

RESEARCH ON THE FLORA AND SOIL PROPERTIES OF THE *PINUS PINEA* L. STANDS NEAR FISTIKLI VILLAGE IN ARTVIN.

Rahim ANŞIN *
Özgür EMİNAĞAOĞLU**
Turan YÜKSEK**

* : Prof. Dr., K.T.U., Faculty of Forestry, Department of Forestry Engineering, 61080 Trabzon

** : Res.Ass., Kafkas University, Faculty of Forestry, 08000 Artvin / TÜRKİYE

ABSTRACT

Pinus pinea L. is the most striking species of Mediterranean elements distributed and established small stands in the Çoruh valley at Fıstıklı Village as well as in Düzköy near Trabzon.

This survey aims fundamentally to search out the flora and some soil properties of the *Pinus pinea* L. stands. For this purpose, plants materials have been collected periodically between 1994 and 1996 in order to determine its floristic composition.

The other aim of the study is to find out the main soil properties gathered from different soil profiles applied different depth such as 0-20 cm. and some soil properties have been analyzed in the laboratory of Karadeniz Technical University.

As pointed out by some authors like Zohary, Davis and Anşin, the *Pinus pinea* L. should be regarded as a Tertiary relic of old Mediterranean region in the Artvin and Trabzon areas. In the stands of *Pinus pinea* L. which is taken place in Fıstıklı Village, a lot of taxa, both herbaceous and woody plants such as *Silene italica* (L.) Pers., *Viola sieheana* Becker, *Trifolium campestre* Schreb, *Euphorbia paralias* L., *E. peplis* L., *Erodium malacoides* (L.) L'Herit, *Linum bienne* Miller, *Convolvulus cantabrica* L., *Punica granatum* L., *Arbutus andrachne* L., *Cistus creticus* L., *C. salvifolius* L., *Cornus sanguinea* L. subsp. *cilicica* (Warg.) Chamb., *Cotinus coggygria* Scop., *Rhus coriaria* L., *Jasminum fruticans* L. whose floristic region is Mediterranean.

After soil samples were analyzed, it was determined the highest water holding capacity, erosion ratio and silt ratio in the third high step (between 550-700 m.) and the highest amount of sand, clay and loss on ignition were measured in the first high step (between 250-400 m.).

In our opinion is in the same way with mentioned authors, in other words, the *Pinus pinea* L. should be regarded as a old Mediterranean Tertiary relic in the Fıstıklı Village near Artvin.

Key Word : *Pinus pinea* L., Flora, Some Soil properties and Fıstıklı Village .

1. INTRODUCTION

The area under review is taken place in the Colchis province of Euro.-Siberian floristic area of the Holarctic region (Davis, 1965, Anşin, 1983).

In the study area, It rains 150.6 days a year, snows 21.8 days a year, covered with snow days are 44.9. Vegetation period are 223.8 days. According to Çepel, It was determined that the climate is semiarid.

Table 1. Some Meteorological Data of Artvin Meteorology Station

Meteorology Parameters *	M O N T H S												Annually
	1	2	3	4	5	6	7	8	9	10	11	12	
Max. Temp. (°C)	18.9	21.2	28.4	34.4	36.4	39.0	42.0	43.0	38.4	33.9	27.9	20.9	43.0
Min. Temp. (°C)	-16.1	-11.1	-8.5	-4.3	2.7	3.7	9.7	10.0	4.2	-1.3	-8.2	-10.6	-16.1
Average Temp. (°C)	2.8	3.9	7.1	11.7	15.7	18.9	20.8	20.9	17.9	13.7	9.5	4.8	12.3
Average Rain (mm.)	75.4	73.2	56.3	50.8	47.4	48.9	26.8	27.9	35.9	59.4	71.1	87.5	661.0
Daily Max. Rain (mm.)	31.5	7.6	18.6	18.7	15.7	20.6	19.5	15.7	13.6	26.6	27.6	3.7	80.0

* : Observation period of the parameters and precipitation are for 33 years.

