Vol 3 Issue 4 Oct 2013

Impact Factor : 1.2018 (GISI)

ISSN No :2231-5063

Monthly Multidisciplinary Research Journal

GoldenResearch Thoughts

IMPACT FACTOR : 0.2105

Welcome to ISRJ

RNI MAHMUL/2011/38595 **ISSN No.2230-7850**

Indian Streams Research Journal is a multidisciplinary research journal, published monthly in English, Hindi & Marathi Language. All research papers submitted to the journal will be double - blind peer reviewed referred by members of the editorial Board readers will include investigator in universities, research institutes government and industry with research interest in the general subjects.

International Advisory Board

Editorial Board

Address:-Ashok Yakkaldevi 258/34, Raviwar Peth, Solapur - 413 005 Maharashtra, India
Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.isrj.net

Golden Research Thoughts
Volume-3, Issue-4, Oct-2013
ISSN 2231-5063

Available online at www.aygrt.isrj.net

FEATURES OF SUGARCANE ECONOMICS OFTHE MALSHIRAS TAHSILIN SOLAPUR DISTRICT.

B. R. Phule And B. T. Nikam

Head and Associate Professor, Sangloa Mahavidyalaya, Sangola
Head and Assistant Professor, Vijaysinh Mohite-Patil Mahavidyalaya, Natepute

Abstract: Economics of sugarcane cultivation is major concern for the sugarcane cultivator as well as sugar factories. Present research article highlighted cultivation cost and income form sugarcane cultivation of Malshiras tahsil. The major aim of this research article is to find the sugarcane cultivation cost and income of the different zones in the Malshiras tahsil. The data for calculating the cultivation cost is collected by survey through personal interviews and field visits within the Malshiras tahsil. It is interesting to find the, cultivation cost of sugarcane is high in the south zone vis-à-vis income and profit is also higher in this zone. The reasons behind this are quality of soil, adequate facilities of irrigation and adaptation of modern agriculture tools and techniques. However it is also suggested that, north zone also have potential for increasing the sugarcane production after development better irrigation facilities as well as training to the sugarcane cultivator.

Key words:sugarcane, economics, cultivation cost, production cost.

INTRODUCTION :

Sugarcane is the basic raw material for sugar industry. From this point of view sugarcane cultivation in the Malshiras tahsil is assessed. The chapter is divided into three parts the first part deals with the requirements of sugarcane cultivation in the region.

Sugar is known to Hindu culture since the pre-mythological period. Reference of 'Sarkara' and 'Ikshudand' in the ancient literature supports this. In the mythological stories it is found that the sugarcane was created by famous Hindu hermit "Vishwamitra" to serve as heavenly food for the temporary paradise for the sake of king 'Trishanku.' Botanically, Sugarcane is mainly grouped into two species saccharam barberi and Saccharam Sinense. The thick class of canes is classified under "Saccharam officinarum".

Zone wsie output of sugarcane yield per hectare and the net profit of the sugarcane are calculated. The zone wise study and its comparison are done and future prospects for the sugarcane cultivation in context of sugar industry are discussed. The projection of sugarcane cultivation and the zone wise variation may provide a good base for assessment of present spatial distribution of sugar industry and future planning.

The prosperity of the region depends upon the economy of the region. The available resources, its potentials and utility are the major determinants of the prosperity of the region. Agriculture is one of the dominant resources of the region. In the study region the physio-climatic conditions are suitable. The physical base is of agriculture, soil, climate and water are significant in the study region on which study region is divided into three zones viz. south, central and north zones. The study of sugarcane cultivation has made according to the zones.

The evaluation of sugarcane and of its cost as well as income per hectare has been done as natural zone. The minute details of cost of cultivation i.e. human labour, manures, fertilizers, ploughing, planning the land, ridges and furrows, Sugarcane seeds, breaking of cane, irrigation charges, land revenue and education tax, other expenditure etc. are considered, as the cost of cultivation. All those are groups in major eight groups. These are human labour, manures and fertilizers, bullock and machinery charges, irrigation charges, land, sugarcane seeds and other expenditure. The expenditure made on these items will be different in each region because agro climatic conditions are different in each region. Therefore, requirements of the sugarcane vary from zone to zone. Here attempt is made to analyse the sugarcane economics of Malshiras tahsil.

