

## Horticultural Education in Turkish Universities<sup>1</sup>

D. R. Bienz<sup>2</sup>

Washington State University, Pullman

Training of foreign university students is one of the more important aspects of our nation's commitment to the betterment of life in developing countries. Because of this commitment, most horticulturists have or will have contact with students from Africa, Asia, South America or the Middle East. Not infrequently, both the student and his American advisors and instructors experience frustrations which result from the different educational experience and social attitude of the foreign student. Spending a year in Turkey has greatly increased my appreciation for the difficulties these people face when they come to the United States for advanced training.

### Pre-college education

Some knowledge of the overall educational system in Turkey is necessary before the role of the university student can be understood. Pre-college education is divided into 3 parts -- *Birinci* (first or grammar school), *Orta* (middle or junior high) and *Koleji* or *Lise* (secondary or high school).

School attendance is compulsory for all Turkish children between the age of 7 and 14; however, educators estimate that from 25 to 50% of the children of these ages are not in school. This is partly because of lack of facilities and failure to enforce the law and partly because many parents are not convinced that education is desirable. School attendance is especially poor in rural areas and in the eastern provinces of the country.

Admission to the secondary schools is determined by examination. Students who receive high examination scores are admitted and those with the highest scores are admitted to the better schools. Some secondary schools are private and some are public; private ones are generally considered to be better. In both middle and secondary schools teaching is mostly by lecture. Students take notes on each lecture and then are required to pass an examination at the end of the course. There is a shortage of up-to-date texts written in Turkish, notably in the areas of science, mathematics and social studies.



The Administration Building at Ege University, Bornova, Izmir, Turkey

Vocational agriculture is not taught in the *kolejis* or *lises*, but the government supports a few vocational agricultural schools designed to train boys and occasionally girls between the ages of 14 and 20 in the concepts of modern agriculture. Because of continuing concern over the lack of education in rural areas, the government plans to establish from 25 to 30 more of these schools in various parts of the country. Some of the agricultural schools have expanded their program to include a broad spectrum of high school subjects so that, by attending school 1 to 1½ years longer than the 4 years normally required for the vocational degree, a student can obtain the Turkish equivalent of a high school diploma. This makes him eligible to compete for a place in a university, although at present few agricultural school graduates achieve college entrance examination scores high enough to be admitted to government-supported universities.

### College entrance requirements

When he takes the college entrance examination, the student is required to list in order of preference the three curricula which he desires. For example, he may list agriculture as No. 1, medicine as No. 2 and education as No. 3. He also lists, in order of preference, the 3 universities where he wishes to attend. Formerly admission to his first choice curriculum and university

depended entirely on the college-entrance examination score, but recently the National Selection Committee for College Entrants has been attempting to more equally distribute the better students and also to integrate students of the various geographical regions of the country. As a result, even a student who receives a high score sometimes finds himself assigned to his second or third choice of curriculum or university.

While ostensibly a college education is equally available to every Turkish citizen, in reality a majority of the students admitted to the universities are from relatively wealthy families who live in the larger cities and villages and in western Turkey. The superior training which these people receive from the better secondary schools found in these locations gives them a decided advantage on the college entrance examination.

Although all Turks do not yet have equal educational opportunities, it should be emphasized that Turkish education has made and continues to make tremendous advances. Forty-five years ago only a very few sons of the ruling elite in the largest cities received any education whatever. Year by year grammar school education has become increasingly available to young people, first in the towns and larger villages of western Turkey, then in the towns and larger villages of eastern Turkey, and

<sup>1</sup> Research for this report was assembled while the author was on Sabbatical Leave working with the Commission for Educational Exchange between the United States and Turkey during the 1967-68 academic year.

<sup>2</sup> Department of Horticulture.

now even in many of the small rural villages throughout the country. The secondary schools have also improved both in number of students served and in quality of education.

Even so, these schools still have a long way to go and Turkish educators are concerned about the lack of opportunity for the underprivileged. Recently a few of the better students from the rural *kolejis* and from agricultural schools have been admitted to the universities on a trial basis even though their college entrance examination scores were lower than the minimum usually accepted. Most of these students have been successful and an increase of this kind of admission is expected.

#### Agriculture at Turkish universities

Three Turkish universities at present offer curricula in Agriculture. These are Ankara University, Ege University near Izmir in western Turkey, and Ataturk University at Erzurum in eastern Turkey. Because the relationship between eastern and western Turkey is the reverse of the relationship between eastern and western United States of a century ago, monetary incentives are offered for staff and students who teach at or attend Ataturk University at Erzurum.

