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THE TURKISH FOREST RESEARCH INSTITUTE
AND
ITS ACTIVITIES

PUBLICATIONS OF THE TURKISH FOREST RESEARCH INSTITUTE

Miscellaneous Publications No. 12

Güzel İstanbul Matbaası

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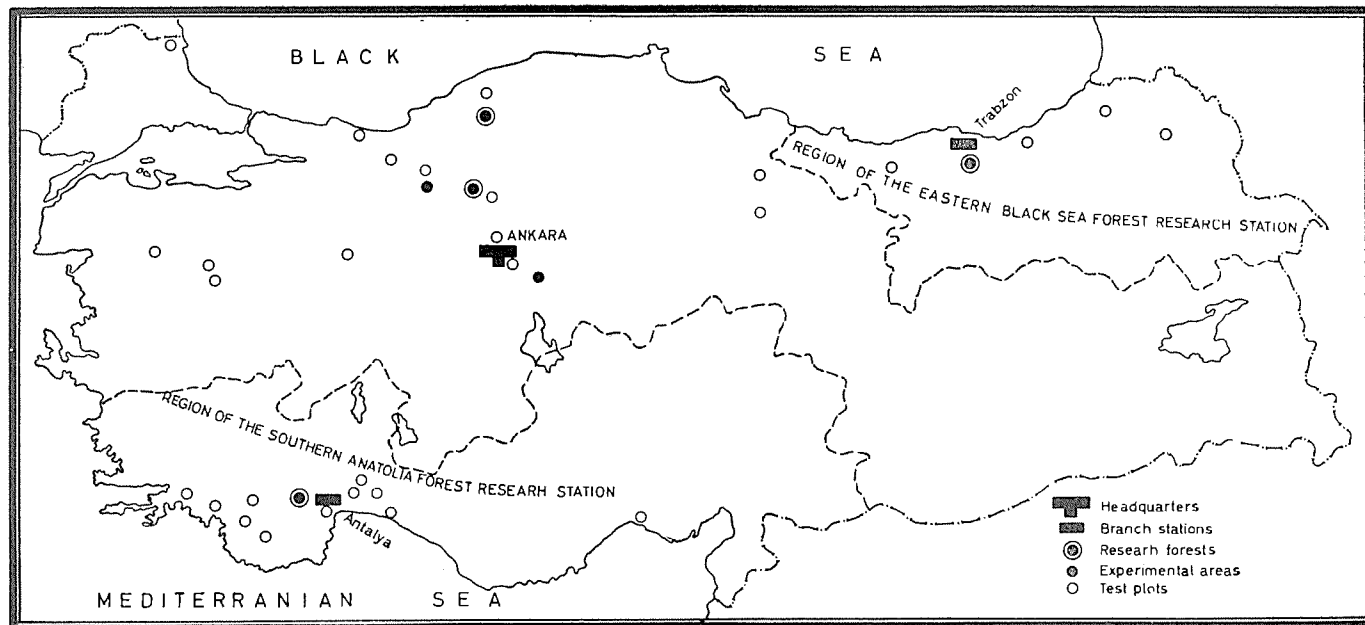


Figure 1. Forest research stations and their regions, research forests, experimental areas, and other places where different experiments have been carried out.

THE TURKISH FOREST RESEARCH INSTITUTE AND ITS ACTIVITIES

I. AIM AND WORK

The aim of the Turkish Forest Research Institute is to assist in the establishment of more developed forests in Turkey with a view to supply the country's needs for forest products; to determine necessary basic principles and to acquire a better knowledge about the characteristics and qualities of Turkish forests and the possibilities they offer; to find out ways and means for the development of Turkish forestry through application of highly developed techniques of forest science.

II. HISTORY

In Turkey, research in forestry was started for the first time in 1934 when the Forestry College at Halkalı was reorganized as a Forestry Faculty. The Faculty was also entrusted with the work of forest research, in addition to its main purpose of education. The first step in the establishment of a special organization to deal with forestry research was to include the Division of Scientific Research in the Central Organization of the General Directorate of Forests in 1937. Fourteen years later, in accordance with decisions of the Regional Forest Officers' Conference held in Ankara on the 20th September, 1951, the first Forest Experiment Station was set up in Bolu on 28th September, 1951. The Station actually began operations after its various divisions have been organized on 28th November, 1952.

