Annexure C

GI APPLICATION No.
240

KOLHAPUR JAGGERY

APPLICATION FOR REGISTERING KOLHAPUR JAGGERY AS A GEOGRAPHICAL INDICATION

THE GEOGRAPHICAL INDICATIONS OF GOODS (REGISTRATION & PROTECTION) ACT, 1999

FORM GI-1

A: Application for the registration of a Geographical Indication in Part A of the Register:

Section 11(1) of Geographical Indications of Goods (Registration and Protection) Act, 1999 and Rule 23(2) of Geographical Indication of Goods (Registration and Protection) Rules, 2002.

Fee: Rs.5, 000 (See entry No.1A of the First Schedule)

Application is hereby made by Kolhapur Agricultural Produce Market Committee, represented by Mr. Ganesh S. Hingmire of Great Mission Group Consultancy, in Part A of the Register of the accompanying Geographical Indication furnishing the following particulars

Name of the Applicant : Kolhapur Agricultural Produce Market Committee, represented by Ganesh S. Hingmire of Great Mission Group Consultancy

Address : Prof. Ganesh S. Hingmire, GMGC
169, Bhudhawar Peth, Shree Madhav Apartment,
Pune- 411 002, Maharashtra

Geographical Indication: Kolhapur Jaggery

Class : 31

Goods : Class 31, Agricultural products

1. (a) Name of Applicant: Kolhapur Agricultural Produce Market Committee, represented by Ganesh S. Hingmire of Great Mission Group Consultancy

(b) Address: 169, Budhwar peth, Shree Madhav Apartment, Pune 411038, Maharashtra, India.

(c) List of association of persons/

Authority, Association Kolhapur Agricultural Produce Market Committee,

(d) Types of goods: Name of the articles: Jaggery

Class: 31

Category: Agricultural product.

(e) Specification:

- Organic, chemical free, sweet and long-lasting product.
- Rich in glucose, vitamins, calcium, minerals, iron etc.
- Effective medicine for acidity, cold and cough, joint pains, urinary tract and bowels; invigorates tone, improves digestive power and cures itching and prameha etc.
- Prescribed by Ayurveda as an effective remedy for various ailments and disorders.
- Widely used in cuisines especially in South Indian and Gujarati foods like rassam, dal and sambar. Adds touch of sweetness to the sour and spicy food.
- Consumed in the raw form as well.
- Used in the preparation of alcohol, beverages and to make items like candy, toffees, jaggery cakes, Chikki and other similar sweet preparations.
- Recommended daily allowance as a healthy and unrefined form of sugar.
- Used for the coating of inside of a tandoor oven to enable better flavor of dishes.
- Utilised as animal fodder.

f) NAME OF GEOGRAPHICAL INDICATION - KOLHAPUR JEGGERY

g) DESCRIPTION OF GOODS:-

- White and golden (reddish brown) in colour, organic, chemical free, pure and hygienically produced.
- Made from fresh sugarcane juice which gives permanent sweet taste.
- No added colour, non harmful and allowed chemicals, no puse of preservatives, additives and flavors.
- Natural sweetener and contains glucose, vitamins, calcium, minerals.
- Indicates Geographical Origin of entire area of District Kolhapur, Maharashtra State , India.

APPERANCE OF GOODS:-

Kolhapuri Jaggery has an attractive appearance, distinct in shape, excellent taste and quality, attractive yellow golden (reddish brown) colour and easy to transport.

MARKET:-

- **LOCAL DEMAND:-**

With the aim of selling the agricultural products of the agriculturist in a right way and manner and making it easy for him to make his agricultural products easily accessible to the nearby market, first marketplace was set up and started by Shahu Maharaj at Shahupuri in Kolhapur. Arrangements were made for the sale of oil seeds, jaggery, cotton, textile market.

AGRICULTURAL PRODUCE MARKET COMMITTEE-

As earlier stated, Shahu Maharaj had set up market at Kolhapur, Jaysinghpur, Gadhinglaj for the sale of agricultural products of farmers of Kolhapur Regional Market Committee. For convenience of farmers from South-East Kolhapur, market was set up and started at Vadgaon for the sale of Maize, Groundnut etc.

The farmers of this market Committee were in no way legally bound for selling their products. Considering this aspect, Agriculture Produce Market Committee was set up. The aims and intentions of the committee were to get proper price at proper time, to avoid deceptions in weights, standards, measurements, marks, to make their presence in market and to keep over all legal control under Purchase-Sale strategy . Under this law, first market Committee was established at Kolhapur in the year 1945.

- Kolhapur market accounts for 28% of total production of jaggery.
- Kolhapur market jaggery handles nearly 25% of all jaggery market in the State of Maharashtra.
- 1/3 villages in Kolhapur district produce jaggery.
- There are about 1200 jaggery making units in Kolhapur district.
- The average wholesale price of jaggery is between **Rs.10.34** per kg. and Rs.**32.18** per kg.

INTERNATIONAL MARKET

Kolhapur Jaggery has already crossed the boundaries of India and is exported to Middle East Asia, UK, USA etc. because of its uniqueness and it's quality. However, in this world of globalization, Kolhapur jaggery still lags behind in promotion in the international market. The demand in the local and international market would increase if the same is attractively packed and made available in jaggery cubes, chocolates jam, bread spray, energy drink etc.

