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A Case Study of Soybean Crop Production, Installed Capacity and Utilized Capacity of Oil Plants in Nanded District, Maharashtra, India

***Pawar R.S., Wagh V.M., Panaskar D.B., Adaskar V.A. and Pawar P.R.**

Swami Ramanand Teerth Marathwada University, Nanded, Maharashtra

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ABSTRACT

Soybean is an important global crop, providing oil and protein. Above 80% of the global soybean output is crushed worldwide to obtain oil and meal. In the total crop very small proportion is consumed directly by humans. Raw soybean, including the immature green form, are toxic to humans, swine, chickens, in fact all mono-gastric animals. Soybean is gaining popularity on account of its unique characteristics and adaptability to varied agro-climatic conditions. It has unmatched composition of 40 per cent protein and 20 per cent oil and nutritional superiority on account of containing essential amino acids, unsaturated fatty acids, carbohydrates, vitamins and minerals. In this research work we study the comparison of soybean crop area under cultivation, yield, production, utilized capacity and oil plants capacity in Nanded district.

Keywords: Production, yield, plant capacity, oil processor,

INTRODUCTION

Soybean (*Glycine max*) also known as Golden Bean is the largest oilseed crop in world accounting for more than 50% of the world oilseeds production. Above 80% of the global soybean output is crushed worldwide to obtain oil and meal. The processed soybean is the largest source of protein feed and second largest source of vegetable oil in the world. Soybean oil is widely used as edible oil whereas its meal is mainly used in animal feed industry. Direct consumption of soybeans is very limited. Around 35% of the beans production is traded in the world market. [14]

