On the possibility of growing bamboo as an alternative crop in the Eastern Black Sea region of Turkey

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Abstract: This study investigates by a direct questionnaire suvery the response of 508 tea farmers to bamboo as an alternative crop in the Eastern Black Sea region of Turkey. It is found that 77.6 per cent of the participants were not satisfied with tea farming and 76.8 per cent of the participants emphasised that they would like to consider growing an alternative crop. However, 49.6 per cent were not aware of the potential of bamboo. After providing some information about bamboo, only 18.3 per cent farmers were willing to try growing bamboo as an alternative crop.

Key words: Bamboo, tea producers, alternative crop, Turkey.

INTRODUCTION

Tea growing has been a common farming practice and the predominant source of income for the farmers in the Eastern Black Sea region of Turkey. However, lately, tea and hazelnut cultivation has reached a level of production that significantly exceeds the demand leading to a serious problem for the government. To solve this problem, the government has initiated new steps to reduce the size of tea and hazelnut cultivation areas and promoted some alternative crops in the region, such as bamboo (Toksoy, 2002, 2003).

Recently, a number of problems have arisen in the tea growing and production sector. These include: structural problems of investments, high production costs, low quality in dry tea production, imbalance between production and consumption volumes, and additional costs brought by the mass stocks due to limited export (Sariahmetoglu *et al.,* 1999). Especially, in the province of Rize, 91 per cent of the agricultural areas have been under monoculture tea farming (Trabzon, 2002), and this has put the farming industry on the brink of loss of productivity.

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On the other hand, recently, there have been fundamental changes in Turkish agricultural policies. Willingness of Turkey to join the European Union and other international laws have forced the country to apply some major changes in the agricultural sector, such as changing agricultural subsidy methods, carrying out reforms in agriculture, and arranging new regulations related to tobacco and sugar production (Gökçe, 2002). The objective of this study is to determine the possibility of using bamboo as an alternative crop in the tea growing areas of the Eastern Black Sea region of Turkey.

Bamboo species native to the Asian region have been introduced to Turkey in recent years. Turkey has many areas with suitable ecological conditions to grow different bamboo species. Some bamboo species that grow in Turkey have similar diameter and height characteristics compared to those growing in Okayama (Japan). These bamboo species are *Phyllostachys bambusoides*, *P. pubescens* and *P. nigra* var. *henonis* (Var *et al.,* 1998).

MATERIALS AND METHODS

The study site includes the provinces of Trabzon, Rize, and Artvin in Turkery. These are considered as first class tea production sites contributing to approximately 96 per cent of the tea production of Turkey. The area extends up to the Georgian border in the east. There were 204112 tea farmers in the region, growing tea in 76663 ha area in 1998 (Anonymous, 2001). The number of tea farmers and the total area of tea cultivation in each city are shown in Table 1. It is ecologically possible to grow bamboos in most of these areas.

In this study, a direct questionnaire survey was conducted to elicit the opinions of tea producers in the region on growing bamboo as an alternative crop. The sample size was determined to be 384, according to the equation suggested by Churchill (1995) and Orhunbilge (1997). However, the proportion of the sample group (384/187611) was very low. In order to increase the reliability of the study, the size of the sample group was increased to 508 and 126 of these were from Trabzon, 344 from Rize and 38 from Artvin.

Table 1. Number of tea producers and extent of area under tea

Cities	Number of producers	The tea field (ha)
Trabzon	44812	14755
Rize	123549	49972
Artvin	19250	8602
Total	187611	73330

Source: Anonymous, 2001.

The data were coded by numeric values suitable for entering into the SPSS statistical software package (SPSS,1998) used for data analysis. As this study was an attempt to ascertain the perceptions of the farmers about growing bamboo as an alternative crop, using non-parametric and descriptive statistical analysis was found appropriate and sufficient.

The frequency distribution and percentage of the questions in the questionnaire have been calculated. The statistical relations between socioeconomic indicators (age, level of education, vocation, area under tea, annual tea production and its value), the evaluating system of the produced products, the pleasantness degree of the farmers from the tea farming and their reasons, the willingness to introduce an alternative crop farming and the specification of the alternative crop have been studied with the χ^2 analyses.

RESULTS AND DISCUSSION

The findings from the study are presented under three main headings: i) demographic features of the tea farmers, ii) farmers' opinions about tea farming, and iii) their knowledge and ideas about bamboo as an alternative crop.

Demographic features

Of the 508 farmers surveyed, 15.7 per cent were between age 18 and 30 years, 47.4 per cent between 31 and 50 years, and 36.8 per cent, over 51 years. Of the total, 6.7 per cent of them were literate without formal school education, 35.2 per cent with primary school education, 21.3 with middle school education, 27.4 per cent with high school education, and 9.4 per cent with university level education. By vocation, 13.8 per cent of them were public officers, 17.3 per cent workers, 12.2 per cent traders, 14 per cent entrepreneurs, 5.9 per cent farmers, 30.5 per cent retired persons, 5.3 per cent unemployed and one per cent from other professions. It was found that age, education level, and profession of the producers did not influence significantly how they made use of their product.