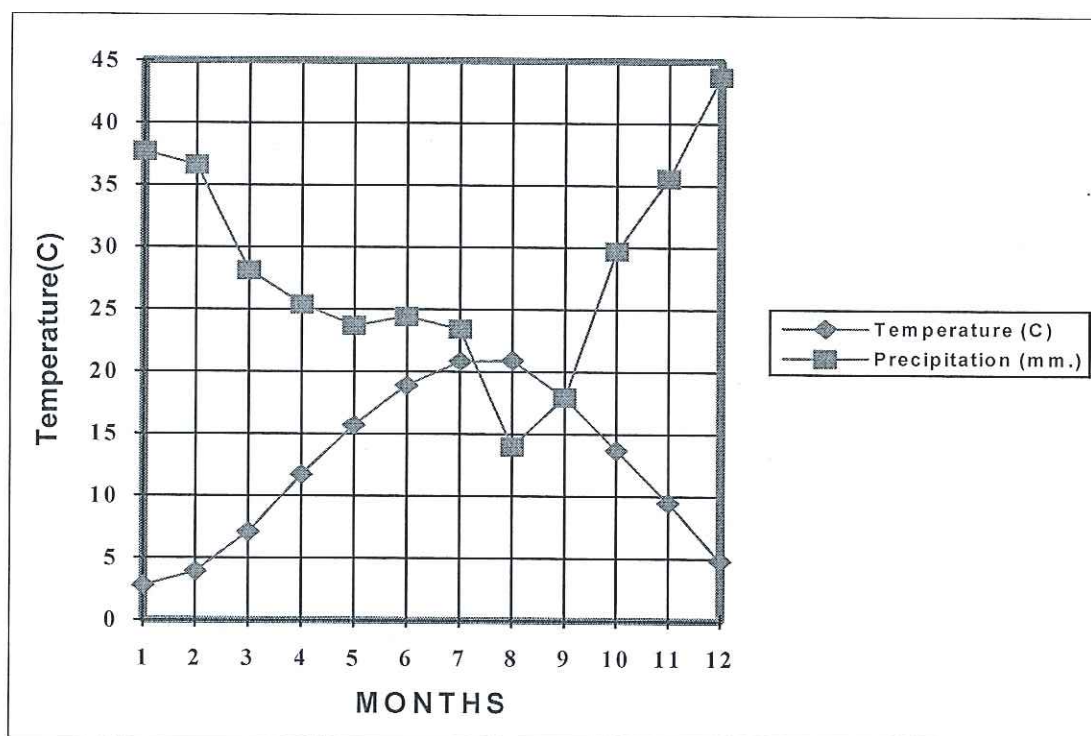
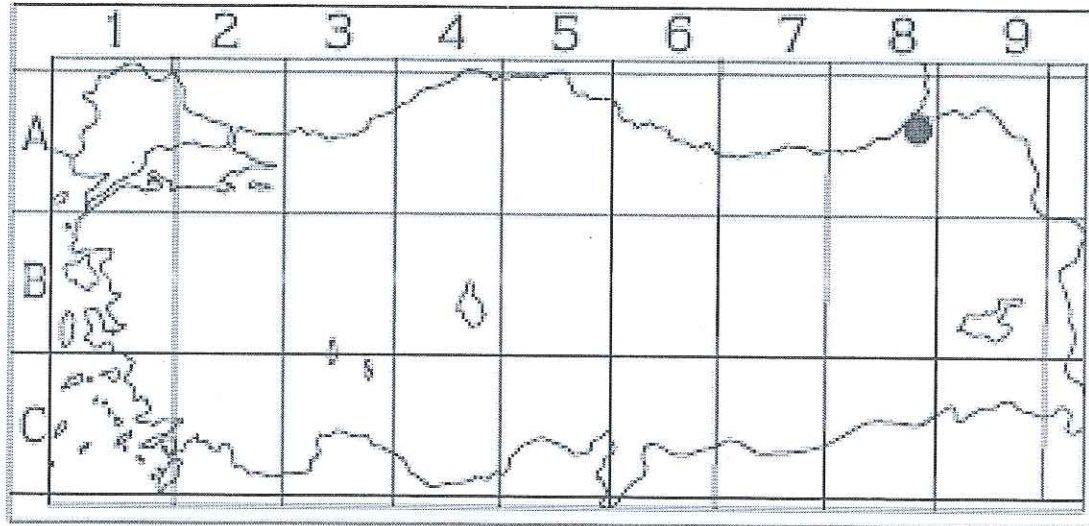


Figure 1. Water Balance of Study Area after Walter (Çepel, 1966).

