AN ETHNOBOTANICAL STUDY IN CENTRAL ANATOLIA (TURKEY)[1]

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Ertuğ, Füsun *(Rıdvan Paşa Sok. Refik Bey Apt. 13/14 Göztepe-Istanbul 81080 Turkey).* AN ETHNOBOTANICAL STUDY IN CENTRAL ANATOLIA. *Economic Botany 54(2):155–182, 2000.* *This study examines both edible plants and non-food uses of plants in a limited area to provide clues for archaeologists, to interpret their findings including the reconstruction of former diets. The results are based on an ethnoarchaeological study conducted in 1994–1995 on the traditional subsistence economy of a contemporary village, in close proximity to a pre-ceramic Neolithic site, Aşıklı, in the Aksaray province of Central Anatolia. As a part of this study, about 600 plant specimens were collected, of which over 300 were considered useful by the villagers. Through this study the floral potential of a limited area, and the richness of the traditional knowledge of plants was documented to provide clues to archaeologists, archaeobotanists, botanists, pharmacologists, economists, and perhaps to the planners of future local development projects.*

ORTA ANADOLUDA (TÜRKİYE) BİR ETNOBOTANİK ÇALIŞMASI. *Bu çalışmada, arkeologlara karşılaştırma malzemesi sağlamak ve geçmişte yaşamış insanların gıda rejimleriyle yaşam biçimlerini yeniden oluşturabilmelerine yardımcı olmak üzere, bir köyün 'erişim alanı' içindeki yenen ve diğer amaçlarla kullanılan yararlı bitkiler araştırılmıştır. 1994–1995 yıllarında Orta Anadolu'da Aksaray ilinde, çanak-çömlek öncesi Neolitik döneme ait Aşıklı yerleşmesine yakın modern bir köyde geleneksel geçim ekonomisini konu alan bir etnoarkeolojik çalışma gerçekleştirilmiş; bu çalışmanın bir bölümü olarak 600'e yakın bitki örneği toplanmış ve 300'ü aşkın bitkinin köylülerce adlandırıldığı ve çoğunun kullanıldığı saptanmıştır. Bu çalışma, dar bir alandaki bitki kapasitesinin zenginliğini ve bitkilere ilişkin geleneksel bilginin derinliğini göstererek arkeologlara, arkeobotanikçilere, botanikçilere, farmakologlara, ekonomistlere ve belki yerel kalkınma projeleri hazırlayan planlamacılara önemli ipuçları sunmaktadır.*

Key Words: ethnobotany; archaeobotany; food and non-food plants; Central Anatolia; Turkey.

The village of Kızılkaya, is located in the Melendiz Plain, which is part of the Central Anatolian Plateau, southeast of Ankara, in the province of Aksaray. The modern town of Aksaray is in the southwest corner of Cappadocia, the ancient name once given to most of Central Anatolia. The population density of the area was 49 per sq km, in contrast to 71.6 per sq km in the national average in 1990. The Melendiz Plain is at an altitude of about 1100 m, and is bordered by a range of volcanic mountains including Melendiz Dağ (2935 m) and Hasan Dağ (3268 m). The Melendiz River waters the plain, and created some deep canyons such as the Peristrema Valley (Ihlara), with a different micro climate and subsequent floral composition. Elsewhere the Melendiz Plain is covered with volcanic soils from lava flows originating from the volcanic activities. The climate is moderate continental, with dry, hot summers and cold winters, with an average annual precipitation of 350 mm. Most of the Aksaray area belongs to the Irano-Turanian floristic region, and is dominated by treeless steppe vegetation.

A Xero-Euxinian vegetation belt once surrounded this steppe vegetation (Zohary 1973). These steppe-forests begin east and south of the research area, where the altitude reaches 1400 m, and its upper limits would be about 2000 m. It includes remnants of the oak forests (dominant *Quercus cerris;* mixed forest of *Q. pubescens, Q. infectoria, Q. ithaburensis,* a few *Q. trojana,* and *Q. vulcanica* at 2000 m). Most of these oaks have been cut down for fuel, reduced

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TABLE 1. USEFUL SPECIES OF THE MELENDIZ RIVER BASIN, AKSARAY, TURKEY (B 5 PLAN SQUARE).