FEATURES:-

- White and golden (reddish brown) in colour, organic, chemical free, pure and hygienically produced.
- Made from fresh sugarcane juice which gives permanent sweet taste.

- No added color, non harmful and allowed chemicals, no puse of preservatives, additives and flavors.
- Natural sweetener and contains glucose, vitamins, calcium, minerals.
- Indicates Geographical Origin of entire area of district Kolhapur, Maharashtra State, India.

METHOD OF WATER SUPPLY:-

- The perennial rivers flowing through Saydhari mountain range, situated in western Maharashtra region, bring rich minerals along with them. It makes the soil of Kolhapur highly fertile. Free flowing, recurrent rivers provide natural source of water supply throughout the year. The water is sweet and salt free which gives a particular taste, color and endurance to the crop.

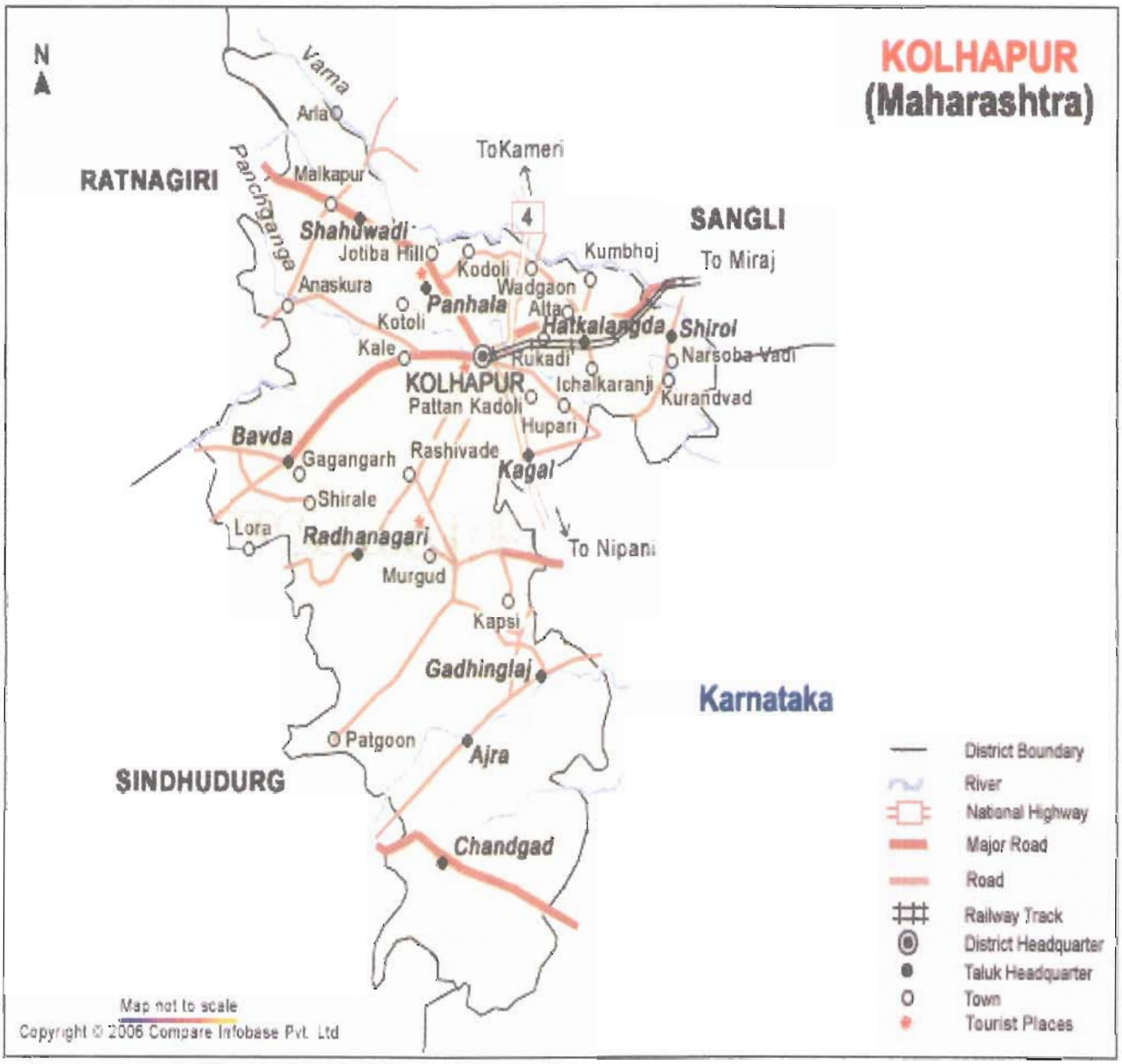
MAIN FORMS OF JAGGERY:-

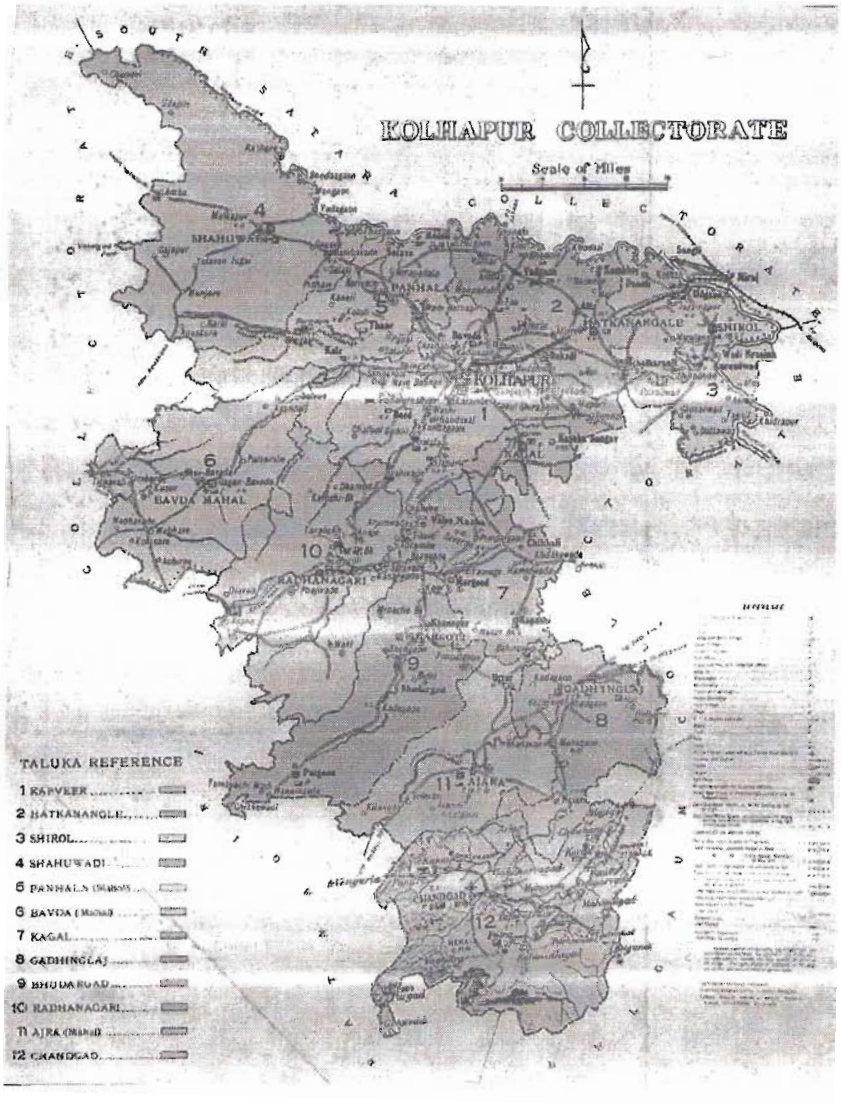
- Solid Jaggery
- Powder Jaggery
- Liquid Jaggery (kakvi)

GEOGROPHICAL POSSITION:-

1. Latitude : 16°-43'N
2. Longitude : 74°-14'E
3. Elevation : 574 m above MSL

GEOGRAPHICAL AREA IN THE MAP:-





STRATEGIC LOCATION AND UNIQUENESS OF KOLHAPUR DISTRICT:-

Kolhapur region is one of the most concentrated sugarcane growing area in Maharashtra state because of the soil, climate, favourable geographical conditions and agro-ecological structure of the region. The region has paramount position in producing high quality cane and jaggery with highest returns in Indian Union.

GENERAL INFORMATION -

1. Total area of farm : 28.67 ha
2. Area under cultivation : 24.02ha
3. Area under Roads, Building etc. : 4.65 ha

SOIL TYPE-

·Black clay , silty loam

SOIL FERTILITY STATUS-

· Soil Ph : 6.5-6.9

·Electrical conductivity : 0.15-0.30dsm^{-1}

·Organic carbon : 0.65-1.0%

