# The Effect of the Applying Modern Methods of Tea Cultivation on the Quality of Iranian Produced Tea

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***Abstract:*** *Iran is among the countries that has a higher mean of tea consumption than the world,so that by having 1% of world population consumes about 5% of total tea of the world [1] and in terms of consumptions is the $9^{th}$ tea consumption country in the world [2].Although, by passing  one century from commencement of tea cultivation and production in Iran, tea cultivation surfaces has been developed and numbers of tea making factories has been increased, no progress has been made in improvement of quality of produced dried tea and this product is not accountable for qualitative and quantitative needs of consumers [3].However, low quality of Iranian tea and lack of interest the consumers lead to reduction of selling domestic tea and their accumulation in warehouses with no standards and proper facilities. In case of continuing this process, thousands of people occupied in the various stages of production and selling will be unemployed and the country will face more severe economical problems. Thus, in this research in order to prevent these problems and with the objective of increasing the quality of domestic tea, the effect of the applying modern methods of tea cultivation on the quality of Iranian produced tea is assessed. Method of library studies and field research were used and essential information for answering the research question was collected by applying interview and questionnaire. In this research Mean, Standard Deviation and Column Chart have been used as descriptive statistics for defining and describing variables and Two sided T-Test has been used as inferential statistics for answering the research question. After analyzing obtained data from questionnaire, research hypothesis was confirmed in confidence level of 95%. Therefore, it can be stated that in confidence level of 95%, applying modern methods of tea cultivation effects on quality of produced dried tea.*
***Keywords****: Tea, Tea Quality, modern methods of tea cultivation.*

## I. Introduction

In terms of production and employment in the country, Iranian tea industry is particularly important especially in tea areas of north of the country and over 70000 households make money via producing tea in two provinces of Guilan&Mazandaran[4]. But unfortunately, domestic produced tea lacks require desirability and quality which leads to the fact that Iranian produced tea fails to compete with the well-known and high quality foreign teas and reduces its market share every day so that not only the foreign markets but also the major parts of domestic ones have been lost and also domestic consumers prefer to use the high quality foreign tea.

Iran has the special position in rural arts and agricultural product like peanuts, saffron and date, but unfortunately, it could not have a good position in the world's tea market and even in the international market. One of the reasons of falling tea industry in Iran compare with the first-grade countries in tea industry such as India, China, Srilanka. Kenya and so on can be the problems that Iran is faced with, which some of them are mentioned below:

A. In spite of the fact, that tea has a long history in Iran, the knowledge of tea farmers in using the modern methods of cultivation; nursing and harvesting tea is low and requires continuous scientific and quantitative training.

B. After 110 years of cultivation and production of tea in Iran, the average age of tea bushes is 70 years, so their exploitation time is over and with considering the quality of produced tea; their output is in a very low range [5]. So they should be cut from beneath or be replaced by linebreeding acts.

C. Most of the tea farms of the country are built traditionally and without considering any methodical principles of agriculture, thus the majority of them lack of suitable arrangement, distance between plants, declivity and other elements, which are necessary for tea forms can be seen. Consequently, the expenses of maintaining and exploitation of tea farms will rise.

D. About, 84% of tea farms of the country are below one hectare. So in consequent of small space of tea farms and lack of financial sources of the owners, any better farming and line breeding act is impossible or very difficult [6].

E. The distribution of tea farms and their distance to the tea factories cause that tea farmers put the harvested green leaf in basket, package them and transfer them to the factory by lorry, van horse or unpack and compressed in a truck and even on foot. So packing and the period from harvesting to deliver green leaf

to the factory will hurt and reduce the quality of tea green leaf. Moreover, produced dried tea of this primary material does not have enough quality.

Small extent of tea farms, lack of livelihood and profitability to the tea farmers cause that farmers prevent to do breeding and farming operation because of lack of affordable and economic problems. So due to the age of tea plants and lack of efficiency, these bushes cannot have tender and green leaf proper to tea production [7]. Although tea is a perennial plant, its economic performance is different according to the environmental condition and tea bushes in different part of the world. It is estimated about 35 to 40 years and because tea in Iran dates back more than one hundred years, most of its bushes don't have economic proficiency because of senility [8]. Therefore, the produced tea from harvested leaves of these bushes doesn't have enough quality and cannot compete with foreign tea. And also senility of bushes reduces the production, and should be gradually eradicated and instead of old and low-productivity bushes, new amended sapling should be cultivated. The above problems have indicated the necessity of performing vast research to find the ways of increasing the quality of produced dried tea of country and its correct application. Shokrgozar and Sanjeri (2001) have appraised the affective factors on tea quality in tea making operations and studied the factors such as standard harvesting of leaf, difference in harvest season, fertilizer and withering, fermentation and drying stages on quality of produced dried tea [9].

