



ORIGINAL RESEARCH PAPER

Commerce

AN EVALUATIVE STUDY ON ORGANIC TEA WITH SPECIAL REFERENCE TO HATHIKULI TEA ESTATE.

KEY WORDS: Organic, Inorganic, organic tea, sustainable development.

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ABSTRACT

Green revolution brought a drastic change in the scenario of Indian agriculture, starting from the north to other parts. It acted as life guard to Indian Agriculture at that time. Now the question is 'if the changes at the time of revolution sustainable for the country environmentally?'. The answer will be not sustainable. The environment is suffering due to the mass use of artificial chemical. On the other organic production is a sustainable way which doesn't affect the environment and living being. It is a system of farm management and production of commodities with no use of artificial chemical. Likely organic tea may be termed as tea, which are produced without the use of chemicals. The paper tries to trace the origin of organic tea, the procedure adopted in the preparation of it and to analyze the procedure of preparing organic manure and pesticides.

INTRODUCTION

Tea have stood the test of time and its spans both centuries and cultures. From the days of British Colonialism the popularity of tea has increased in India. The British established their East India Company and tea trade began to flourish worldwide from Asia to Europe and indeed off to America. Thus tea has gained an important role in the life of people around the globe.

Scientifically known as *CAMELLIA SINENSIS*, the tea plant is related to *Camellia japonica*. All tea originated from one of the two important sub species, either the Indian Assam tea known as *Thea assamica* or Chinese tea that is *Thea sinensis*. Grown in India, Sri Lanka and in other parts of the world. The assam tea produces large strong tasting leaves while the chinese tea cultivated in China, Taiwan, Japan and parts of Darjeeling, yields a more delicate tea with smaller leaves. Climate, Altitude and soil play an important role in the development and determination of the quality of tea.

Tea is mainly produced in two ways : organic and inorganic. Organic method is a procedure in which a product is free of harmful chemical pesticides and fertilizers. In this method instead of spraying synthentic pesticides herbal concoctions are used which are prepared in the farm itself. On the contrary, Inorganic method includes extensive use of pesticides and fertilizers for plantation and all. It does not respect the natural cycle of plants and only emphasises on it quick and huge volume of production.

However, people now are more health conscious and aware of the harmful effect of inorganic method of production. So as this is an era of societal marketing ie, emphasizing more on consumer demands, many individual and organisations have initiated the agri-practice in organic way.

In prospect of our state of Assam, Amalgamated Plantation Private Limited (APPL) has started the organic tea cultivation in one of its tea estate namely Hathikuli Tea Estate near Kaziranga National park, Assam. Such initiatives by all will eliminate the harmful effect of fertilizers, pesticides and chemicals used in agricultural land for years.

REVIEW OF LITERATURE:

The following literatures on perception of organic product, green marketing, consumer perception on organic tea have been reviewed for identifying the research gap.

T. Kumarasamy, and J. Murugesan, (2017), Consumer perception on green marketing with special reference to organic food product in Kumbakonam town. The paper basically deals with finding the consumer perception particularly in the semi urban area by giving special reference to organic food product and the awareness level of the respondent about organic food product.

Ghai S., and Ramawat N., (2016), A Study on consumer perception

and preference s towards organic tea in Delhi NCR. The study focus on the factors which influences the purchase of organic tea and the consumer buying motives and attitudes toward organic tea at NCR region, Delhi.

Kumar S. and Chandrashekar H.M., (2015), A Study on consumers behavior towards organic hood products in mysore city. The study tries to gain knowledge about consumer attitude towards organic product, its consumption behavior and market potential.

Chandrashekar H. M., (2014) Consumers perception towards organic products- A Study in mysore city. The study focuses on analyzing the potential market in the study area along with the consumer purchasing behavior and product perception.

Acharya (2009), Organic agriculture is a production system that sustains the health of soils ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local condition rather than the use of inputs with adverse effects. Organic tea farming promotes and enhances biodiversity, biological cycles, soil biological activity through management practices that resort, maintain and enhance ecological harmony.

Baskota (2009), on one hand organic tea plantation in Nepal is difficult factor, on the other hand it is difficult for marketing. Market of organic tea is not only internal it is also spreaded worldwide.

Khanal, Ritukant (2002), A study has been conducted on organic tea cultivation. Here the researcher has made a brief assessment of the production and price of conventional tea and organic tea in Nepal.

Research gap: From the above review of literature it has been seen that all the research have been carried on organic farming in other states and countries, no study has been conducted on Bokakhat subdivision where Hathikuli tea state is located and does not throw much light on the procedure of preparation of organic tea. Thus the present study tries to fulfill these gaps.