·Available Nitrogen : 180-225 kg ha^{-1}

·Available Phosphorus : 15-25 kg ha^{-1}

·Available Potash : 260-325 kg ha^{-1}

SOURCE OF IRRIGATION-

Own lift irrigation scheme on Panchganga river is in operation from 2005.CLIMATE-

1. Annual rainfall : 1023.8mm
2. Maximum Temp : 31.4°C
3. Minimum Temp : 13.9°C
4. Humidity(Morning) : 73-94%

The main natural advantage available to Kolhapur city is the river Panchganga. Later it flows as a Krishna in south India. Five rivers from sahyadri mountains comes together at kolhapur carrying minerals and other natural resources suits to grow unique Jaggery. The soil in kolhapur district belt supports the natural water of Panchganga and provides the platform to the farmers of Kolhapur to produce quality jaggery.

KOLHAPUR- PANCHAGANGA AND ITS TRIBUTARIES (which leads uniqueness to Jaggery growing in that region)

INTRODUCTION

This Kolhapur region is located at the South-West plateau of Maharashtra. Kolhapur is situated between 15°-43'N - 17°-17'N latitude and 73°-40'N - 74°-42'N longitude. Towards west of the district is the Saydhari border and towards east is the river Varna, forming a natural boundary. Towards the south is river Krishna and boundary of the district Belgaon. Towards the west of the Sayadhari Range, there is a boundary considering of districts Sindhudurgh, Ratnagari and Kolhapur while river Varna has forms the north boundary of districts Sangli and Kolhapur.

GEOGRAPHICAL LOCATION

The rivers flowing in Kolhapur plateau flow quite tranquilly and their speed is quite high and flow quite a long distance and therefore, an alluvial soil has been created on both sides of the river bank.

A wide drainage area has been created at river Panchaganga due to the tributaries like Kasari, Kumbhi, Tulshi and Bhogavati. Flooding of the rivers is become a specialty of the rivers of this area.

