the latest available statistics, India ranks first in production and productivity of coconut among the coconut growing countries in the world. Coconut (cocos nucifera) is a benevolent tree, nature's gift to mankind. It is grown in about 12.20 million ha. in the world. India contributes about 17.55% in area and 31.02% in production of coconut in the world (Table 1). Coconut cultivation is mainly concentrated in the southern states viz Kerala, Tamil Nadu, Karnataka and Andhra Pradesh, which contributes about 89.09 percent in area and 90.93 percent in production of coconut in India. (Table 2)

Compared to the previous two years, 2015-16 was a golden year for the state of Kerala with great achievements in coconut cultivation. The state emerged from its third position in the country and regained its superiority in coconut production. In 2015-16 Kerala ranks top in coconut production with 74.29 million nuts. Significant increase was also achieved in productivity. A spurt in productivity was observed which enhanced from 7535 nuts/ha. in 2014-15 to 9641 nuts/ha. in 2015-16 recording a 27.95% increase. But this is lower than the national average of 10,614 nuts/ha. and far below the productivity of other major coconut growing states viz. Andhra Pradesh (13,732 nuts), Tamil Nadu (13,423 nuts),West Bengal (12,658 nuts) and Gujarat (13,706 nuts).

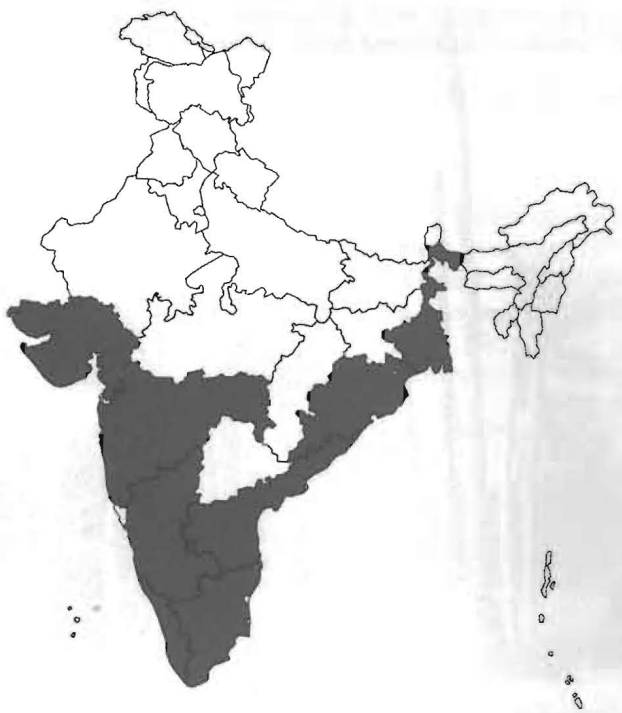
The official statistics on area and production of coconut is released by the Directorate of Economics and Statistics (DES) in Kerala, Tamil Nadu, Karnataka and Andhra Pradesh. In other states viz. Maharashtra, Gujarat, Odisha and UTs, coconut production is estimated by agriculture or horticulture department of the concerned state governments. The All India final estimate of area and production of coconut is officially

Table 1 - Area, Production and Productivity of coconut in Major Coconut Growing Countries (2014)

| Sl. No. | Country | Area ('000 Ha) | % Share | Production (Million Nuts) | % Share | Productivity (Nuts/ Ha) |
|---|---|---|---|---|---|---|
| 1 | Indonesia | 3610.00 | 29.60 | 16354.00 | 23.42 | 4530 |
| 2 | Philippines | 3502.00 | 28.71 | 14696.00 | 21.04 | 4196 |
| 3 | India* | 2141.00 | 17.55 | 21665.00 | 31.02 | 10119 |
| 4 | Srilanka | 440.00 | 3.61 | 2870.00 | 4.11 | 6523 |
| 5 | Brazil | 251.00 | 2.06 | 2919.11 | 4.18 | 11630 |
| 6 | Papua New Guinea | 221.00 | 1.81 | 1483.00 | 2.12 | 6710 |
| 7 | Thailand | 206.00 | 1.69 | 1001.00 | 1.43 | 4859 |
| 8 | Mexico | 169.00 | 1.39 | 1118.75 | 1.60 | 6620 |
| 9 | Vietnam | 159.00 | 1.30 | 1245.59 | 1.78 | 7834 |
| 10 | Tanzania | 128.00 | 1.05 | 545.80 | 0.78 | 4264 |
| 11 | Samoa | 99.00 | 0.81 | 267.00 | 0.38 | 2697 |
| 12 | Vanuatu | 92.00 | 0.75 | 415.11 | 0.59 | 4512 |
| 13 | Malaysia | 88.00 | 0.72 | 653.00 | 0.94 | 7420 |
| 14 | Mozambique | 81.00 | 0.66 | 244.06 | 0.35 | 3013 |
| 15 | Fiji | 62.00 | 0.51 | 200.00 | 0.29 | 3226 |
| 16 | Myanmar | 48.00 | 0.39 | 509.18 | 0.73 | 10608 |
| 17 | Solomon Islands | 38.00 | 0.31 | 100.00 | 0.14 | 2632 |
| 18 | Ghana | 27.00 | 0.22 | 380.38 | 0.54 | 14088 |
| 19 | Jamaica | 15.90 | 0.13 | 98.50 | 0.14 | 6195 |
| 20 | Others | 818.10 | 6.71 | 3070.89 | 4.40 | 3754 |
| | Total | 12196.00 | 100.00 | 69836.36 | 100.00 | 5726 |

