

# ‘Production Dimensions of Sunflower in Gadag District’

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## Abstract:

The discussion in this chapter is focused on the production dimensions of Sunflower in the study area comprising of five talukas of Gadag district. It is expedient to discuss the production dimensions since they have a direct bearing on the marketing of the product relating to volume supply cost and prices. The different aspects covered by the discussion on the production of sunflower include the area covered by the sunflower crops during the five years in the five talukas of the district, quantity of the produce during the corresponding period and the yield per acre which indicates the productivity of the land in relation to the sunflower crop. Other aspects of production dimensions of sunflower relate to the cost of production in terms of the various components viz., tilling and manuring cost, cost of sowing, cost of cleaning of the crop, cost of irrigation, cost of crop cutting, cost of harvesting, cost of inputs like seeds, manure, water and irrigation etc.. In addition to these the other costs relating to infrastructure cost like, transport cost, electricity cost, rentals for harvesting, salary of regular workers etc. are discussed.

The discussion under the production dimensions includes other aspects like investment in land, ownership of vehicles agricultural implements like tractors and irrigation pump sets. Financial involvement in relation to production activities and the production technology influencing production and the employment aspects are the major areas discussed

**Keywords:-** Production, Sunflower, dimensions, study, area, comprising, components, irrigation, inputs, seeds.

## Introduction:-

India is predominantly an agricultural country and a land of villages with 80% of population residing in about six lakh villages, spreading throughout its length and breadth. Thus agriculture forms the backbone of Indian economy, which contributes 32 percent to the national income about 68.8 percent populations depends on agriculture for their livelihood. The agricultural situation in India has undergone a rapid change. The areas under irrigation and cropping intensity have steadily increased the consumption of fertilizers and pesticides investment in agriculture through institutional and other sources has risen. A numbers of policy decision have been taken to give a high priority to agriculture. India has achieved significant progress in agricultural production.

Marketing of agricultural goods in India assumes greater significance as the major portion of the population is engaged in agriculture related activities. The recent developments in the field of agriculture like High Yield Variety Programme (HYVP) besides contributing to green revolution have further increased significance of agricultural marketing. Today, agricultural sector is not only supplying the food requirements, but also contributing to the foreign exchange of the country. Like in the case of marketing of other kinds of goods, marketing of agricultural goods too is a business venture, covering all activities in the flow of goods and services from the producer-sellers to the ultimate buyers. Thus, in the process of agricultural marketing, the farmer-sellers are on the supply side, the ultimate buyers are on the demand side and in between these too, the various intermediaries are functioning. Thus, agricultural marketing is a process which starts with the decision to produce a farm commodity and it involves all aspects of market structure or system, both functional and institutional, through which goods move from producer to consumer'.<sup>1</sup> The development of the country is closely linked with the development of agriculture. The development of agriculture is dependent upon the facilities available for marketing of agricultural produce. 'The marketing of agricultural products is a matter of great interest to the farmer, the consumer and the middleman. To the farmer, it provides the channel of communication between him and the society and gives him continuous information about demand for his products. The consumer views it as a means of supplying his need since marketing helps in raising the

standard of living of the people by satisfying the multitude' of needs and desires of consumers. The middleman depends upon it for his livelihood

### Production History

Sunflower oil is widely used in parts of Russia, Europe, and the Middle East, and U.S. production began with immigrant groups from these regions. With the introduction of High Oil Yielding (HOY) Soviet cultivators in the late 1960s and the development of oilseed crushing capacity in the United States, sunflower production increased to over 2,00,000 acres by 1970. Acreage continued to rise throughout the 1970s, fueled by strong prices, improved varieties (including Argentine and hybrid seed), and ready export markets in Europe and Mexico. Planted acreage peaked at 5.6 million acres in 1979. Through the 1970s, sunflowers were touted as one of the most promising growth crops. However, U.S. sunflower production declined by more than two-thirds in the 1980s as foreign sunflower production expanded and U.S. farmers increased production of alternate oil crops (primarily soybeans).

During the 1990s, sunflower acreage rebounded largely as a result of the Food Agricultural Conservation and Trade Act (FACTA) of 1990 that included sunflower and other minor oilseeds in the Marketing Assistance Loans/Loan Deficiency Payments program. Sunflower seed producers became eligible for Direct Payments and Countercyclical Payments in 2002 and the Average Crop Revenue Election Program (ACREP) in 2008. However, sunflower production has not regained levels seen in the late 1970s, largely because of decreased export prospects.