OBJECTIVES OF THE STUDY:

1. To trace the origin of tea and genesis of organic tea.
2. To study the procedure involved in the preparation of organic tea.
3. To analyze the procedure adopted in preparing organic manure and pesticides.

Geographical scope:

The research enquiry is conducted over only one tea estate, i.e. Hathikuli Tea Estate located in Golaghat District and Karbi Anglong District.

METHODOLOGY ADOPTED:

Research methodology is a way of solving the research problem

systematically. The methodology of the study comprises of population, sample, sources of information, ways of collecting those information, tools used etc.

Research design:

The study is descriptive and analytical in nature. Here the researcher from the population, that is tea, a sample of organic tea in Assam in a particular tea estate is selected.

Sources of data:

This study is based on both the sources. Primary data are collected by observation method, interview method, and collection of data through is done with schedules. Interview methods include direct personal interaction.

Secondary data are collected from various publication of the central, state, local, foreign technical and trade journals; books, magazines newspaper report, research report, publications etc.

Meaning of organic and inorganic:

ORGANIC

According to Merriam Webster dictionary

Of food: grown or made without the use of artificial chemical;

Of, relating to, or derived from living organisms

Of, relating to, yielding, or involving the use of food produced with the use of feed or fertilizer of plant or animal origin without employment of chemically formulated fertilizers, growth stimulants, antibiotics, or pesticides.

INORGANIC

According to Merriam Webster dictionary,

Not consisting of or derived from living matter

Relating to or denoting compounding which are not organic.

According to business dictionary,

In general, substances of mineral origin (such as ceramics, metals, synthetic plastics, as well as water) as opposed to those of biological or botanical origin (such as crude oil, coal, wood, as well as food). With certain exceptions, inorganic substances do not contain carbon or its compounds.

Organic Tea:

Organic tea is prepared by completely natural means and is, therefore, free of synthetic fertilizers, herbicides and pesticides. The agriculture of organic tea sustains the health of soils, ecosystems and people.

Organic tea has many beneficial qualities such as: it improves blood circulation, the immune system, it lessens the likelihood of heart attack or stroke, it may fight against cancer formation.

Inorganic tea:

Inorganic tea or non-organic tea makes use of synthetic pesticides and fertilizers for maintaining a high yield. Synthetic pesticides are known to pose significant, acknowledged health risks to people – including birth defects, damage to the nervous system, and disruption of hormones and so on. Teas that are not certified organic are often air dried without rinsing, meaning that synthetic chemicals are dried on the leaf and may end up in our cup of tea. This can affect the quality of the tea and pose potential health risks.

BRIEF HISTORY OF TEA.

The history of tea is marked by richness in both facts and friction. Its history of origin is deeply rooted in mystical legends, but its growth in popularity is achieved by facts of real world, economic, social, and political maneuvering.

2.1.1 Mystical roots of Tea :

There are various legends behind the history of tea which are famous from time immemorial. Some of these legends are stated below.

According to one of the legends, In China, the story goes that in

the year 2737 BC, Emperor Shen Nung was relaxing in the shade of a camellia tree when one of the leaves dropped into his cup of hot water. It smelled sweet and enticing, so he took a drink and found he had discovered something magical. And from that day tea came to know.

In 59 BC Wang Bao wrote the first book on tea .Again in 220 AD a surgeon name Hau Tuo wrote a book name Shin Lun which describes how tea helped to improve mental function. In 350 AD a Chinese dictionary cites tea for the first time.

Another legend related to the origin of tea involves the founder of Zen Buddhism, Bodhidharma. As the legend goes, Bodhidharma ventured off to meditate in a cave for nine years, on a quest to reach enlightenment. Much to his dismay, he fell asleep in the midst of his meditation. Out of frustration, Bodhidharma tore off his own eyelids to insure that it would never happen again. Where his eyelids hit the ground, tea plants are said to have appeared. It is during the period of 400 to 700 A.D.

Another Chinese legend goes that the God of agriculture would chew the leaves, stems and roots of various plants to discover medicinal herbs. If he consumed a poisonous plant, he would chew tea leaves to counteract the poison.

Tea originated in Southeast Asia, specifically around the intersection of latitude 290 N and longitude 980 E. This intersection point includes the lands of northeast India, north Burma, southwest China and Tibet. The tea plant was introduced to more than 52 countries, from this centre of origin.