Source: APCC Statistical Year Book - 2014 *r - Revised

**States Covered under the survey of concurrent estimation of coconut production and productivity for the year 2016-17**



released by Horticulture Division under the Ministry of Agriculture and Farmer's Welfare, Government of India

It is observed that the release of final statistics by the State DES/Agri/ Hort Departments usually lags at least by one year. Availability of concurrent data on coconut production is critical for timely decision making on many policy issues related to the crop and its development programmes including recommendation to Government of India for fixing Minimum Support Price from year to year. Moreover the information on concurrent production of coconut is very much useful when it is disseminated to farmer collectives enabling them to plan their primary processing and marketing activities, in order to ensure fair, steady and reasonable price for their produce. Hence it was felt appropriate to have a concurrent estimation of production and productivity of coconut in the major coconut growing states of India by the Coconut Development Board itself. Accordingly Coconut Development Board took a decision in its 111th Board meeting held in September 2012 for undertaking concurrent estimation of production and productivity by conducting a statistical survey in 31 major coconut growing districts of Kerala, Karnataka, Tamil Nadu and Andhra Pradesh for the agriculture year 2012-13. During the next year, the study was extended to the states of Odisha, West Bengal and Maharashtra. In 2014-15, Gujarat was the new state covered under the survey and in 2015-16 the study was extended to the state of Goa also. This is the fifth year since the Coconut Development Board is undertaking a field survey for the concurrent estimation of coconut production in the major coconut growing states in India. In 2016-17 the study was conducted in Kerala, Karnataka, Tamil Nadu, Andhra Pradesh, Odisha, West Bengal, Maharashtra and Gujarat. These eight states together contribute about 95.36% of area under coconut and 96.73% of production in India. The study was carried out by Coconut Development Board in collaboration with educational institutions having Satistics/Economics department or in association with research organisations.

Table 2 - Area and production of coconut 2015-16

| Sl No: | States | Area "000" Ha | % Share | Production Million Nuts | % Share | Productivity(Nuts / Ha) |
|---|---|---|---|---|---|---|
| 1 | Kerala | 770.62 | 36.90 | 7429.39 | 33.51 | 9641 |
| 2 | Tamil Nadu | 459.74 | 22.01 | 6171.06 | 27.84 | 13423 |
| 3 | Karnataka | 526.38 | 25.20 | 5128.84 | 23.14 | 9744 |
| 4 | Andhra Pradesh | 103.95 | 4.98 | 1427.46 | 6.44 | 13732 |
| 5 | West Bengal | 29.51 | 1.41 | 373.58 | 1.69 | 12658 |
| 6 | Odisha | 50.91 | 2.44 | 328.38 | 1.48 | 6451 |
| 7 | Gujarat | 22.81 | 1.09 | 312.68 | 1.41 | 13706 |
| 8 | Maharashtra | 27.75 | 1.33 | 271.24 | 1.22 | 9775 |
| 9 | Bihar | 14.90 | 0.71 | 141.38 | 0.64 | 9489 |
| 10 | Assam | 19.73 | 0.94 | 132.59 | 0.60 | 6720 |
| 11 | Chhattisgarh | 1.85 | 0.09 | 30.54 | 0.14 | 16508 |
| 12 | Tripura | 7.20 | 0.34 | 29.51 | 0.13 | 4097 |
| 13 | Nagaland | 0.33 | 0.02 | 2.67 | 0.01 | 8091 |
| 14 | Others | 52.80 | 2.53 | 388.13 | 1.75 | 7351 |
| | All India | 2088.47 | 100.00 | 22167.44 | 100.00 | 10614 |

Source : Horticulture Division ,Department of Agriculture, Cooperation & Farmers Welfare, Government of India

**Objectives**

The objective of the survey was to estimate the concurrent productivity and thereby production of coconut in the major coconut growing states in India viz. Kerala, Karnataka, Tamil Nadu, Andhra Pradesh, Odisha, West Bengal, Maharashtra and Gujarat for 2016-17 by undertaking field survey and collecting palm wise yield data based on established phenotypic characters of the buttons/nuts and to estimate the production of coconut in India.

