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Study Of Sugarcane Cultivation Trends In The Malshiras Tahsil

B. T. Nikam And B. R. Phule

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

Abstract: Sugarcane was used for chewing and its juice for drinking in ancient times. In India sugar making started between the fourth and fifth century A.D. The cane was cut into pieces, crushed by heavy weights and the juice boiled and cooled to get sugar in solid form. Malshiras tahsil is famous for the sugarcane cultivation and cooperative sugar industry. In this concern it is pertaining to understand the sugarcane cultivation trends in the Malshiras tahsil. The major aim of this research article is to find that,weather sugarcane cultivators in the Malshiras tahsil doing the sugarcane cultivation in modern way. The data are colleted from the filed visits and unpublished reports and data colleted from the Tahsil Agriculture Office and Sugarcane Deptt. of all sugar factories in the Malshiras tahsil. It is intresting to find that, sugarcane cultivators in the Malshiras tahsil adopted new methdologies and tools during the sugarcane cultivation.

Keywords:sugarcane, cultivation, modern machines and tools.

INTRODUCTION:

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.' The menting in 'Atharva Veda' also dates its existence in pre-antique period. A mention of sugarcane is also found in the "Lalitha Sahastranaman" and the Goddess is shown as having a sugarcane stalk in hand (Deshmukh S.B.1983).

In China sugarcane has been known during the period Su-ma-Siang J.N. 179 B.C.-117B.C. Tai Taung (627 to 650 AD), a Chinese emperor sent a batch of Chinese students to Bihar in India for studies the Agronomy of the sugarcane" and the extraction of sugar from the sugarcane. The Chinese canes were introduced inIndia by Roxourgh in 1796. Sugarcane belongs to the family "Graminede" and the generic name Saccharam has been derived from the Sanskrit word "Sarkara" meaning sugar. The genus has five species, three cultivated and two wild. The cultivated species are Saccharam officinarum, Saccharam Sinense (Roxo) JSW and Sacchram Barberi JESN. The wild species are Saccharam spontaneum and Saccharam Robustum Brand.

Sugarcane was used for chewing and its juice for drinking in ancient times. Persia has provided the earliest positive evidence of sugar in solid form, around 500 A.D. In India sugar making started between the fourth and fifth century A.D. The cane was cut into pieces, crushed by heavy weights and the juice boiled and cooled to get sugar in solid form. The product looked like gravel and it was called "Sharkara" in sanskrit term Srakara or Sharkkara. The commercial manufacturing and refining of sugar were developed in Egypt in sixth and tenth centuries. In France in 11th century. It had regarded that the cane has medical properties and it was used in medieval formulas and it was extremely costly (Deshmukh S.B.1983).

In India origin of sugarcane had been in the Gangetic plains. Then it spread to tropical India and confluence to river basins. Sugarcane cultivation in Maharashtra, especially in western Maharashtra is not recent. Sugarcane was used for the preparation of Jaggery.

After the introduction of Sugar factories especially in the private / co-operative sector, the rapid growth of area under sugarcane was seen. There is upward trend of increase in area under sugarcane. The fertile land which was once used for traditional cropsis now transfered in cane cultivation. This has reduced area under food crops.

1.1 Basics of sugarcane cultivation:-Soil, climate and water are the basic requirements of sugarcane. Soil supplies essential food to the sugarcane. It can be regarded as living material rather than a dead inert material. It is not static, but it is dynamic (in the state of constant change). These changes occur under the influence of natural factors such as temperature variations, water, air movements, growth and decay of plant material etc. It provides environment favourableenvironment to root for development and uptake of the nutrients essential to proper growth.

Soil suitable for sugarcane is classified into seven main types. These are red soil, black soil with clay sub-soil, black soil with calcareous subsoil, brown clay loams, alluvial soils, sands and sandy loams and soils of organic origin. Each type has its own characteristic on which productivity

depends but the soils own potential is not sufficient for the proper growth of the sugarcane.

For proper growth of cane, certain nutrients are required. The necessary elements (nutrients) required for the sugarcane growth are nitrogen, potassium, phosphorus, sulphur, calcium, iron and magnesium. Out of these seven elements five elements suchas Potassium, Phosphorus, Calcium, Iron and magnesium are derived form the mineral part of the soil. The nitrogen and sulphur are absorbed from the decaying plants and organic matter. Some sulphur may be supplied from the compounds in the soil. In addition to these seven elements, supplementary elements like boron, copper, manganese, zinc also play important role. The minute changes affect the health of vigor of plant profoundly. It reveals that sugarcane can grow on all types of soil. However the productivity depends upon the quality of the soil. The deep, rich, loamy soils on the river banks and black cotton soils are more productive than the others.