Family/Species	Local names	Plant part	Use category	Voucher specimen no.
Aceraceae				
Acer hrycanum Fisch. et Mey. ssp. *tauricolum* (Boiss. et Bal.) Yalt.	Meşe?/Akçaağaç	P	m?/u	526
Amaranthaceae				
Amaranthus retroflexus L.	Pancar otu/Kızıl sirken	L	f	405, 536
Amaryllidaceae				
Galanthus fosteri Baker	Sümbül	F	e	318, 341
Anacardiaceae				
Pistacia atlantica Desf.	Çıtırmık/Menengiç	Fr	f/e	329, 433, 564
Pistacia vera L.	Fıstık/Menengiç*	Fr	f	431, 432, 562–563
Apiaceae				
Anethum graveolens L.	Dereotu*	L	f	559
Astrodaucus orientalis (L.) Drude	Pıtrak otu	P	a	65, 162
Berula erecta (Huds.) Couville	Kazayağı	L	f	224, 315, 504
Caucalis platycarpos L.	Pıtırak otu	P	a	408
Daucus carota L.	Pıtırak otu	P	a	88
Echinophora tenuifolia L. ssp. *sibthorpiana* (Guss.) Tutin	Çörtük	R/L	f/a	63, 160, 161
Echinophora tournefortii Jaub. et Spach	Dikenli çörtük	P	a	86
Eryginum campestre L. var. *virens* Link.	Boğa dikeni	S/R	r	576
Orlaya daucoides (L.) Greuter	Pıtrak dikeni	P	a?	128, 572
Petroselinum crispum (Miller) A.W. Hill	Maydanoz*	L	f	—
Peucedanum palimbioides Boiss.	Pıtrak?	P	a	528
Turgenia latifolia (L.) Hoffm.	Pıtrak dikeni	P	a	452
Araceae				
Arum sp.	Yiviş	L	f	—
Aristolochiaceae				
Aristolochia maurorum L.	Gavur bostanı	Fr	r	48
Asclepiadaceae				
Vincetoxicum fuscatum (Hornem.) Reichb fil.	Gavur üzerliği/ Dag biberi	L	a	165, 523, 547
Asteraceae				
Achillea cf. setacea Waldst. et. Kit.	Yavşan?	L	f?/a	272

TABLE 1. CONTINUED.

Family/Species	Local names	Plant part	Use category	Voucher specimen no.
A. teretifolia Willd.	Dağ kekiği?	L	f/a	522
A. wilhelmsii C. Koch	Kokulu ot?	L	f?/a	422
Anthemis wiedemanniana Fisch. et Mey.	Papatya	P	a	399
Arctium minus (Hill) Bernh. subsp. *rubens* (Babington) Arenes	Deve pıtırağı	P	a	87
Artemisia santonicum L.	Yavşan	P	a	588, 589
Centaurea depressa Bieb.	Gökçebaş/Göğçebaş	P	a	3
C. iberica Trev. ex Sprengel	Çakıl dikeni	P	a	69
C. pulchella Ledep.	Gümüş süpürge otu	P	a/m	510
C. solstitialis L. subsp. *solstitialis*	Sarıbaş dikeni	P	a	77
C. virgata Lam.	Acımık otu	L/P	a/u	78, 189
Chondrilla juncea L. var. *juncea*	Karaavlık	L/R	f/a	74, 308
Cichorium intybus L.	Çıtlık/Yabani hindiba	L/R	f/r/a	66, 232, 291–292
C. pumilum Jacq.	Çıtlık*	L/R	f	488
Crepis foetida L. subsp. *rhoeadifolia* (Bieb.) Celak.	Kohum/Koyun otu	L	f/a	79, 309
Echinops pungens Trautv. var. *pungens*	Kangal dikeni	S	f/a	575
E. ritro L.	Kangal dikeni (small)	S/L	a	580
Gundelia tournefortii var. *armata* L.	Kengel	R	f	—
Helianthus annuus L.	Ayçiçeği*	Se/C	f	—
H. tuberosus L.	Yerelması*	B	f	—
Helichrysum arenarium (L.) Moench.	Püren/Paryavşanı	F	f/r/b	166
Jurinea pontica Hausskn. et Freyn ex Hausskn.	Kavkaz otu/Kav otu	L	f	497
Lactuca sativa L. *longifolia*	Marul*	L	f	—
L. serriola L.	Marul otu/Yazı marulu	L	f/a	2, 317
Picnomon acarna (L.) Cass	Kuşkonmaz dikeni	F/L	a	277
Scariola viminea (L.) F.W. Schmidt	Kedi çıtlığı/Çukur çıtlığı	L	f/a	335, 569
Scorzonera cana (C.A. Meyer) Hoffm. var. *radicosa* (Boiss.) Chamberlein	Tekercik/Dede sakalı	L	f/a	303, 326, 407, 450
S. mollis Bieb. ssp. *szowitzii* (DC.) Chamberlain	Bırçalık	B	f/a	38, 483
Sonchus asper (L.) Hill ssp. *glaucescens* Jordan Ball	Su kangalı	L	f/a	487
Tanacetum aff. parthenium (L.) Schultz Bip.	Saçlı ot	P	a	279
T. argyrophyllum (C. Koch) var. *argyrophyllum* Tvzel.	Yavşan	P	a	566
Taraxacum microcephaloides van Soest	Ebem çıtlığı/Karahindiba	L	f/a	234, 414
T. serotinum (Waldst. et Kit.) Poiret	Çukur çıtlığı/Çukur otu	L	f/a	353, 568
Tragopogon buphthalmoides (DC.) Boiss.	Yemlik	L	f/a	306, 325, 395, 449
Tripleurospermum decipiens (Fisch. et May.) Bornm.	Sarı papatya	P	a	56
T. monticolum (Boiss. et Huet) Bornm.	Papatya	P	a	340