***Methodology and Sample Design***

For the estimation of production of coconut in the country, eight major coconut producing states of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Odisha, West Bengal, Maharashtra and Gujarat were selected as these states account for 95.36% of area under coconut in the country. A multistage random sampling method was used for the selection of coconut gardens (samples), for collecting the primary data are as detailed below;

The districts from each state for conducting the survey were selected based on the extent of area. Accordingly minimum area considered for selecting a district in the state of Kerala and Karnataka was 16,000 ha. 15,000 ha. in Tamil Nadu, 6,000 ha. in Andhra Pradesh, 4000 ha. in Odisha, 3500 ha. in Gujarat and 3000 ha. in West Bengal, whereas the cut off area in Maharashtra was 1500 ha. From each identified districts, selection of blocks were made on the basis of extent of area under coconut cultivation in a Block/Taluk. From selected Blocks, Grama Panchayats/Mandals were selected on the basis of simple random sampling. From each selected Grama Panchayat/Mandals, sample plots were selected at random based on the criteria of having minimum 20 bearing palms in Kerala and 40 bearing palms in other states. From each sample plots 10 bearing palms were randomly selected to collect data pertaining to yield. From the selected palms, number of nuts in bunches of three month old and above was recorded in a chronological order in the data collection sheets.

Yield of coconut palm in a particular year is the sum of nuts from the total harvest undertaken during that period. In most of the southern states, coconut is being harvested at an interval of 45-60 days (during summer months the interval from one harvest to other harvest is 45 days and that of rainy seasons/winter seasons the same is 60 days). So, in a complete year, 6-8 harvests takes place. It is therefore assumed that button setting is completed in 3 month old bunches and will be ready for harvest in eight to nine months from the date of the survey. Hence the nuts from three month old bunches and above were recorded from 10 palms from the sample holdings, which was done by the field investigators with the help of skilled coconut tree climbers (FoCTs), for estimating yield.

Table 3 - Sample Details

| States | No of Districts | No.of Panchayaths | No of Holdings | No of Palms |
|---|---|---|---|---|
| Kerala | 12 | 118 | 1200 | 12000 |
| Karnataka | 8 | 85 | 1000 | 10000 |
| Tamil Nadu | 7 | 81 | 834 | 8340 |
| Andhra Pradesh | 4 | 108 | 600 | 6000 |
| Odisha | 4 | 18 | 250 | 2500 |
| West Bengal | 4 | 18 | 150 | 1500 |
| Maharashtra | 4 | 12 | 100 | 1000 |
| Gujarat | 2 | 3 | 100 | 1000 |
| Total | 45 | 443 | 4234 | 42340 |

**Sample size**

The study was conducted in twelve districts in Kerala, seven districts in Tamil Nadu, eight districts in Karnataka and four districts each from the states of Andhra Pradesh, Odisha, West Bengal, Maharashtra and two districts in Gujarat. Details of samples selected under each state are given in table 3.

The overall supervision of the survey as far as technical guidance, day to day monitoring and administrative control was under the direct control of Coconut Development Board, Head Quarters, Kochi. All the preliminary works related with the study viz. planning the survey, selection of states/districts/blocks, providing technical instructions, orientation to educational institutions/research organisations and training of the field investigators were done under the supervision of Statistics section of Coconut Development Board with coordination from Regional Offices/State Centres in the respective states.

For the successful conduct of the study at field level, Board collaborated with educational institutions, research organisations in each district selected under the survey. Coordinators/Principle Investigators from institutions were in full charge of enumeration work, field supervision, online data entry and preliminary analysis of data. For collection of data on yield (counting of nuts in bunches), services of trained coconut climbers (Friends of Coconut Tree) were utilized.

Institutions associate with the survey

Kerala

| Sl No | District | Institute | Name of Principal Investigator |
|---|---|---|---|
| 1 | Kozhikode | Farook College, Kozhikode | Dr. P Anil Kumar |
| 2 | Kasargod, Kannur, Malappuram and Palakkad | Government College, Kasaragod | Dr. K Harikurup |
| 3 | Thrissur | Sree Kerala Varma College, Thrissur | Shri Vishwas Nath |
| 4 | Thiruvananthapuram and Kollam | University College, Thiruvananthapuram | Shri. Shibu A.S |
| 5 | Ernakulam | St.Albert College, Ernakulam | Shri Francis M.C |
| 6 | Alappuzha | St. Michaels College, Cherthala | Ms. Minnu Mathew |
| 7 | Kottayam | St.Thomas College, Palai | Dr. K.M Kurian |
| 8 | Idukki | Niramala College, Muvattupuzha | Dr. Johnny Scaria |

Tamilnadu

| Sl No | District | Institute | Name of Principal Investigator |
|---|---|---|---|
| 1 | Coimbatore | PSG College of Arts & Science, Coimbatore | Dr. R. Nagarajan |
| 2 | Tiruppur | Gobi Arts & Science College, Erode | Dr. M. Raju |
| 3 | Thanjavur | Srimad Andavan College, Thanjavur | Dr. R. Thanga Prasd |
| 4 | Kanyakumari | Scott Christian College, Kanyakumari | Dr. J Cyril Kanmony |
| 5 | Vellore & Krishnagiri | Periyar University, Salem | Dr. D Janagam |
| 6 | Tirunelveli | St.Xaviers College, Tirunelveli | Dr. Michael |