RIVERS

Most of the rivers of Kolhapur district are east bound. The main rivers of this district are Varana, Panchaganga, Vedganga, Hirnyakeshi and Ghatprabha. The origin of these rivers is in Sahyadhri mountain ranges and these flow through south-east, north or north-east of Kolhapur district and meet Krishna River. The river basin of these rivers is quite deep and wide and has huge amount of alluvial soil stored therein.

Panchaganga-

River Kasari, Kumbhi, Tulshi and Bhogvati are the tributaries of River Panchaganga. As per the local belief, the fifth tributary Sarswati is secretly flowing underground.

Kasari –

This tributary is having its origin in village Gajapur of Saydhari ranges. It flows at least 15 km. till Dhangarwada in the south-east direction and further for at least 40 Km. towards north direction. The Kasari River stream is wide and receives its water source from a fairly large triangular area lying between watersheds of the Vishalgad range because of which its river basin has become quite big and wide. In course of 8 Km. flow, few streams and tributaries join the river. Of these Mangar, Jambhali and Gadvali are the big tributaries. Likewise, source Mangari meets river Kasari near village Bhogaon. It is flowing down ahead from kasari flood plain below Bhogaon taking twists and turns.

About 5 Km from Kolhapur, near Padali, this river meets the flow of Kumbhi and Tulsi. Near village Gelawde of Taluka Shahuwadi, a dam has been built, the estimated cost being Rs.1202.19 Lakh.

Kumbhi -

The Kumbhi River rises near Bavda and flows south-east for about 25 Km. up to Kidwai. Dhamani tributary meets Kumbi near Choughalewadi. Its basin has become wide towards south-east of Sagrul. From south-east of Sangoor, this river changes its direction and flows towards north. This river meets Tulsi and Bhogavati River near Bahireshwar about 13 km south-west of Kolhapur. Near Lakhampur of taluka Bavda, a dam project was carried on in the year 1886-87 and its estimated cost was Rs. 460.81 lakh.

Tulshi-

This river rises about 8 Km from the north of the river Kumbhi. Firstly, it flows till 25 km. from north-east direction and meets river Bhogavati of Beed on south-west side of Kolhapur. A flood plain has been created in its lower portion. Near Burunbali of Ratanagari taluka a dam project on the river Tulsi was carried out in the year 1978 and its estimated cost was Rs.650.36 lakh.

Bhogvati-

Out of the above mentioned rivers, this is the biggest tributary. Approximately 3kms to the south of Fonda ghat it raises in Taput Sayadhari. After flowing parallel approximately 45kms to Fonda ghat road, river Tulsi meets the Bhogavati river near Beed. A dam has been built on Bhogavati in Ratnagari. The water from the side dam is used for agriculture through canal. It is also used for creating hydro electricity. Towards approximately 3kms south-west side of Beed, Kumbi river meets Bhogavati. Thereafter, approximately 5kms to the west side of Kolhapur, river Kashi meets from left side. Exactly opposite to northern tributaries which meet Panchganga river is Bhogavati valley. Because of the flow of the Bhogavati River, the alluvial soil is created in the area adjacent to village Feriwade. After the Feriwade village Bhogavati flows taking quite a lot twist and turns without a straight course of flow. The depth of the basin is increasing in the middle area. Further, the valley floor goes on increasing in width and when Tulsi and Kumbi River met Bhogavati its valley floor has been increased in width by about 8kms. There are many small hills surrounding these area and many small streams meet here.

The place where Bhogavati and Kasavati rivers unite together is known by the name Prayag. This place is considered to be a sacred place. The actual origin of panchganga starts forms this place. From the place of origin till the main stream has

been recognized by the name Panchganga. As four tributaries meet, the flow of the Panchganga increases. Another 2 steams Jayanti and Gomti meets Panchganga near Kolhapur. There are 4 bridges constructed in the Kolhapur city area on Jayanti stream. Panchaganga flows approximately 50kms towards east and meets river Krishna at Narsobawadi near Kurundwad. Kabnur stream meets this river approximately 4kms east of Kolhapur. The origin of this stream has been on the in the Altaya mountains.

CONCLUSION-

The rivers having their origin in Saydhari Mountain ranges, flow calmly, long distance and with high speed in Kolhapur plateau. The land from these areas is formed from basalt rock disintegration. The Kasari River stream is wide and receives its water source from a fairly large triangular area lying between watersheds of the Vishalgad range because of which its river basin has become quite big and wide. Also, the depth of the Bhogavati river basin increases in the middle area and the floor gets increasing in width and when Tulsi and Kumbi River met Bhogavati its valley floor has widen more. Because of the uniqueness of the river basins, huge amount of alluvial soil is stored in river basins on both sides of river banks which is rich in high quality soil and abundance of minerals and thus, make the land of Kolhapur fertile and unique, making it highly rich and beneficial for cultivation of quality sugarcane.

(i) ORIGIN OF THE PRODUCT (KOLHAPUR JAGGERY):-

Maharashtra has been one of the leading states in jaggery production business since 18th century. Kolhapur has been famous for its kolhapuri Jaggery. In 1886, Chatrapati Shahu Maharaj took efforts for establishment of First market place for

jaggery with all necessary infrastructural requirements and services. Kolhapur is famous worldwide for a quality of its jaggery. Today Jaggery from Kolhapur is exported in great quantities to almost 44 countries in Europe, Middle East Asia, and parts of South East Asia.