Cultivated sunflowers are one of the five largest oilseed crops in the world. Sunflower production was 7-9 percent of world oilseed output between marketing years 1999/2000 and 2008/09. Sunflower seed oil, the principal product of sunflower seed processing, accounted for 8-11 percent of world vegetable oil trade between 1999/2000 and 2008/09.

In the year 2008/09 (September-August), Sunflower production in the United States had a farm-gate value of \$669 million and was concentrated in the northern Midwest. About a quarter of sunflower seed is used in birdseed, and another 10-20 percent is sold directly for snacks and baking products. The remaining seed is crushed into oil and meal. Historically, seed was produced for export to Europe, but today, only a small amount is exported; instead, today's sunflower crop is almost entirely consumed domestically.

There has been large regional variation in area, production and productivity changes of oil seeds. States like Haryana, Madhya Pradesh, Rajasthan and west Bengal increased their oil seed production both through area expansion and productivity improvement but states like Maharashtra, Tamil Nadu and Himachal Pradesh increased their oil seeds production mainly through productivity improvement. In some states like Orissa area, production and productivity declined sharply. Productivity of oil seeds rose by 2 percent in last 20 years (1991-2010). The production of oil seeds by 45 percent due to area expansion. Sunflower is one of the few crop species that originated in North America (most originated in the Fertile Crescent, Asia or South Central America). It was probably a "camp follower" of several of the western native America tribes who domesticated the crop (possibly 1000 BC) and then carried it eastward and southward of North American. The first Europeans observed sunflower cultivated in many places from Canada to Mexico.

### Market and price trends of oil seeds and oil

The prices of oil seed in seventies and eighties tended to decline sharply in the market soon after harvest and rise inordinately a few months later in the lean season. The difference seemed to be more than the holding cost of storage, interest and reasonable profit with the result that both the formers and the consumers were the sufferers. Fixing minimum support price for oil seeds and intrusting public agencies like National Co-operative Marketing Federation (NCMF) with effective market intervention is essential to ensure protection of returns encourage adoption of modern crop production technology by the oil seed farmers.

In the initial years of the TMO, the National Dairy Development Board (NDDB) built a large Network of oil seeds co-operatives with storage and processing capabilities. The initial trust given by NDDB in its price support operations was a critical factor for the success of TMO till the mid nineties. However during 1999-2000 and 2000-2001 oil seed groups have indeed suffered heavily when the price of oil seed groups were at a very low level and there was no effective market intervention by NCMF to give price support to oil seeds. Moreover support price policy has its own limitation in the absence of their appropriate yield, promoting factors as well as rationalized EXIM policy. The support price policy and market intervention effectively help promote the growth of oil seeds crops.

### Economics of Sunflower Production and Marketing:

Sunflower is most important oil seeds crops in temperature countries like USSR. Bulgaria, Canada, etc... although sunflower has been grown and been familiar to the world for a long time, its importance as an oil seeds crop has grown during the last 40 years as a result of development programs in the USSR and few other countries, sunflower is originated in south and Mexico.

In India the important oil seed crops grown are ground nut, sunflower, sesamum, soya bean, safflower, mustard, linseed, Niger seed and castor seed. Among these oil seed crops sunflower occupies an important position recently next only to the Groundnut, and it is being called as the “Champion” of the oil seed crops. Sunflower is an important oil seed crop in the world and ranks third next only to soybeans and cotton with an area of 12.81 million hectares producing 27.41 million tones. In India commercial cultivation of sunflower started 1970 with the introduction of Russian varieties modern sunrise, EC-68413, EC-68414 and EC-68415. In India it is cultivated over an area of 3 million hectares with a production of 1.80 million tones and productivity of 656 kg per hectare. The major area under sunflower is concentrated in southern states of AP, Karnataka, Maharashtra, and Tamil Nadu. The crop is also grown in other states like Bihar, Orissa, Rajasthan, UP, and West Bengal, to a limited extent.

The sunflower crop has greater economic importance among the oil seed crops and it was introduced in the year 1972-73 in India, which can be grown throughout the year even in day season with little moisture. Sunflower is a short duration crop of 90 to 120 days. Its advantages are wider adaptability to varying agro climatic conditions, photo period., insensitive nature, high degree of drought tolerance highest oil production per unit area, seed contain high quality edible oil to the extent of 38-48 percent including oleic and linoleum acids, low seed rate high multiplication rate and it has got higher yield potential even up to 2000 kg per hectare. It also contains appreciable quantities of proteins A.D.E and K. The sunflower meal is nutritious and can be used to feed the milk cattle, poultry and pigs. Its oil can be also be used for industrial purpose. It is grown both as Khariff as well as Rabi crop as mentioned earlier.