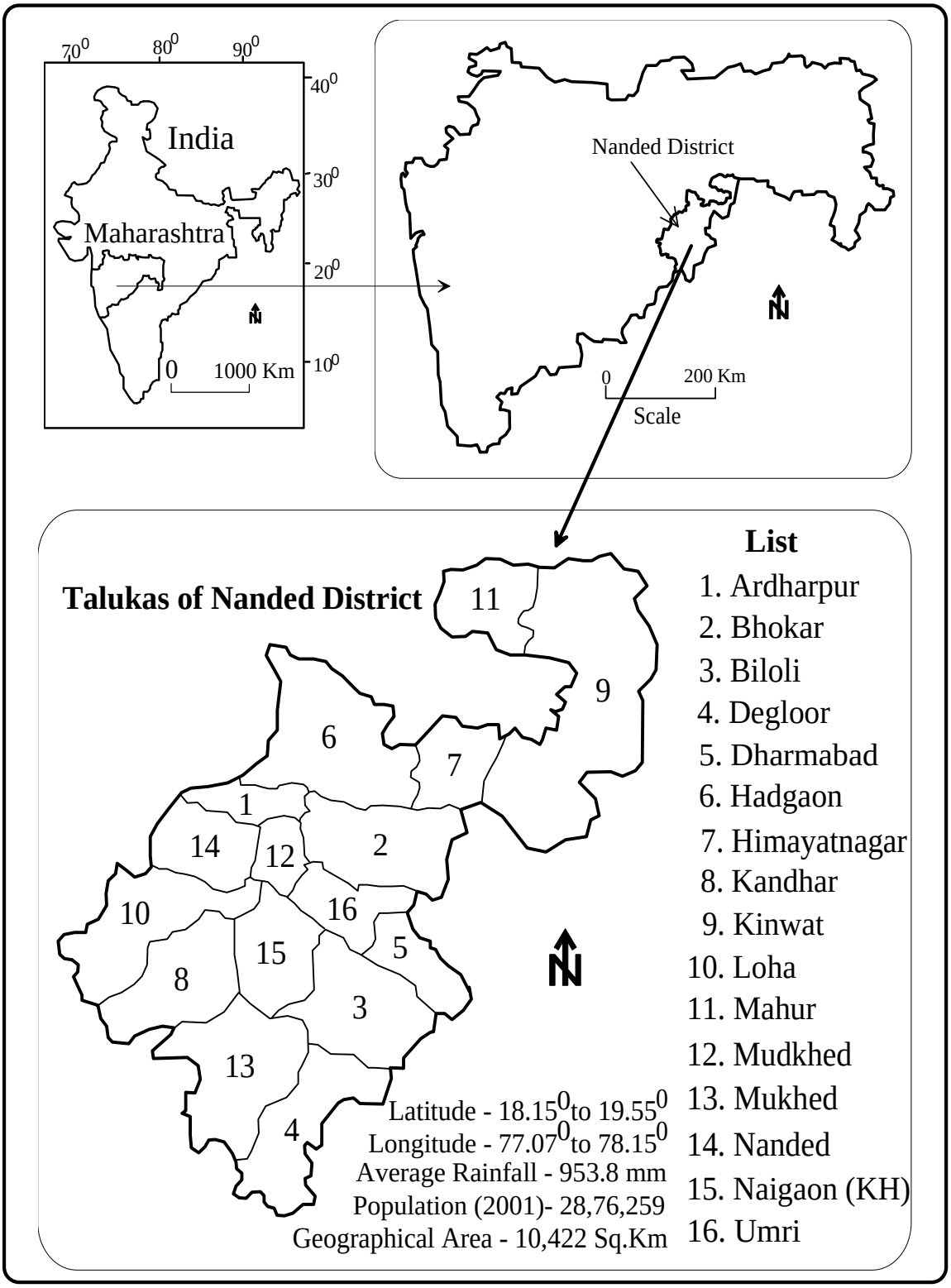

Figure 1– Map of the Study Area with Talukawise Location

United States is the single largest producer of soybean in world while Brazil and Argentina are the second and third biggest producers of soybean respectively. China and India, the Asian countries, stands at fourth and fifth position respectively for soybean production in world. For 2008-09, the soybean oil global production was around 35.75 million tones. [7]

Soybean is gaining popularity on account of its unique characteristics and adaptability to varied agro-climatic conditions. It has unmatched composition of 40 per cent protein and 20 per cent oil and nutritional superiority on account of containing essential amino acids, unsaturated fatty acids, carbohydrates, vitamins and minerals. Soybean protein is rich in valuable amino acid lycine (5%) in which most cereals are deficient. In addition, it contains a good amount of minerals, salts and vitamins (thiamine and riboflavin) and its sprouting grains contain a considerable amount of Vitamin C.

Study Area

Nanded district is situated in eastern portion of Marathwada region, which corresponds to Aurangabad Division of Maharashtra state. The name Nanded is widely believed to have originated from 'NANDI' the Vahan of Lord Shiva, who performed penance on the banks of River Godavari. The district is bounded by Nizamabad, Medak and Adilabad districts of Andra Pradesh on the east, by Bidar District of Karnataka falls on the south, by Parbhani and Latur districts of Marathwada on the west, and Yavatmal District of Maharashtra's Vidarbha region on the north. The influence of Andhra, Karnataka and Vidarbha can be seen on the language, behaviour and general conduct of the people of Nanded. The district has an area of 10,422 Km^2 while according to 2001 census its population is 2876259 of which 23.96% were urban. The average rainfall of Nanded district is 953.8mm. In Nanded districts there are 16 talukas shown in the figure 1.

MATERIALS AND METHODS

Our overall objectives are to estimate and analyze the focusing on land use, yield as components of production and the oil production capacity of the Nanded Districts. Soybean production, area harvested, installed capacity and utilized capacity of oil plants data were collected from the Soybean Processors Association of India (SOPA) and Nanded oil Processers Association, MIDC Nanded. The rainfall data was collected from Cotton Research Centre, Nanded. Specifically we study the soybean production, yield and oil plants capacity in Nanded district. The preliminary data was processed and finally used for research work.

RESULT AND DISCUSSION

In the recent past, soybean cultivation has increased manifold as compared to any other oilseed crop in India and stands next only to groundnut, though commercial production of soybean began only in 1971-72. Soybean production is mainly confined to Madhya Pradesh (also known as soybean bowl of India), Maharashtra, Rajasthan, Andhra Pradesh, Karnataka, Uttar Pradesh and Chhattisgarh.