TABLE 1. CONTINUED.

Family/Species	Local names	Plant part	Use category	Voucher specimen no.
T. parviflorum (Willd.) Pobed.	Kır papatyası	P/F	a	15
Xeranthemum annuum L.	Mor çiçek?	P	a	5
Berberidaceae				
Berberis crataegina DC.	Karamuk çalısı/Sarı ağaç	Fr/R	f/r/m	271, 293, 380
Boraginaceae				
Alkanna cappadocica Boiss. et Bal.	Boya otu	R	m	498
A. pseudotinctoria Hausskn. ex Hub.-Mor.	Kök boya/Karakök	R	m	22
Anchusa azurea Miller var. *azurea*	Ballık/Çoban çedenesi	F	b	33, 513
A. undulata L. ssp. *hybrida* (Ten.) Coutinho	Ballık	L	f/a	512
Buglossoides arvensis (L.) Johnston	Beyaz çiçek?	P	a	507
Cerinthe minor L.	Yenir ot?	P	a/f?	493
Echium italicum L.	Kurt kuyruğu	F	a/b	89
Heliotropium lasiocarpum Fisch. et Mey.	Tavuk otu	P	a	1
Brassicaceae				
Aethionema armenum Boiss.	Pembe çiçek ?	P	a	41
Allyssum linifolium Steph. ex Willd.	Sarı çiçek ?	P	a	392
Barbarea plantaginea DC.	Götlez götü	L	f/a	289, 304, 369, 448
Boreava orientalis Jaub. et Spach.	Sarı ot	F	a/b	19
Brassica oleracea var. *capitata*	Lahana*	L	f/a	—
Camelina hispida Boiss. var. *grandifora* (Boiss.) Hedge	Bozot	L	f/a	311, 321, 445
Capsella bursa-pastoris (L.) Medik.	Kuşkuş ekmeği	L	f/a	27, 229, 316, 484
Cardaria draba (L.) Desv.	Tırman otu	P	a	391
Descurainia sophia (L.) Webb ex Prantl	Karınca kavağı otu	P	a	16
Eruca sativa Miller (syn. *E. cappodocica* Reut.)	Izgın	Se	a/r/m	55, 131, 132
Lepidium sativum L.	Acı tere*	L	f/a	376
Rorippa nasturtium aquaticum L. Hayek	Acı tere/Su teresi	L	f	230, 314
Sinapis arvensis L.	Hardal otu	L	f/m	58, 156, 312
Sisymbrium altissimum L.	Elgelen hardalı/Ergelen	L	f/a	23
Thlaspi perfoliatum L.	Kalbimsi ot?	P	a	406
Campanulaceae				
Campanula cymbalaria Sm.	Yer otu	L/R	f/a	518
Cannabaceae				
Cannabis sativa L.	Çedene/Hint keneviri*	Se/S	f/m	67, 126

TABLE 1. CONTINUED.

