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Measuring perception and consumption level of agricultural engineering students for medicinal and aromatic plants: a case study for Cukurova University

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ABSTRACT

The aim of this study is to measure agricultural engineering students knowledge and consuming habits for Medicinal and Aromatic Plants (MAPs) who are coming from different regions of Turkey. 35 % of respondents family members consume MAPs; furthermore, 45 % of them gather information about MAPs from internet or news. Supermarkets are frequently preferred places for buying MAPs (52 %). Respondents consume these plants especially when they get sick (45%). Peppermint is mostly used for curing the illnesses. Moreover, Thyme is mostly used to prevent illnesses and Linden is used both for prevention and curement. Another finding is that the difference between students who are taking the course in the university and who are not. It can be said that means if consumers can access information about MAP's they will increase their consumption.

Key words: Medicinal and aromatic plants, consumer, attitude, university students.

The natural environment has been a location for the growth and development of medicinal plants for thousands of years. Healing with plant extracts dates back to the appearance on earth of Homo sapiens. Even to date, about 80% of the world population relies on traditional medicines for their primary health care, while medicinal plants continue to play an important role for the remaining 20%. The attribute aromatic indicates plants having an aroma; being fragrant or sweet-smelling, while the word aroma is supposed to imply also the taste of the material (aromatic herbs). Spice plants are plants used for seasoning, spicing, flavoring and coloring foods, drinks and different products of the food processing industry, i.e. making a product more enjoyable. Frequently, we also speak of essential oil plants, that accumulate oils in certain specific organs or plant parts which are then used for the production of essential (ethereal) oils (Máthé, 2009). Herbs are staging a comeback and herbal 'renaissance' is happening all over the globe. The herbal products today symbolize safety in contrast to the synthetics that are regarded as unsafe to human and environment (Ibrahim Singab, 2012). Medicinal and aromatic plants are used based on ethnobotanical evidence as being safer, acceptable, affordable, culturally compatible and suitable for chronic treatment. Phytochemical screening of these plants revealed that they contain bioactive chemical substances such as alkaloids, tannins, saponin, and others with therapeutic potentials (Okigbo et al., 2009). Many species of medicinal and aromatic plants (MAPs) are cultivated for such industrial uses, but most are still wild collected. The need for renewable sources of industrial products as well as the need to protect plant biodiversity creates an opportunity for farmers to produce such crops (Lubbe and Verpoorte, 2011). The aim of this study is to measure agricultural engineering students knowledge and consuming habits for Medicinal and Aromatic Plants (MAPs) who are coming from different regions of Turkey.

Medicinal and aromatic plants (MAPs) play an important role in the healthcare of people around the world, especially in developing countries. Until the advent of modern medicine, man depended on plants for treating human and livestock diseases. Human societies throughout the world have accumulated a vast body of indigenous knowledge over centuries on medicinal uses of plants, and for related uses including as poison for fish and hunting, purifying water, and for controlling pests and

diseases of crops and livestock (Rao *et al.*, 2004). Medicinal Aromatic Plants (MAPs) can be defined as botanicals that provide people with medicines - to prevent disease, maintain health or cure ailments (Marshall, 2011). MAPs are beneficial both consumers and producers. Cultivation of MAPs can help small scale and local farmers. Furthermore, cultivation of MAPs also contributes to sustainable development and sustainability of environment. This importance caused the development of the International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP).

The International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP) has been developed to meet the needs of industry, governments, certifiers, resource managers, and collectors to understand whether wild collection activities for medicinal and aromatic plants (MAP) are sustainable, and how to improve collection and resource management operations that are detrimental to the long-term survival of these resources. MAP resources include many different types of plants in a wide variety of habitats. The ISSC-MAP is itself a generic set of principles and criteria intended for use in a wide range of circumstances. The focus of the ISSC-MAP is on the ecological sustainability of wild plant populations and species in their natural habitat, but it also addresses the social and economic context of sustainable use(Leaman and Salvador, 2005). Specialty materials can be obtained from plants are: Essential oils, Pharmaceuticals, Herbal health products, Dyes and colorants, Cosmetics, Personal care products, Plant protection products, Intermediates from which the above can be produced(Lubbe and Verpoorte, 2011).

Medicinal and aromatic plants are offered in a wide variety of products on the market. At least every fourth flowering plant is used. The enormous demand in botanicals results in a huge trade from local to international level. In the 1990s, the reported annual world-wide importation of pharmaceutical plants amounted on average to 400,000 t valued at USD 1,224 million. The international trade is dominated by only few countries. About 80 % of the world-wide imports and exports are allotted to only 12 countries with the dominance of temperate Asian and European countries. Whereas Japan and the Republic of Korea are the main consumers of pharmaceutical plants, and China and India are the world's leading producing nations, Hong Kong, the USA and Germany stand out as important trade centres(Lange, 2002).