There are morphological differences between the Assamese and Chinese varieties and this has led to botanists to assert a dual botanical origin of tea. However statistical cluster analysis, the same chromosome number ($2n = 30$), easy hybridization all appear to demonstrate a single place of origin for camellia sinensis – the area including the northern part of Burma and Yunnan and Sichuan provinces of china.

2.1.2 The Indian Tea kingdom:

India is one of the world's top tea producers, consuming 70 percent of its own production. (source- www.historyoftea/india.in as on 30 may 2016). While India is predominantly an exporter of black tea ,and other tea varieties are becoming increasingly common.

Commercial production of tea was first introduced into India by the British. In an attempt to break Chinese monopoly on tea. Prior to British, the plant has been used for medicinal purpose. The first reference to tea was in the ancient epic of Ramayana when hanuman was sent to Himalaya to bring 'sanjeevani' plant, however scientific studies have shown that the 'sanjeevani' plant is in fact a different plant and is not related to tea.

Other references have been found of two tribes of North Eastern part of India, the Singpho tribe and the Khamti tribe also validate that they have been consuming tea since the 12 century.

The next recorded reference of tea in India after 12th century was in 1598 , when a Dutch traveller Jan Huyghen van Linschoten, noted in a book on tea that the Indians ate the leaves as a vegetable with garlic and oil and also boiled the leaves to make a brew(Wikipedia.indianteaconsumotion.org assessed on 18th January 2016) Ukers (1935) on the other hand asserts that although tea is said to have grown in India since a long time but it was discovered by Robert Bruce ,an employee of the East India company who found tea growing healthily in some hills near Rongpur (near present Sibsagar).

The assertion of Ukers has also been reinforced by Tocklai Tea Research Institute which states that the discovery of tea in India has been in the later part of 1823, when major Robert Bruce encounter as the chief of Assam Singpho Tribe, Bessa Gaum and subsequently was offered tea as both medicinal drink and as a

beverage

However the commercial production of tea in India did not begin until the arrival of the British east India company. It was basically started in 1854 with plantation in the northeastern part of India. By 1856 plantation activities started in other part of India (mandal,2006).

The Chinese variety of tea is used for Sikkim Darjeeling tea, and the Assamese variety of tea, colonial to the native to Assam and everywhere. The British introduce tea culture into India in 1836 and Ceylon(Sri Lanka) in 1867.

Having considered the national and international scenario, the researcher now confine its to the discussion on tea in Assam.

2.1.3 Tea in Assam:

The introduction of tea in Assam is attributed to Robert Bruce . Bruce reportedly found that plant growing 'wild' in Assam while trading in the region. Maniram Dewan directed him to the local Singpho chief besa gam. Bruce noticed local tribesmen (The Singphos) brewing tea from the leaves of the bush and arranged with the tribal chiefs to provide him with samples of the leaves and seeds, which he planned to have scientifically examined. Robert Bruce died shortly thereafter, without having seen the plant properly classified. It was not until the early 1830s that Robert's brother, Charles, arranged for a few leaves from the Assam tea bush to be sent to the botanical garden in Calcutta for proper examination. There, the plant was finally identified as a variety of tea, or *Camellia sinensis*, but different from the Chinese version (*camellia sinensis* var. *sinensis*)

In the early 1820s, the British East India Company began large scale production of tea in Assam, India. In 1826, the British East India Company took over the region from the Ahom kings through the Yandaboo treaty. In 1837, the first English tea garden was established at Chabua in upper Assam; in 1840, the Assam tea company began the commercial production of tea in the region, run by the indentured servitude of local inhabitants. Beginning in the 1850s the tea industry rapidly expanded, consuming vast tracts of land for tea plantations. By the turn of the century, Assam became the leading tea producing region in the world.

Maniram Dutta Baruah, popularly known as Maniram Dewan was an Assamese nobleman in British India. He was one of the first people to establish tea garden in Assam. It was Maniram who informed the British about the Assam tea grown by the Singpho people. When tea committee visited Assam to study the feasibility of tea cultivation, Maniram met Dr. Wallich as a representative of Purandar Singha and highlighted the region's prospects for tea cultivation. In 1839, Maniram became the Dewan of the Assam tea company at Nazir. In the mid 1840s, he quite his job due to the differences in opinion with the company officers. By this time, Maniram had acquired tea cultivation expertise. He established his own tea garden at Chenimora in Jorhat, thus becoming the first Indian to grow tea commercially in Assam. Jorhat later became home to the Tea Research Labouratory Tocklai Experimental Station. He established another plantation at Selung(or Singlo) in Sibsagar.