UNIQUENESS OF KOLHAPUR JAGGERY:-

General Information

Since ancient times, jaggery has been an important item of food and even today; jaggery manufacturing continues to be the most important cottage industries in India. Out of the total production of sugarcane in India, 67 percent is used for production of white sugar, 11.9 percent for seed, feed and chewing and 21 per cent for jaggery (including khandsari). In Maharashtra, about 11 to 12 per cent sugarcane is being used. Jaggery plays an important role in the rural economy. Compared to the manufacturing of sugar, production of jaggery is very simple and the capital cost is also very limited.

Jaggery (commonly known as Gur or Gul) is an important nutritive sweetener made out of sugar cane. India accounts for around 70% of the world production of Jaggery. Indian Jaggery is exported to 44 countries including Germany, Australia, Sri Lanka, Pakistan etc. Now a days, as per the European demand, farmers have started producing organic and Granulated Jaggery. Kolhapur Gul is well known established brand for years in domestic and international markets.

WHY ONLY EXPORT OF KOLHAPUR JAGGERY?

Traditionally, Indian economy is mostly dependent on agricultural products. After the green revolution, sugarcane crop became a vital product amongst the other agricultural products. Because of globalization, the Indian agricultural products

have crossed international market. Jaggery, which is made from sugarcane, is being used since ancient times and since then is an inseparable part of the Indian culinary lifestyle.

Along with Maharashtra, states like Gujarat, Madhya Pradesh, Tamil Nadu etc. also produce jaggery on a large scale as part of cotton industry. But, out of all jaggery produced by these states, the Kolhapur Jaggery is unique in its own kind because of its special features like sweetness, smell, color, endurance etc. It is on the verge of getting recognition in markets worldwide. While inspecting the specialty of this Kolhapur Jaggery, it is important to see the role of different natural aspects attributing its quality.

In the production of Kolhapur Jaggery, the below mentioned things play a naturally important role: 1) Kolhapur's geographical situation, 2) Atmosphere 3) Water 4) Rich fertile soil.

1. GERORAPHICAL AREA-

Basically this area is at sea-level height & is at the south-west of Maharashtra having a **regur** black soil, Kolhapur is the successor of these geographical attributes. Also, perennial flowing of rivers in the sea lap, wind coming from the sea, hot and humid atmosphere plays an important role in the making of sugarcane.

2. HUMIDITY-

The hot and humid climate suits the sugarcane crop most. It is useful in extracting sugar. The clear and direct sunrays are favourable for the sugarcane growth and the south-west monsoon rains prove useful. The nitrate in the air falls on the soil through rains and thereby, the crop gets a natural nitrate. The growth of sugarcane stays uniform. The temperature of Kolhapur region varies 30-37 degree C and therefore, the sugarcane grows quickly in the humid atmosphere. It ripens in winter

and growth of new sugarcane increases. The yield of sugarcane increases due to abundant rainfall, nutritious hot and humid atmosphere.

3. WATER-

Sugarcane needs water throughout the year and Kolhapur is blessed with the same. The rivers having soft water makes the sugarcane crop sweet. The taste of sugarcane is very important for Jaggery and therefore, it is equally important that the water should not be salty. Coincidently, the rivers that flow down from the mountains brings abundantly along with them rich minerals and Humasta, minute food particles because of which the crop gets sweet and less salt water. This develops the taste, colour and durability of the jaggery.

4. SOIL-

For the production of jaggery, it is necessary that the land for the sugarcane crop should be very fertile. For the production of jaggery in the Kolhapur region, the reddish black (regur) soil along the river bank which is rich in minerals is used for production of sugarcane and therefore, the said particular type of land hold importance in the cultivation of high quality jaggery. Kolhapur is spread on the banks of Panchaganga, Bhogavati, Tulsi, Kumbhi, Kasari, Doodhganga, Varana, etc rivers. The land from these areas is formed from Basalt rock disintegration. Likewise, the red land soil, alongside the river bank is highly rich in minerals. During rainy season, these rivers bring rich minerals, components like humus and make the river banks of Kolhapur rich in soil.

JAGGERY FROM HEALTH POINT-

From ancient times, the role of Jaggery in human life is very important. Its nutritious values and characteristics are necessary for the human life and health. Jaggery contains carbohydrates in large quantity. It also contains useful calories. minerals, calcium, iron etc. which help to repairing the wear and tear of body.

Jaggery is mainly useful for jaundice. It helps in increasing appetite. Human body is benefited by eating atl east 10 to 15 gms of jaggery everyday. The consumption of sugar is not advantageous for human body. In fact, the side effects of sugar have started proving to be harmful for the human body. Therefore, instead of sugar, non chemical jaggery is far more healthy. The food facility provided to children in schools is important for developing their healthy body. Inclusion of this chemical free jaggery will be helpful for the development of children and is ideal and fit.

Rich level of minerals and naturally maintain ph of the soil. The land in the Kolhapur region erupts during rainy season and because of the same the salts from the soil comes up. Due to heavy rainfall these salts get washed off. Thus the land with less PH (PH 5 to 7) keeps the taste of the jaggery perpetual.