Establishment of a Forest Research Institute in Ankara was decided at the Consultative Forestry Conference held in 1952. Thus, the Experiment Station of Bolu was transferred to Ankara in 1955, to be reorganized as the Forest Research Institute.

III. ORGANIZATION

The Turkish Forest Research Institute comes under the General Directorate of Forests and its headquarters is in Ankara. The Institute has two branch stations, one is active in the Mediterranean region and one in the Eastern Black Sea region of the country.

The Research Institute headquarters consists of eight research divisions, one library, one herbarium and several laboratories. Unfortunately laboratories of the Institute have not yet been established properly because of shortage of space and inadequate necessary equipment. Main studies

of the Institute are carried on in the field. They are concentrated in the four research forests whenever possible. The problems which are important from the standpoint of Turkish forestry but can not be studied in the research forests, are being worked out in experimental areas or sample plots scattered over the country.



Figure 2. Meeting room of the Turkish Forest Research Institute.

For the time being, all experiments are conducted by the research foresters in charge at the headquarters. It is planned that in the near future regional forestry problems will be studied by the branch stations located in the several regions after supplying them with qualified research foresters and necessary equipment.

A. Headquarters

Forest Research Institute
P. K. 24, Bahçelievler, ANKARA

Divisions at the Headquarters :

1. Division of Afforestation and Reforestation

Research subjects :

- a. Forest tree seed problems
- b. Nursery practice
- c. Afforestation and reforestation problems
- d. Provenance trials and testing of fast-growing species
- e. Forest genetics



Figure 3. Physical analyzes section of the soil laboratory.

2. Division of Silviculture :

Research subjects :

- a. Tending of stands
- b. Forest botany
- c. Plant sociology

3. Division of Forest Management :

Research subjects :

- a. Mensuration
- b. Forest management
- c. Yield

4. Division of Forest Protection

Research subjects :

- a. Forest fires
- b. Entomology
- c. Phytopathology

5. Division of Land Improvement and Range Management

Research subjects :

- a. Soil
- b. Soil conservation
- c. Torrent control



Figure 4. «Amsler» wood testing machine in the wood technology laboratory.

- d. Forest influences
- e. Hydrology
- f. Range management

6. Division of Forest Economics

Research subjects :

- a. Work efficiency
- b. Logging and transportation techniques
- c. Forest economics
- d. Standardisation of forest products

7. Division of Forest Products

Research subjects :

- a. Wood anatomy, pathology and conservation
- b. Physical properties of wood



Figure 5. Annual ring counting machine in the forest management laboratory.

- c. Chemical properties of wood
- d. Mechanical properties of wood and woody material
- e. Minor forest products



Figure 6. Maintenance of the cutting tools in the work efficiency laboratory.

8. Division of Mathematical Statistics

Research subjects :

- a. Application of the mathematical statistics in forest research
- b. Forest inventory

B. Branch Stations

1. Southern Anatolia Forest Research Station

ANTALYA

Region : Region covered by the Regional Forest Services of Muğla, Antalya and Mersin.

2. Eastern Black Sea Forest Research Station

TRABZON

Region : Region covered by the Regional Forest Services of Giresun, Trabzon and Erzurum.

C. Research Forests

1. Büyükdüz Research Forest

KARABÜK

The Büyükdüz Research Forest is a mixed high forest consisting of fir (*Abies bornmülleriana* Lk. Matf.), beech (*Fagus orientalis* Lipsky), Scotchpine (*Pinus nigra* Arnold) and oak (*Quercus* spp.) and located at a distance 13 km north of Karabük. Its altitude varies between 650 and 1650 meters above sea level. The forest covers an area of 2340 hectares, average growing stock per hectare is 315 cubic meters, and allowable cut is 110,000 cubic meters for ten years.

The forest represents typical western Black Sea coast forests.

2. Çamkoru Research Forest

ÇAMLIDERE

The Çamkoru Research Forest, which is located 18 km northwest of Kızılcıhamam is a high forest and consists of Scotch pine and Austrian pine mixed or pure stands. The altitude varies between 1360 and 1400 meters. The forest covers an area of 618 hectares. Average growing stock per hectare is 59 cubic meters and allowable cut is 5200 cubic meters for ten years.