Family/Species	Local names	Plant part	Use category	Voucher specimen no.
Caprifoliaceae				
Lonicera nummulariifolia Jaub. et Spach.	Kırmızı meyvalı çalı ?	P	e	502
Caryophyllaceae				
Dianthus anatolicus Boiss.	Yabani karanfil	F	e/a	540
D. calocephalus Boiss.	Yabani karanfil	F	e/a	514
D. crinitus Sm. var. *crinitus*	Yabani karanfil	F	e/a	546
D. zonatus Fenzl var. *zonatus*	Yabani karanfil	F	e/a	91
Gypsophila eriocalyx Boiss.	Çöğen	P	a/u	61
G. pilosa L.	Yağlıkara otu	P/Se	a/f?	554
Saponaria prostrata Willd. ssp. *prostrata*	Ebem terliği	L/P	a/s	32
Silene alba (Miller) Krause ssp. *divaricata* (Reichb.) Walters	Sığır biciği	L	a	556B
S. subconica Friv.	Pembe çiçek ?	P	a	401
S. vulgaris (Moench.) Garcke var. *vulgaris*	Tavşan ekmeği	L	f/a	516
Stellaria media (L.) Vill. ssp. *pallida* (Dumort.) Aschers. et Graebn.	Haval otu	L	f/a	533
Vaccaria pyramidata Medik. var. *grandiflora* (Fisch. ex DC.) Cullen	Kıyşayak	P	a	553
Chenopodiaceae				
Beta macrorhiza Stev.	Kızıl pancar	L	f/a	336, 409, 556
B. vulgaris L. ssp. *vulgaris* var. *altissima* Döll	Şeker pancarı*	L/B	a/f	120, 560
B. vulgaris L. ssp. *vulgaris* var. *canditiva* Alef.	Kırmızı pancar*	R/L	f/a	137, 195, 202
Chenopodium album L. ssp. *album*	Köpürgen otu	L	a	403, 486
C. album L. ssp. *iranicum* Aellen	Sirken otu	P	f/a	334, 410
C. botrys L.	Köpürgen otu	P	a	557
Kochia prostrata (L.) Schrad	Zelve otu?	P	a?/m?	587
K. scoparia (L.) Schrad.	Süpürge otu*	P	m	182, 205
Noaea mucronata (Forssk.) Aschers. et Schweinf. ssp. *Mucronata*	Hölmez dikeni/Hölmez otu	P	a/u	62, 215
Salsola ruthenica Ijin	Keteğen dikeni/Sıyırma	P	a/u	73
Spinacia oleracea L.	Ispanak*	L	f	427,428
S. tetrandra Stev.	Yazı ıspanağı	L	f/a	142, 337, 558
Convolvulaceae				
Convolvulus arvensis L.	Sarmaşık/Yeşil sarmaşık	L	a	50
C. galaticus Rostan ex Choisy	Sarmaşık/Boz sarmaşık	L	a	49
C. lineatus L.	Tavşan kulağı	L	f/a	404, 446
Corylaceae				
Corylus avelanna L.	Fındık	Fr	f	11, 237, 506

TABLE 1. CONTINUED.