The academic organization of Ege and Ankara is similar to that of continental European universities. Lectures and sometimes laboratories are provided for each subject in the curriculum, but whether or not a student receives credit depends entirely on his passing a final examination. Ataturk University has had an exchange program with the University of Nebraska for a number of years and has a few (certainly not all) of the attributes of a U.S. land-grant university.

Four major differences between education in Turkish universities and U.S. universities are: 1) A student in Turkey learns almost entirely from lectures and laboratories with no library and only occasional textbook assignments, 2) Approximately half of all Turkish agricultural students have had little or no previous experience with agriculture, 3) After he has completed his freshman year an agricultural major in Turkey receives all of his instruction from the College of Agriculture faculty, and 4) The cost to a student of a university education is very low.

#### Student learning

A student attends lectures from 30 to 40 hr each week. Very seldom is there a textbook for an agricultural course. Also the library is closed during the evening and lunch period and even if it were open during his free period, a typical undergraduate student would not be able to read more than 10% of the material. In the Agricultural Library at Ege about 60% of the texts are in

English, 25% in German, 5% in other languages, mainly French, and less than 10% in Turkish. Furthermore, only about 5% of the students can read English well enough to understand a scientific text written in English. About the same percentage can read German or French.

As a consequence of the unavailability of written texts and of the training in the lecture method which he receives in pre-college schooling, the Turkish undergraduate gains much of his knowledge from the memorization of lectures. Lecture notes are checked and graded by the graduate assistant before a student is allowed to take the final exam. An examination for each course is scheduled at the end of each semester, and a student who fails the examination may repeat it the following semester without repeating the course.

This system of education produces students with excellent memories. All of those closely associated with me knew my automobile registration number within a few days after I arrived and were amazed that I had failed to learn it. A less desirable result of this type of education is that students often experience difficulty in applying knowledge to unfamiliar situations.

#### Home background of agricultural students

In a country where 70% of the work force is engaged in agriculture, one would assume that university students who major in agriculture would come largely from farms. This is not true in Turkey. My first impression was that all of the agriculture majors were from cities. This was because only students who had been educated in the city schools and who had had contact with

city-dwelling foreigners could speak English well enough to communicate with me. Actually, about one-half of the agricultural students are the sons and daughters of middle-class urban parents. The percentage of horticultural majors who are from urban areas is somewhat higher than 50% because of the importance of ornamental horticulture to urban living. Most of the students whose parents own farms or have agricultural related positions received their pre-college education in the larger towns and villages of western Turkey.

Because of the abundance of cheap labor in Turkey, many agricultural students, especially those from the cities, will have done little hard physical work and will have had little experience with agricultural machinery, farm crops, or livestock. Significantly it is these students who are most likely to have the linguistic and academic ability to pursue advanced study in the United States or another foreign country.

The reasons for so many youth from relatively sheltered urban environments entering agriculture are not easy to determine. For some, notably girls from the Izmir region, it is a matter of convenience. Ege University offers degrees in only agriculture, medicine, and science. For girls who wish to remain at home while attending a university, agriculture is frequently the least undesirable of the three curricula. A number of students also are motivated by a desire to be of service to their country. Studying agriculture will permit them to work in the depressed rural areas of Turkey where people certainly need assistance.

Another reason may be prestige connected with permission to major in



Ege University fifth-year horticultural majors planting a laboratory research plot for the vegetable improvement class. (Students generally wore dressy clothes to school regardless of the activity planned.)

agriculture. The entrance requirements for the College of Agriculture are higher than are those for almost any other discipline. Of the 50,000 Turkish high school graduates who took the College Entrance Examination last year, 20,000 or 2/5 were admitted to a university. Of the 50,000, about 18,000 listed agriculture as one of their three choices of curricula. Although 6,000 listed agriculture as their first choice, there was room in agricultural colleges for only about 1,200. In Turkey agricultural majors are an elite group!

### Curriculum

The curriculum followed by a Turkish agricultural major is somewhat different from the curriculum of his American counterpart. No humanities or art courses are taught to an agricultural major at the university. He has supposedly obtained these in secondary school. During his freshman year a student studies general science. After he has completed his freshman year, the agricultural major is taught entirely by the College of Agriculture faculty. The second, third, and one-half of the fourth year are devoted to the study of general agriculture. During the spring semester and following summer of the fourth year, the student at Ege University gains practical experience on the nearby university farm. Housing is provided at the farm and the student is required to live there during the 7-month period and to participate, often for the first time in his life, in farming operations. During the fifth year, the Ege University student specializes in his own field. In the past, Ankara and Ataturk have both had 4-year curricula, but both changed to 5-years in 1968. Ankara University requires 9 months of on-the-farm training and Ataturk University requires 3 months.