The Forest is located in the transition zone between the poorly forested steppe land and the forests of the Black Sea region.



Figure 7. General view of the Büyükdüz Research Forest.

3. Bük Research Forest

ANTALYA

The Bük Research Forest located 40 km northwest of Antalya, on the Antalya - Korkuteli highway.

It consists of pure Turkish red pine (*Pinus brutia* Ten) high forests, degraded oak coppices and maquis. The altitute ranges between 350 and



Figure 8. A pure *Pinus silvestris* stand in the Çamkoru Research Forest.

1152 meters above sea level. The Research Forest covers an area of 2101.6 hectares, 1490.7 hectares of which are pure Turkish red pine high-forest, 158.2 hectares are degraded oak coppice, 318.5 hectares are maquies and 133.8 hectares are open or rocky areas. Average growing stock per hectare is 71 cubic meters in high-forest, and 10.8 steres in degraded coppice. Allowable cut is 28214 cubic meters for ten years for high forest, and 4077 steres for thirty years for degraded coppice.

All of the three forest types found in this particular forest are characteristic for low and medium elevations of the Mediterranean region.

4. Meryemana Research Forest .

TRABZON

The Meryemana Research Forest is located 40 km south of Trabzon. It is a high forest consisting of pure spruce (*Picea orientalis* Lk. Carr.) stands in general and some spruce-broadleaved mixtures. It has an elevation between 1000 and 2000 meters above sea level, and covers 1423.6 hectares. Only 918.8 hectares of the area are stocked.



Figure 9. One of the pure *Pinus brutia* stands in the Bük Research Forest.

The preparation of the management plan of the forest has not yet been started.

D. Experimental Areas

1. Balâ Experimental Area

The area is a part of the Balâ Seed Producing State Farm. It has been set up to study methods of establishment and influences upon agricultural yields of shelterbelts in steppe regions of the country. It lies 22 km east of Balâ and covers an area of 220 hectares. In all, eight shelterbelts consisting of ten rows of trees and shrubs, 5,6 km in total length, have been established.

2. Aladağ experimental Area

An experimental area has been established in the Aladağ Forest District of Bolu, to study range management problems. It is located 27 km south of Bolu, and covers a forest pasture of 2 hectares at an altitude of 1350 meters above sea level.

In addition to the above-mentioned experimental forests and experimental areas, the Institute has numerous test plots scattered throughout the Turkish forests.

IV. THE RESEARCH UNDER WAY

1. Division of Afforestation and Reforestation

- a. Forest tree seed problems :
 - 1 — Determination of the seed maturity conditions and seed collection time for main forest tree species of the country (Scotch pine, Austrian pine, fir, spruce and cedar (*Cedrus libani* Barr.))
 - 2 — Determination of seed germination conditions for tree and shrub species which are suitable for afforestation purposes in arid regions and have seed dormancy (*Juniperus*, spp., *Viburnum lantana*, *Rose feotida*, *Pyrocantha coccinea*, *Ligustrum vulgare*)
- b. Nursery practices :
 - 1 — Growing techniques of Austrian pine and Turkish red pine in nurseries.
 - 2 — Growing techniques in nurseries of the coniferous and broad-leaved tree species which are suitable for afforestation purposes in arid regions.
 - 3 — Mechanical and chemical weed control in forest nurseries.

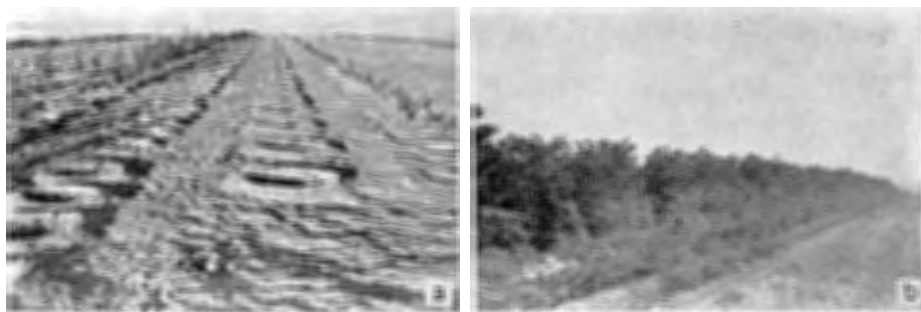


Figure 10. Shelterbelt Number 4 at the Bala Experimental area : a) in the first year of establishment (1954), b) in the eighth year of establishment (1962).