In India sunflower is traditionally cultivated in Karnataka, Maharashtra, and Andhra Pradesh. In recent years its cultivation has also been taken up in non- traditional states like Haryana, Punjab UP, Gujarat, Tamil Nadu, Orissa, MP, and Rajasthan. Among the important sunflower growing states in the country Karnataka is one where it occupies an area of 9.85 lakh hectare areas with annual production of 3.62 lakh tones and productivity of 336 kg per hectare. Karnataka is one of the states selected by the oil seed technology mission for the development of oil seed crops in the National Oil seed Development Project (NODP) in the country. Out of 180 districts considered for the development of oil seeds under NOPD, ten districts are selected from Karnataka namely, Belgaum, Bellary, Bidar, Bijapur, Chitradurga, Gadag Gadag, Gulbarga, Raichur, and Tumkur.

Objectives of the study:

The present research study has the following objectives.

1. To provide a comprehensive description of economic dimensions of oil seeds in general and sunflower in particular at global, national and regional level.
2. To provide a general and detailed profile of sunflower growing farmers of Gadag district covered by the study.
3. To study and examine the changes in area, production, productivity and cost of production of sunflower in the study area.
4. To identify and analyse the efficiency of the channels of marketing and price spread in the marketing of sunflower in the study area.
5. To highlight the problems confronted by the sunflower growers in production and marketing of sunflower covered by the study.
6. To assess the role of market intermediaries at APMC in the marketing of sunflower in the study area.
7. To record the important findings of research covered by the study.
8. To suggest the policy measures based on the study to increase the efficiency in the marketing of sunflower.

Hypothesis:

The research study has set forth the following hypothesis.

1. Local sales of sunflower are the directed result of small size of output and the financial difficulties of the respondent farmer.
2. Production and marketing costs of sunflower are rising faster than the market price of sunflower.

Scope of the study:

The major area of the present research study relates to the production and marketing dimensions of the cash crop in general and sunflower in particular in the study area. The production dimensions include the analysis of the variation in the production area, volume of production, productivity of the crop. The study has also provided a comprehensive analysis of the cost structure of the produce and the cost component and their relative significance. The analysis of the production dimension also relate in the technological level used by the cultivators in the production of oil seed etc. The research study involves a systematic analysis of the marketing dimensions of the cash crop produce in general and marketing of sunflower in particular in the areas covered by the study. The analysis relate to various marketing process involves viz assembling, storing, grading, packing, transport, market information, the marketing costs and finance, channels of distribution, pricing, etc. the other areas covered under the marketing dimension relate to the role of market intermediaries at the APMC etc.

The analysis of the production and marketing dimension has naturally revealed some the major problem areas of the oil industry in general and sunflower in particular.

Limitations of the study:

The study has been conducted with some limitations. Limitations are restrictive conditions under which the research study is conducted. It is essential for the researcher to reduce the study to workable size and set boundaries by limiting its scope.

Following are the limitation of the study:

1. The study is restricted to one district consisting of five talukas.
2. The main thrust of the study is on sunflower production and marketing only among the different cash crops grown in the area.
3. The data collection is restricted to only five years.
4. The sample of respondent sunflower growing farmers is limited to 200 only in the five talukas.
5. Statistical techniques used area simple and not sophisticated and advanced.

It may however, be recognized that the findings of the study need not be generalized beyond the boundaries of the area under investigation and applicable to such other areas having similar agro-climatic and socio-economic conditions.

Need for the study and statement of the problem:

The oil seeds industry in general and sunflower in particular has been facing many problems and challenges. The inadequacy of cropped area low productivity, lack of adequate supply of quality seeds, absence of integrated nutrient supply management, inefficient crop management practice, absence of suitable soil and moisture, conservation etc. the cash crop marketing mainly are in the hands of middlemen like money lenders and traders, village merchants, wholesalers and private oil miller in general and sunflower marketing in particulars. Hence the producer is only a price receiver. Therefore, many a time's oil seed producers have to resort to distress sale due to uncertain situations in the marketing of oil seeds. In the process of marketing the producers has to incur various marketing costs.

The problem areas of market of cash crops and sunflower relate to absence of scientific assembling and storage, lack of adequate transport and grading facilities, insufficient market information. The role of market intermediaries and the APMC have been found unsatisfactory. High marketing cost and inadequate finance resulting

in distress sales in the village local at low price are the other set of marketing problems of sunflower farmers and sellers.

In this context there is a need for the study on the cost and margins in the marketing of this new oil seeds crop which was grown and marketed extensively in recent years. The findings of this study will be useful to the producers as well as policy markets to take suitable measures to improve the marketing systems of sunflower. Hence the present study is selected as stated below.