2 STUDY UNIVERSE:

Malshiras tahsil is one of the eleven tahsils in the Solapur districts situated on the western part of the district, it is exteneded between 170 36' to180 1' North latitudes and 740 42' East to 750 13' East longitude. It is bounded on the north by Poona district, on the west by Satara district, on the south by Sangli district, Sangola tahsil and on the east by Madha and Pandharpur tahsil of Solapur distrct. Malshiras tahsil as a whole is monotonously underlain by Deccan trap basaltic lava flows, which in turn covered by thin mantle of soil. These lava flows on account of weathering give rise to undulating topography. The climate of the region is agreeable and free form extremes of hot and cold, except hot months of March, April and May. The monsoon rain covers

the region from mid June to the end of September. There are two peaks of rainfall in the region. The first peak is in June (206.37 mm) whereas second is in Septemper (280.93 mm). The rainfall throughout the region is scanty and spread unevenly over the region. Study universe is divided in the various zones which are mentioned below.

A) South Zone :- This zone is covered by mountainous shallow soils which has less fertile and accounted the limited production of crop. In this zone the canal and ground water are the major irrigation sources.

B) Central Zone :- This zone has medium deep and mixed type soils , organic and inorganic nutrients are fairly limited. The topography largely covers the foothill and plains. Canal networks are largely spread in this zone.

C) North Zone :- This zone consists of medium black and deep black soil and have good organic and inorganic minerals in the soil. The plain topography is key character of this area. Along with canal the Nira and Bhima rivers are supplying ample of water to this zone.

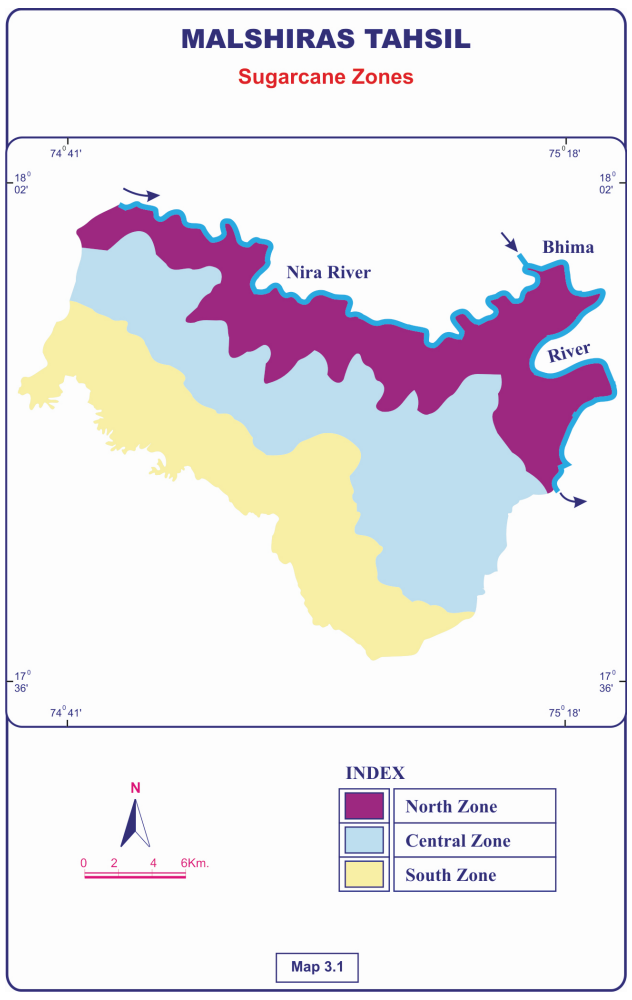

Fig. No.1 Study area Malshiras tahsil.

3 OBJECTIVES:

The specific objectives of this study are as follows.