- c. Afforestation and reforestation problems :
 - 1 — Establishment of shelterbelts in arid areas.
 - 2 — Reforestation techniques of burned-over Austrian pine and Turkish red pine forests.
 - 3 — Spacing trials in Austrian pine and Turkish red pine plantations.

- 4 — Afforestation techniques on hilly land in arid regions.
- 5 — Sand dune fixation and afforestation on the Mediterranean sea coast.
- d. Provenance trials and testing fast growing tree species :
 - 1 — International eucalyptus (*Eucalyptus* spp.) provenance trial.
 - 2 — *Pseudotsuga menziessii* provenance trial.
 - 3 — To test adaptability of *Quercus suber* L. to the Antalya region.
 - 4 — Austrian pine provenance trial.
- e. Forest Genetics :
 - 1 — Selection of Turkish red pine plus trees and plus stands, and testing their progeny.

2. Division of Silviculture

- a. Tending of Stands :
 - 1 — Natural regeneration in pure pine and pine+fir+beech mixed stands.
 - 2 — Tending of pure pine regeneration.
 - 3 — Silvicultural treatment of the different stand types of different tree species (pure pine stands, pine+fir+beech mixed stands, pure red pine stands, pure cedar stands, pure ash (*Fraxinus* spp.) stands).
 - 4 — Improvement of degraded oak coppices.
 - 5 — Improvement of degraded beech forests.
 - 6 — Improvement and regeneration of degraded *Liquidambar orientalis* Mill. stands.
 - 7 — Establishment of black locust (*Robinia pseudoacacia* L.) coppice.
 - 8 — *Rhododendron* control.
 - 9 — Brush control in eucalyptus plantations.
- b. Forest Botany :
 - 1 — Establishment of an herbarium for Turkish forest plants.

c. Plant Sociology :

- 1 — The forest types of Turkey.

3. Division of Forest Management

a. Mensuration :

- 1 — The spiegel relaskop and a study of the precision obtained by its use.

- 2 — Methods of diameter measurement in standing trees.

b. Forest Management :

- 1 — Preparation of management plans for research forests (Büyükdüz, Çamkoru, Bük).

c. Yield :

- 1— Comparison of different methods for estimating stand volume increment.

- 2 — Precision obtained in estimation of increment by increment cores.

- 3 — Thinning experiments in pine and beech stands.

- 4 — Rotation age for Turkish red pine.

- 5 — Estimation of increment and yield in spruce stands.

- 6 — Rotation age for beech in the Tokat -Yaylacık Region.

4. Division of Forest Protection

a. Forest Fires :

- 1 — Experiments on economic methods of fire control and testing fire control tools.

b. Entomology :

- 1 — Control of *Thaumatococcus pitiochampa* Schiff.

- 2 — Control of bark beetles (*Ips sexdentatus* Börner) in spruce.

5. Division of land improvement and Range Management

a. Soil :

- 1 — Fertilization and improvement of nursery soils.

- 2 — Reduction pH values of nursery soils and inoculation with *Mycorrhiza* spp.

b. Soil conservation :

- 1 — Watershed improvement in one of the creeks of the Sarıyar Dam Lake.
- 2 — Determination of the spacing, size and types of terraces in water and soil conservation.
- 3 — Planting experiments on terraces in the Tokat watershed.



Figure 11. Testing of the efficiency of the different cutting tools.

- 4 — Run-off and soil erosion in fields cleared from forests.

c. Range management :

- 1 — Adaptation trials of pasture and fodder plants.
- 2 — Improvement of forest ranges by means of reseeding, fertilizing and liming, and protection.
- 3 — Weed control in pastures.
- 4 — Growing possibilities of *Colutea* spp. as a fodder plant.
- 5 — Testing of grazing methods.
- 6 — Range inventory.
- 7 — Vegetation types of pastures.
- 8 — Forest grazing and its affects.