Family/Species	Local names	Plant part	Use category	Voucher specimen no.
Crassulaceae				
Sempervivum armenum Boiss. et Huet var. *armenum*	Musluk otu	L	f	567
Umbilicus erectus DC.	Çanak çatlatan	P	r	534
Cucurbitaceae				
Bryonia multiflora L.	Yabani asma?	L	a	561
Citrullus vulgaris L.	Karpuz/Bostan*	Fr/Se	f/a	—
Cucumis melo L.	Kavun*	Fr	f/a	—
Cucurbita pepo L.	Kabak*	F/Fr/Se	f	—
C. sativus L.	Salatalık/Hıyar*	Fr	f	—
Lagenaria siceraria (Mol.) Standl. ?	Su kabağı	Fr	m	—
Cyperaceae				
Carex divulsa Stokes ssp. *divulsa*	Saz	L	m?	470
Dipsacaceae				
Scabiosa argentea L.	Süpürge/Yazı süpürgesi	P	m	509
Elaeagnaceae				
Elaeagnus angustifolia L. var. *angustifolia*	İğde çalısı/Kuş iğdesi	Fr	f/m	52b, 236, 270, 500
E. angustifolia L. var. *orientalis* (L.) Kuntze	İğde/Has iğde*	Fr	f	52, 222, 269
Equisetaceae				
Equisetum ramosissimum Desf.	Ulama	P	a	233
Euphorbiaceae				
Chrozophora tinctoria (L.) Rafin.	Yalangı ?	R/P	u/m	76
Euphorbia macroclada Boiss.	Sütleğen	L	a/r	235
Fabaceae				
Alhagi pseudolhagi (Bieb.) Desv.	Çoban çalısı	P	a	287
Astragalus elatus Boiss. et Bal.	At keveni	P/R	a/r	548
A. elongatus Willd. subsp. *elongatus*	Yazı yoncası	P	a/r	28
A. kirshehiricus Chamberlain	Keven/Geven	P/R	u/r/m	191, 223
Cicer arietinum L.	Nohut*	Se/P	f/a	130
Colutea cilicica Boiss. et Bal.	Tavşan patlağı	Se	s	153, 155, 430
Genista sessilifolia DC.	Borcak çalısı	P	u	286, 460
Hedysarum pestallozzae Boiss.	Kıraç yoncası	P	a	83

TABLE 1. CONTINUED.

Family/Species	Local names	Plant part	Use category	Voucher specimen no.
Lathyrus cicera L.	Yazı fiği	P	a	25, 53, 412, 424, 550
L. sativus L.	Fiğ*	P	a	119, 201
Lens culinaris Medik.	Mercimek*	Se/P	f/a	59, 118, 491
Lotus aegaeus (Griss.) Boiss.	Devre otu	P	p	421
Medicago sp.	Yonca*	L	a	—
Melilotus officinalis (L.) Desr.	Eşek yoncası/Sarı yonca	L	a	80
Onobrychis tournefortii (Willd.) Desv.	Kıraç yoncası	P	a	495
Ononis spinosa L. ssp. *leiosperma* (Boiss.) Sirj.	Siğek dikeni	P	f/a	70
Phaseolus vulgaris L.	Fasulya/Pakla*	Se/C	f/a	133, 135, 194
Pisum sativum L.	Bezelye*	L	f	—
Robinia pseudoacacia L.	Akasya*	F/P	u/r	144
Sophora japonica L.	Dişbudak*	P	u	219
Trifolium fragiferum L. var. *pulchellum* Lange	Yonca	P	a	438
Trigonella aurantiaca Boiss.	Üçgül	P	a/r	35
T. coerulescens (Bieb.) Hal.	Devre otu	P	p	384
T. foenum-graecum L.	Çemen otu*	Se	f	299, 511
T. monantha C.A. Meyer	Sarı yonca	P	a	402
Vicia caesarea Boiss. et Ball.	Nohud otu	P	a	34, 157
V. cappadocica Boiss. et Ball.	Fiğ*/Efek yoncası	P/Se	a	26, 397
V. cracca L. ssp. *stenophylla* Vel.	Dağ yoncası	L	a	515, 525
V. ervilia (L.) Willd.	Burçak*	G/C	a	116, 117
V. narborensis L. var. *narborensis*	Mürdümük otu	Fr	f/a	520
V. sativa L. ssp. *nigra* (L.) Ehrh. var. *segetalis* (Thuill.) Ser. ex DC.	Dağ fiği	P	a	524
Fagaceae				
Quercus cerris L.	Pelit/Dağ Meşesi	Fr/P	fa/u/m	471, 477
Q. infectoria Olivier ssp. *boissieri* (Reuter) O. Schwarz	Pelit/Dağ Meşesi	Fr/P	f/u	476
Q. ithaburensis Decne. ssp. *macrolepis* (Kotschy) Hedge et Yalt.	Pelit/Dağ Meşesi	Fr/P	f/u	457
Q. pubescens Willd.	Pelit/Dağ Meşesi	Fr/P	f/u	439–442, 454–456, 478
Q. robur L. ssp. *robur*	Pelit/Meşe*	Fr/P	f/a/u	172, 208–210, 352, 453, 473
Q. trojana P.B. Webb	Pelit/Dağ Meşesi	Fr/P	f	443
Q. vulcanica (Boiss. et Heldr. ex) Kotschy	Pelit/Dağ Meşesi	Fr/P	f	527

TABLE 1. CONTINUED.