Table 1- Soybean Area, Production and Share by State 2007-08

State	Area (Lakh Hectares	Production (Lakh Tones)	Production % Share
Madhya Pradesh	48.79	49.81	53
Maharashtra	26.52	32.37	34
Rajasthan	7.64	7.35	8
Other States	5.55	5.2	5
Total	88.50	94.73	100

Source: The Soybean Processors Association of India (SOPA)

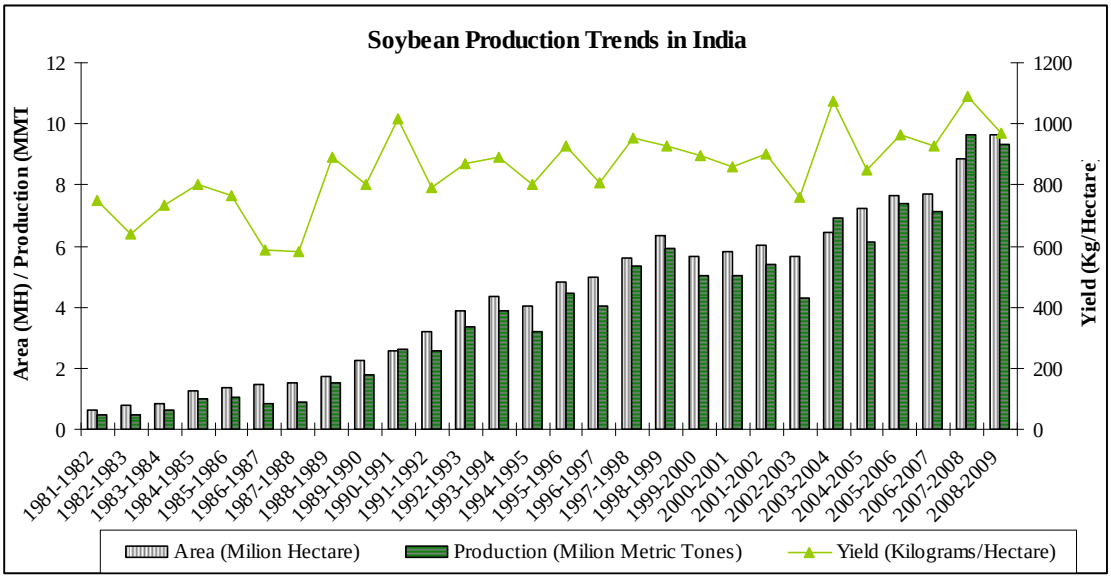

Figure 2- Soybean Production Trends in India (Source: SOPA)

The soybean crop is grown mainly in the states of Madhya Pradesh, Maharashtra and Rajasthan. About 53 per cent of the cropped area under this crop falls in Madhya Pradesh. However, the yield of soybean crop in Madhya Pradesh 2001-02 was as low as 838 kg per hectare whereas it was 1,254 kg and 1,091 kg per hectare in Maharashtra and Rajasthan, respectively. Soybean acreage and production in the country was steadily increasing till the late 1990s and lost its momentum in the past few years. The area under the crop steadily increased from 22.5 lakh hectares in 1989-90 to 60.02 lakh hectares in 2001-02 but thereafter the area fell sharply in 2002-03 due to poor monsoon conditions. Again, the area under the crop increased in successive years after 2002-03 and it is reported up at 88.50 lakh hectares in 2007-08 (Table 1).

For the last twenty eight years, soybean has been witnessing growth in terms of acreage and it now stands at 9.624 million hectare. In 1981-82, the production of soybean seeds was mere 0.466 million metric tones, which increased to 5.4 million metric tones in 2001-02 and which decreased to 4.3 million metric tones in 2002-03. It is only in 2003-04 that production recovered with record of 6.932 million metric tones of soybean seeds; thereafter the production fell to 6.122 in 2004-05. However, production rose in consecutive years after 2004-05 and now it has significantly increased. Similarly, the yield per hectare increased from 750 kg per hectare in 1981-82 to 1018 kg per hectare in 1990-91 and then declined in 792 kg per hectare in 1991-92. The yield rose sharply in 1074 kg per hectare in 2003-04 and the all time record yield of 1090 kg per hectare in 2007-08 (Figure 2).