Climate is the decisive factor for sugarcane cultivation. It grows where climate is favorable. Sugarcane originally the crop of thetropical zone. For healthy development hot and humid climate is required. Too hot or too cold climate is disastrous to the sugarcane. Therequired favorable temperature ranges from 200c to 260C. The rainfall and relative humidity is not much important as the sugarcane crop is irrigated crop. Still the number of rainy days is important. The amount of rainfall and number of rainy days decide the period of watering. .

Water is the soul of sugarcane. The water requirement is about 150 to 170 inches per acre in a year. Out of that 140" to 150" water is given by irrigation. Very little amount of water is utilized for sugarcane growth. The lighter soils remove about 60percent to 70percent of water through seepagealone.

2. MATERIALS AND METHOD

Research methdology contains objectives, data collection methods and study universe.

2.1 Objectives: The specific objectives of this study are as follows.

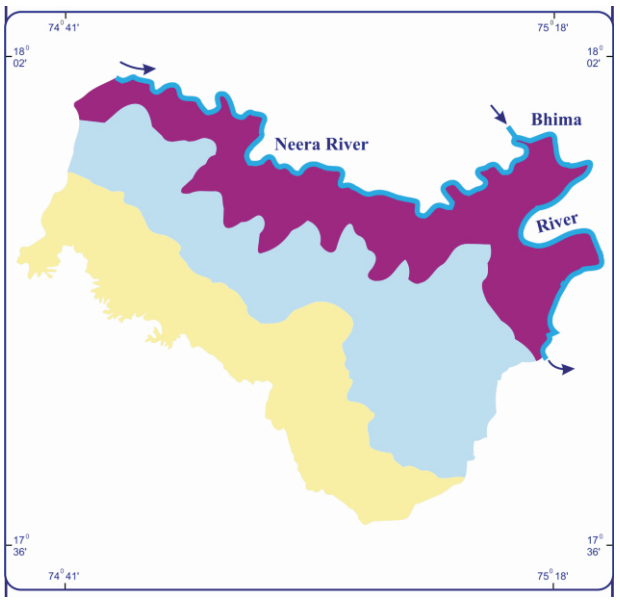
1) To analyse the process of sugarcane cultivation in the Malshiras tahsil.
2) To findout different practices used during sugarcane cultivation in Malshiras tahsil.
3) To evaluate recent trends used by the sugarcane cultivators in Malshiras tahsil.

2.2 Data Collection tool: 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.

2.3 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 mansoon 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.



Picture No.1.1 Study area Malshiras tahsil.

3. RESULTS AND DISCUSSION

A) Preparation of Land: Land preparation is essential before the plantation of sugarcane. It includes the operations of ploughing, making big clods into pieces harrowing, making ridges and furrows etc. These are intended to loosen the soil and separate the particles without destroying its structures so that the moisture and air may freely penetrate to the roll cultivation depth and to assure favourable conditions for the root development.

First ploughing is done in mid-November, the land is kept open about one month in which it weathers and becomes dry. The second ploughing is made for breaking soil clods and harrowing is made to crumble remaining clods.

The manures are mixed with soil at the time of harrowing. It will be beneficial to use B.H.C. powder or five percent heptaclore or five percent chlordane powder along with manures. The land cleans by collecting the residues of the previous crop and weeds, the ridges and furrows are prepared simultaneously either by bullock pair or tractor. The height of the ridge varies from region to region, which depends upon nature of soil. In the land having high and medium quality soilthere is 125 cms distance between to furrows. The light soil has about 100 cm. distance. The slope of the land also decides the length of furrows. Furrows must be on equal level and possibly longer, so that intercultural is convenient.

B) Sugarcane Seeds: Proper sugarcane seed is the base of production. Hence selection of cane seed has vital importance. At present there are number of cane verities available. Important ones are CO-671, CO-6907, CO-265, CO-92061, CO-7219, CO-86032, CO-8021, CO-8014. All thesevarieties are in practice. But CO-671, CO-86032 and CO-265 are used widely for cultivation. These varieties are grouped in three parts.

Early maturing varieties get ready for harvesting after 10 to 11 months. These are CO-671, CO-6907, CO-265, CO-92061. In general early varieties are planted early in the planting season and are crushed during the earliest part of the crushing season. Per hectare yield of these varieties are upto - 100 to 120 tonnes.