2. MATERIAL AND METHOD

In this study has been determined the flora of Artvin-Fıstıklı Village which has quite a rich floristic composition, including herbaceous and woody plants and some soil properties.

In the stands of *Pinus pinea* L. which is taken place in Fıstıklı Village, 88 plants taxa have been determined, 28 of these taxa which are woody and 60 of these taxa which are herbaceous have been collected between 1995 - 1996 years.



● : Study Area

Figure 2. Floristic Regions of Türkiye (After Davis, Harper & Hedge, 1971, Anşın, 1983).

It was determined three high steps such as 250-400, 400-550 and 550-700 m. 3 soil profiles were dug and soil samples were taken from 0-20 cm. depth on each high step (totally 9 soil profiles). Soil properties have been analyzed in the laboratory of Karadeniz Technical University.

Soil samples were prepared and some soil properties, such as water holding capacity, colloid / moisture equivalent ratio, bulk density, soil particle density, erosion ratio, texture (sand, clay and silt ratio), loss on ignition and pH ratio were measured in laboratory. All soil properties have been determined according to Gülçür (1972).

3. FINDINGS

In the study area, there are a lot of Mediterranean, Euxine and Irano - Turanian elements between 250 - 750 m. altitude in Çoruh Valley near Fıstıklı Village. *Pinus pinea* L. is the main tree of the area under review. Some striking taxa of *Pinus pinea* L. stands are as follows:

Woody Taxa : *Juniperus oxycedrus* L., *J. communis* L. subsp. *hemisphaerica* (Presl.) Nyman, *J. excelsa* Bieb., *Ephedra major* Host, *Capparis ovata* Desf. var. *herbacea* (Willd.) Zoh., *Ostrya carpinifolia* Scop., *Ficus carica* L., *Carpinus orientalis*, *Chamaecytisus hirsutus* (L.) Link, *Cistus creticus* L., *C. salvifolius* L., *Tamarix tetrandra* Pallas ex Bieb., *Diospyros lotus* L., *Rosa canina* L., *Crataegus monogyna* Jacq. subsp. *azarella* (Gris.) Franco, *Argyrobolium biebersteinii* Ball., *Cornus sanguinea* L. subsp. *cilicica* (Wangerin) Cham., *Buxus sempervirens* L., *Paliurus spina - christi* Miller, *Cotinus coggyria* Scop., *Acer*

divergens Pax., *Rhus coriaria* L., *Jasminum fruticans* L., *Ruscus aculeatus* L. var *angustifolius* Boiss., *Arbutus andrachne* L., *Cotoneaster morulus* Pojark., *Punica granatum* L., *Pyracantha coccinea* Roem. and others.

Table 2. Threshold Values of Erosion, Dispersion and Colloid / Moisture Equivalent Ratio (Balci, 1984).

Erosion Erodibility Index	Soils Are;	
	Resistant	Sensible
Colloid / Moisture Equivalent Ratio	>1.5	1.5 <
Erosion Ratio	<10	>10
Dispersion Ratio	<15	>15