1) To find out cost of sugarcane cultivation in the Malshiras tahsil.

2) To analyse output of Sugarcane in the Malshiras tahsil.

3) To evaluate income form sugarcane cultivation in the Malshiras tahsil.

4 DATA COLLECTION AND METHODOLOGY :

The data in context with sugarcane cultivation trends in the Malshiras are collected from the field visit as well as secondary resources.

1) Primary data collection: The information regarding the sugarcane cultivation in the Malshiras tahsil are collected from the repeated visits to the different parts of the Malshiras tahsil. During field visits reseacher meet with various farmers and collect notes and information of sugarcane cultivation. Field visits were performed during the Novermber 2012 to June 2013.

2) Secondary data collection: Information regarding the sugarcane cultivation in the Malshiras tahsil is collected from the unpublished and published records, reports and books by the Tahsil Agriculture Officer and annual magazines of all sugar industires in Malshiras tahsil.

5. RESULTS AND DISCUSSION

I) Cost of Sugarcane Cultivation

Table No. 1
Cost of sugarcane cultivation in different zone (per hector) in Malshiras Tahsil

Sr. No.	Particular	South Zone		Central Zone		North Zone	
		Cost	Percentage	Cost	Percentage	Cost	Percentage
1.	Human Labour	12500	12.55	12500	12.11	12500	13.36
2.	Manures and Fertilizers	4600 30000	34.75	4600 28000	33.69	4600 27500	34.31
3.	Bullock and Machinery Charges	8600	8.64	8200	8.47	8000	8.55
4.	Irrigation (Labour Charges)	14200	14.26	13500	13.95	10000	10.69
5.	Land Rental Value	17500	17.58	18000	18.60	19200	20.52
6.	Sugarcane Seeds	8250	8.29	8250	8.52	8250	8.82
7.	Other Expenditure	3900	3.92	3700	3.82	3500	3.74
	Total Expenditure	99550	100	96750	100	93550	100

Source: Field survey, 2011-12.

A) Human Labour:- In the conventional system for cultivation of sugarcane the labour plays an important role. However in the mechanical system the labour cost is tremendously saved. For cultivation of sugarcane in an acer (0.40 hectare) of land about 1170 man hours and 130 bullock pair hours are required (NISR, 2012) which is laborious hence it is not only drudgery (hard work) but also increase cost of production. In the present attempt the per hectare human labour is calculated in term of man days, converted into rupees. The zone wise expenditure of labour work is calculated in the study. In the central zone and north zone the labour cost in rupees are same however there TVC is 12.11

percent and 13.36 percent respectively for 153 days. Where as in the south zone the labour cost is more than above respective zones and their total contribution to the cost is also high i.e. 12.55percent. The physiographic factors like topology, terrain and soil are additional contributing to raise the cost of this region.

The labour charge per man per day for 8 hours is 82 rupees. Therefore labour charges per hectare are Rs.12500. It is found that, more human labour is require in the south and central zone because of inadequate technological advancement. The irrigation facilities are also outscoured which further cause to increase the cost for the watering and applying of manures and fertilizers to sugarcane. To apply the human resources high capitals required which a major constraint is also for acquired the labour for the sugarcane crop. The human labour is concentrated in the north zone. Where as in the south and central zones there are poor irrigation facilities, which limit the generation if the employment in the sugarcane cultivation. Rapid technological advancement results mechanization in farm which further reduces cost of human labour. It is interesting to see the levels of mechanisation in the zones. In the north zone from planting to harvesting of the sugarcane machines are more commonly used.