“MARKETING DIMENSIONS OF CASH CROPS – WITH SPECIAL REFERENCE TO SUNFLOWER IN GADAG DISTRICT (KARNATAKA)”

#### METHODOLOGY:

##### Choice of the Area

The study covers the district of Gadag consisting of five talukas viz., Gadag, Mundaragi, Shiratti, Ron and Naragund. The area has dry climate and vast stretch of black and red soil suitable for growing oil seeds. Sunflower is grown extensively in the area and hence choice of the district for the research study.

##### Choice of Respondent Farmers

A total number of 200 respondent farmers growing sunflower and other cash crops have been chosen for an intensive study of the marketing dimension of cash crops with special reference to sunflower. Taluka wise the study covers 40 farmers in each taluka for personal interview for obtaining the data. The 40 farmers include 10 large farmers, 20 medium farmers and 10 marginal farmers to give proper representation to the three groups of farmers in each taluka. The actual selection of the farmers and their location is done on a random sampling basis by taking into account the area under cash crops in general and sunflower in particular.

##### Type of data collection:

The study is based on both primary and secondary data. Primary data is collected from the 200 respondent farmers growing oil seeds in the Gadag district. The data is collected as per structured questionnaire on production and market aspects

The secondary data is collected from the published sources from government and other relevant institutions such as APMCs, Department of agriculture, Department of statistics etc.

##### Method of data collection:

The primary data has been collected through personal interviews as per the pre-tested and structured questionnaire administered to the 200 farmers. The questionnaire for the farmer-respondents consisted of two sections. The first relating to questions of different aspects of production of oil seeds, investment, employment and income of the farmers. The second part related to various aspects of marketing of cash crops and sunflower assembling, grading, packing, storage, weighing, channels of distribution, pricing, marketing costs, finance and various marketing problems.

##### Data analysis and interpretation:

The data collected from the primary and secondary sources are presented in suitable planned statistical tables and wherever possible graphical representations are made through graphs and charts. The data is interpreted through statistical tools by using simple techniques like percentages, ratios and averages. Appropriate conclusions and inference are derived from the data collected.

##### Organization of the study:

The research study has presented in the following six chapters.

1. Introduction and Research design
2. Economic dimensions of sunflower-Global, National and Regional perspectives.

3. Profile of sunflower – growing Farmers in Gadag district.
4. Production dimensions of sunflower in Gadag district.
5. Marketing dimensions of sunflower in Gadag district
6. Summary of findings, conclusions and suggestions.

#### Review of literature

A review of related literature has been made here to gain a proper perception and clarity about the status of production and marketing of oil seeds in general and production and marketing of sunflower in particular in the historical and contemporary context. The review of research studies in the related held has been useful in understanding appropriate tools and techniques that can be used in the analysis appreciating the various evidences generated and policy prescriptions suggested there in.

In the present decade among the oil seeds crop sunflower crop sort started occupying larger area due to its short duration and drought tolerance even in the marginal lands of dry tracts, particularly in Karnataka up to now not much work has been done on the production and marketing of sunflower, in order to maintain the tempo of production of sunflower in the long run few studies conducted on production and marketing of agricultural commodities in general and particularly the oil seeds have been received under the following section.,

1. Growth rates.
2. Cost of production
3. Marketing cost and price spread
4. Seasonal variations in arrivals and price
5. Market integration.

#### Cost of Tilling and Manuring (Labour Cost)

The cost ranges mentioned by the respondent farmers are Rs. 800 or less, Rs.800 to Rs.2000 and Rs.2000 and above per acre.

The cost of tilling and manuring an acre of land for sunflower crop ranged between Rs.800 in case of 02 respondents and Rs.2000 and more in case of 28 farmers in Gadag taluka. While in Mundaragi taluka the cost ranged between Rs.2000 and more than Rs.2000 according to 20 farmers each. The tilling and manuring (labour cost) cost for sunflower crop area in Shirahatti taluka ranged from Rs.800 (4 respondents), Rs.800-2000 (20 respondents) and Rs.2000 and more (16 respondents), while the said cost ranged between Rs.800-2000 36 respondents in Ron and 08 respondents in Naragund taluka, Rs.2000 and more 4 respondents in Ron and 32 respondents in Naragund taluka.

The cost of tilling and manuring of one acre for groundnut crop was mentioned to be Rs.800 or less by the respondents in all the five talukas.

The above details are mentioned in the following table.