The Cambridge world history of food, Weisburger and Comer write.. " the tea cultivation begun there(India) in the nineteenth century by British, however, has accelerated to the point that today India is listed as the world's leading producer, its 7,15,000 tons well ahead of China's 540,000 tons, and of course, the teas of Assam, Ceylon(from the island nation known as Sri Lanka) and Darjeeling are world famous. However, because Indians average half a cup daily on per capita basis, fully 70 percent of India's immense crop is consumed locally.

As per 2013 the consumption of green tea in India was growing by over 50 percent a year.

THE PROCEDURE OF PROCESSING TEA AS A WHOLE

All tea types have a very similar set of methods for tea processing

with only minor variations. The process generally involves plucking, sorting, cleaning, withering, oxidation/ fermentation, rolling and drying. Different types of tea can be produced by application of various methods such as white tea, black tea, green tea, yellow tea and so on.

The different stages of tea processing are:

- **Plucking:** Tea leaves and flushes consisting of a terminal bud and two young leaves are picked from the tea bushes typically twice a year during early spring and early summer or late spring. Picking is done by hand when a higher quality tea is needed, or where labour costs are not prohibitive. Tea flushes and leaves can be picked by machine, though there will be more broken leaves and partial flushes reducing the quality of tea.
- **Withering:** The freshly plucked leaves, having 75% of moisture, are spread out on withering troughs and a flow of cool air helps reduce moisture. This process can last from 8 to 18 hours depending on weather conditions. During withering the moisture content is reduced to 45% and the cell membrane permeability of tea leaves is increased allowing for the disruption of cell structure.
- **Rolling:** the withered tea leaves are then rolled several times. Rolling is done to break the leaf cell walls and release essential oils to start a chemical reaction of fermentation.
- **Fermentation:** During the fermentation, also known as oxidization, the leaves are placed in the cool and dark rooms where an oxidizing enzyme produces brown products from the remaining water.
- **Drying/ Firing:** The fermented leaves are then dried with the help of hot air passed over them to deactivate fermenting enzymes. Drying or baking of tea leaves also reduces the moisture level to 2- 3%.
- **Sorting and Gradation:** dried or baked tea is sorted into different grades by passing them over a series of vibrating screens of different mesh sizes.

The Procedure of preparing different types of Organic Tea in the Estate.

Generally Tea production falls into one of two styles:

Orthodox and Non- orthodox, the latter usually being the CTC, or 'Crush-Tear-Curl', method.

ORGANIC ORTHODOX:

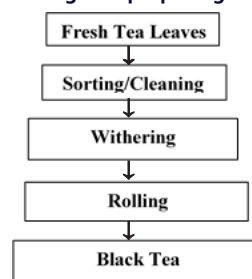
Plucking, Withering, Rolling, Oxidation, and Firing. On the other hand, CTC, or Crush- Tea- Curl production is a very different process. All five steps of Orthodox processing are performed, but much more rapidly and in a limited fashion. This method was invented specifically for the black tea, in an effort of saving time and money.

Each type of tea has different taste. The different kinds of tea are distinguished according to the processing they undergo.

ORGANIC BLACK TEA:

In preparation of black tea the tea leaves are rolled immediately after withering to help get the oxidation processes started quickly. The leaves are then fully oxidized before they are dried, which is how they get their dark color and rich flavor.

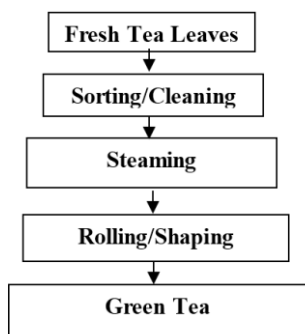
Flowchart Describing the Process of preparation of Black Tea Chart No-1 Different stages of preparing Black Tea



ORGANIC GREEN TEA: Green tea is passed through a steaming treatment before rolling. Steaming applies light heat to the leaves to help halt the oxidation process before the leaves are rolled into shape. Steaming also helps to expose the fresh, grassy flavor of the leaves. Green tea leaves are not allowed to oxidize after rolling, which is why they remain light in color and flavor.

Flowchart Describing the Process of preparation of organic Green Tea

Chart No-2 Different stages of preparing organic Green Tea

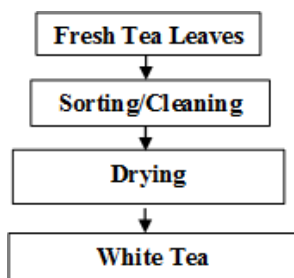


ORGANIC WHITE TEA:

For the preparation of white tea the freshly plucked green tea leaves are simply allowed to wither and dry in a carefully controlled temperature of 110 / 65 degree Celsius, which results in the most delicate, fresh-from-the-garden tasting tea. This tea is neither rolled nor fired in artificial heat. So it is essentially non-oxidized and the least processed type of tea.