Mid late maturing varieties get ready for harvesting at its age of 12 to 14 months. These are CO-7219, CO-86032, CO-6304, CO-8021and CO-8014. These varieties are generally high yielding types with moderate level of sugar recovery. The CO-86032 variety is found in most part of the area under sugarcane cultivation Its per hectare yield is 110 to 125 tonnes.

Late maturing varieties get ready for harvesting at the age of 14 to 16 months. Those are CO-62125, CO-86032. Among these CO-94012 is popular variety in the Malshiras tahsil.The sugarcane variety generated and promoted by Coimbatore (Tamil Nadu) based Central Sugarcane Research Institute. Therefore, their varieties are named with CO.

Healthy cane seeds have certain characteristics. The cane seed must be of 10 to 11 months age old, premature with full of juice, having green buds, disease free, thick stick and sufficient length. Such cane seeds with three budded may be used for plantation. Before use these seed sticks are put into CaCO3 water for 24 hours and then 2 to 3 minutes in Aregmol or Areton medicine having very little mercury. So that it avoids dangers of cause healthy ripening. And it will be possible to achieve maximum production. Therefore, such sugarcane seeds are desirable(Deshmukh S.B.,1983). The farmers in the Malshiras tahsil using following varieties of sugarcane.

Table No. 3.1
Sugarcane varieties in Malshiras tahsil

Sr.No.	Varieties of Sugarcane	No. of Respondents	Percentage
1	Co-671, Co-86032, Co-92061	344	46.66
2	Co-671	164	22.77
3	Co-86032	128	17.77
4	Co-671, Co-94012, Co-265	92	12.77
	Total	720	100

Source: Compiled by researcher.

There are several sugarcane varieties planted on the pilot seed plots in the study region. All the sugar factories grow pilot seed plots to supply quality seeds to the sugarcane grower. The varieties like Co-671, Co-92061 and Co-86032 widely famous among sugarcane grower. Here it has found that 46.66 percent of sugarcane grower use these varieties.About 22.77 percent of sugarcane growers used Co-671 variety of sugarcane. At the same time 17.77 percent sugarcane growers used Co-86032 variety of sugarcane. About 12.77 percent sugarcane growers used the mixed varieties like Co-671, Co-94012 and Co-265. The Co-86032 variety yields 100-120 tonnes per hectare where as Co-671 variety yields 90-100 tonnes per hectare.

The Co-86032 and Co-671 are very famous varieties and occupy an area of 60 percent to 80 percent in the different sugar factory areas. Sugar factoriesgrow basic seed farm and supply the Co-86032 to their shareholders.This healthy seeding gives good output.

C) Seasons of Cane Growing : The climate is the controlling factor for the growth of sugarcane. Sugarcane takes about six to eight weeks to germinate. Further a period of four to six weeks is needed for filling after which enters the early grand period of growth. It starts to grow vigorously and shed the ground completely. The growing period depends upon seasons ofcultivation. There are three seasons (periods) of cultivation and growsin Maharashtra. The Adsali Sugarcane seed requires about 16 to 18 month growing. Plantation of / Adsali is mostly practiced in the end of June to August. The yield per hectare of Adsali is high. The pre-seasonal sugarcane crop requires 14 to 16 months. The plantation is generally donein the months of October-November. The yield is better than seasonal crop, but less than Adsail. The seasonal crop or plant (suru) requires about 12 months. The plantation is done in December and January. The yield per hectare is low as compared to other two. The ratoon (Khodwa) crop is also usually taken in all types of cultivation.

Table No. 1.1
Seasons of sugarcane growing in Malshiras tahsil

Sr.No.	Season and growing period	Time of Planting	No. of sugarcane growers	Percentage
1	Adsali (17-18 months)	End of June - August	432	60.00%
2	Seasonal (Suru) (12-13 months)	December - January	288	40.00%
3	Ratoon (Khodwa)	-		
	Total			100.00%

The Adsali plantation is mostly at the end of June to August, during rainy season. It requires about 16 to 18 months for grow and maturity. Therefore Adsali sugarcane crop stands in the field up to next rainy season. Because harvesting starts in October-November followed by winter which helps for its growing. In summer irrigation facilities requires more innuminater. The summer follows the rainy season and after rainy season harvesting is started. Therefore, yield per hectare of Adsali is high and about 60 percent of farmers in Malshiras tahsil prefer Adsali plantation (Table No. 1.1)

The Suru plantation is mostly in November and December. It requires about 12 months for growing. Winter followed by summer which hampers the growth. Only one rainy season is there. Before harvesting this plantation of Suru this crop passes through two winter and two Summer seasons. Because it's harvesting is done mostly in March and April. Therefore yield per hectare of Suru planation is low as compared to other.