A student has no choice of courses. Every agricultural major takes every course taught to his respective class during the first 4 years and every horticultural major takes every horticultural course taught to the fifth class. The basic vegetable crops, pomology, and ornamentals classes are taught to all students as general agricultural classes during the second and third years. During the fifth year, the horticultural student takes courses in landscape design, fruit breeding, vegetable breeding, greenhouse management, etc. A special project required for fifth year students offers an opportunity for study in an area of special interest.

Students take from 11 to 16 classes each semester and, as has already been mentioned, they attend classes from 30 to 40 hr during a 6-day week. A major complaint of students is too many classes with an inadequate amount of time spent in each class. There are obvious disadvantages to this system;

however, it certainly simplifies registration and the planning for instructors and facilities.

### Financing college education

Students can pay for their own education or they may receive a scholarship from the Turkish Ministry of Agriculture or some other governmental agency. The Ministry of Agriculture provides scholarships for about half the agricultural majors, and officials at Ataturk University estimate that other scholarships are available for another 30% of the students. Regardless of financial backing students pay almost no tuition or fees.

With the Ministry of Agriculture Scholarship a student receives 250 Turkish Lira (\$21.00) a month. This will cover the cost of room and board. Students arrange for their own housing at Ege and Ankara. At Ataturk a dormitory room costs 35 TL and meals 150 TL to 200 TL per month. (The tourist exchange rate is 12 TL for \$1.00.)

A student who has a government scholarship is required to work for the government until his debt is paid off -- usually 5 years after graduation. A majority of the students elect to attend on government scholarships mainly because a recipient of one of these scholarships is guaranteed a job upon completion of his schooling. Very few non-governmental jobs are available to graduates, and a student who doesn't have a government scholarship is employed only if a position remains after all scholarship recipients have work. Government jobs typically pay the beginner 440 TL to 650 TL each month. Graduates work mainly in the villages and have the duties of a hybrid between an American county agent and a peace corps worker.

### The University Staff

The staffing of the University follows the German system - one professor in each department, one or more docents and several assistants. Most of the ranking faculty members at all 3 universities have spent some time in Europe and/or America and most are informed and capable. Salaries are relatively low by U.S. standards, but a Turkish professor enjoys a great deal of prestige among his fellow citizens and lives comfortably. A full professor is able to travel to Europe occasionally and generally owns an automobile, a sign of considerable affluence in Turkey. His salary is based on length of service and rank. A full professor with 12 years of service receives a salary equivalent to about \$250 a month. Wives of many university staff members are employed. Frequently, wives also hold staff positions.

### Graduate education

The usual road to graduate education is for the undergraduate to become an

assistant. Assistants are selected on the basis of scores on 2 examinations -- one in the academic field and the other in a foreign language. There is no degree equivalent to our MS Degree in Turkey. A student must study for 3 to 4 years after he earns his BS to qualify for the PhD and another 3 to 4 years before the Docent is awarded. No formal classes are taken for the PhD, but the student must pass oral and written examinations in major and minor subjects and write a thesis. Only docents and professors are permitted to teach university classes. Almost all graduate students plan to remain with a university since there is little other employment for those with advanced degrees. Most of the staff at the research institutes have only a BS although the United Nations Food and Agricultural Organization (FAO) and other outside agencies cooperating with Turkish research institutes are encouraging these men and women to seek more education.

### Women in the university

Women play an important role in the university life of Turkey and, in turn, the university has been a major factor in emancipating women from the isolated seclusion in which they existed just 50 years ago. Despite the fact that the veil was outlawed 40 years ago, all older and some younger women in rural eastern Turkey still cover their heads. In that part of the country women do most of the field work and polygamy is not uncommon. Women in western Turkey have a more equal status. Twenty-five % of the students in the agricultural colleges are women and women hold important positions on the staff of most departments. Two very capable young female PhD's, both of whom received training at Wageningen, hold horticultural staff positions at Ege University.

### Physical plant and facilities

Classroom and office facilities at Ankara and Ataturk are relatively new and adequate. At Ege an entirely new campus is being constructed for the College of Agriculture. A great deal of scientific apparatus, mostly imported from the U.S. and Germany, is available, but much of it is seldom used. There are staff members who know how to use the equipment, but with heavy teaching responsibilities and minimal emphasis on publication there is little incentive to keep it operating.