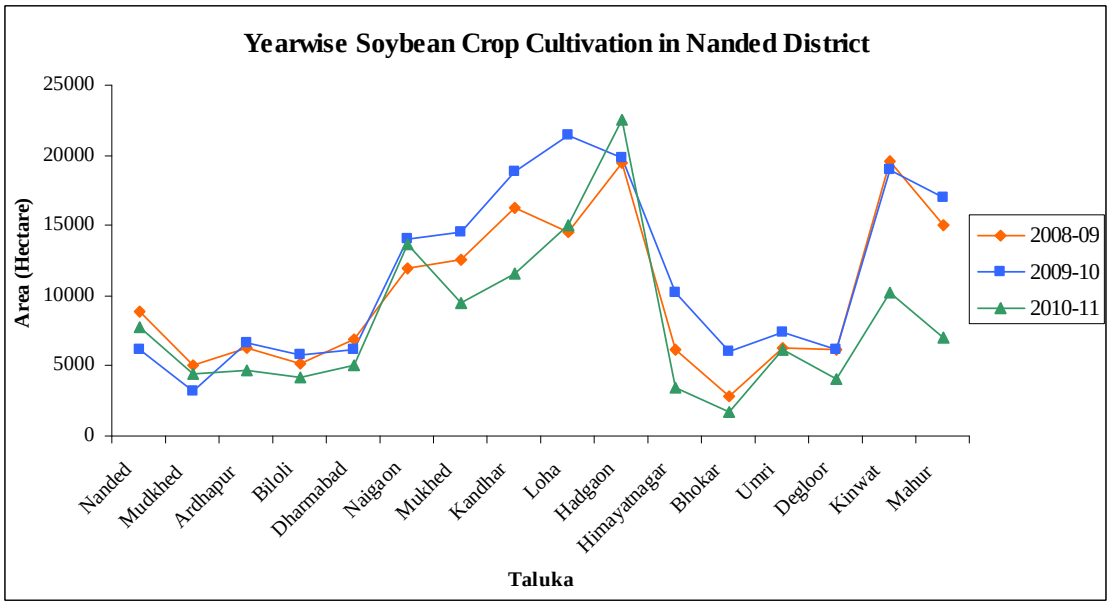

Figure 3- Soybean Crop Cultivation (Area in Hectare) in Nanded District

The soybean crop is grown in all the Talukas of Nanded districts. The area under cultivation is higher in Loha, Hadgaon, Kandhar, Mukhed, Naigaon, Kinwat and Mahur Taluka. The cultivated area of soybean crop in Bhokar 2008-09 was as low as 2800 hectare and as high as 19600 hectare in Kinwat Taluka. In the year 2009-10 cultivated area was low as 3200 hectare in Mudkhed and higher as 21400 hectare in Loha Taluka. In the year 2010-11 the area under cultivated was low as 1700 hectare in Bhokar and higher as 22500 hectare in Hadgaon Taluka (figure 3). The average rainfall (mm) data of Nanded district was given in figure 4. The rainfall pattern was interconnected for the agricultural production.