There is large amount of grazy grass, which attracts large no of chattels, sheeps & goats their excretion gives natural fertility .There is a difference in the land type all over Maharashtra and thus this land proves to be the best for sugarcane and jaggery. Kolhapur is leading in the sugarcane cultivation. Farmers are more aware about the sugarcane cultivation. As jaggery is in great demand in the foreign markets, the farmers have started cultivating sugarcane with the help of organic fertilizers. Manufacturing jaggery without use of chemical fertilizers has increased its quality. New techniques, advanced technologies, organic agricultural processes have been applied for the production of Kolhapur Jaggery.

JAGGERY EXPORTS:

For last few years, the farmers are producing sugarcane, without use of artificial chemicals, for the production of jaggery. The sugarcane is cultivated with organic fertilizers. Jaggery manufactured for the purpose of export is made without use of any hazardous chemicals. Herbal extracts like ladyfingers, skin of vegetations are used as natural fertilizers and pesticides. Because of which the sweet taste and medicinal values are maintained. Jaggery made in such a manner is reddish-brown in colour. Such jaggery is nutritious and contains healthy minerals.

UTILITY OF JAGGERY:

The need of jagery is more felt in the Indian culinary lifestyle. The use of jaggery is a must and priority in every festivity. It is an inseparable food product from the eating habits of people in India. Liquid Jaggery and jaggery powder is also manufactured from sugarcane. This tasty molasses as a syrup along with bread would prove to be very important (useful) in abroad. Likewise, jaggery powder from only being an idea is now actually executed and manufactured. The powder has greater shelf-life than jaggery and thus, will be more useful in India as well as other parts of world. Being a substitute to jaggery, it will be available to everyone.

Many companies in India manufacturing instant food products require healthy jaggery. A well known company like ITC is using such jaggery to manufacture their food products. Thus, at the same time, the sweet marts or the chocolate manufacturing companies can make or produce useful food stuffs from jaggery.

NUTRIENT CONTENTS OF JAGGERY:

The Jaggery has less sucrose than sugar and rich source of minerals and vitamins as shown below:

Nutrient	Solid Jaggery	Liquid Jaggery	Powder Jaggery
Sucrose	60-85gm	40-60gm	83-90gm
Protein	0.40gm	0.00001gm	0.04gm
Fat	0.1gm	--	--
Carbohydrate	95.0gm	--	--
Energy	383kcals	--	383kcals
Calcium	80.20mg	300mg	75mg
Phosphorous	40.20mg	3.0mg	4.0mg
Iron	11.4mg	8.5mg	12.0mg

Total Minerals	0.60-1gm	--	--
Carotine	168mcg	--	--
Thiamine	0.02mg	--	--
Riboflavin	0.05mg	--	--
Vitamin C	0.50mg	--	--
Moisture	3.80gm	--	--
Resedued Sugar	5-15gm	9-12gm	5-9gm
PH	5.25	--	--
Ash_	0.80%	--	--
Zn	2.45ppm	--	--
Total Sugar (as invert sugar)	91.70%	--	--
Ash(dil HCL)	--	0.17%	--
Extraneous Matter	--	1.50%	--

Jaggery is a highly nutritive sweetener. And unlike White Sugar, it has minerals and vitamins in good quantities. It is considered a health product and it is used in many of ayurvedic prescriptions .In Ayurvedic medicine system, it is used as medicine for acidity, joint pains etc. Being loctogenic and Cardiac tonic, Jaggery is still used in tea and a host of other drinks in households. In many households, there is tradition of making sweetmeats from Jaggery it is also used as part of animal feed mixtures.

Main Ingredients jaggery and Kakavi

Sr. No.	Ingredients	Jaggery	Kakavi
1	Sucrose gm	65-85	40-60
2	Invert Sugar gm	10-15	50-25

3	Water %	3-10	30-35
4	Protein(mg/100gm)	0.40	0.10
5	Calcium gm	80.20	0.30%
6	Phosphorus (mg/100gm)	0.045	3
7	Iron (mg/100gm)	11.0	8.5-11
8	Total Minerals gm	0.6-1.0	--
9	Vitamin B (mg/100gm)	20.0	14.0

(j) METHOD OF PRODUCTION:-

Sugarcane cultivation technique for manufacturing Quality jaggery:

The quality of Jaggery is determined by quality of sugarcane and the process of Jaggery making. Few important Factors affecting quality and making. of Jaggery produce are as shown below :-

- **Soil**
- **Variety of Sugarcane**
- **Irrigation**
- **Fertilizer**
- **Maturity**

Soil:

Elevated, well-drained soils are well suited for growth of Sugarcane crops. Salt free(less than0.5%) Loamy Soil is preferable for obtaining good quality sugarcane. PH level of soil 6.5-7.5 is necessary, in this kind of soil Sugarcane rapidly grows. Therefore, quality of Sugarcane juice remains good. From that kind of sugarcane, good quality of Jaggery is manufactured and that type of Jaggery can be stored for long time.

Variety of Sugarcane:

The best varieties of jaggery and its product should possess physiological Characteristics like few nodes, long inter nodes, low proportion of rind tissue, yellow white Colour, and soft stem at the same time it should have high sugar with low molasses, coloring and colloidal materials. Large number of sugarcane varieties have been screened for jaggery and the following varieties have been found suitable for making of jaggery:

Early:	1) COC671Vasant;	2) C0 8014 Mahalaxmi;	3) CO 7219 Sanjivani
Mid late:	1) COM 7125	2) CO 740	3) COM 88121
Late:	1) CO 740	2) COM88121	3) CO 7527

Varieties with brix hydrometer reading of more than 19 and purity of more than 85% are suitable for making jaggery.