Table 2. The reasons of dissatisfaction of producers with tea farming

The reason of dissatisfaction with tea farming	Primary important reason	Secondary important reason	Not assigned	Order of preference
Low income	171	96	127	2
Labour	15	67	312	4
Marketing	30	64	300	3
Late payment for the product	168	147	79	1
Obligatory cutting of 1/5 of the field	5	1	378	5
Others (causing disease)	5	9	380	6

Table 3. Characteristics the producers expect from the new crop

Characteristics	No. of farmers			
	Primary important speciality	Secondary important speciality	Not assi gned	Order of preference
Profitable	377	70	61	1
Durable	23	108	377	3
Demanding less workmanship	12	83	413	4
No marketing problem	72	177	259	2
Held every year	11	29	468	6
Held a few times in a year	13	41	454	5

Opinions of the tea farmers on tea farming

The mean area each farmer owned was 1.08 ha; 48 per cent of the farmers had fields between 0.1 and 1.0 ha, 39 per cent between 1.0 and 2.0 ha, and 13 per cent between 2 and 6 ha for tea farming. It was found that 75.8 per cent of the tea farmers owned additional land apart from the tea field, while the rest did not own any. These farmers produced 11.2 tonnes of tea per year, on the average. Among the farmers, 47.6 per cent produced between 0.5 and 10 tonnes, 37 per cent produced between 10 and 20 tonnes, and 15.4 per cent produced between 20 and 90 tonnes of tea per year. About 19.7 per cent of the farmers sold their products to the public sector, 3.7 per cent to the private sector, 71.7 per cent both to the public and private sectors and the remaining 4.9 per cent processed some of their tea for own use and sold the rest to public sector or private sector.

Planting tea was the most important source of income for 40.9 per cent of the producers, second most important source for 36 per cent, third most important source for 14 per cent, and fourth most important source for 9.1 per cent. The statistical analysis of the data showed that age, level of education, occupation, size of the tea field possessed, annual tea production volume, and how producers made use of their tea significantly ($P = 0.05$) influenced the income from tea production.

While 22.4 per cent of farmers were satisfied with growing tea, 64.4 per cent were dissatisfied and 13.2 per cent were neither satisfied nor dissatisfied. It was revealed that age and education level of the producers did not influence significantly their satisfaction with tea production. However, occupation, size of the tea field owned, volume of tea production per year, and the way farmers made use of their product significantly ($P = 0.05$) influenced their satisfaction.

The response of the farmers, when asked about the two most important reasons for their dissatisfaction, is given in Table 2. These were late payment by the government and private sectors for their products, and low income from tea. However, age or

education or occupation of the producers did not influence significantly on their dissatisfaction.

Growing bamboos as an alternative crop

While 76.8 per cent of the respondents stated that they will consider growing any other crop as an alternative to tea, 23.2 per cent did not consider growing any alternative crop. It was only the level of education that significantly ($P = 0.05$) influenced the decision. Age, profession of the tea producers, size of the fields they own and volume of their annual tea production had no effect on their desire for considering growing an alternative crop.

The participants were asked about the most important two factors they were looking for in an alternative crop. The responses obtained are shown in Table 3. As seen the most important two characteristics that the participants expected from the alternative crop were that the profit should be higher than the profit from tea and it should not have any marketing problem. However, age, educational level, and occupational status did not have any significant impact on the characteristics expected from the alternative crop.

Participants were asked what bamboo meant to them. About 49.6 per cent of the participants did not have any idea, 24.8 per cent thought that it was a tree, 14.4 per cent responded that it was a reed, 8.3 per cent a fruit, 1.6 per cent a vegetable, and 1.4 per cent a grass. Age, educational level, and occupation of the tea farmers had significant ($P = 0.05$) effect on what bamboo meant to them.

The tea farmers were asked which of the following items were made from bamboos: building materials, paper, food or drink, furniture - handicrafts, fertilizer - feed for animals, and charcoal. The responses obtained were 21.3 , 6.9, 12, 15, 1, and 2 per cent respectively. However, for 41.9 per cent of the participants, these items did not mean anything to them. Age, educational level, and occupation of the participants significantly ($P = 0.05$) influenced their knowledge about the uses of bamboo.

After providing some information about environmental and economic benefits of bamboo, the participants were asked if they would like to try growing bamboo as an alternative crop to tea or not. Considering all of its benefits, 30.2 per cent of the participants replied that they would try it, 19.7 per cent replied that they would wait until it became popular, 18.3 per cent replied that they would try it once, 14.4 per cent replied that they would try it if anybody had tried it before in the region, 2.8 per cent replied that they would try it if there was a government support programme; but 5.7 per cent of the participants replied that they would never try any other alternative crop. Analysis of the data showed that age, educational level, and profession of the participants played a significant role ($P = 0.05$) on their preference about trying bamboo. In conclusion, it may be stated that, in spite of the potential that bamboo has as an

alternative crop to tea in Turkey, lack of familiarity about the crop among people is a hurdle for its wider acceptability. It calls for efforts to disseminate information on bamboo and its uses.

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