Flowchart Describing the Process of preparation of White Tea

Chart No-3 Different stages of preparing White Tea



Vermicompost is used as manure for the land.

THE CONCEPT ON ORGANIC INSECTICIDES

An organic insecticide is a pesticide that uses only natural components to kill bugs. Those are the organic materials to repel insects. Organic insecticides can be made from a number of different materials and plants such as lime, posotia paat (scientifically known as vitex negundo), neem oil, garlic, etc. Different raw materials are used.

PREPARATION OF ORGANIC INSECTICIDES

Different ingredients are used to protect the tea leaves from harmful insects. Tea farm use both home made or farm made organic insecticides and ready- made organic insecticides available in the market.

The plants used for the preparation of organic insecticides

- Posotia paat (vitex negundo)
- Dhoupat tita (clerodendrum colebrookianum)
- Basak boga (phlogacanthus wallichii)
- Phothorua bih logonic (alternanthera)
- Neem (Azadirachta indica)

THE PROCEDURE OF PREPARATION OF INSECTICIDE

As stated above, H.T.E. uses organic manure, i.e. fertilizer and

insecticide for its garden. The procedure of preparing Organic insecticide is stated below:

The leaves and stem of the plant, i.e. Posotia Paat(vitex negundo), Dhoupat Tita(clerodendrum colebrookianum), etc. are brought from their own garden in the tea estate by labourers. Those plants are cut into smaller pieces and put into tanks filled with water. These tanks, varying from 50 to 100 litres are then covered with meters of cloth and kept for 2 to 3 days.

After the period of 2 to 3 days the labourers separate the leaves and stems from the tank. The left out water is the resultant insecticide.

The prepared solution of insecticide is filled into the sprayers which are then taken by the worker to spray in the tea garden.

Findings:

The above study has been done by the researcher at Hathikuli Tea estate on its organic mode of production. They have been producing organic tea, organic manure, organic insecticides and some organic masala like black pepper. The adaptation or going organic is a challenging task for any farm for various region like other nearby tea estate are using chemical which mix in air and water and affects the organic firm. Organic farming requires intensive care, resulting involvement of huge number of labour by increasing the labour cost. Organic farm has to spend a lot on research, training and development, which increases the cost of production. Organic farm should have to take care of the raw product to the highest as because organic farms doesnot use chemical preservatives, due to which the chances of damage is maximum if not taken care of. Natural predators are best way to control and mange pest. The farms pet some predators which are helpful to the farm products and acts as a natural pesticide. Use of vermin compost to nourish the soil is the best way to get rid of chemical fertilizer (like urea, potassium etc.) which is not only good for the soil but also a good way of waste management.

SUGGESTIONS

Over the past couple of decades, the demand for organic tea has increased considerably, and it shows no sign of stopping. The pressure to go organic is a blessing for the region's soil, which after over a hundred years of intensive development and cultivation is eroding and exhausting with every harvest.

The use of inorganic pesticides sprayed on tea bushes is likely to affect the neighbouring organic tea farms, through the air or ground water. Therefore, the tea cultivators who cannot run their tea estate in total isolation might go for a discussion and implementation of organic procedure of tea cultivation.

Although the organic tea market is improving, there are many conventional tea growers in the market. People in general do not go for organic tea due to its increased price. However, some people opt for organic tea because of its beneficial qualities. Researcher suggests that the organic farm should promote organic tea properly.

Organic tea does not necessarily taste any better than conventionally grown tea. In fact, some organic teas taste worse than other conventional tea, so, it is better to take some research to make it taste better.

The tea growers are still negotiating the challenges of growing tea in an entirely, organic way. The tea growers face a dilemma in making a choice between the highly profitable way of tea production, i.e. the conventional way, and the eco-friendly way of producing healthy organic tea.

CONCLUSION

From the study on organic tea, the researcher concludes that organic way is a sustainable way, which without harming, only increases the quality or the standard of tea. With the growing awareness among the people, organic way of production is

getting more and more attention, resulting to increase in the demand. The various authorities like Tea Board of India is taking steps to promote organic tea, which are like helping to get certification or providing a channel to marketing. Likewise various small tea growers are using natural way in producing tea, natural way is the way in which the firm practice the same way of production like organic product but does not get certificate to claim as organic. Assam tea is characterized by their large glossy leaves which create a fine tea.

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