Having established and developed research centers in tea growing areas and large complexes of tea industry and cultivation, using the results of research in the process of production and training new methods of crop improvement and seed and plant breeding to farmers and also applying the most modern tea making technology and machinery and implementing a mechanized system for the whole stages of tea cultivation and production, countries such as India, Seri Lanka, Kenya and China could proceed for performing essential and continuous changes in production stages and in addition to qualitative and quantitative rise of produced dried tea were succeeded to reduce the wage and final cost of production by applying mechanized system, pruning and tea leaf harvesting machinery and be known as one of the most successful countries in producing and exporting tea in the world. Great companies invested in the process of cultivation, industry, distribution and tea international commerce of these countries and established the best tea gardens in large measures using the most advanced technologies and emphasizing on continuous innovation and research and proceeded to produce desirable and high-quality tea commensurate with the world standards by studying the taste of consumers in various global markets.

However, tea production operations in Iran are not performed based on standard and scientific principles, and its strategies are mostly old and lack innovation. Furthermore, due to deterioration of most of the machinery and tea making equipment and lack of using a mechanized system in tea gardens, in addition to rise of production and final cost, produced dried tea does not have required quality.

To solve this problem, we should promptly proceed for forming and developing research departments in tea production centers and perform vast studies in the field of modern knowledge and technology of tea making and create continuous ties with research centers of countries that are pioneered in tea industry so that in addition to achieving the advanced science and technology and their correct use in tea industry and cultivation could reach the produced dried tea of the country to its real position.

## II. Methodology

Descriptive-Analytical method has been applied in this research. Thus, description of status of tea cultivation and industry and identification of method of the effect of the applying modern methods of tea cultivation on quality of produced tea have been studied and analyzed.

The researcher has selected the method of research based on field study and survey and performed library studies and interview with tea specialists and experts of tea cultivation and industry to collect information. To study and analyze key variables of research, he has designed a questionnaire and distributed among the samples. To define and describe variables, he has used mean index, standard deviation and column chart and t-test was used to test the hypotheses in inferential statistics.

**Statistical Sample and Population**

Statistical population of this research are defined as the entire managers and experts of tea making factories of Guilan Province, all tea experts andspecialists of occupied in Tea Organization, State Tea Researches Center and other related organizations with tea. Furthermore, the entire managers of tea making factories and experts and specialists of tea making of Lahijan City, the 2nd tea producer city in terms of tea cultivation surface and amount of production, are selected as statistical sample of this research.

**Hypothesis**

Applying modern methods of tea cultivation has no impact on quality of produced dried tea.

$H_0: \mu = 3$

Applying modern methods of tea cultivation impact on quality of produced dried tea

$H_1: \mu \neq 3$

**Table 1:** Frequency Distribution of Hypothesis (Applying Modern Methods of Tea Cultivation)

| Description | Frequency | Percentage of Frequency |
|---|---|---|
| Very low | 0 | 0 |
| Low | 0 | 0 |
| Average | 0 | 0 |
| High | 2 | 1.9 |
| Very high | 103 | 98.1 |
| Total | 105 | 100 |

Considering the obtained data from the above table that is prepared by five items Likert scale, the respondents have answered the questions related to fourth hypothesis of research as below:

No answer was taken to "very low", "low" and "average" items. 2 people have chosen the item "high" and 103 people have chosen the item "very high" which as a result, the item "very high" with 98.1 % has dedicated the highest coefficient.
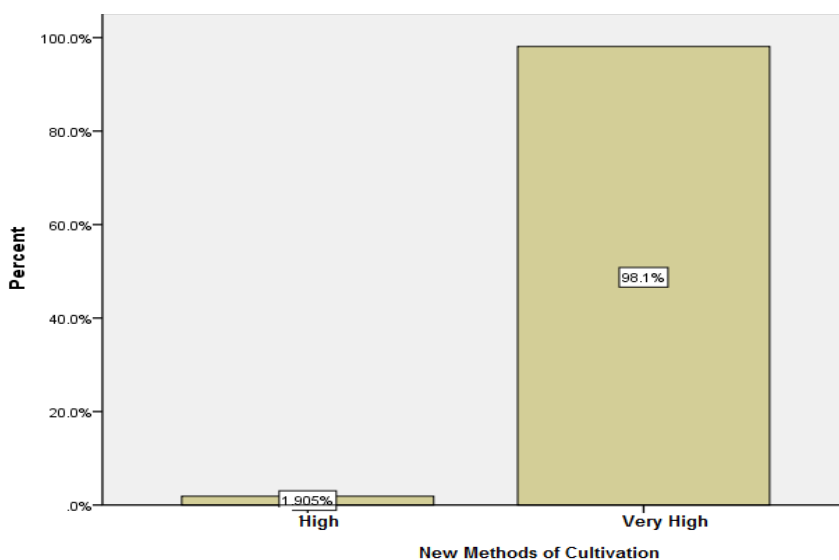