Table 3. The Result of Some Soil Properties of Study Area After Duncan Test

Soil Properties	n	X	S _x	F Ratio	Significant Level	Duncan Test
Sand (%)	3	61.60	4.020	2.75	0.1439	N.S
	3	60.98	2.535			
	3	69.15	0.537			
Silt (%)	3	25.48	2.884	6.395	0.0326	N.S
	3	21.08	1.826			
	3	15.37	0.642			
Clay (%)	3	12.95	1.141	5.003	0.0527	N.S
	3	18.61	1.811			
	3	15.53	0.480			
Bulk Density (gr./cm ³)	3	2.25	0.0317	9.515	0.0138	1-3 *
	3	2.46	0.0568			
	3	2.49	0.348			
Soil Particle Density (gr./cm ³)	3	1.02	0.061	0.412	0.6799	N.S
	3	1.09	0.066			
	3	1.08	0.052			
Dispersion Ratio	3	28.66	0.611	0.433	0.6676	N.S
	3	29.06	0.833			
	3	28.17	0.769			
Water Holding Capacity	3	8.71	1.09	2.763	0.1410	N.S
	3	6.77	0.26			
	3	6.90	0.10			
pH	3	6.68	0.015	2.33	0.1780	N.S.
	3	6.76	0.011			
	3	6.71	0.041			
Loss on Ignition	3	5.96	0.621	7.066	0.0265	N.S
	3	7.84	0.465			
	3	8.45	0.335			
Colloid/ mos. equ.	3	1.41	0.161	6.041	0.0365	N.S
	3	2.17	0.085			
	3	1.59	0.212			
Erosion Ratio	3	20.60	2.72	6.173	0.0350	N.S
	3	13.61	0.328			
	3	13.92	0.137			

x: Average, n: number of samples, S_x: Standard error, *: Significant at 1% level, N.S: Non-Significant

Herbaceous Taxa : *Helleborus orientalis* Lam., *Ceterach officinarum* DC. , *Nigella segetalis* Bieb., *Ranunculus constantinopolitanus* (DC.) d' Urv., *Papaver dubium* L., *Fumaria officinalis* L., *Silene italica* (L.) Pers., *Hypericum perforatum* L., *Viola kitaibeliana*

Roem. & Schult., *V. suavis* Bieb., *Helianthemum nummularium* (L.) Miller subsp. *tomentosum* (Scop.) Schinz & Thellung, *Alyssum desertorum* Stapf., *Arabis caucasica* Willd., *Fibigia eriocarpa* (DC.) Boiss., *F. clypeata* (L.) Medik, *Raphanus raphanistrum* L., *Cyclamen coum* Miller var. *causicum* (C.Koch) Medik, *C. coum* Miller var. *coum*, *Primula vulgaris* Huds., *Potentilla reptans* L., *Dorocynium graecum* (L.) Ser., *Genista tinctoria* L., *Lathyrus nissolia* L., *L. aureus* (Stev.) Brandza, *Lotus corniculatus* L., *Trifolium campestre* Schreb, *Vicia grandiflora* Scop., *Euphorbia paralias* L., *E. peplis* L., *Erodium malacoides* (L.) L' Hérít., *Geranium lucidum* L., *G. molle* L., *Linum bienne* Miller., *Polygala anatolica* Boiss. & Heldr., *P. pruinosa* Boiss., *Vinca herbacea* Waldst. & Kit., *Convolvulus cantabrica* L., *Lamium tomentosum* Willd., *Origanum vulgare* L. subsp. *viride* (Boiss.) Hayek, *Sideritis montana* L., *S. rubriflora* Hub.-Mor, *Veronica jacquinii* Baumg., *V. liwanensis* C. Koch, *V. persica* Poirét, *Campanula pontica* Albov, *Centaurea pecho* Albov., *C. coronarium* L., *Cichorium intybus* L., *Doronicum orientale* Hoffm., *Pallenis spinosa* (L.) Cass., *Scorzonera inaequiscapa* Boiss., *Senecio pandurifolius* C. Koch, *Chrysanthemum coronarium* L., *Tragopogon reticulatus* Boiss. & Huet, *Tripleurospermum fissurale* (Sosn.) E. Hossain, *Gagea tenuissima* Misch., *Muscari armeniacum* Leichtlin ex Baker, *M. neglectum* Guss, *Ornithogalum umbellatum* L., *Scilla leepi* Speta and others.