A few items which we consider essential are notably absent. There were no pencil sharpeners in the building which housed the Vegetable Crops Staff and duplicating equipment in the College of Agriculture was essentially unavailable for any work but examinations. Slide projectors were available, but other audio-visual materials were rarely used.

Perhaps the greatest need at Ege, and

presumably other Turkish universities as well, is an improved library which contains books the typical student can read. The administration needs to give top priority to the translation of modern texts into Turkish and the adaptation of these for Turkish conditions.

### Summary

Turkish schools and the Turkish social structure produce a student somewhat different than a typical American student. The educated Turk is likely to regard most physical labor as unnecessary, but is willing to work long hours at academic and administrative pursuits. He may have academic deficiencies in basic sciences, especially chemistry, and in economics. Because he has had little library experience, he will find difficulty in reading and writing scientific papers not only in

English, but also in his own language. He will usually know about the latest farm techniques and scientific equipment, but will not be well acquainted with the operation of farm machinery or scientific apparatus. He may have difficulty in marshalling information from several fields to solve new problems. On the other hand, he will have a real advantage over American students in classes where information to be gained comes largely from the lecture. He is likely to be well informed concerning world affairs and politics and to have rather definite ideas concerning these subjects. The average agricultural major probably started school with a higher I.Q. than did his average American counterpart.

Young Turks, and undoubtedly the youth of all developing nations, are impatient to have the better things of life, and they will become more

impatient when television comes to their tea houses next year. Democratic change is slow and many understandably feel that the totalitarian approach would bring quicker results. If the needed advances are to come by a peaceful democratic process, thousands of leaders of these young people must observe democracy in action, and the best way for them to do this is by study in this and other western nations. We who are educators can make a contribution to our way of life, first by attempting to understand the problems faced by foreign students and adjusting our attitudes so that we can provide them with the kind of training which will be most practical for them and, second by accepting the extra teaching load involved in training these students even though this extra load may not receive full monetary or other compensation.

## The Horticultural Crops Research Program of the Federal Experiment Station in Puerto Rico

M. H. Gaskins<sup>1</sup>

*U. S. Department of Agriculture, Mayaguez, Puerto Rico*

The Federal Experiment Station in Puerto Rico is maintained at Mayaguez for crops investigations requiring a tropical environment. When established in 1902, the station was the only institution for agricultural research on the island. The research program included all of the diverse investigations such as animal husbandry, entomology, and forestry, in addition to crops studies, required for improvement of agriculture in Puerto Rico. Today, the Agricultural Experiment Station of the University of Puerto Rico is responsible for studies related entirely to insular agriculture. Research projects at the Federal station are selected for applicability, not only in Puerto Rico, but in other tropical areas as well. The Federal station also maintains projects with temperate-zone crops when these are needed to supplement investigations at locations on the mainland. Since 1961, the station has been part of the Crops Research Division of the Agricultural Research Service, and joint projects have been maintained with various other research units in the Division.

Horticultural research has been prominent in the station's program from its beginning. In the past both tropical and temperate zone vegetable, fruit and ornamental cultivars were introduced from all parts of the world for evaluation in Puerto Rico. This work, now conducted in cooperation with USDA's New Crops Research Branch,



The office and laboratory building of the Federal station is surrounded by a small arboretum of labelled tropical trees. Other planted areas and plot land are nearby.

continues to be an important part of the station program. The station maintains a large arboretum containing about 2,500 tropical species. This is one of the largest collections of arborous tropical plants available in the Western world. It is used frequently by botanists, horticulturists and others, both from the States and from countries in the tropics.

The station gives special attention to maintenance of species not readily available from other sources. Cultivars of black pepper and vanilla are examples. A large collection of cocoa cultivars is held in a germ plasm collection, as a source of authentic disease-free propagating material for use of breeders and other investigators. The

cocoa collection, assembled with support from the American Cocoa Research Institute, is an especially valuable reference collection. All accessions are quarantined before they are added to the collection, so that diseased clones will not be introduced.

The Federal station maintains laboratories for studies in plant pathology, plant chemistry, and genetics, in addition to field and laboratory facilities for horticultural and agronomic research. Where specialized equipment is required, staff members use facilities at the ARS Plant Industry Station, Beltsville, Maryland. To the extent possible, the facilities at Mayaguez are those which do not duplicate others available at USDA

<sup>1</sup>Horticulturist and Officer in Charge, Federal Experiment Station, Crops Research Division, Agricultural Research Service.