**Table**  
**Cost of Tilling and Manuring of One Acre of Land**

Taluka	Crops	Rs.800 below	Pc	Rs.800 to Rs.2000	Pc	Rs.2000 above	Pc	Total
Gadag	Sunflower	02	9.09	10	100	28	100	40
	Groundnut	20	90.91	-	-	-	-	20

Mundaragi	Sunflower	-	-	20	100	20	100	40
	Groundnut	08	66.67	-	-	-	-	08
Shirahatti	Sunflower	04	33.33	20	100	16	100	40
	Groundnut	20	100	-	-	-	-	20
Ron	Sunflower	-	-	36	100	04	100	40
	Groundnut	04	100	-	-	-	-	04
Naragund	Sunflower	-	-	8	100	32	100	40
	Groundnut	06	100	-	-	-	-	06
Total		64		94		100		258

Source: Field Survey

### Cost of Sowing

Maximum numbers of respondent farmers in the five talukas of the district have mentioned that the labour cost of sowing of sunflower per acre varied between Rs.400 and Rs.800. However 04 farmers each in Gadag and Shirahatti taluka mentioned that per acre labour cost sowing of sunflower was Rs.400 or less. It is significant to note that 4 farmers each in Gadag, Mundaragi and Ron mentioned that the labour cost of sowing sunflower was Rs.800 and above and 06 farmers in Shirahatti taluka mentioned similar view.

Cost of sowing groundnut was Rs.400 or less per acre according to 6 farmers in Mundaragi, 04 in Shirahatti and 6 farmers in Naragund taluka. The cost varied between Rs.400 to Rs.800 according to 20 farmers in Gadag, 02 farmers in Mundaragi, 16 farmers in Shirahatti and 02 farmers in Ron taluka. The following table provides the details.

**Table**  
**Cost of Sunflower and Groundnut per Acre**

Taluka	Crops	Rs.200 below	Pc	Rs.200 to Rs.400	Pc	Rs.400 above	Pc	Total
Gadag	Sunflower	04	100	30	60	06	100	40
	Ground nut	-	-	20	40	-	-	20
Mundaragi	Sunflower	-	-	34	94.44	06	100	40
	Ground nut	06	100	02	5.56	-	-	08
Shirahatti	Sunflower	04	50	32	66.67	4	100	40
	Ground nut	04	50	16	33.33	-	-	20
Ron	Sunflower	-	-	34	94.44	06	100	40
	Ground nut	02	100	02	5.56	-	-	04
Naragund	Sunflower	-	-	40	100	-	-	40
	Ground nut	06	100	-	-	-	-	03

Total		26		210		22		258
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Source: Field Survey

### Cost of Cleaning the Crop area

The labour cost of cleaning the standing crop of sunflower per acre was Rs.300-600 according to 6 farmers in Gadag taluka, 14 farmers in Shirahatti taluka and 6 farmers in Ron taluka. However 34 farmers in Gadag taluka, 40 farmers in Mundaragi taluka, 26 farmers in Shirahatti taluka, 34 farmers in Ron taluka and 40 farmers in Naragund taluka asserted that the labour cost of cleaning the sunflower crop per acre was Rs.600 and above.

The cost of cleaning the groundnut crop was Rs.300 or below according to 02 farmers in Shirahatti taluka. The said cost was Rs.300 – 600 according to 20 farmers in Gadag taluka, 8 farmers in Mundaragi, 18 farmers in Shirahatti, 02 farmers in Ron and 6 farmers in Naragund taluka. However one farmer in Ron taluka put the cost of cleaning one acre of groundnut crop at Rs.600 and above. The above details are provided in the following table.

**Table**  
**Cost of Cleaning the Crop**

Taluka	Crops	Rs.300 below	Pc	Rs.300 to Rs.600	Pc	Rs.600 above	Pc	Total
Gadag	Sunflower	-	-	06	23.08	34	100	40
	Ground nut	-	-	20	76.92	-	-	20
Mundaragi	Sunflower	-	-	-	-	40	100	40
	Ground nut	-	-	08	36.36	-	-	08
Shirahatti	Sunflower	-	-	14	63.64	26	100	40
	Ground nut	02	100	18	75	-	-	20
Ron	Sunflower	-	-	06	25	34	94.44	40
	Ground nut	-	-	02	100	02	5.56	04
Naragund	Sunflower	-	-	-	-	40	100	40
	Ground nut	-	-	06	100	-	-	06
Total		02		80		176		258

Source: Field Survey

### Cost of Irrigation

Cost of irrigation (labour cost) of sunflower varied from Rs.1000 to Rs.2000 according to maximum number of 24 farmers in Mundaragi, 10 farmers in Shirahatti, 4 farmers in Ron and 26 farmers in Naragund talukas. 02 respondent farmers each in Mundaragi and Shirahatti taluka affirmed that the labour cost of irrigating of one acre of groundnut crop was Rs.1000 or less. The following table provides the details.