It could not determined statistically important differences among soil properties except bulk density. The highest amount of sand, clay and loss on ignition were measured in the first high step (between 250-400 m.), the highest water holding capacity, erosion ratio and silt ratio were measured in the third high step (between 550-700 m.). Soils of study area are sensible to erosion according to erodibility index (Table 2, 3).

4. DISCUSSION and RECOMMENDATION

As pointed out by some authors like Zohary, Davis and Anşın, the *Pinus pinea* L. should be regarded as a Tertiary relic of old Mediterranean region in the Fıstıklı Village near Artvin and Trabzon - Düzköy areas. It can establish small stands in these areas, according to its very sporadic distribution and floristic composition. Some striking taxa, both herbaceous and woody ones in the study area are as follows: *Silene italica* (L.) Pers., *Viola sieheana* Becker, *Trifolium campestre* Schreb, *Euphorbia paralias* L., *E. peplis* L., *Erodium malacoides* (L.) L'Herit, *Linum bienne* Miller, *Convolvulus cantabrica* L., and *Juniperus oxycedrus* L., *J. communis* L. subsp. *hemisphaerica* (Presl.) Nyman, *Cistus creticus* L., *C. salvifolius* L., *Cornus sanguinea* L. subsp. *cilicica* (Warg.) Chamb., *Cotinus coggygria* Scop., *Arbutus andrachne* L., *Punica granatum* L., *Rhus coriaria* L., *Jasminium fruticans* L. and others.

The results of plants, soil and climatic properties determined in this study are the same with typical Mediterranean region.

There was determined a quite a lot of sheet erosion in the study area. For this reason, it is strongly suggested to protect its natural plants, must be forbidden to using for agriculturing activities and should be considered as natural forest.

5. REFERENCES

1. ANŞIN, R., 1980, Doğu Karadeniz Bölgesi Florası ve Asal Vejetasyon Tiplerinin Floristik İçerikleri (Doç. Tezi), Trabzon, 305 s.
2. ANŞIN, R., 1979, Trabzon-Meryemana Araştırma Ormanı Florası ve Saf Ladin Meşcerelerinde Floristik Araştırmalar (Doktora), Karadeniz Gazetecilik ve Matbaacılık A.Ş. Trabzon, 234 s.
3. ANŞIN, R., ÖZKAN, Z.C., 1987, Bitki Coğrafyası ve Bitki Sosyolojisine İlişkin Bazı Temel Bilgiler, (Some Basic Knowledges In Plant Geography and Sociology), Karadeniz Teknik Üniversitesi Orman Fakültesi Dergisi, 9, 1-2 , 43-65 s.
4. ANŞIN, R., 1983, Türkiye'nin Flora Bölgeleri ve Bu Bölgelerde Yayılan Asal Vejetasyon Tipleri (The Floristic Regions and the Major Vegetation Types of Turkey), Karadeniz Teknik Üniversitesi Orman Fakültesi Dergisi, 6, 2 , 318-339 s.
5. ANŞIN, R., 1984, Artvin- Atila (Hatila) Vadisinin Bitki Örtüsü ve Bu Örtünün Filogenetik Özellikleri (Vegetation of the Atila Valley in Artvin Area and Its Filogenetical Features), KTÜ., Orm. Fak. Dergisi, 7, 1 , 84-89 s.
6. BALCI, N., 1984, Toprak Koruması Ders Notları, I.Ü. Orman Fakültesi, İstanbul.
7. ÇEPEL, N., 1966, Orman Yetiştirme Muhiti Tanıtımının Pratik Esasları ve Orman Yetiştirme Muhiti Haritacılığı, Kutulmuş Matbaası, İstanbul, 187 s.
8. DAVIS, P.H., 1965-1985, Flora of Turkey and the East Aegean Islands, Vol. I-X., at the University Press, Edinburgh,
9. DAVIS, P. H., HARPER, P.C. & HEDGE, I.C., 1971, Plant Life of South West Asia, The Botanical Society of Edinburg, 335 p.
10. EMİNAĞAOĞLU, Ö., 1996, Artvin- Atila (Hatilla) Vadisi Florası, K.T.Ü. Fen Bilimleri Enstitüsü, Yüksek Lisans Tezi, 150 s.
11. GÜLÇÜR, F., 1972, Toprağın Fiziksel ve Kimyasal Analiz Metodları, I.Ü. Orman Fakültesi, Yayın No: 201, İstanbul.
12. MIROV, N.T., 1967, The Genus Pinus, The Ronald Press Company, New York.
13. T.C. Başbakanlık Devlet Meteoroloji İşleri Gn. Md., 1995, Artvin Meteoroloji İl Müdürlüğü 1948 - 1990 Verileri, Artvin.
14. ZOHARY, M., 1973, Geobotanical Foundations of the Middle East, Band 1-2, Gustave Fischer Verlag, Amsterdam, 739 p.