B) Manures and Fertilizers: -The fertilizer contribute maximum to the increase in the yield. Therefore, additional supply of these nutrients and fertilizers are needed.It is commonly found that, sugarcane cultivators have been using various fertilizers. In the south zone more fertilizers are required, total cost of which is about Rs. 34600 (34.75percent),in a north zone the cost of fertilizers is Rs. 32100 (34.31percent) while in the central zone cost of fertilizer is Rs.32,600(34.75 percent). In these zones the cost of manure is Rs. 4600/- which is constant. The south zone has a shortage of water, poor soil fertility and hilly slopes put limits on productivity. Therefore, sugarcane cultivators in this zone are applying more chemical fertilizers for better yield. In contract to this the sugarcane cultivators of north zone are using less chemical fertilizers because of fertile soil. It is observed that, for ratoon crop the requirements of manure and chemical fertilizers are more. The doses of fertilizers are necessary to increase more yield from same field. The nutrients are generally disposed during the first plantation crop of sugarcane hence to recoup it additional supply of manures and fertilizers are inevitable.

C)Bullocks and Machinery :- In the modern era due to heavy mechanization the labour work in the agriculture has become very easy. However bullock and man labour practices are applied in the Indian agriculture. Today the modern machines like tractors, electric pumps, harvester, spraying pumps and mechanical sugarcane crusher are evident in the farm. Due to this transformation the time and labour wages are reduced vis-a-vis production is increased.

The zone wise distribution of bullock and machinery charges is listed in the table number 3.12.From this we came to know that in south zone of Malshiras tahsil the bullock and machinery charges are Rs. 8600 and which are more than the central and north zone i.e. Rs. 8200and Rs.8000 respectively. This difference suggest that, in the south zone most of the sugarcane cultivation work is done by the bullock labour because it is still under developed and unable to catch the modern reformation in agriculture. The cultivators of the south zone mostly carry the work of cultivation with the help of bullocks. The two times ploughing with iron plough requires 4-8 bullocks' pairs. The ridges, furrows and cane breaking done by single pair.On the contrary farmers of north zone are more progressive where they use machines for sugarcane cultivation which reduces the cost on bullock labour and machineries like tractors, electric pumps, invertors, harvesters etc. are used.

D) Irrigation charges : The sugarcane is water loving plant and requires more water than any other crops. Economy of the sugarcane depends upon the water availability. Irrigation schemes supplies water to sugarcane and role of sugar factories are very active to initiate and maintain the irrigation schemes.

In this study it is found that south zone have poor irrigation sources because those are laying in geographically hilly tract, whereas favourable monsoon does not provide water to this zone because of hilly terrain water runoff and does not permeate into ground, imperious rock have poor capacity of holding the ground water. As well as the zone has inaccessible source of Perennial River and ponds. In the south zone Shri Shankar Sahakari Sakhar Karkhana Ltd. Sadashivnagar is operating many water schemes for the farmers and suppling water for sugarcane cultivation. However, results the cost of irrigation is little high. For irrigation in south zone per hectare costs was Rs.14200. and in central zone cost it Rs. 13500. However, in north zone irrigation cost just Rs.10000 per hectare. In the north zone along with this Nira Dam Right Bank Canal supplies the water for sugar cane cultivation. The expenditure on irrigation is minimal in July and August due to rainwater which meets the water demand of sugarcane crop.

The central and north zones are well developed. The fertile soil, confluence of Nira-Bhima rivers, Bhatghar Right Bank Canal, Ujjani Left Bank Canal and sugar industries' irrigation schemes of are continuously supply water throughout year. Individual as well as co-operative irrigation schemes over rivers are well developed in the eastern zone and it is observed that majority of agriculture area is covered by sugarcane and banana crops.

E) Rental value of land:- It is usual practice that the cultivators are not taking into account the rental value of the land. It is very pertinent to take into account the rental value of the land. The rental value is calculated by taking 1/6 of the total output of the crop (Deshmukh, 1984). This value varied as the output varied. The north zone has Rs. 19200 (20.52 percent) rental value per hectare. The central zone has about Rs. 18000 (18.60 percent) rental value. The average rental value for the whole region is calculated about Rs. 18233(-18.36 percent). It is observed that north zone has maximum rental value because the gross output of sugarcane is more in the north region.

F) Sugarcane seeds:- The region has a reputation of using

cane seeds, CO-671, CO-86032, CO-92061, CO-265, CO-671, CO-86032, CO-265 are widely used all over the study region. The CO-671 is famous for high recovery (12 to 13 percent) of sugar production. Therefore the sugar producing sugar factories in all zones uses this seed.