Karnataka

| Sl No | District | Institute | Name of Principal Investigator |
|---|---|---|---|
| 1 | Tumkur | University of Horticultural Sciences, Bagalkot | Dr. Basvaraj G |
| 2 | Hassan | | Shri. Shripad Visweshwar |
| 3 | Chitradurga | | Dr. Ashok .N |
| 4 | Chikmagalur | | Dr. V. A Ramachandra |
| 5 | Mysore | | Dr. Sachin Nandimath |
| 6 | Mandya | | Dr. Tanveer Ahmed |
| 7 | Udupi | | Dr. C.G. Yadav |
| 8 | Dakshina Kannada | | Dr. M. G Kerutagi |

Andhra Pradesh

| Sl No | District | Institute | Name of Principal Investigator |
|---|---|---|---|
| 1 | East Godavari | Dr YSR Horticultural University, Andhra Pradesh | Dr. G. Ramanandam |
| | | | |
| 2 | West Godavari | | |
| 3 | Srikakulam | | |
| 4 | Visakhapatnam | | |

Maharashtra

| Sl No | District | Institute | Name of Principal Investigator |
|---|---|---|---|
| 1 | Sindhudurg | R.P Gogate Arts & Science College, Ratnagiri | Dr. Surendra .C. Takurdesai |
| 2 | Ratnagiri | | |
| 3 | Raigad | | |
| 4 | Thane | | |

| Odisha | | | |
|---|---|---|---|
| Sl No | District | Institute | Name of Principal Investigator |
| 1 | Puri | Odisha University of Agriculture and Technology, Odisha | Dr. R.K Mishra |
| 2 | Ganjam | | |
| 3 | Cuttack | | |
| 4 | Nayagarh | | |

| Gujarat | | | |
|---|---|---|---|
| Sl No | District | Institute | Name of Principal Investigator |
| 1 | Junagadh | Junagadh Agricultural University, Junagadh | Dr. S. B Vekariya |
| 2 | Bhavnagar | | |

Survey in West Bengal was done by State Centre, Coconut Development Board, Kolkata under the supervision of Deputy Director.

**Proforma**

For collecting field level information from selected holdings a single proforma was designed, which contains four parts. First part relates with general information of the selected holding and second part with personal details of the coconut farmer. Third part was designed for recording information on coconut holdings viz. number of bearing and non bearing palms, management practices, cropping pattern etc. and the last part was for collecting tree wise/ bunch wise yield data pertaining to the 10 palms selected.

**Training to FoCTs and field investigators**

Before beginning the survey, one day field training was imparted to field investigators and FoCTs (Friends of Coconut Tree) on the selection procedure of sample gardens and palms at random and identifying the bunches and counting of nuts on a chronological order from three month old bunches and above. This was limited to institutions/ principal Investigators associating with the survey.

**Supervision**

In order to improve the quality of field work, the enumeration was supervised on a regular basis from the institution side by Principal Investigators/Associates and random check was made from Head Office/Regional Offices/State Centres.

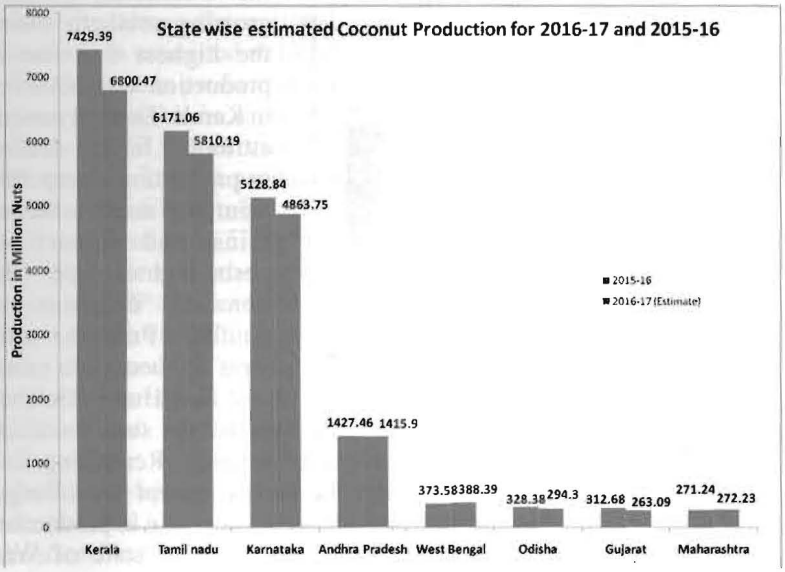
**Duration of survey**

The enumeration works in all the eight states were done during November 2016 - February 2017. Actual collection of data varied from district to district and from state to state.