Due to Turkey's varied climate and geographic conditions, a vast number of trees, shrubs and herbaceous plants grow in the country. Of the 11 000 plant species existing in Europe, 9 500 grow in Turkey, of which 3 000 are endemic. The NWFP derived from the leaves, flowers, seeds, roots and corms of plants which grow in the 8.8 million ha of forest land, provide the essential input for medicines, cosmetics, perfumery and various foods. In Turkey, production of MAPs aims to enhance the living standards of forest villagers through employment in production areas; decrease the damage made by villagers on the natural resources in forests; sustain cultivation and production of rare and endangered medicinal and aromatic plants by limiting their production even in the face of high domestic and foreign demand; conserve the biological and genetic diversity of important natural resources by limiting production; improve the economic value of medicinal and aromatic plants by offering only high quality produce for export.(Kizmaz, 1997).

MATERIALS AND METHODS

Study conducted in Adana where is the fourth biggest city of Turkey. Besides, Adana has a huge potential for agricultural production. For that reason Cukurova University Faculty of Agriculture is placed in the Top 5 list of Higher Education Rankings in the country for Agricultural Education.

In the study primary and secondary data were used. Secondary data were collected from the past studies and organization reports. Primary data were obtained from the face to face interviews which would present the originality of the study. Study conducted with 90 students who are enrolled Cukurova University Agricultural faculty. For data analysis Descriptive Statistics and ANOVA were used. This study gains its originality in two ways: (1) There is no such study which conducted with university students attitude to MAPs, (2) Respondent students are enrolled the faculty of Agriculture. In the education programme of the faculty not every department is giving Medicinal and Aromatic Plants course. That gives data to compare the two gropus of students who are taking the course and who are not.

RESULTS AND DISCUSSION

Descriptive Statistics

The 21 % of students are in their first year of university education. 23% of them is second grade, 30 % is third and 16 % is fourth grade. In the Agriculture Faculty of Cukurova. In the faculty there are 10 departments these are: Field Crops, Agricultural Economics, Horticulture, Agricultural Machinery and Technologies Engineering, Agricultural Structures and Irrigation, Animal Science, Landscape Architecture, Plant Protection, Soil Science and Plant Protection and Food Engineering. Students chosen randomly from the departments but distrubuted equally. For that reason every department represents 10 % of the total sample.

Table 1. Survey Respondents Perception and Attitudes to MAPs (%)

Who is using Medicinal and Aromatic Plants around you ?	Myself Family Relatives Friends	30 % 35 % 22 % 13 %
How do you gather information about MAP's ?(Selected more than one)	Friends and Family News, Internet Interested and searched Plant Stores	40 % 45% 20 % 8 %
Where do you buy MAP's ? (Selected more than one)	Plant Stores Local Markets Supermarkets Collecting	40% 22% 52% 40%
When do you consume these plants ?	Consume immediately When i need (buy them in advance) When i get sick	30 % 25 % 45 %

The most frequent plants used by respondents are; Black Pepper, Peppermint, Red Pepper, Linden, Thyme and Cummin. Black pepper and red pepper and cummin are mostly used for their flavours for spicing. Peppermint is mostly used for curing the illnesses. Moreover, Thyme is mostly used to prevent illnesses and Linden is used both for prevention and curement. In addition to the result that are mentioned above, respondents agreed on that they would increase their consumption if the price of Mate, Curry and Saffron and Cardamom decreased. Only 10 % of the students took MAP's course and 80 % of the students heard the term of Medicinal and Aromatic Plants before. The 35 % of respondents family members consume MAPs; furthermore, 45 % of them gather information about MAPs from internet or news. Supermarkets are frequently preferred places for buying MAPs (52 %). Respondents consume these plants especially when they get sick (45%) (see Table 1).

Table 2. Output of the ANOVA Analysis

Frequent	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	48,585	1	48,585	46,454	000
Within Groups	92,037	88	1,046		
Total	140,622	89			

ANOVA stands for 'Analysis of variance' as it uses the ratio of between group variation to within group variation, when deciding if there is a statistically significant difference between the groups. In this study, ANOVA was conducted to compare the students who took MAP's course and who did not take. According to the results, there was a significant effect of MAP'S course at the $p<.05$ level for using frequency.

CONCLUSION

Humans have been using Medicinal and Aromatic Plants for centuries as healing, spicing, flavouring etc. Apart from Aromatic Plants, Interest in medicinal plants as a re-emerging health aid has been fuelled by the rising costs of prescription drugs in the maintenance of personal health and well-being, and the bioprospecting of new plant-derived drugs(Hoareau and DaSilva, 1999). When looking the outcomes of the study it can be said that students are willing to consume MAPs. Another finding is that the difference between students who are taking the course in the university and who are not. It can be said that means if consumers can access information about MAP's they will increase their consumption. Considering the sustainable development effect of MAPs cultivation, governments should give information and raise awareness about MAPs. Besides its sustainable development effect a government action also will contribute to reduce the health expenses.

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