Family/Species	Local names	Plant part	Use category	Voucher specimen no.
Fumariaceae				
Fumaria vaillantii Luis.	Güvercin göğsü/Şahtere	L	s	20, 366
Geraniaceae				
Erodium cicutarium (L.) L'Herit subsp. *cicutarium*	İnnelik/Iğnelik	L	f/a	228, 294
E. hoefftianum C. A. Meyer	Eşek inneliği	L	a	328, 381
Geranium tuberosum L. ssp. *tuberosum*	Deve tabanı	B/P	f/a	29
Hydrangeaceae				
Philadelphus coronarius L.	Beyaz çiçekli çalı ?	P	e	501
Illecebraceae				
Herniaria incana Lam.	Köpürgen otu/Sabun otu	P	a/m	494
Iridaceae				
Crocus ancyrensis (Herbert) Maw	Çiğdem/Kırmızı çiğdem	B/F	f	6, 9, 138, 302
Gladiolus atroviolaceus Boiss.	Sümbül	B	f	386
Iris galatica Siehe	Navrağaz	B	f	10, 12, 139, 140
I. germanica L.	Susam/Zambak	F	e	359
Juglandaceae				
Juglans regia L.	Ceviz*	Fr/L/Br	f/r/m	221
Juncaceae				
Juncus inflexus L.	Kova otu	L/S	u/m	71
Lamiaceae				
Acinos rotundifolius Pers.	Yazı irfanı/Reyhan	P	a	383, 398
Ajuga chamaepitys (L.) Schreber ssp. *chia* (Schreber) Arcangeli var. *chia*	Ebem terliği	L/P	s	17
Ballota larendana Boiss. et Heldr.	Ekmeklik	L	a	545
Lamium amplexicaule L.	Ballıbaba	F	b	367
Marrubium parviflorum Fisch. et Mey. ssp. *parviforum*	Ak yaprak ?	P	a?	579
M. vulgare L.	Kayışkıran	P	a/u	190, 274
Mentha longifolia (L.) Hutson ssp. *typhoides* (Brig.) Harley var. *typhoides*	Yarpuz/Yaban nanesi	L	a/r/m	72
M. piperita L.	Nane*	L	f	—
Ocimum basilicum L.	Reyhan/İrfan*	L	f/a	—
Salvia candidissima Vahl.	Yağlı Börek	S/L	f/a	490

TABLE 1. CONTINUED.

Family/Species	Local names	Plant part	Use category	Voucher specimen no.
S. cryptantha Montbret et Aucher ex Bentham	Adaçayı ?	L/F ?	f?/r/a	46
S. hypargeia Fisch. et Mey.	Çayotu	L/F ?	f/r	40, 489, 583
S. microstegia Boiss. et Bal.	Yağlı Börek	S/L	f/a	531
S. syriaca L.	Çevlik otu ?	P	a?	578
Teucrium polium L.	Acı yavşan ?	P	a?	584
Thymus argaeus Boiss. et Bal.	Kekik	L	f?	521
T. sipyleus Boiss.	Kekik	L	f	496
T. sipyleus Boiss. ssp. *rosulans* (Borbas) Jalas	Kekik	L	f	451
Wiedemannia orientalis Fisch. et Mey.	Sormuk otu/Ballıbaba	F	f/a	18
Liliaceae				
Allium atroviolaceum Boiss.	Yabani sarmısak ?	L	f?	51
A. cepa L.	Soğan/Kıska*	B/L	f	127, 187
A. lycaonicum Siehe ex Hayek	İt dirseği	P	a	37, 389
A. porrum L.	Pırasa*	L	f	283
A. sativum L.	Sarmısak*	B/L	f	—
A. scorodoprasum L.	İt dirseği/Kaya sarmısağı	P	a	423, 544
Asparagus officinalis L.	İt üzümü	P	a	434
A. persicus Baker	İt üzümü	P	a	180
Colchicum triphyllum G. Kuntze	Oksüz çigdem/Ak çiğdem	P	a	7, 290, 301
Gagea granatellii (Parl.) Parl.	İt dirseği	P	a	8
Muscari comosum (L.) Miller	Sümbül ?	B	f/e	45
M. neglectum Guss.	İt dirseği	P	a	352
M. tenuiflorum Tausch.	İt dirseği	P	a	437, 532
Ornithogalum pyrenaicum L.	Eşek susamı	P	a/p	43
O. umbellatum L.	İt dirseği	P	a	415
Tulipa armena Boiss. var. *lycica* (Baker) Marais	Lale (yellow&red)	F	e	344, 354
T. humilis Herbert	Lale (pink)	F	e	13, 345
Linaceae				
Linum mucronatum Bertol ssp. *armenum* (Bordz.) Davis	Sarı ot?	P	a/m?	39
L. usitatissimum L.	Zegrek/Zeyrek/Keten*	Se/S	f/a/r/m	124, 125, 300, 542
L. usitatissimum L. var. *bienne* Mill.	Yabani keten?	P	a	387
Loranthaceae				
Viscum album L. ssp. *album*	Armut Öveleği/Ökse otu	L	a/r	343