**Table**  
**Labour Cost of Irrigating One acre of Land**

Taluka	Crops	Rs.1000 below	Pc	Rs.1000 to Rs.2000	Pc	Rs.2000 above	Pc	Total
Gadag	Sunflower	-	-	-	-	-	-	-
	Groundnut	-	-	-	-	-	-	-
Mundaragi	Sunflower	-	-	24	92.30	-	-	24
	Groundnut	02	100	02	7.70	-	-	04
Shirahatti	Sunflower	-	-	10	71.42	-	-	10
	Groundnut	-	-	04	28.58	-	-	04
Ron	Sunflower	02	100	04	66.67	-	-	06
	Groundnut	-	-	02	33.33	-	-	02
Naragund	Sunflower	-	-	26	81.25	-	-	26
	Groundnut	-	-	06	18.75	-	-	06
Total		04		78		-		82

Source: Field Survey

### Cost of Crop Cutting

Labour cost of cutting the harvestable crop of sunflower was estimated at Rs.400 or less per acre by 02 respondent farmers each in Gadag and Shirahatti taluka. The crop cutting cost of sunflower was mentioned at Rs.400-800 per acre by 30 farmers in Gadag, 34 farmers in Mundaragi, 36 farmers in Shirahatti, 36 farmers in Ron and 38 farmers in Naragund. A higher cost of crop cutting of Rs.800 and above was affirmed by 8 farmers in Gadag, 3 farmers in Mundaragi, 2 farmers in Shirahatti, 4 farmers in Ron and 02 farmers in Naragund taluka.

Cost of crop cutting of groundnut per acre at Rs.400 or less was affirmed by 20 farmers in Gadag, 2 farmers in Mundaragi, 14 farmers in Shirahatti, and 04 farmers each in Ron and Naragund taluka. The cost was placed at Rs.400-800 per acre by 6 farmers in Mundaragi, 6 farmers in Shirahatti at 2 farmers in Naragund taluka. The following table provides the details.

Harvesting involves labour cost. The cost of harvesting sunflower produce per acre was Rs.200 or below according to 28 farmers of Shirahatti taluka and 14 farmers of Naragund taluka. The cost of harvesting was higher varying between Rs.200 to Rs.400 in case of 30 farmers in Gadag, 38 farmers in Mundaragi, 10 in Shirahatti, 40 in Ron and 26 in Naragund taluka cultivating sunflower. Farmers who mentioned the harvesting cost of sunflower of Rs.400 and above were 10 in Gadag and 02 each in Mundaragi and Shirahatti. The harvesting cost of groundnut was Rs.200 to 400 as mentioned by 20 farmers in Gadag, 8 in Mundaragi, 20 in Shirahatti, 4 in Ron and 6 in Naragund taluka. The following table provides the details.

### Cost of inputs

The cost of inputs includes the cost of seeds, manure, water and electricity etc. The analysis provides an insight into the cost of inputs.

### Cost of Seeds

Cost of seeds per acre of sunflower crop was mentioned at Rs.500 or less by 4 respondent farmers in Shirahatti taluka. However the cost was mentioned at higher level of Rs.500 to Rs.1000 by 40 farmers in Gadag, 28

farmers in Mundaragi, 36 farmers each in Shirahatti and Ron and 38 farmers in Naragund taluka. A smaller number of 12 farmers in Mundaragi, 4 farmers in Ron and 2 farmers in Naragund had mentioned the cost of sunflower seeds per acre at Rs.1000 and more. Cost of groundnut seeds per acre was mentioned at Rs.500 by 20 farmers in Gadag, 8 farmers in Mundaragi, 20 farmers in Shirahatti, 4 farmers in Ron and 6 farmers in Naragund. The following table provides the details.

### Cost of Manure

The cost of manure per acre of sunflower was mentioned at Rs.600 or less by respondent farmers in Gadag taluka, 8 farmers in Mundaragi taluka, 30 farmers in Shirahatti taluka and 8 farmers in Naragund taluka. Higher cost of manure per acre at Rs.300-600 was mentioned by 8 farmers in Gadag taluka, 32 farmers in Mundaragi taluka, 10 farmers in Shirahatti taluka, 40 farmers in Ron taluka and 32 farmers in Naragund taluka.