Index/Indice/İçindekiler

Areas/Sujets/Temel Alan A - H

**Proceedings of the
XI World Forestry Congress
Comptes Rendus du XI^{ème}
Congrès Forestier Mondial
Actas del XI Congreso
Forestal Mundial**

XI. Dünya Ormancılık Kongresi Tebliğleri

13 - 22/Oct./1997

ANTALYA



ACRONYMS/ABBREVIATIONS/ABREVIACIONES/KISALTMALAR

Titles in bold characters	=	Title of document in original language
Titres en caractères gras	=	Titre du document en langue originale
Títulos en negrita	=	Título del documento en el idioma original
Bold karakter ve başlıklar	=	Tebliğin orijinal dilde başlığı
Vol.	=	Volume number
		Numéro du volume
		Número del volumen
		Cilt numarası
T	=	Topic number
		Numéro du thème
		Número del tema
		Konu numarası
FT	=	Full text published
		Texte publié en version intégrale
		Texto publicado en versión integral
		Tüm metin yayınlandı
S	=	Summary published in languages shown by title
		Résumé publié dans la langue indiquée
		Resumen publicado en el idioma indicado
		Belirtilen başlıkla özeti yayımlandı
NP	=	Not published (but available on request)
		Non publié (mais disponible sur demande)
		No publicado (pero disponible a pedido)
		Yayınlanması (istediğinde temin edilebilir)

Table of contents/Table de matières/Indice/İçindekiler

A.	List of documents Liste des documents Lista de los documentos.....	1
	Döküman listesi	
B.	List of authors Liste des auteurs Lista de los autores	125
	Yazarlar listesi	

A. LIST OF DOCUMENTS/LISTE DES DOCUMENTS/LISTA DE LOS DOCUMENTOS

- 0001 **Abouelkhair, S. Sanaa; Abouelkhair, Khairia S.; Elsettawi, A.A.; Sami, M. (Egypt)**
 • **Effect of potassium and VA-mycorrhizae on the infestation by the soft scale insect (*Pulvinaria psidii* Mask) and growth of *Schinus terebenthifolius* seedlings** (Vol.1, T5, S)
- 0002 **Abraham de Noir, Fidelina (Argentina)** (Vol.3, T13, S)
 • Natural dispersion of certain native species - Analysis and parameter value assignment
 • Dispersion naturelle de quelques espèces indigènes - Analyse et quantification des paramètres
 • **Dispersión natural de algunas especies nativas - Análisis y cuantificación de parámetros**
- 0003 **Abu Syed, Md. (Bangladesh)** (Vol.5, T26, S)
 • **People's participation in planning, monitoring and evaluation of participatory forestry programme**
- 0004 **Ackerknecht, Carlos (Chile)** (NP, T20)
 • **Protección ambiental y mejoramiento del entorno de trabajo en operaciones forestales**
- 0005 **Ada, Lawali; Montagne, Pierre; Peltier, Régis (Niger)** (Vol.6, T38.4, S)
 • Forest management by villages: The experience in Niger. (Management of forests by waterside populations within an optimum institutional and economic framework)
 • **Aménagements forestiers villageois: L'expérience du Niger (Des aménagements pour les populations riveraines des forêts dans un cadre institutionnel et économique optimal)**
 • Ordenaciones forestales aldeanas: La experiencia de Niger. (Ordenación por las poblaciones vecinas de los bosques, en un marco institucional y económico óptimo)
- 0006 **Adeyemo, A.I. (Nigeria)** (NP, T7)
 • **Conservation needs of tropical forest resources**
- 0007 **Aedo, Darío; Bravo, Carmen (Chile)** (Vol.3, T14, S)
 • Optimizing modelling of environmental and forestry production objectives
 • Modelisation optimisante d'objectifs environnementaux et de production forestière
 • **Modelación optimizante de objetivos ambientales y de producción forestal**
- 0008 **Agbelusi, E.A. (Nigeria)** (Vol.3, T18, S)
 • **Ranching grasscutter (*Thryonomys swinderianus* T.) for meat production in the humid forest zone of Nigeria**
 • Elevage d'aulacodes (*Thryonomys swinderianus* T.) pour la production de viande dans les zones forestières humides du Nigeria
 • Cría en granjas del "cortador de cesped" (*Thryonomys swinderianus* T.) para la producción de carne en la zona de bosque húmedo de Nigeria
- 0009 **Agbelusi, E.A.; Adeparusi, E. Oluwayemisi (Nigeria)** (Vol.3, T15, S)
 • **Effect of some plant-food materials on the growth rate of the African giant land snail (*Archchatina marginata*)**