D) Sugarcane Planting: Plantation of sugarcane varies from region to region.In the study region the Geographical features differentiate the regions due to which sugarcane plantation also differs.The plantation is divided into two types. The wet plantation and the dry plantation. The wet plantation is done in the light and medium type of soil. The water is flooded in furrows and the cane sticks are pressed in the soil about 3 to 6 cms keeping buds on upper side. The dry plantation is done in fertile black soil. The cane sticks are pressed in dry soil. The buds are kept on upper side, covered with soil and then watered.

Recently, the plantation method 'one bud method' is given by sugarcane Research Centre, Padegaon (Satara District). It proves beneficial as it reduces the cost of plantation by Rs. 500/- per hectare. It requires 30000 to 32,500 cane seeds (buds) per hectare. In this method the intercultural is easily done. To prepare cane seeds proper care is taken. The seeds plots are specially prepared. The cane seeds with one bud pressed into soil. Water is given by sprinkle method to the plot. It is watered as per requirement. After four to five weeks the plants with 4 to 6 leaves become ready for plantation. Then they are replanted in the well prepared land. The distance between the two plants may not be less than 0.3 to 0.45 meters. Whileplantation of seeds proper care is taken. The remaining operations are as usual. The sugarcane research centre canvasses the farmers to use this method, but the farmers are not confident to use it yet. Table No. 1.2 showsdifferent plantation methods adopted by the farmers in the study region.

Table No. 1.2
Planting methods of sugarcane

Sr.No.	Types of Planting	Respondents	Percentage
1)	Ridges	279	38.75
2)	Furrows	441	61.25
	Total	720	100

Source : Compiled by researcher.

In the Malshiras tahsil sugarcane plantation methods different according to nature of land, water sources for irrigation, availability of mechanical tools and climate. It is interesting to note that, there are 61.25 percent of farmers choose the furrows method for cultivating sugarcane crop. The furrow method is more advent and widely popular among the sugarcane cultivator in the region. This plantation method gives more production and also gives option for mixed cropping. Farmers in the study region also adopt this furrows method to take the advantage of drip irrigations. Irrigation through drip method is very convenient for furrows plantation because in this plantation 2 to 3 feet furrows gives space for piping the drip irrigation system. From this discussion it is realised that majority of sugarcane cultivators in the study region are adopting modern technologies for cultivting sugarcane. However on the contrary 38.75 percent farmers till using Ridges as conventional method for sugarcane plantation. The farmers those who are using the Ridges method belong to that region where the condition of soil is poor, lacking of adequate irrigation facilities and mechanical tools and lacking of awareness.

E) Seed Treatment: Treatment is given to seeds with hot water at 510C for two hours or moist air treatment at 54oC for 21/2 hours. Sets is dipped in 0.1percent solution of Bavistin (10g Bavistininfor 10 litres of water) or Bayleton (0.05percent) (5 g Bayleton for 10 litres of water) for 10 to 15 minutes. If sets are infected with scale insect or woolly aphids, sets should be dipped in solution of Malathion (50EC), 30 ml or Dimethoate (30EC), 27 ml in 10 litres of water for 10 to 15 minutes. If fresh sets are not available for planting, sets should be dipped in solution of 500 g lime in 200 litres water for 12 to 24 hours. To increase biological nitrogen fixation and solubility of phosphatic fertilizers, sets should be treated with Azatobactor and Phosphate solubilising inoculants. For one hectare area, dissolve 10 kg Azatobactor and 10 kg Psolubilising inoculants in 100 litres of water and dip sets for 10 – 15 minutes and then do planting after drying them in shade.

F) Interculture: Optimum utilization of nutrient is possible when interculture is done properly. It increases the capacity

of the soil. Along with the growth of sugarcane, the other unwanted plants also grow. These unwanted plants are removed to make land free for absorption of nutrients. Throughout growing duration of cane, 3 to 5 timesweeding are required. Occasionally pesticides are also used for this purpose. After 4 to 4.5 months "Khandani" (digging) is made. The ridges are re-arranged. This is done manually or with bullock labour. Every 15 to 30 day watering is done. This continues up to harvesting. Table No. 1.3 gives the online outline of interculture practices applied for sugarcane plantation.