The expenditure incurred on cane seed is not much varied in zones. The south zone uses 37000 cane sticks per hectare which costs about Rs. 8250 (8.29percent). The central and northern zone also uses 37000 cane sticks per hectare cost of which is about Rs. 8250 (8.52percent)and Rs. 8250 (8.82percent)respectively. It is observed that the central and north zone spend same amount of money on the sugarcane seed. But the proper care is not taken in selecting the sugarcane seeds.

G) Other expenditure:- The minor expenditures which are incurred on sugarcane cultivation from planting to harvesting includes other expenditures. The amount spent on land revenue and educational tax is also included in this expenditure. This expenditure varies from region to region as the land revenue is decided according to the quality of the land and the education tax on irrigation. Therefore, it is observed that the expenditure made on these items insouth zone is very less as compared to central and north zone. It is about Rs. 3900 (3.74percent) , Rs.3700 (3.82percent)and north Rs. 3500 (3.74percent) per hectare in south , central and north zones respectively.

Fig. No. 2 shows the per hectare cost of sugarcane cultivation indifferent zones.

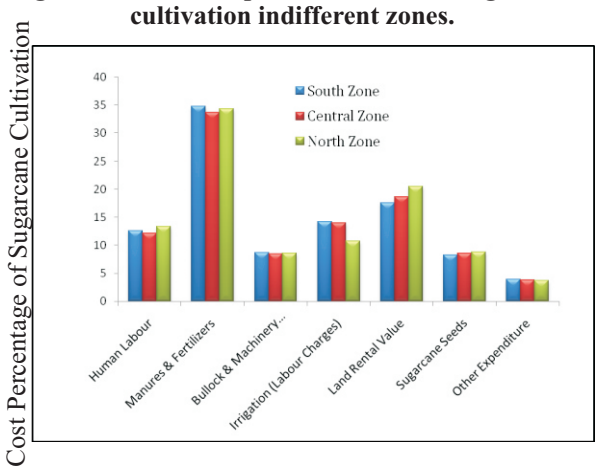

Fig. No. 2

In the south zone manures and fertilizers, land rental value and human labour contributed about Rs.64600 (64.89percent) of the total expenditure, in which fertilizers accounts Rs.34600(34.75 percent), the land rental value contributes Rs.17500 (17.58 percent) and labour account Rs.12500 (12.55 percent) and sugarcane seed charges are Rs. 8250 (8.29 percent). The yield per hectare of sugarcane in this zone is Rs. 2089 per tonnes and cost of cane cultivation per tonne per hectare came as Rs.1276.

However in the central zone manures and fertilizers, land rental value and human labour contributed about Rs. 63100 (65.21 percent) of the total expenditure, in which fertilizers accounts Rs. 32600 (33.69 percent) the land rental value contributes Rs. 18000 (18.60percent) and sugar seed charges are Rs. 8250 (8.52percent). The per hectare yield of sugarcane in this zone is Rs. 2089 tonnes and cost of tonne per hectare is Rs. 1180.

While in the north zone share of manures and fertilizers, land rental value and human labour is about Rs.63800means 68.19 percent of the total expenditure, in which fertilizers accounts Rs. 32100 34.31 percent the land rental value shares Rs. 19200 (20.62percent) and sugar seed charges are of Rs. 8250 (8.82percent). In this zone per hectare yield of sugarcane in this zone is Rs. 2089 tonnes and cost of tonne per hectare is Rs.1075.

The north zone has low expenditure and high income from sugarcane crop because of favourable conditions like irrigation, soil fertility and plain topography and so on. Whereas southern zone is lagging behind because of insufficient irrigation facilities, poor soil fertility and hilly topography. To overcome to these difficulties there is vast scope to conserve the rainwater and use this for sugarcane in the western zone. This will solve the difficulties to promote the sugarcane economy in the south zone.