**Estimation**

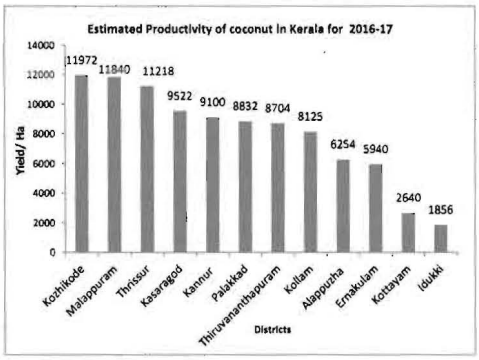
The main objective of the survey was to arrive at a good estimate of yield per palm and per hectare, thereby estimating production with a reasonable degree of accuracy. From the recorded observations, the number of nuts ready to be harvested upto June, 2017 (in the Agri. Year 2016-17), only were accounted for the estimation of yield. These observations from all the selected palms were taken into account to obtain the average yield, which was extrapolated to get annual yield depending on the month in which the data collection was done. The annual yield divided by number of bearing palms in the sample gives the yield per palm. Further, yield per ha. is arrived at by multiplying average yield per palm with bearing palm density in each district. Production for 2016-17 was estimated by multiplying area under coconut and yield per ha. for each state. All India production was estimated based on state level yield.

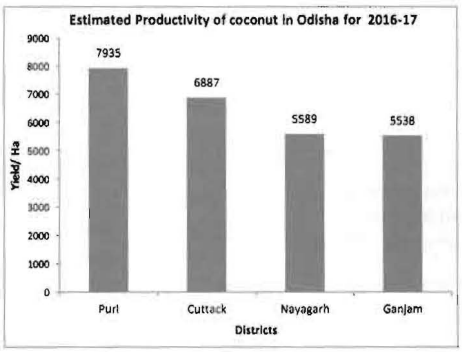
**Graph 1**

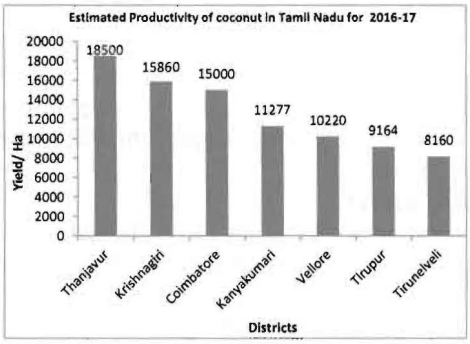


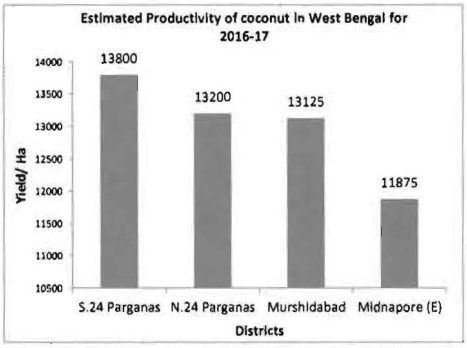

**Findings**

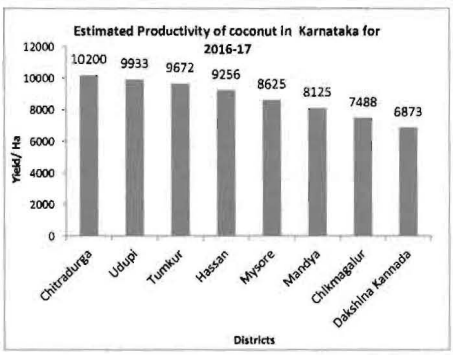
Average size of coconut holdings varied from state to state. While the smallest size of 0.37 ha. is in West Bengal, largest size of 2.40 ha is reported from Tamil Nadu. Lowest palm density of 116 palms/ha is reported from Karnataka while the highest of 161 palms/ha is reported from Andhra Pradesh.

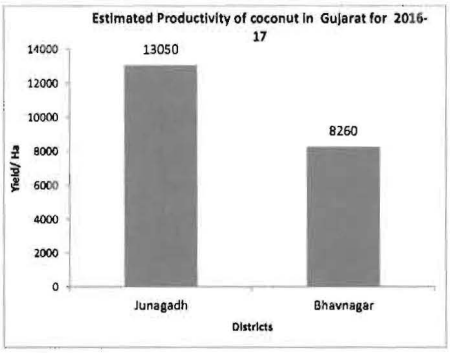


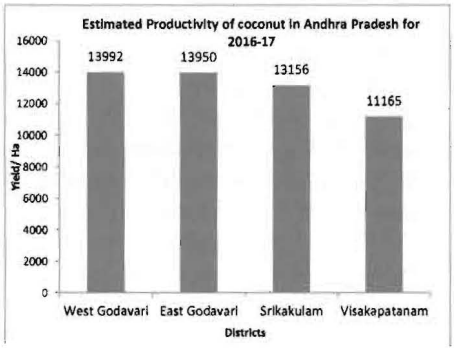



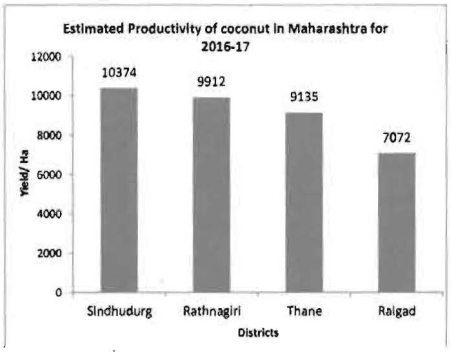




Yield per palm and yield per ha. (productivity) varied from state to state. Highest yield per palm of 116 nuts was recorded in West Bengal and lowest of 59 nuts from Odisha. It varied between 71 nuts and 89 nuts in other stated. Andhra Pradesh is showing the highest productivity of 13617 nuts/ha. whereas the lowest productivity of 5782 nuts/ha. was estimated in the state of Odisha. It varied from 8,804 nuts/ha to 13,108 nuts/ha in other states covered under the survey.