Table No : 1.3
Types of Interculture practices used in Malshiras tahsil

Sr.No.	Interculture	Respondent	Percentage
1)	Manually	93	12.92
2)	Bullocks Labour	420	58.33
3)	Machinary	207	28.75
	Total	720	100

Source : Compiled by researcher.

From the above table 1.3 it is interesting to note that, 28.75 percent sugarcane cultivators use machines for interculture practices. Those are tractors mounted with multipurpose equipments like paddy puddles, seed drill mode, peddler mode and so on. In consonance to the resultit is amazing to see that, about58.33 percent farmers use bullocks labour for interculture. In the course of field study it is observed that many farmers using bullockparticularly who are having bullocks. Because it is very economic than machine and manual labour and it is also advantages for organic manure. With these reasons where machines and manpower lacking bullock labour is very convenient. Where as about 12.92 percent of the farmer use the human labour during interculture. This type of farmers is having small land under sugarcane cultivation and they are doing interculture practices their self.

G) Manures and Fertilizers:Balanced growth of the sugarcane depends upon the supply of required nutrients. The soil alone is unable to provide all those nutrients sufficiently though the soil is generally capable of natural regeneration. Sofar as all essential plant nutrients requirements are concerned. It necessary to supply of additional nutrients. This can be done by supplying manures and fertilizers to sugarcane.

The sugar in the sugarcane is the main component. Sucrose in the sugarcane is a chemical substance consisting of carbon, hydrogen and oxygen. None is derived from the soil. It is the product upon which the whole economy of the industry rests. The proper development of the preservation of these components is very essential. The appropriate quantity of manures and fertilizers at right time serves this purpose.

The farm yard manures play very important role, provided that if it is applied properly. The composition of farm yard manure is of varying types. It depends upon the type of animal, the nature of the food ingested, the litter used, the method of making and conserving the material and its age. The farm yard manures contains 76percent of water, 0.64percent (6 kg per tonne) of nitrogen. 0.23percent (2.0 kg per tonne) of phosphates as P2O5 and 0.32percent (2.8 Kg per tonne) Potash. The high temperature and methods of making and conserving manures cause to rapid loss of nitrogen.

The nitrogen and humans are two important components of the farm yard manures. It increases humus in the soil. It improves water retentivity of the soil. The nitrogen is mainly present in the form of urea. It rapidly decomposes into free ammonia and carbonic acid. Both escapes entirely into atmosphere in the form of gaseous and ammonium carbonate ((NH4)2CO3) formed as an intermediate product. It is also subjected to decomposition by the action of bacteria, which first convert into nitrate and then into free nitrogen (gas). This process of decomposition is called de-nitrification. Therefore, it is essential to conserve the manures carefully and avoid de-nitrification. It is observed that manures are used more where the animal source is dominant , which is economical. The main constituents of the manures are dung, urine of all animals deposited in one place. Sometimes bagasse is also used as manure, in nearby areas of the factories. It is available at low prices. In some places manures are specially reaped for sugarcane. The compost fertilizer is one of them. For this purpose pit is prepared. The size of Pit is 13 meter long , 2 meter width and 1 meter in depth. It is filled by residues of Gobar Gas, layered by bagasse, little superphosphate, layered again by waste material, little urea and so on. It put for 4 to 6 months; the compost fertilizer is ready for use, and used for sugarcane.

In present days, the use of manures is less. The chemical fertilizers have taken its place. Nitrogen, phosphate and potash are the main constituents of the chemical fertilizers. It may be in the form of mixtures, or urea, superphosphate, etc.

Nitrogen, in the presence of adequate moisture, stimulates and increases growth of sugarcane. It enables the plant to take up other plant nutrients. Phosphates are also important for sugarcane. It initiates growth and ripening of cane. Potassium is useful for normal growth of sugarcane. Adequate uptake of potassium increases the resistance of the sugarcane. It is observed that the nitrogen and phosphates are found to be complementary in their effect upon cane growth. Potash is often used with phosphates where standard Potash-Phosphate mixture is available. Fertilizer contributed sustainably towards agriculture growth and it is key factor of agriculture development. (Rathod H. B. 2011) Table No. 3.5 gives information of types of fertilizers used in the Malshiras tahsil by sugarcane cultivators.

