

Researchers Find Way To Grow Fine Turkish Tobacco In U. S.

DURHAM—The successful culture of high quality Turkish tobacco in this country, a feat which was generally considered impossible, was announced simultaneously at Duke university and at agricultural experiment stations in North Carolina, Virginia, and South Carolina.

Import of Turkish tobacco by cigarette manufacturers for blending with domestic tobaccos amounts to 50 to 75 million pounds a year, so the announcement may prove one of important economic significance. Manufacturers attribute the quadrupling of cigarette smoking in the United States during the past 25 years largely to the skillful blending of Turkish with domestic tobaccos.

The distinctive aromatic leaf is being grown this summer under the supervision of Duke and state experiment station researchers on some 55 small farms in three states to determine experimentally whether a high quality product can be grown profitably to the farmers.

If the raising of Turkish in this region can now be proved economically feasible, and if the indications of present field and laboratory findings are borne out, it should prove a boon to thousands of small growers in the Piedmont and mountain areas and mark one of the most important developments in tobacco growing since the bright domestic and heavy tobaccos were first developed 80 to 100 years ago. Strangely enough, the Turkish plant thrives and produces best quality on comparatively poor soil and fortunately does not overlap areas of domestic leaf.

HAND LABOR
A principal consideration to be dealt with in the growth and raising of Turkish tobacco is the large amount of hand labor involved, since the more numerous leaves are but a tenth the size of domestic tobacco leaves and

Tabor City Street Scene Looking North



require considerable handling. Continuation of the research program this summer and in subsequent seasons will include attempts to solve the labor-cost problem. Turkish brings a substantially higher price per pound than does domestic leaf. Once the operation is under way an income of \$600 an acre would not be considered over optimistic.

Announcement of the perfection of methods of producing Turkish tobacco in this country is the culmination of an intensive program of quiet research that has been under way for over five years. For prior decades it had been contended that Turkish would thrive only in certain areas bordering the Mediterranean and Black Seas, and the numerous attempts to produce it successfully in other areas have failed. Now it is proved that American Turkish is as good if not better than the overseas

tobacco. Credit for the successful production of this popular blending tobacco in this country goes to a small group of Duke and agricultural scientists of the three states, who have been supported in their work by Duke university, the General Education board, the agricultural agencies of the three states and four of the major tobacco companies.

Duke university's interest in research on the agronomic and industrial aspects of the tobacco industry through the Department of Chemistry is another manifestation of its desire to serve the region in which it is situated. Earlier aspects of this research program have resulted in important contribution toward the development of a domestic cigarette paper industry in North Carolina and toward the development of controls over such serious tobacco crop diseases as blue

mold and Granville wilt. Dr. F. R. Darkis, of the Duke Department of Chemistry has been in charge of the Turkish tobacco experimental laboratory and field research, a task which involved the responsibility of coordinating the project between the participating agencies and individuals. Dr. F. A. Wolf of the Duke Department of Botany has been in charge of the breeding and genetic experiments. The program as a whole has been under the general direction of Dr. Paul Gross, chairman of the Department of Chemistry. The investigations have been carried out as a co-operative project between Duke and the agricultural agencies of the states of North Carolina, Virginia, and South Carolina.

KEY MAN
Dr. E. G. Moss of the Oxford tobacco experiment station at Oxford, N. C., has been one of the key men in the program and has had the active support of Commissioner Kerr Scott, Dr. L. D. Bauer, director of the North Carolina agricultural experiment station, and Fred Miller, director of the state farms. Dr. Moss has made available facilities for carrying on most of the agronomic program. On the basis of his extensive tobacco experience he made many suggestions helpful to the program.

In Virginia the work was carried on at the Chatham experiment station under the direction of E. M. Mathews who had long been interested in the possibility of producing Turkish tobacco in this country and who made trial plantings there before the inception of the present program, and by Luben Spasoff, a native Bulgarian who had had experience in growing Turkish tobacco in the old country.

The subsequent development of this work in Virginia was made possible by the support of Dr. A. W. Drinkard, Jr., director of the Virginia Agricultural Experiment station, and of Dr. T. B. Hutcheson, agronomist for the Virginia Experiment station. Since 1944 the program has been extended to include work in South

Carolina through the cooperation of Dr. R. F. Poole, president of Clemson college, and the active work of H. A. McGee, G. H. Griffin, and J. A. Martin.

One of the interesting revelations of this co-operative research program has been the demonstration that it is not necessary to import fresh seed from the European growing regions each year for plantings in this country. It had previously been thought that seed grown in the United States would not continue to produce plants which are true to type.

Turkish tobaccos are grown under greatly different conditions from those of the familiar flue-cured tobacco of the Southeastern region. Turkish plants are planted very close together, from 5 to 6 inches apart and in rows 20 inches apart. Under these crowded conditions the closely spaced stalks produce a large number of small leaves. There are 55 to 60 thousand Turkish plants per acre as compared to 5 to 6 thousand domestic plants per acre.

While this process increases the labor of planting, there is ample compensation in the fact that the crop while growing needs very little weeding or cultivation.