Irrigation:

In water management, total requirement of water is depended on sugarcane corps. Water supply at the right time and in equal proportion is essential. Sugarcane is long term corp. Therefore, Sugarcane need to 52h.cm, without seasonal sugarcane needs 300 to 325h.cm, year gap sugarcane requires 325 to 350h.cm. Generally soil needs water after 50% of evaporation water from the soil. Sugarcane corp needs water in summer after every 10 days, in rainy season rains may not or less at that time 14 to 15 days and in winter after 18 to 20 days. It depends on the growth of sugarcane crop at the first stage crop needs 5h. cm, at the time of fast growth crop needs water 7 to 8h.cm. And at the time of maturity 5 to 6h.cm crops required water. Modern irrigation methods are also useful for sugarcane crops as well as it helps to save water. Before 15 days of cutting the sugarcane supply of water is stopped.

Fertilizer:

Fertilizer application should be as per soil analysis of N P K levels. Out of total expenditure on production of sugarcane generally 30 to 35 % spent only on fertilizer.

For it we should know scientifically method for which fertilizer, at which time and which manner is necessary. After soil analysis use of chemical and organic fertilizer in equal balancing is necessary.

Maturity

For the production of quality jaggery there is need of good quality sugarcane juice and its all depend on maturity of sugarcane. If jaggery is made from immature sugarcane it results in low quality production jaggery and it is also not good for storage. Therefore, after the maturity cutting of sugarcane is starting.

PROCESSING AND MANUFACTURING OF JAGGERY:-

INTRODUCTION:-

- Sugarcane, being the only ingredient of jaggery, is produced on a large scale in Kolhapur. The seeds need to be sown for the sugarcane crop, are specially selected which are useful for the manufacturing of jaggery. The cutting of the cane takes place after a year when the crop of sugarcane is fully developed. Because of the value of the soil and the geographical atmosphere of Kolhapur, it adds to the sweetness and its long-lasting capacity of the cane. The most important aspect of the jaggery units in Kolhapur is that they are situated in the farms itself. Therefore the transportation of the cane takes place immediately to these jaggery units. This not only saves the time but the transportation cost.
- Because of the cutting and immediate utilization of the cane for the production of jaggery in the units maintains the freshness of the cane juice. This immediate utilization maintains the quality of the juice and maximum quantity of the juice can be extracted.

(Flow charts attached is herewith)

***STEPS INVOLVED FOR THE MANUFACTURE OF JAGGERY:-**

PART A

- Firstly the fresh sugarcane is crusher in the sugarcane crusher and the fresh juice is extracted and the same is properly filtered to maintain the quality and hygiene. This extracted juice is stored in the tank. The pH of this juice is approximately 5.2 to 5.3 and the same is stored for 2 to 3 hours. The deposits and insoluble impure substances get separated automatically as the juice is kept stable.
- After storing, the juice is heated in a churner at boiling temperature. The said churner has a capacity of 1000 liter. The juice pH value is averagely recorded as 4.8 to 6.0. Calcium carbonate (150- 200gm /1000litre) developed ladyfinger podwer/sibblings is mixed in this said churner along with **baggies.** This helps to remove the impurities. First dirt (**Dhor** dirt) is removed at this stage when the temperature reaches 85 degree C
- The juice is further boiled in the churner. The juice pH is averagely recorded as 5.5. Phosphoric dilute acid (without arsenic) 150-200 ml/1000 Lt. is mixed in the juice contained in churner. At this stage, second dirt (**Son** dirt) is removed at 99 degree C.
- The above mixture of juice is then used to prepare Liquid Jaggery(part B) and solid jaggery(part C)

PART B-LIQUID JAGGERY MAKING PROCEDURE:

- The temperature of the liquid jaggery in the churner is maintained at 105-106 degree C.
- This hot syrup is cooled down in the churner.
- This clod syrup is kept stable for 72 hrs in packed barrels. This helps to removes the impurities.

- The pure syrup is then is boiled giving low heat and citric acid(0.04%), potassium metabuy sulphite(0.01%) or benzoic acid(0.5%) is mixed in the same. This removes all the impurities.
- This clean syrup is then filled in the clean liquid jaggery germ free bottles and the bottles are sealed to make them air tight.
- The information is labeled on the said bottles and kept in the storages, which thereafter, reaches traders and consumers.

PART C-SOLID JAGGERY

- The above juice (as described in part A) is further boiled in the churner and edible oil 200ml./1000 Lt. is mixed in the same. The temperature of the syrup is 106 degree C. The said syrup solidifies when it reaches 118-120 degree C. It is then inspected properly and the churner is removed from the fire.
- The first stirring of the said hot syrup is done by giving it cold blowing till its temperature drops down to 96° C and further, the second stirring till the temperature drops down to 91° C.
- When the temperature reaches 76 degree C, the said hot thick syrup is filled in the jaggery containers and thus, the jaggery is ready to consume and stored in clean and hygienic places. The same is purchased by the traders and therefore, by the consumers.

CONCLUSION

The Kolhapur jaggery is thus, processed and manufactured in clean and hygienic conditions. No harmful chemicals are used in this process. The sweet and fresh cane of Kolhapur not only maintains quality and endurance, but also adds to its taste making is superior and unique maintaining the important natural nutrients and also making it a healthy to human consumption and body.