TABLE 1. CONTINUED.

Family/Species	Local names	Plant part	Use category	Voucher specimen no.
Malvaceae				
Alcea apterocarpa (Fenzl.) Boiss.	Devegülü/Hatmi	F	a/r	64
Althaea officinalis L.	Hatmi*	F	f	188
Hibiscus esculentus L.	Bamya*	L/F	f/r	—
Malva neglecta Wallr.	Ebemgümeci	L/Se	f/a/r	275
M. sylvestris L.	Ebemgümeci	L	f/a	535
Moraceae				
Morus alba L.	Dut*	Fr	f	—
M. nigra L.	Dut*	Fr	f	—
M. rubra L.	Dut*	Fr	f	—
Oleaceae				
Fraxinus angustifolia Vahl ssp. *angustifolia*	Dişbudak*	P	u	145, 220, 475
Orchidaceae				
Orchis palustris Jacq	Yazı susamı	P	e/a	44, 418
Papaveraceae				
Glaucium leiocarpum Boiss.	Gülotu	L	r	54
Hypecoum imberbe Sibth. et Sm.	Navraz otu	L	a	14, 411
Papaver rhoeas L.	Gülotu/Gelincik	L	f/a	332, 419
Roemeria hybrida (L.) DC. ssp. *hybrida*	Mor gelincik ?	P	a	57
Plantaginaceae				
Plantago lanceolata L.	Boduk kulağı/Sinir otu	L	r	82
P. major L.	Boduk kulağı	L	r	82c
Plumbaginaceae				
Acantholimon kotschyi (Jamb. et Spach) Boiss. ssp. *kotschyi*	Keven/Geven	P	u/m	84
Plumbago europaea L.	Serkele otu	R/P	m	570
Poaceae				
Aegilops triuncialis L. ssp. *triuncialis*	Çayır otu	P	g	94, 420
Alopecurus arundinaceus Poiret	Çayır otu	P	a	394
Avena sativa L.	Yulaf*	Se/C	a/r	101, 102
A. sterilis L.	Yabani yulaf	P	a/g	103
Bromus danthoniae Trin.	İbubuk ekini	P	a	96, 463
B. tectorum L.	İbubuk ekini	P	a	464

TABLE 1. CONTINUED.