The application of fertilizer and manures is vital for crop production. There are two types of fertilizer and manures used to increase the crop production. The crop like sugarcane requires more quantity of fertilizers and manures. At world wide synthetic fertilizers are used in high proportion . This is because of its instant result. The organic fertilizers also contributed to achieve great yield of

sugarcane, but it can act very slowly than the synthetic fertilizer. For sugarcane crops various fertilizers like DAP, Urea, 10-26-26, 18-46, 10-15-15, Super phosphate are commonly in use, whereas organic fertilizers are very famous but it is not easily available and also it is very costly. The famous organic fertilizers are compost, cow dung, Neem fertilizer and poultry waste are and very useful forincreasing the yield as well as maintaining soil health.

Table No. 1.4
Use of fertilizers in the Malshiras tahsil.

Sr.No.	Types of Fertilizers	Respondents	Percentage
1	Organic and Chemical	412	57.22
2	Chemical	276	38.33
3	Organic	32	4.44
	Total	720	100

Source : Compiled by researcher.

From above table it is found that 57.22 percent of sugarcane growers use organic and chemical fertilizers. Whereas 38.33 percent sugarcane growers depends only on chemical fertilizers. About 4.44 percent sugarcane growers using organic fertilizers. Therefore in the study region maximum are farmers using mixed type of fertilizers and manures.

Farmers in the study region are commonly use mixed type fertilizers and manures. It is also found the fertilizers are more used in the central region of Malshiras tahsil.

F) SugarcaneDiseases: There are various types of diseases, pests and insects are found in the study region. Most commonly found diseases are Rust (Puccinia Kueuhill), Yellow Spot (Cercospora Kopkeil), Smut (Usfilage Scitominese), Red Rot (Collitorichum falcatum) and Rust (Puccinea Kuchnil), Eye Spot (Helminthosporium Sacchari) etc. are reported by the field sugarcane officer of the respective sugar factories in the Malshiras tahsil. Where as some of the commonly found pests are Pyrilla (Pyrilla purpusilla), White fly (B. argentifolii), Mealybug (B. argentifolii) and Mites (Dermanyssus gallinae) are reported in the field visits. The diseases are commonly found in all the regions of Malshiras tahsil as well as Solpur district.

H) Maturity of the Cane: Sucrosecontentin sugarcane depends upon maturity of cane. The winter conditions are favourable for it, especially it is experienced in the months of January and February. In this period sugarcane attains highest maturity, juice becomes concentrated and Brix content, sugar content purity increases. Water and soil play important role in maturity of the cane. The soil contains moisture and helps to supply food to the sugarcane. Moisture retaintivity depends upon the type of soil. The organic matter, colloidal content, clay fractions in the soil and climatic elements as temperature relative humidity and wind velocity decide the water retentivety of the soil, which helps to increase the maturity of cane. Mature sugarcane gives highest recovery and quality of the juice which increase the production. This reveals that the cane with highest maturity gives more benefit to the farmer.

Cane should be harvested only when it is mature. There are some practical tests to judge the maturity of cane are use following

i)General yellowish colour of whole crop.
ii)Cessation of growth
iii)Swelling of eye buds
iv)Metallic sound of cane
v)Breaking of cane of the nodes
vi)Brix saccharometer reading between 21 and 24.

I) Harvesting of Sugarcane: Harvesting at proper time gives maximum recovery. Because at this time most of the juice is concentrated and converted into sugar. It is very essential to stop watering the cane at least 15 days. Otherwise it reduces the sucrose content. Pre mature cane as well as post mature cane reduces the percentage of the sugar in sugarcane. This concludes that the harvesting of sugarcane must be at the time when the maturity is at maximum level.

4. CONCLUSION

The climate, soil, rainfall and seasonal variations are supported the growth of sugarcane crop. There are various factors required for the sugarcane cultivations. Soil, climate andwater are the basic requirement of sugarcane. Soil suitable for sugarcane is classified into seven main types. In the Malshiras tahsil there is three main season's viz. summer beginning from March in middle of June, the rainy season ranges from the middle of June to the middle of October and the winter from middle of October to the end of February. This tahsil receive most of the rain water from the rains starts in early June viz. pre-monsoon rains and September-October viz. post-monsoon. Suagrcane are planted by various methods however in the Malshiras tahsil most popular method are furrow method. Treatment to sugarcane seed are done with the biological as well as chemical methods. These treatment methods are significance to improve the quality of sugarcane crop. Interculturing of sugarcane crop is doing with the modern as well as traditional technologies. In the Malshiras tahsil more than 50 percent of the sugarcane cultivators are use bullock and labour for interculturing while 28 percent have modern tools for interculturing. The increased cost is one of the vital considerations for using modern tools for cultivation of sugar culivation.

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