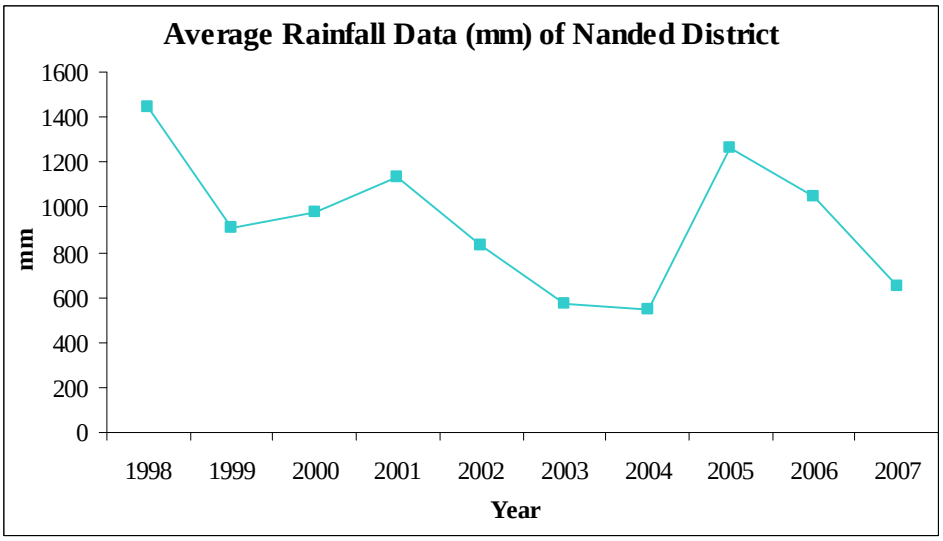

Figure 4- Average Rainfall Data (mm) of Nanded District

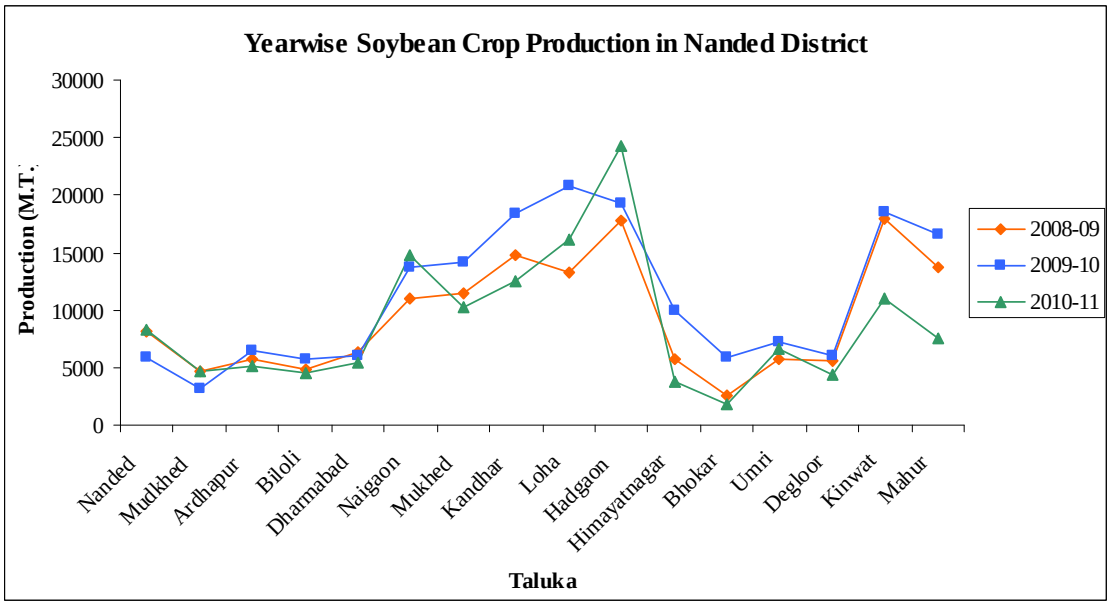

Figure 5- Yearwise Soybean Crop Production (MT) in Nanded District

Table 2- Talukawise Production Percent (%) Share in Nanded District

Sr. No.	Taluka	Production % Share		
		2008-09	2009-10	2010-11
1	Nanded	5.5	3.3	5.9
2	Mudkhed	3.1	1.8	3.4
3	Ardhapur	3.9	3.6	3.6
4	Biloli	3.2	3.2	3.2
5	Dharmabad	4.2	3.4	3.8
6	Naigaon	7.4	7.7	10.5
7	Mukhed	7.7	8	7.3
8	Kandhar	9.9	10.3	8.9
9	Loha	8.9	11.7	11.4
10	Hadgaon	11.9	10.9	17.1
11	Himayatnagar	3.8	5.6	2.7
12	Bhokar	1.7	3.3	1.3
13	Umri	3.9	4.1	4.7
14	Degloor	3.7	3.4	3.1
15	Kinwat	12	10.4	7.8
16	Mahur	9.2	9.3	5.3
Total		**100**	**100**	**100**

The Production of soybean crop in Bhokar 2008-09 was as low as 2562 hectare and as high as 17934 metric tones in Kinwat Taluka. In the year 2009-10 cultivated area was low as 3120 metric tones in Mudkhed and higher as 20865 metric tones in Loha Taluka. In the year 2010-11 the area under cultivated was low as 1830.9 metric tones in Bhokar and higher as 24232 metric tones in Hadgaon Taluka (figure 5). The production percent (%) share in Nanded District was

described in table 2. The Soybean acreage and production in the district was steadily increasing. The area under the crop steadily increased from 163200 hectares in 2008-09 to 182200 hectares in 2009-10 but thereafter the area fell sharply in 2010-11 due to poor monsoon conditions.