**Fig.1.**Distribution of Frequency Percentage related to the Hypothesis
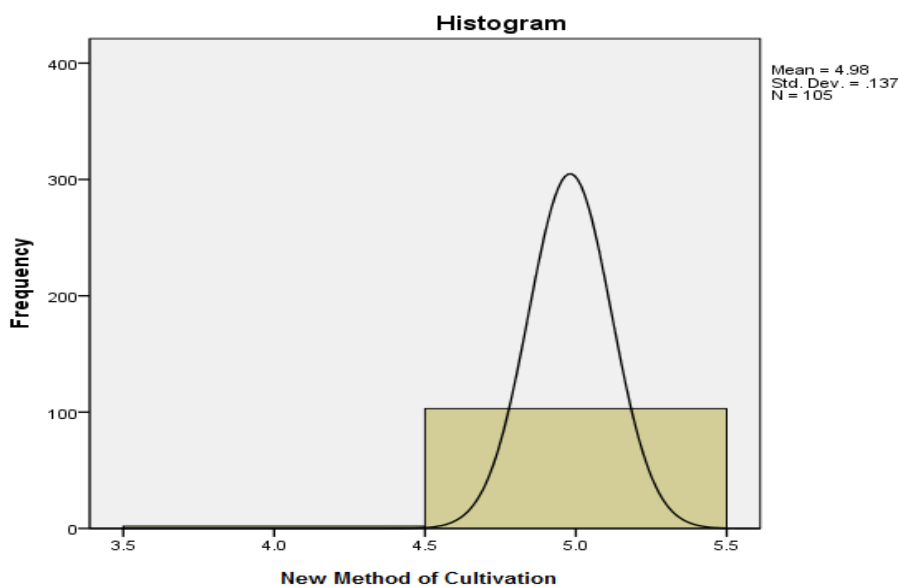(Applying Modern Methods of Tea Cultivation)



**Fig.2.**Test of Hypothesis (Applying New Methods of tea Cultivation)

**Table2:** Result of Test of Hypothesis (Applying New Methods of Tea Cultivation)

| Hypothesis | Sample Volume | Mean | Standard Deviation | Mean of Measurement Error |
|---|---|---|---|---|
| Applying New Methods of Tea Cultivation | 105 | 4.98 | 0.137 | 0.013 |

**Table 3:** Result of Test of Hypothesis (Applying New Methods of Tea Cultivation)

| Hypothesis | Calculated T | Freedom Degree | Significance Level | T of Table | Deviation of Mean | Confidence interval for the mean difference from the theoretical mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Low level | High level |
| Applying New Methods of Tea Cultivation | 148.0946 | 104 | 0.000 | 1.9830 | 1.981 | 1.95 | 2.01 |

formula:

$$t = \frac{\bar{x} - \mu}{\frac{s}{\sqrt{n}}} = \frac{4.98 - 3}{\frac{0.137}{\sqrt{105}}} = 148.0946$$

**Decision Making**

Considering the obtained results from the above table, since the amount of calculated t-test is larger than the t of the table, $H_0$ is rejected in error level of 5% and $H_1$ (impact of new methods of tea cultivation on quality of produced dried tea) is accepted. Because statistics of t is in $H_1$ area, it can be said that in confidence level of 95%, new methods of tea cultivation effects on quality of produced dried tea. Considering the result of research and in order to remove the existing problems in tea agro-industry of country, there are some suggestions as below:

1- Pass laws to prevent the division of the tea gardens in order to make better use of advanced technology in all stages of tea cultivation, nursing and harvesting
2- Encouraging farmers and manufacturers to organize tea cultivation and production complexes and cooperatives to fulfill the following objectives:
a. Integrating tea gardens
b. Unique (centralized) management of all stages of tea cultivation and production
c. Aggregating limited capitals of farmers and manufacturers to provide required capital for performing breeding and crop improvement affairs and using modern agricultural methods
3- Financial support of government from tea cultivation and production complexes via granting low-interest or no interest loan

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