The cost of manure for one acre of groundnut area was mentioned at Rs.600 or less by 16 farmers in Gadag, 8 farmers in Mundaragi, 20 farmers in Shirahatti, 2 farmers in Ron and 6 farmers in Naragund taluka. 02 farmers in Ron taluka mentioned the cost of manure of one acre of land at Rs.600-1200. The following table provides the details.

**Table**  
**Cost of Manure**

Taluka	Crops	Rs.600 below	Pc	Rs.600 to Rs.1200	Pc	Rs.1200 above	Pc	Total
Gadag	Sunflower	26	61.90	08	100	-	-	34
	Groundnut	16	38.10	-	-	-	-	16
Mundaragi	Sunflower	08	50	32	100	-	-	40
	Groundnut	08	50	-	-	-	-	08
Shirahatti	Sunflower	30	60	10	100	-	-	40
	Groundnut	20	40	-	-	-	-	20
Ron	Sunflower	-	-	40	95.24	-	-	40
	Groundnut	02	100	02	4.76	-	-	04
Naragund	Sunflower	08	57.14	32	100	-	-	40
	Groundnut	06	42.86	-	-	-	-	06
Total		104		124		-		248

Source: Field Survey

### Cost of Electricity for Irrigation

The cost of electricity for irrigating an acre of land of sunflower was mentioned at Rs.600 and above according to 24 respondent farmers each in Mundaragi and Naragund talukas and 04 farmers each in Shirahatti and Ron talukas. An identical cost of electricity for irrigation of one acre of groundnut was mentioned by 4 farmers each in Mundaragi and Shirahatti, 02 farmers in Ron and 06 farmers in Naragund talukas. The following table provides the details.

**Table**  
**Cost of Electricity for Irrigation**

Taluka	Crops	Rs.300 below	Pc	Rs.300 to Rs.600	Pc	Rs.600 above	Pc	Total
Gadag	Sunflower	-	-	-	-	-	-	-
	Groundnut	-	-	-	-	-	-	-
Mundaragi	Sunflower	-	-	-	-	24	85.71	24
	Groundnut	-	-	-	-	04	14.29	04
Shirahatti	Sunflower	-	-	-	-	04	50	04
	Groundnut	-	-	-	-	04	50	04
Ron	Sunflower	-	-	-	-	04	66.67	04
	Groundnut	-	-	-	-	02	33.33	02
Naragund	Sunflower	-	-	-	-	24	80	24
	Groundnut	-	-	-	-	06	20	06
Total		-	-	-	-	72		72

Source: Field Survey

### Overhead Cost

The cost of rentals, electricity for farm house rentals of harvesting machines, salary of regular workers and other regular overhead costs are ascertained from the respondent farmers and the same are analysed and presented here.

### Cost of Rentals for Hired Vehicles

Cost of rentals for hired vehicles for sunflower has been mentioned at Rs.500 or less by 4 farmers each in Mundaragi and Naragund taluka. However 10 farmers in Gadag, 4 farmers in Mundaragi and 4 farmers in Naragund talukas have mentioned the cost of hired vehicles at Rs.500 to Rs.1000. 2 farmers in Naragund has mentioned that the cost of rental for hired vehicles for groundnut farming has been Rs.500 to Rs.1000. The following table provides the details.

**Table**  
**Cost of Rentals of Hired Vehicles**

Taluka	Crops	Rs.500 below	Pc	Rs.500 to Rs.1000	Pc	Rs.1000 above	Pc	Total
Gadag	Sunflower	-	-	10	100	-	-	10
	Groundnut	-	-	-	-	-	-	-
Mundaragi	Sunflower	04	-	04	100	-	-	08
	Groundnut	-	-	-	-	-	-	-
Shirahatti	Sunflower	-	-	-	-	-	-	-

	Groundnut	-	-	-	-	-	-	-
Ron	Sunflower	-	-	-	-	-	-	-
	Groundnut	-	-	-	-	-	-	-
Naragund	Sunflower	-	-	04	66.67	-	-	04
	Groundnut	-	-	02	33.33	-	-	02
Total		04		20		-		24

Source: Field Survey

### Cost of Rental for Harvesting Machines

Harvesting machines are used by farmers and rental cost is incurred every season. The rental cost of harvesting sunflower was Rs.200 or less as mentioned by 6 farmers each in Gadag and Shirahatti. However the cost varied between Rs.200 to Rs.400 for 34 farmers each in Gadag and Shirahatti talukas while the same cost was mentioned by 40 farmers in Mundaragi, Ron and Naragund talukas.

The cost of rentals for harvesting groundnut was Rs.200 or less in case of 2 farmers in Ron while it was Rs.200 to Rs.400 in case of 20 farmers in Gadag, 6 farmers in Mundaragi, 14 farmers in Shirahatti, 2 farmers in Ron and 4 farmers in Naragund taluka. The following table provides the details.