Table 3 – Oil Processor Plants in Nanded Districts

Sr. No.	Name of Plant	Capacity	Annual Capacity	Year Wise Capacity Utilization					
				2008-09		2009-10		2010-2011	
		(TPD)	250 Days	Capacity	Utilization	Capacity	Utilization	Capacity	Utilization
1	**Kirti Foods Ltd.** Unit-I Krushnur MIDC Unit- II Krushnur MIDC	300 500	200000	200000	110000	200000	85000	200000	108000
2	**Sidrameshwara Agro Industries** Unit-I Dhakni Nanded Unit-II Dhakni Nanded	300 150	112500	112500	50000	112500	40000	112500	55000
3	**Kohinoor Foods & Fats Ltd.** MIDC Nanded	300	75000	75000	38000	75000	34000	75000	40000
4	**Shrinivasa Cattle Feeds Pvt. Ltd.** MIDC Nanded	300	75000	75000	40000	75000	36000	75000	47000
5	**Sai Smaran Foods Pvt.** MIDC Nanded	300	75000	75000	40000	75000	36000	75000	45000
6	**Kapil Solvex Pvt. Ltd.** Gundegaon, Nanded	300	75000	-	-	75000	15000	75000	51000
7	**Shrinivasa Agro Foods Pvt. Ltd.** Dhakni, Nanded	300	75000	-	-	75000	15000	75000	43000
8	**Shri Laxmi Narshimha Paldewar** Oil Extractions India Pvt. Ltd. MIDC Nanded	300	75000	75000	46000	75000	42000	75000	60000
		Total	**762500**	**612500**	**324000**	**762500**	**303000**	**762500**	**449000**

(Source: Nanded oil Processers Association, MIDC Nanded)

In Nanded district total 8 oil processor plants were worked (Table 3). The soybean oil processor plant capacity and utilization was 612500, 762500 and 762500 metric tones and 324000, 303000 and 449000 metric tones in 2008-09, 2009-10 and 2010-11 respectively. The crop production, Installed capacity and utilized capacity were shown in figure 6.

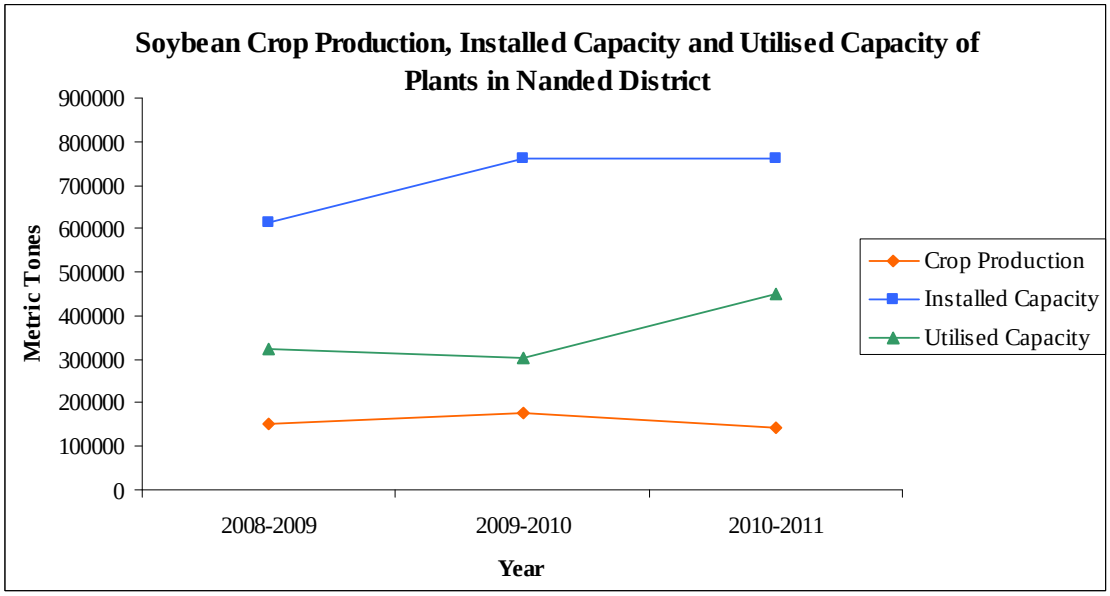

Figure 6- Soybean Crop Production, Installed Capacity and Utilised Capacity of Plants in Nanded District

CONCLUSION

The present study deals with the, Soybean production, its processor unit's capacity and total information about the Nanded District. The given Studies revealed that good seeds and better practices could deliver yield of the order of three tonnes per ha which could place India's total production around 15 million tonnes. Thus, there is ample scope of increasing the production. Non-availability of short duration high yielding, good quality seed on adequate scale are the major constraint in achieving higher productivity. Only limited seed varieties are available and production of quality seed is also limited. Further, low and unbalanced use of chemical fertilizers is another major factor for poor yield of soybean crop. The rainfall pattern is highly dependant on the production and yield of any crops. As, the country is in short supply of edible oil and about 50 per cent of our edible oil consumption is fulfilled by imports of different vegetable oils, there is a dire need to promote the production of oilseeds like soybean.

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