As per the results of the survey, coconut production in India for the Agriculture year 2016-17 is estimated to be 20,789 million nuts, which is 6.22 percent less compared to that of the previous year. In all the four major coconut growing states of Kerala, Tamil Nadu, Karnataka and Andhra Pradesh, which contributes 90.93 % of the country's production, coconut production shows a decreasing trend compared to the previous year. In Kerala, Tamil Nadu and Karnataka, production recorded a decrease of 8.47, 5.85 and 5.17 percent respectively, while in Andhra Pradesh, production is showing only a marginal decrease of 0.81% compared to the last year. Among the traditional coconut growing southern states, the highest decrease in production was observed in Kerala. General reasons attributed for the decline in production as reported from field are, insufficient rains and impact of pests and disease. The nominal decrease in Andhra Pradesh after being hit by two cyclonic storms in successive years, viz. Phailin in October, 2013 and Hud-Hud in October, 2014, is substantiating the fact that the state is coming back to normal coconut production. Remaining four states covered under the survey, except West Bengal and Maharashtra also showed a decrease in production. While production estimation for the state of West

Bengal, showed an increase of 3.96 percent, production in Odisha and Gujarat, decreased by 10.38 and 15.86 percent respectively, whereas the production increase in Maharashtra is only marginal at 0.37 percent.

Compared to the previous year, Kerala recorded a decrease of 8.47 percent in production. Largest productivity is estimated in the district of Kozhikode with 11972 nuts/ha. followed by Malappuram with 11840 nuts/ha. and Thrissur with 11218 nuts/ha. whereas Idukki recorded the lowest productivity with 1856 nuts/ha. Average productivity of the state is estimated at 8804 nuts/ha.

Coconut production in Tamil Nadu is showing a decrease of 5.85%. Thanjavur is having the highest productivity of 18,500 nuts/ha. followed by Krishnagiri and Coimbatore districts with 15,860 nuts/ha. and 15,000 nuts/ha. respectively. Tirunelveli with 8,160 nuts/ha. is the district with lowest productivity. Average Productivity in Tamil Nadu is estimated at 12,638 nuts/ha.

A decrease in production of 5.17 percent is estimated in Karnataka for 2016-17, compared to that of the previous year. Chitradurga district is having highest productivity in Karnataka with 10,200 nuts/ha. followed by Uduppi (9,933 nuts/ha.) and Tumkur (9,672 nuts/ha). Average productivity of coconut in the state is 9,240 nuts/ha. Dakshina Kannada with 6,873 nuts/ha. records the lowest productivity in the state.

As far as Andhra Pradesh is concerned, even though the state is showing a production decrease over the year, it is insignificant. A decrease in production of 0.81% is estimated at state level compared to the previous year. West and East Godavari districts are having highest productivity of 13,992 & 13,950 nuts/ha. Productivity is lowest in Visakhapatnam with 11,165 nuts/ha. All the four districts covered under the survey are having productivity above the national average. State level productivity is estimated at 13,617 nuts/ha.

The decrease in production estimated compared with previous year in Odisha is 10.38%. Puri is having largest productivity of 7,935 nuts/ha. followed by Cuttack with 6,887 nuts/ha. Lowest productivity is estimated from Ganjam with 5,538 nuts/ha. Average productivity in the state is estimated to be 5,782 nuts/ha.

In West Bengal, the production is showing an increase of 3.96% over the previous year. 24 Paraganas South is the district with largest productivity of 13,800 nuts/ha. followed by North 24 Paraganas(13200 nuts/ha). Lowest productivity is reported from Midnapore (11,875 nuts/ha). Productivity in the state is 13108 nuts/ha.

As far as Maharashtra is concerned, an increase in production of 0.37 percent over the last year is observed in the state. Sindhudurg is having the largest productivity

with 10,374 nuts/ha while and the lowest being Raigad district with 7,072 nuts/ha. Average productivity of 9,796 nuts/ha is estimated in Maharashtra.

In Gujarat, production decreased by 15.86%. District with largest productivity is Junagadh at 13,050 nuts/ ha. Bhavnagar reported a productivity of 8,260 nuts/ha. only. State productivity is estimated at 11,534 nuts/ha.

In Kerala, where cutting and removal of disease advanced, senile and old palms are going on in a massive scale through implementation of Replanting and Rejuvenation Scheme, indication is that, area under the crop is not coming down, rather increased due to the effect of replanting of cut and removed palms with good quality seedlings under the scheme coupled with the impact of the Area Expansion Programme implemented in the state.