Figure 12. General view of the dessered rotation grazing test plot in the Aladağ Experimental Area.

6. Division of Forest Economics

a. Work efficiency :

- 1 — Work and cost analyses in soft woods.
- 2 — Testing efficiency of different cutting and unbarking tools.

b. Logging and transportation techniques :

- 1 — Research on logging and transportation techniques in the Antalya Region.
- 2 — Possibilities for winter logging and transportation in the Sarıkamış Region.

c. Standardisation of forest products :

- 1 — Standards for fir, pine, beech, spruce, red pine and cedar woods.

7. Division of Forest Products

a. Wood anatomy, pathology and conversation :

- 1 — Heart rot in beech and possibilities for its control.
- 2 — Impregnation of telephone poles and fence posts and their durability.

- 3 — Spiral grain formation in Turkish Scotch pines.
- b. Minor forest products :
- 1 — Methods of turpentine suitable for Turkish forest conditions.
 - 2 — Methods of gum tapping in *Liquidambar orientalis*.
 - 3 — Methods of *Daphnea* leaf production.
- c. Mechanical properties of wood and woody materials :
- 1 — Mechanical properties of Scotch pine wood of the Western Black Sea Region.
 - 2 — Seasoning of the wood of native tree species.

8. Division of Mathematical Statistics

- 1 — Determination of the effects of climate upon width of annual rings, and climatic estimation for past years based on annual rings.

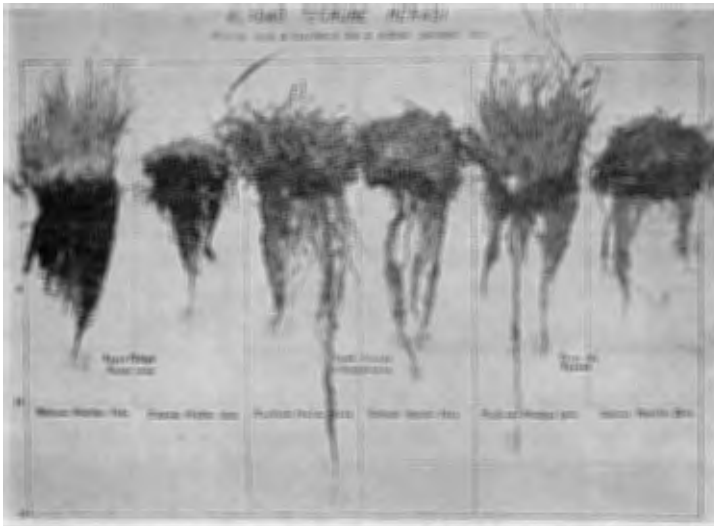


Figure 13. Comparison of the growth of maine forage plants grown on controlled and uncontrolled grazing areas.

V. PUBLICATIONS

The Turkish Forest Research Institute is assembling and publishing research results that have been conducted by its organization. In addition, articles, bulletins and books written or translated by its technical staff are also being published with a view to inform Turkish foresters about recent development in world forestry. All publications of the Institute are grouped in four series.

A. Annual Report of the Turkish Forest Research Institute

This periodical is published once in a year, in February, to give brief information about studies made by the Institute and results obtained from them during one calendar year. A summary in English is given in the report.

Nine Annual Reports had been published by the end of 1961.

B. Journal of the Turkish Forest Research Institute

The Journal is also a periodical with two issues (one in January and one in July) published in every year. It contains articles written by technical staff of the Institute on actual forest problems of the country. A summary in one of the main foreign languages may be given for original studies.

Number of journals published by the end 1961 is fourteen.

C. Technical Bulletins

The bulletins giving the intermediate or final results of the experiments are in this serial. A summary in one or more of the language of English, French, German or Spanish is given in every technical bulletin.

The Institute had published ten technical bulletins up to the end of 1961.

D. Miscellaneous Publications

The articles, bulletins and books which are prepared or translated by technical staff of the Institute, but not included in the above mentioned periodicals or serial, are published in the miscellaneous publications series.

Number of the miscellaneous publications is nine by the end of 1961.

Different publications of the Turkish Forest Research Institute from the first establishment in 1951 at Bolu, to the end of 1961 had amounted forty two.