The exceptionally large number of plants per acre and the numerous leaves to each stalk, nevertheless, means the harvest requires a great amount of painstaking hand labor. Now under way is an investigation of the best procedures for handling these leaves at harvest and a study of harvesting costs. In addition less costly methods of curing are being investigated.

ECONOMIC FACTORS
Since it has been demonstrated that from 700 to 900 pounds of excellent Turkish can be grown per acre, the investigations are now largely concerned with a study of the economic factors involved.

The investigations emphasize, however, that only after the completion of several years study of planting, harvesting, and handling costs will it be possible to determine definitely whether a crop can be produced economically under existing farming conditions in the Southeast.

Production in small plots of one to two acres or less has been found most desirable. Many small farms in the upper Piedmont regions of the Eastern slope of the Blue Ridge from Virginia to South Carolina are considered to be the most favorable sites for growing this type of tobacco.

The economic situation over the past 20 years has operated to make these small farms more and more marginal and to deprive their owners of their normal sources of cash income. An increasing preference by American smokers for lighter eastern flue-cured types of tobacco has reduced the demands for the heavier types formerly grown on the farms of the western Piedmont in Virginia so that a new cash crop is now badly needed as a source of income in this area. Due to his higher production costs, the same situation prevails for the small cotton farmers in western South Carolina.

A second factor of economic importance and significance is that these tobaccos thrive better with organic types of fertilizers, such as are commonly used for flue-cured tobacco production. The widespread introduction of such a profitable crop as Turkish tobacco to these farms would

require the production of more animal manures and thereby encourage the keeping of livestock. A more balanced agriculture on these farms would be the result. The present experiments in the growth of Turkish, so far as it is known, are the first to be conducted on a broad, scientific basis. Field fertilization tests were accompanied by extensive tobacco analyses of both the local grown and imported Turkish. This correlation of laboratory and field work was done under the direction of Dr. Darkis, and much of the success of the program as a whole is to be attributed to the findings of his experiments.

25 SAMPLES OF SEED
From various sources 26 samples of seed were originally obtained. Small plots of each were grown and were found in most instances to be mixtures of various tobaccos. Careful selection of the most desirable plants from several varieties have led to the development of strains more suitable for production in the Southeastern areas than were any of the original varieties.

In an entirely different direction careful laboratory and field experimentation under the direction of Dr. Wolf has shown a correlation between the development of aroma in individual plants and in different types of tobacco which is related to the gum content which exudes from the hair glands on the leaf surface of these aromatic tobaccos.

This discovery has pointed out a possible way toward improving aroma through breeding and selection for plants with larger

number of hair glands. The harvesting of Turkish is the "priming" method. Leaves are harvested as they mature, beginning with the lower and going toward the top of the stalk. The leaves are harvested when they are much greener than are those of flue-cured tobacco, the lower being removed about seven weeks after transplanting. From six to nine primings, at intervals of five to nine days, are required to remove all leaves from the stalk. After removal from the plant the leaves are strung on a small, strong twine by the use of a long, thin needle. Since the

priming and stringing are done by hand, the handling of some million and a half leaves is required for each acre. The strings of leaves are suspended between sticks and left to wilt in a cool, humid place for 36 to 72 hours, allowing certain desirable chemical changes to take place. After wilting, the strung leaves are placed on racks and placed in the sun to cure for a period of five to 15 days, the time varying according to the compactness and density of the leaves and the intensity of the sunshine.

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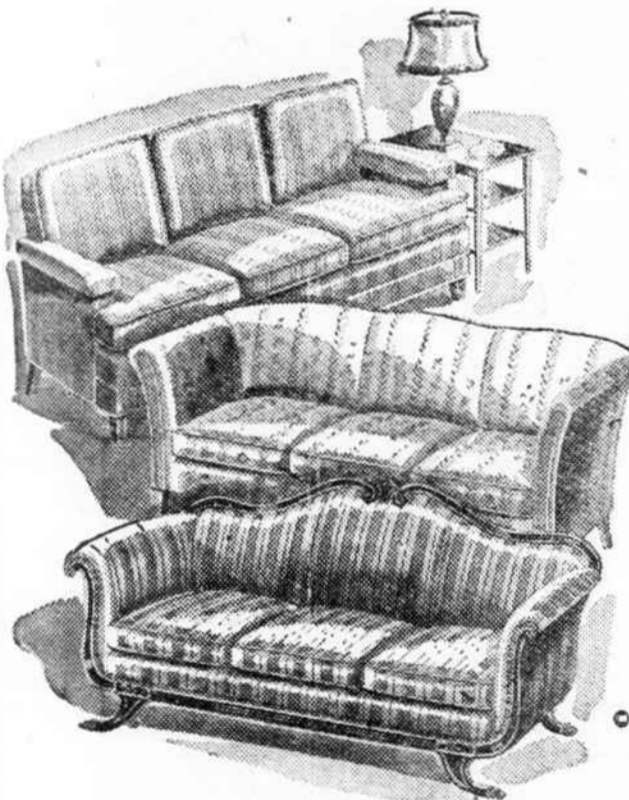
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