II) Output of sugarcane :

Per hectare output of sugarcane per hectare has been calculated zone wise. The per hectare yield is taken as an average yield in terms of tonnes. The rate per tonne is considered by taking average rate of three years of all sugar factories in the Malshiras tahsil.

Table No. 2
Average rate of sugarcane given by sugar factories in the Malshiras tahsil

Sr. No.	Sugar Factory	Rate per Tonne			
		2008-09	2009-10	2010-11	Average
1.	SMSF Malinagar	1901	2350	1940	2064
2.	S.P.S.S.K. Shreepur	1920	2450	2130	2167
3.	S.M.S.M.P.S.S.K. Shankarnagar	1911	2501	1900	2104
4.	S.S.S.K. Sadashivnagar	1809	2351	1900	2020
	Average	1885	2413	1968	2089

(Figures are rounded to nearest numbers)
Source: Compiled by researcher.

In the south zone the average yield is 78 tonnesper hectare. The rate per tonne is calculated Rs. 2089. Therefore per hectare gross output of south zone comes Rs. 162942. The cost of production per hectare is Rs. 99550. Hence the net income per hectare is Rs. 63392. It is 38.90 percent per hectare.

In central zone the average yield per hectares is 82 tonnes. The rate per tonne rate is Rs. 2089. It accounts gross income of this zone as Rs. 171298. The cost of production is Rs. 96750. This gives the net income per hectare as Rs. 74548. It accounts only for 43.51 percent. Hence the average yield per hectare is considered as 82 tonnes, but there are some farmers in this region who produced per hectare 150 tonnes of sugarcane per hectare.

The north zone gives average yield per hectare as 87 tonnes. The rate per tonne rate is Rs.2089. Therefore per

hectare gross income is Rs. 181742. The gross cost of production is Rs. 93550.Therefore net income is Rs. 88193 which accounts 48.52percent per hectares.

III) Income from Sugarcane cultivation:

Table No. 3
Income from sugarcane (2010-11) of Malshiras tahsil.

Sr.No.	Particulars	South Zone	Central Zone	North Zone
1.	Yield per hectare	78	82	87
2.	Rate per M. Tone	2089	2089	2089
3.	Total Income	162942	171298	181743
4.	Total Cost of Production	99550	96750	93550
5.	Net Income	63392	74548	88193
6.	Percentage of Profit	38.90	43.51	48.52

Source : Compiled by researcher.

To calculate the per hectare output of sugarcane . The per hectare yield is taken as an average yield in terms of tonnes. The rate per tonne is considered by taking average rate of three years of all sugar factories in the Malshiras tahsil. (Deshmukh 1983)

The above account of per hectare output indicates that south zone has low per hectare yield. It is mainly due to insufficient irrigation facilities, infertile soil and unfavourable topography. The farmers alone on their own risk are unable to do this, because of economic backwardness. They do not have enough capital for investment to make available the new water resources. Therefore it is suggested that government should come forward through the agriculture department, irrigation department and make available water to cultivators. By constructing small dam on the hill slope and store and conserve the water to solve this problem. It is also advisable to give loans to the farmers for digging the wells with subsidy. The proper guidance for digging wells should be given by the geology department so that locations of wells will be identified properly. The sugar factories in the region should come forward and plan irrigation scheme and make available the water. Proper guidance for sugarcane cultivation, supply of quality seeds, supply of manures and fertilizers through village co-operative societies all these efforts are possible to sugar factories. Therefore it may be concluded that sugar factories can play significant role in developing this south region.

The north zone has long history of sugarcane cultivation. The production of sugarcane is found maximum in the zone. The farmers of this zone are very active. They always cautious about the investments to be done in sugarcane cultivation. The land is fertile and abundant water is available. Optimum use of manures and fertilizers is done. Therefore, it results in highest production in the tahsil. The per hectare yield is calculated here as87 tonnes. Though the production of sugarcane is more than the south and central zone, the net profit of north zone is differed by Rs. 24900 and Rs.13600 respectively. Here mention must be made that cultivators of the central zone has potential to increase their production by reducing there unwanted expenditure especially on the fertilizer, machinery and irrigation.