- 00041 **Amorini, Emilio; Cutini, Andrea; Fabbio, Gianfranco (Italy)** (Vol.2, T7, S)
 • **Conservative management of residual holm oak ecosystems in Sardinia (Italy)**
 • Gestion visant la conservation des écosystèmes de chêne vert résiduel en Sardaigne (Italie)
 • Manejo conservacionista de los ecosistemas residuales de encina en Cerdeña, Italia
- 00042 **Amstutz, U. (Switzerland)** (Vol.4, T20, S)
 • **Fonctions de la forêt et situation de l'économie forestière en Suisse**
- 00043 **Andonoski, A. (Macedonia)** (NP, T1)
 • **Survey of Macedonian dendroflora**
- 00044 **Andonoski, A. (Macedonia)** (NP, T8)
 • **The state of the forest genofond in the Republic of Macedonia, measures for its protection and improvement**
- 00045 **Anşin, Rahim; Eminağaoğlu, Ozgür; Yüksek, Turan (Turkey)** (NP, T1)
 • Research on the flora and soil properties of the *Pinus pinea* L. stands near Fistikli Village in Artvin
- 00046 **Anşin, Rahim; Gökdemir, Şükran (Turkey)** (Vol.3, T12, S)
 • **Weeds of Ordu Province beech nursery and their chemical control**
- 00047 **Apsey, T. Michael; Bourgeois, Bill; Barker, John; Couch, Don; Dumont, W.E.; Jepsen, Dan (Canada)** (Vol.5, T33, S)
 • **Forging international consensus - The need for a world forestry convention**
 • La voie vers un consensus international sur la nécessité d'une convention forestière mondiale
 • Creación de un consenso internacional sobre la necesidad de un convenio forestal mundial
- 00048 **Apsey, T. Michael; Les Reed, F.L.C. (Canada)** (Vol.5, T33, S)
 • **World timber resources outlook: Current perceptions with implications for policy and practice**
 • Les perspectives des ressources ligneuses mondiales: Comment sont-elles appréhendées aujourd'hui et avec quelles implications au plan politique et dans la pratique?
 • Perspectiva de los recursos madereros mundiales: Percepciones actuales con implicaciones para las políticas y la práctica
- 00049 **Apsey, T. Michael; Mann, J.W.; Munro, J.J. (Canada)** (Vol.3, T18, S)
 • **The forestry/tourism accord: Bringing together natural allies**
 • L'accord foresterie/tourism: Réunir des allies naturels
 • Acuerdo forestal-turístico: Reuniendo a aliados naturales
- 00050 **Apud, Elias (Chile)** (Vol.3, T14, S)
 • Ergonomic applications in a number of forestry activities
 • Applications ergonomiques dans certaines activités sylvicoles
 • Aplicaciones ergonómicas en algunas actividades silvícolas