Table 4 - General details on holding size/Yield per palm and palm density in the states covered

| Sl No | State | No: of Holdings | Avg Holding Size (Ha.) | Yield / Palm | Yield/ Ha | Palm Density | Bearing Palm Density |
|---|---|---|---|---|---|---|---|
| 1 | Kerala | 1200 | 0.39 | 71 | 8804 | 141 | 124 |
| 2 | Tamil Nadu | 834 | 2.40 | 89 | 12638 | 158 | 142 |
| 3 | Karnataka | 1000 | 1.38 | 88 | 9240 | 116 | 105 |
| 4 | Andhra Pradesh | 600 | 1.45 | 89 | 13617 | 161 | 153 |
| 5 | Odisha | 250 | 0.70 | 59 | 5782 | 125 | 98 |
| 6 | West Bengal | 150 | 0.37 | 116 | 13108 | 133 | 113 |
| 7 | Maharashtra | 100 | 0.66 | 79 | 9796 | 131 | 124 |
| 8 | Gujarat | 100 | 1.04 | 79 | 11534 | 159 | 146 |

Table 5 - State wise estimated production for 2016-17

| SL No | States | Estimated Production in Million Nuts | Previous Year Production in Million nuts | Increase/ Decrease over Previous year (%) |
|---|---|---|---|---|
| 1 | Kerala | 6800.47 | 7429.39 | -8.47 |
| 2 | Karnataka | 4863.75 | 5128.84 | -5.17 |
| 3 | Tamil Nadu | 5810.19 | 6171.06 | -5.85 |
| 4 | Andhra Pradesh | 1415.90 | 1427.46 | -0.81 |
| 5 | Odisha | 294.30 | 328.38 | -10.38 |
| 6 | West Bengal | 388.39 | 373.58 | 3.96 |
| 7 | Maharash-tra | 272.23 | 271.24 | 0.37 |
| 8 | Gujarat | 263.09 | 312.68 | -15.86 |
| | All India | 20789.00 | 22167.45 | -6.22 |

Table 6 - Comparison of Estimated Production as per survey with production reported by Department of Agriculture and Cooperation for last three years

| Sl no | Year of Survey | All India Pro-duction –Million Nuts (Survey Result) | All India Production – Million Nuts (Department of Agriculture and Cooperation) |
|---|---|---|---|
| 1 | 2012-13 | 13757.65 | 23351.22 |
| 2 | 2013-14 | 20156.77 | 22680.03 |
| 3 | 2014-15 | 19502.83 | 21665.19 |
| 4 | 2015-16 | 19433.97 | 20439.60 |
| 5 | 2016-17 | 20788.63* | NA |

* decrease of 6.22% over 2015-16 is estimated in 2016-17

NA – Not Available

**Survey findings - highlights**

**Kerala** - Major decline in production was observed in Idukki and Kottayam, districts and a major increase in production was observed in Thrissur, Kozhikode and Kannur districts. Highest production of 1445 million nuts was estimated in Kozhikode and lowest production of 31 million nuts in Idukki.

**Tamil Nadu** – Kanyakumari, Tirunelveli and Thanjavur districts showed a decrease in production over the previous year while there was increase in production only in Krishnagiri district compared to the previous year. Highest production of 1282 million nuts was recorded in Coimbatore and lowest production in Tirunelveli with 135 million nuts.

**Karnataka** - Major coconut growing district of Tumkur and other districts like Hassan, Chikmagalur and Chitradurga recorded an increase in production, while the coastal districts of Udupi and Dakshina Kannada as well as Mysore and Mandya showed decrease in production. Highest production was estimated in Tumkur at 1473 million nuts and lowest in Dakshina Kannada at 127 million nuts.

**Andhra Pradesh-** West Godavari and Srikakulam showed an increase in production while Visakhapatnam and East Godavari showed decline in production. Highest production was estimated in the district of East Godavari at 704 million nuts and lowest in Visakhapatnam at 82 million nuts

**Odisha** - Highest production decrease is reported from Nayagarh district. Puri, Cuttack and Ganjem recorded an increase in production. Highest production of 75 million nuts was estimated in Puri and lowest production of 27 million nuts in Nayagarh.

**West Bengal**- Decrease in production over previous year was noticed only in Murshidabad district. Midnapore (E) and South Paraganas showed increase in production. No significant change in production was observed in the North Paraganas. Highest production of 61 million nuts was estimated in Murshidabad and lowest production of 44 million nuts in Midnapore (E).

**Maharashtra** – All the four surveyed districts showed an increase in production while it remained straight in Raigad. Significant increase in production was noticed in Thane. Highest production of 107 million nuts was estimated same in Sindhudurg.

**Gujarat** – Coconut production increased in Junagadh district while Bhavnagar recorded a decrease. Highest production of 157 million nuts was estimated in Junagadh.