**Table**  
**Cost of Rentals for Harvesting**

Taluka	Crops	Rs.200 below	Pc	Rs.200 to Rs.400	Pc	Rs.400 above	Pc	Total
Gadag	Sunflower	06	100	34	62.96	-	-	40
	Groundnut	-	-	20	37.04	-	-	20
Mundaragi	Sunflower	-	-	40	86.96	-	-	40
	Groundnut	-	-	06	13.04	-	-	06
Shirahatti	Sunflower	06	100	34	70.83	-	-	40
	Groundnut	-	-	14	29.17	-	-	14
Ron	Sunflower	-	-	40	95.24	-	-	40
	Groundnut	02	100	02	4.76	-	-	04
Naragund	Sunflower	-	-	40	90.91	-	-	40
	Groundnut	-	-	04	9.09	-	-	04
Total		14		234		-		248

Source: Field Survey

### Cost of Electricity Used in Farmhouse

Cost of electricity used by the respondent farmers has been mentioned at Rs.400 and above. This has been mentioned by 02 respondent farmers growing sunflower in Gadag taluka, 4 farmers in Ron taluka, and 12 farmers in Naragund taluka. Further 4 respondent farmers growing groundnut too mentioned the same level of cost relating to use of electricity in their farmhouses. The following table provides the details.

**Table**  
**Cost of Using Electricity in Farmhouses**

Taluka	Crops	Rs.200 below	Pc	Rs.200 to Rs.400	Pc	Rs.400 above	Pc	Total
Gadag	Sunflower	-	-	-	-	02	100	02
	Groundnut	-	-	-	-	-	-	-
Mundaragi	Sunflower	-	-	-	-	-	-	-
	Groundnut	-	-	-	-	-	-	-
Shirahatti	Sunflower	-	-	-	-	-	-	-
	Groundnut	-	-	-	-	-	-	-
Ron	Sunflower	-	-	-	-	04	100	04
	Groundnut	-	-	-	-	-	-	-
Naragund	Sunflower	-	-	-	-	12	75	12
	Groundnut	-	-	-	-	04	25	04
Total		-	-	-	-	22		22

Source: Field Survey

#### Findings and Conclusions

1.1 The oil seeds scenario has undergone a transformation in the country due to availability of improved oilseeds production technology, expansion in cultivated area, price support policy and institutional support.

1.2 There has been a large regional variation in area, production and productivity changes of oil seeds. Productivity of oil seeds rose by 2% in the last 15 years. The production of oil seeds by 45% between 1986 and 2002 was mainly due to area expansion.

1.3 The demand for edible oils is expected to rise by more than double from the current level in the next 12 years. An average Indian's yearly edible oil requirement is stated to rise from 9.81kg in 1999-2000 to 16kg by 2015. The per capita edible oil demand will go up to 20.60kg that is twice the current level by 2014-15 in per capita income grows by 6%.

The measures needed to meet the expanding demand for oil include enhancing seed production, productivity improvement through better technology, and value addition to oil seeds, efficient processing of oil seeds and oil, removing domestic marketing constraints etc.

1.4 The price of oil seeds in 70s and 80s tended to decline sharply in the market soon after harvest and rise inordinately a few months later in the lean season. The difference was more than the holding cost of storage, interest and Suggestions

1. The productivity level of the sunflower is low in the areas cultivated by the respondent owners. It is obvious that one of the main reasons for the low productivity in sunflower is the use of poor quality seed for sowing which often results in low plant population leading to lack of response to improved management practices. This calls for the use of quality seed which is the foundation of efficient and productive agriculture. High quality seed is the most remunerative input in successful crop production and also better utilization of inputs.

2. The seed productivity can be enhanced through the following measures.

- i. Bringing more oilseeds area under protective irrigation
- ii. Integrated nutrient supply and management

- iii. Efficient crop management practices starting from adoption of proper crop rotation
  - iv. Suitable soil and moisture conservation practices
  - v. Timely planting, timely weed management and need based crop protection.
3. It is found that the seed rate is very high (100-120 kg/ha) with low yields (8-10 kg/ha), the seed multiplication ratio is very low (1:8) compared to other crops. This is serious constraint in sunflower for faster coverage of improved seeds of sunflower. There is therefore, need to make use of all the viable seeds in sunflower to minimize the cost of the seed and to cover more area under high yield.
4. It is necessary to ensure timely supply of inputs at economical cost and to provide for plant protection measures and take steps for aggressive extension. d reasonable profit Technology Mission on Oilseeds helped.

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