LIST OF AUTHORS/LISTE DES AUTEURS/LISTA DE LOS AUTORES

Abdoulaye, Lo Mohammed	0187
Abdul Razak, Mohd Ali	0082
Abou-Gazia, A.H.	0725
Abouelkhair, Khairia S	0001, 0725
Abouelkhair, S. Sanaa	0001
Abraham de Noir, Fidelina	0002
Abu Syed, Md.	0003
Acar, H. Hulusi	0278, 0279, 0280, 1164
Ackerknecht, Carlos	0004
Ada, Lawali	0005
Adeparusi, E. Oluwayemisi	0009, 0010
Adeyemo, A.I.	0006
Adholeya, Alok	0936
Aedo, Darío	0007
Afolayan, T.A.	0011
Agala, Ahmat	0141
Ağaoğlu, Y.S.	0385
Agbelusi, E.A.	0008, 0009, 0010, 0011
Agrawal, Arun	0012
Aguirre Escalante, Casiano	0013
Aguirre G., Juan Antonio	0014, 0015, 0016
Aguirre, Oscar A.	0689
Ahlback, Arnold J.	0017, 0018
Ahluwalia, S.K.	0019
Ahmad, Shahbaz	0020
Ahmed, Miyan Rukunuddin	0021
Ahuja, M.R.	0022
Akalp, T.	0140, 0368
Akbaba, Muhsin	0023
Akçiçek, Eren	0024
Akesen, Aytuğ	0449
Akinci Kesim, Güniz	0357
Akoena, Sesi	0373
Akpınar, Nevin	0245
Aksu, Yasar	0228
Akyüz, Feyza	0025
Akyüz, Mustafa	0026, 0027
Alam, M.K.	0028
Alanay, Aydan	0029
Alatou, D.	0030
Alexandrov, Alexander H.	0223
Alexeyev, V.A.	0031
Alfaro, René I.	0032
Aliadi, A.	1187
Alkan, Sevkett	0228
Alma, M. Hakki	0033, 0107

Douhéret, Jean	0255
Doumbia, F.	0296
Drapela, Karel	0950
Drazic, Dragana	0256
Duan Dezhi	1176
Dubé, Yves C.	0554
Dubrieu S.	0137
Dudley, Nigel	0257, 0258, 0259
Duivenvoorden, Joost F.	0563
Dukic, Matilda	0260, 0708
Dulsalam	0261
Dumont, W.E.	0047
Dündar, Kürşat	0035
Duponnois, R.	0262
Dupuy, B.	0263, 0296
Durigan, Giselda	0264
Durkaya, Ali	0880
Dwiprabowo, Hariyatno	0265
Dwyer, Edward	0266
Dykstra, Dennis P.	0267, 0888
Ebermann, R.	0530
Echeverría, Ricardo	0104
Ediz, D.	0268
Edroma, Eric L.	0269
Egorov, F.A.	0157
El Abid, A.	0646
El Aichouni, M.	0553
El Gilay, O. Ahmed	0875
El Nour, Mohamed A.	0270
El-Lakany, M.H.	0275
Elbir, Nurettin	0271
Elena-Rosselló, R.	0272
Elhassan, El Sayeda M.	0270
Elias	0273
Ella, Arsenio B.	0274
Elmubark, Sara M.	0270
Elouard, C.	0236
Elsettawi, A.A.	0001, 0725
Elungat-Odeke, David	0276
Emina□ao□lu, Özgür	0045
Engür, M. Osman	0277, 0281
Erdağ, Orhan	0278, 0279, 0280
Erdin, Kadir	0523
Erdin, Nurgün	0281
Erkan, Neşat	0282
Erlbeck, Reinhold	0283
Erler, Jörn	0284
Ero□lu, Hüdaverdi	0246, 0285, 1081
Ero□lu, Mahmut	0286