**Conclusion**

Production of coconut in India in the agriculture year 2016-17 is estimated at 20789 million nuts, 6.22% less than that of 2015-16. Deficiency in monsoon which in turn created a drought like situation in almost all the major coconut growing states coupled with impact of pest/disease are reported as the major reason for the decrease in production. Production is almost steady or even showing increase in gardens with irrigation facility and following good management practices. Production in Andhra Pradesh which was hit by two successive cyclonic storms in the years 2013 and 2014 is showing tremendous improvement, as the percentage of decrease over the year is marginal.

Farmer Producer Organizations (FPO) need to be aware of the fact that coconut production in the country is coming down compared with the previous year. Already, more coconuts are being diverted for value addition. Further, export of coconut and coconut products are

recording a rapid growth and there is potential demand for tender nuts in domestic and international market. Even coconut oil in bulk quantity is being exported from the country now. Consumption of coconut out of total production to value addition and export is on the rise. FPOs need to tap the full potential from this opportunity and plan their harvesting/processing/marketing activities efficiently and execute them accordingly to ensure fair, steady and reasonable price for their produce.

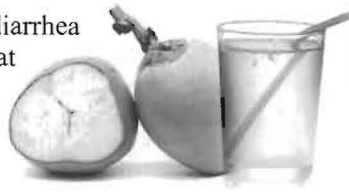
Deficiency in monsoon shower decreases the production to a large extend throughout the country. Further, insufficient rains are being experienced by one state or other frequently. Since majority of the coconut cultivation is under rainfed conditions, palms lost their vigour due to the after effect of drought which in turn results in production loss and a turnaround to the original level takes quite a long period. It is observed that in gardens with good irrigation facility and those following scientific management practices, the production has not come down drastically, rather improved in some cases, compared with neglected gardens. Schemes with special emphasis on irrigation and pest/disease management are the need of the hour.

Further, farmers need to focus more on activities to improve productivity at high level by following scientific management of gardens especially in Kerala as the expansion of area under coconut is having little scope due to rapid urbanization and high land value. In fact the productivity of the state is still below the national average and far below than that of Tamil Nadu and Andhra Pradesh. Since the scope of bringing more area under coconut cultivation in Kerala is limited, under planting with high yielding varieties needs to be adopted. As Kerala is having 36.90% of the total area under the crop in the country with a production contribution of only 33.51%, enhancing productivity especially in the root wilt effected districts through the combined effort of Board and other concerned agencies with the active involvement of Farmer Producer Organisations, is the only solution in Kerala to regain its lost.

Taking up initiatives for productivity improvement at micro level is difficult in the country where the holding size is too small compared with other states. In this context, activities of FPOs need to be continued and further strengthened to achieve the targeted level of productivity and also to ensure better price realisation for the produce by avoiding middlemen in the market.

Farmers usually neglect the crop when the price of their produce is non-remunerative. The price volatility is too high in coconut sector and hence the urgent need is to frame measures for ensuring a stable, steady and remunerative price to the farmers for their produce. In view of the high cost of production of coconut in Kerala, growing coconut as a mono crop is not feasible and intercropping is to be promoted. Existing schemes needs to be modified with built in component for promotion of intercropping. More over farmers need to pay immediate attention for utilizing the available water through revitalizing traditional irrigation sources and adopting water conservation. ■

# Coconut water health benefits



***Oral rehydration***: In many tropical regions, coconut water is often given to patients with diarrhea to help replace fluid loss from the body. The ingredients in coconut water are more effective at hydrating the human body, compared to the ingredients in sports drinks and energy drinks. The composition of tender coconut water is quite similar to what the World Health Organization (WHO) recommends for its ORS (Oral Rehydration Solution). In addition to the salts and sugars in the ORS, coconut water has amino acids, enzymes, minerals, and fatty acids.

***Reduced blood pressure:*** Coconut water finds itself high on the list of home remedies for high blood pressure. One of the causes for high blood pressure is an imbalance of electrolytes in the blood.

Because coconut water contains an adequate supply of minerals and salts, it can help counter this imbalance. Modern researchers say the potassium content in coconut water plays a huge role in lowering blood pressure. Both potassium chloride (seen in supplements) and potassium citrate (seen in foods) can help lower blood pressure. Potassium helps balance out the level of sodium in your blood and keeps your body functioning properly.

***Diabetes management:*** Low serum potassium can cause glucose intolerance. By increasing potassium intake – through drinking coconut water we can prevent the development of diabetes.

***Heart health:*** Studies show that a reduction in serum potassium increases the risk of lethal ventricular arrhythmias in patients with ischemic heart disease, heart failure, and left ventricular hypertrophy. Hence cardiologists in tropical countries recommend drinking coconut water to their heart patients.

***Immune health:*** Coconut water contains high levels of lauric acid, which is what is used by the body to make monolaurin – a fatty acid that helps fight disease. Lauric acid also has antifungal, antibacterial, and antiviral properties, which help you protect your body against infection.

*Courtesy: Dr. Victor Marchione | Heart Health |http: www.belmarrahealth.com/* ■