APPLICATION OF JAGGERY

Its regular usage is advocated in the daily diet as it is a healthy and unrefined form of sugar. Interestingly, jaggery is used for the coating of insides of a tandoor oven to enable better flavor of dishes.

Bakery and confectionary

Medicines

Food and Beverages

Alcoholic Beverages

Sweets and chocolates

Bacterial growth stimulation and multiplication in organic farming.

Jaggery is a traditional unrefined non-centrifugal sugar consumed in Asia, Africa and South America. It is made for direct consumption. This type of sugar is a concentrated product of cane juice without separation of the molasses and crystals, and can vary from golden brown to dark brown in color. It contains up to 65-85 % sucrose, up to 10% Glucose , moisture content of up to 5-8 %, and the remainder made up of other insoluble matter such as ash, proteins and fibers.

The Indian state of Maharashtra is the largest producer and consumer of jaggery. In Maharashtra most vegetables curries and dals contain jaggery. Jaggery is specially used during Makar Sankranti for making sweetmeat called tilgul . In rural Maharashtra, water and a piece of jaggery is given when someone arrives home from working under a hot sun. Kakvi , a byproduct from production of jaggery, is also used in rural Maharashtra as a sweetener. It contains many minerals not found in ordinary sugar and is considered beneficial to health by the tradional medical system Ayurveda . Jaggery made from sugarcane contains vital nutrients like: Glucose, Calcium, Iron, Phosphorus, Protein, Copper etc.

HEALTH BENEFIT OF JAGGERY

- Jaggery is made in the natural way and no chemicals are used for its processing for which it does not loose its original properties. Hence it is rich

in important mineral like salts: 2.8 gms/ 100 grams, whereas only 300 mg/ kg is obtained in refined sugar.

- Magnesium present in jaggery strengthens our nervous system and helps to relax our muscles and gives relief from fatigue and take care of our blood vessels. It also along with selenium acts as an antioxidant property scavenge free radicals from our body.
- The potassium and low amount of sodium present in it maintain the acid balance in the body cells and also combats acids and acetone and control our blood pressure.
- Jaggery is rich in iron, and helps to prevent anemia. It also helps to relief tension take care of asthma as it has anti allergy properties .It is good for migraine and is good for girls those who do not get free flow at the time of their period. Even at the time of post pregnancy it has great benefits to perform to remove all clotted blood from the body of a woman within post 40 days after the birth of a baby.
- The preventive ability of jaggery on smoker's smoke-induced lung lesions suggest the potential of jaggery as a protective food for workers in dusty and smoky atmosphere even for those who are engaged in woolen industries, the wool dust clogged in the food pipe could be cleared with jaggery. Thus we may conclude saying that those who are exposed to higher levels of pollution. Jaggery helps them to breathe easier and counter pollution problems naturally
- It has moderate amount of calcium, phosphorous and zinc so it helps to optimum health of a person .along with all its benefits it purifies the blood and prevent rheumatic afflictions and bile disorder thus help to cure jaundice (take pre soaked jaggery juice).
- It is good for Dry Cough, Cough with Sputum, Indigestion, and Constipation too.

k) UNIQUENESS:-

- The perennial rivers that flow down from the mountains brings abundantly along with them making the soil of Kolhapur rich in minerals and increases the nutrient value leads to quality Jaggery.
- The rivers arising from the Sahyadri mountains having sweetness which makes the sugarcane crop of Kolhapur sweet and distinctive.
- The average temperature of Kolhapur region is 30-37 degree C and therefore, the sugarcane grows quickly in the humid atmosphere.
- Because of salt free water from rivers, Kolhapur jaggery's taste, colour and its durability is maintained.
- colourbody proportion is less in Kolhapur jaggery compared to others, while preparing jaggery. Thus, the coloured impurity is easily removed to maximum extent.
- Kolhapur Jaggery contains carbohydrates in large quantity.
- Kolhapur Jaggery is white and golden colored chemical free pure and hygienically distinguishing it from other chemical used jaggery.
- Kolhapur Jaggery contains Glucose, Minerals, Calcium, Vitamins, Iron, Phosphorous, Protein, Copper, etc. vital for human body.
- The traditional jaggery blenders are specialized in the blending it to light red-brown colour as required.
- Kolhapur jaggery is prepared under most hygienically environment and scientifically packed with no added Chemicals, Colours, Additives and Flavors.
- One notable aspect is that the seeds used for sowing of sugarcane are specially made by the name Panchaganga after the Panchanganga river in Kolhapur because of the the benefits of soil and minerals received from the said river and its sources.

l) **Inspection Body:** Kolhapur Agricultural Produce Market Committee established through the Kolhapur Government Gazette, 6th October 1945 further recorded through APMC Act & Rules, 1967

m) Other: Kolhapur is only place in Maharashtra where near about 25,000 farmers and dependence are growing jaggery. They produce around 9 lakh quintal jaggery per year. Kolahpur Jaggery is an intellectual creation from the farmers in that region. It should be protected under GI as its quality, reputation which are essentially attributable to Kolhapur for more than hundreds of years.

Date: July 7, 2011 Signature

Place: Pune Ganesh S. Hingmire

GMGC, Pune

(For Kolhapur Agricultural Produce Market Committee)