It is further suggested that cultivators of the north zone are cautious about the problems related to their current agricultural practices like over irrigation and misuse of chemical fertilizers during sugarcane cultivation. The south zone has lack of water, while north zone faces the problem of over irrigation. The next serious problem of farmers in the north zone is to save the land from over irrigation. Over irrigation causing the salinity in land, which results the unproductively of land. Secondly the constant use of land for sugarcane cultivation reduces the fertility of the land. The yield per hectare is also reduced.

The overall scenario of the Malshiras tahsil shows that south and central zones have still scope for the development of sugarcane cultivation. The north zone have no scope for development, but the problems raised in the region are essentially must be solved carefully to increase the production of sugarcane as well as to save the land from salinity and constant use of land for the same crop for several years. “If this is not to be done in near future, after 20 years the land will not be useful for us. It will be completely infertile and land will be just a show piece.”

4. CONCLUSION

The evaluation of sugarcane and of its cost as well as income per hectare has been done as natural zone. South zone have labour cost which is more than other zones and their total contribution to the cost is also high i.e. 12.55percent. The physiographic factors in the South zone like topology, terrain and soil are additional contributing to raise the cost of this region.The human labour is concentrated in the north zone. For the regular and ratoon crop the requirements of manure and chemical fertilizers are more and similar trend also found in the Malshiras tahsil. The doses of fertilizers are necessary to increase more yield from the same field. North zone witnessed more progressive in terms of use of technology the usesof machines for sugarcane cultivation which reduces the cost on bullock labour and machineries like tractors, electric pumps, invertors, harvesters etc are used. The cost of irrigation to the sugarcane is more in the north zone this has been because of application of modern tools for pupmping and supplying water. Along with these north zones have more land charges because of its fertile soil. The results of gross expenditure have shows that north zone has low expenditure and high income from sugarcane crop because of favourable conditions like irrigation, soil fertility and plain topography and so on. Farmers in the north zones are very active as well this zone carries natural settings favourble for high yield of sugarcane. Overall scenario of the Malshiras tahsil gives that south and central zones have still scope for the development of sugarcane cultivation. The north zone have no scope for development, but the problems raised in the region are essentially must be solved carefully to increase the production of sugarcane as well as to save the land from salinity and constant use of land for the same crop for several years.

5. REFERENCES

I.Ahmed. E (1971) : Geography of Irrigaion inIndia, Geography Outlook, Vol. VIII., Dept. of Geography, Ranch University, Ranchi, PP-9.

II.Annual Reports of all sugar factories in Solapur District (1980-81 to 2010-11)

III.B.Sundara (1998) : Sugarcane Cultivation.

IV.Baviskar B.S. (1980) : The Politics of development, Sugar Co-operatives in rural Maharashtra, Oxford University Press, Delhi-Bombay-Culcutta-Madrass.

V.Bhanje, B.M. (1993) : Sugar Co-operatives and rural transformation - A geographical perspective of the command area of Warna Sugar Factory, unpublished Ph.D. thesis (Geography), Shivaji University, Kolhapur.

VI.Chandana, R.C. and Sidhu, M.S. (1980) : Introduction to Population Geography, Kalyani Publishers, New Delhi, PP 17,110.

VII.Dakle, S. (1990) : Socio - economic study of seasonal workers in Sangamner Bhag S.S.K. Ltd. Sangament, Unpublished M.Phil. (Commerce) Dissertation, Shivaji University, Kolhapur.

VIII.Deshmukh SB. (1983) : Gur and Sugar Industry in Kolhapur District, A Graphical Analysis. Unpublished Ph.D.Thesis, Shivaji University, Kolhapur.

IX.Gadgil D.R. (1952) Sugar Co-Operatives in Maharashtra, National Federation of Sugar factories, New Delhi, P.21.

X.Gaikwad S.B. (2003) Geographical Perspective on Growth of Sugar Industry in Maharashtra. Unpublished Ph.D. Thesis, Shivaji University, Kolhapur.