Family/Species	Local names	Plant part	Use category	Voucher specimen no.
Elymus elongatus (Host) Runemark ssp. *turcicus* (Mc.Guire) Melderis	Puta otu	P	u	95
E. hispidus (Opiz) Melderis ssp. *barbulatus* (Schur) Melderis	Ilamuk	P	a	93, 462
E. repens (L.) Gould ssp. *repens*	Ayrık otu	P	a/u	192
Hordeum bulbosum L.	Yabani arpa/Çavdarcık	P	a/g	466, 467, 519
H. distichon L.	Arpa*	Se/C	f/a/r	106, 114, 121
H. murinum L.	Yabani arpa?	P	a/g	104
H. spontaneum C. Koch	Yabani arpa?	P	a/g	468
Melica ciliata L. ssp. *ciliata*	Ekinsi ot?	P	a	469
Phragmites australis (Cav.) Trin. ex Studel	Kamış/Sokarık otu?	S	m	277
Poa bulbosa L.	Çayır otu	P	a	377
Secale cereale L. var. *cerrale*	Çavdar*	Se/C	f/a	110
S. cereale L. var. vavilovii (Gross.) Meyss.	Çavdar*	Se/C	f/a	108, 111, 461, 465
Triticum aestivum L.	Buğday*/Beyaz Çomak	Se/C	f/a/r	98, 298
T. baeoticum Boiss. ssp. *baeoticum*	Çavdarcık/Yabani buğday	Se/C	a/g	109
T. durum Desf.	Buğday*/Şahman	Se/C	f/a	97
Zea mays L.	Mısır*	Fr/P	f/a/r/s	136, 186, 268
Polygonaceae				
Polygonum bellardii All.	At mercimeleği	L	f/a	349, 555
P. cognatum Meissn.	Mercimelek/Madımak	L	f/a	284, 327, 333, 385,
P. lapathifolium L.	Mark otu?	P	a	181
P. patulum Bieb.	At mercimeleği	L	a	60, 350
Rumex acetosella L.	Eşkileme/Kuzum oğlağı	L	f/a	382, 417
R. aff. *scutatus* L.	Eşkileme	L	f/a	276
R. crispus L.	Evelek/Kazan Kulpu	L	f/a/r	81, 435
Portulacaceae				
Portulaca oleracea L. ssp. *oleracea*	Temizlik/Semizotu	L	f/a	425
P. oleracea L. ssp. *sativa* (Haw.) Celak.	Temizlik/Semizotu*	P	f	426, 485
Ranunculaceae				
Adonis aestivalis L. ssp. aestivalis	Sakız otu	P	a	24
A. flammea Jacq.	Çanak Çatlatan/Sakız otu	P	a	492
Ceratocephalus falcatus (L.) Pers.	Döğün otu	L/R	r	21, 370
Consolida orientalis (Gay) Schröd.	Şebboy	P	e	42
C. regalis S. F. Gray ssp. *paninculata* (Host) Soo ssp. var. *paninculata*	Gelin tacı/Horoz kuyruğu	P	a	4, 159
Nigella arvensis L. var. *glauca* Boiss.	Çöreotu/Tarla Çörekotu	Se	f?/a/r	90, 552

TABLE 1. CONTINUED.

Family/Species	Local names	Plant part	Use category	Voucher specimen no.
Ranunculus argyreus Boiss.	Yağ kabı ?	P	a?	388
R. isthmicus Boiss.	Sarı su otu ?	P	a?	396
R. repens Boiss.	Yağ kabı ?	P	a?	390
Resedaceae				
Reseda lutea L. var. *lutea*	Eşek kerdemesi	L	a	365, 447
Rhamnaceae				
Rhamnus oleoides L. ssp. *graecus* (Boiss. et Reut) Hulmboe	Kızıl üzüm/Kızılcık çalısı	Fr	f	146, 149, 150, 338
Rosaceae				
Amygdalus communis L.	Badem*	Fr	f	330
A. orientalis Miller	Acı badem/Dağ bademi	Fr/P	f/u	30, 322, 458, 459
Armeniaca vulgaris Lam.	Kayısı*	Fr/Br	f/m	297, 313
Cerasus microcarpa (C.A. Meyer) Boiss.	Dağ eriği	Fr?	f?	528
Cotoneaster nummularia Fisch. et Mey.	Kız elması	Fr	f	178, 212, 393, 429
Crataegus meyeri Pojark	Alıç	Fr	f/a	177, 207, 213, 267
C. monogyna Jacq. ssp. *monogyna*	Öküz götü	Fr	f/a	143, 147, 206, 280
C. sinaica Boiss.	Öküz götü/Alıç	Fr	f/a	174
C. szovitsii Pojark.	Alıç	Fr	f/a	538
Cydonia vulgaris L.	Ayva*	Fr	f/r	—
Fragaria vesca L.	Çilek*	Fr	f	373
Malus sylvestris Miller	Elma*	Fr	f	356, 357
Potentilla recta L. Group B	Sarı çiçek?	P	a	508
Prunus cerasus L.	Vişne	Fr	f	355
P. cocomilia Ten.	Dağ eriği (yellow)	Fr	f/a/r	211
P. divaricata Ledeb. ssp. *divaricata*	Dağ eriği (yellow)	Fr	f/a	152, 169
P. persica (L.) Batsch.	Şeftali*	Fr	f	358
P. spinosa L. ssp. *dasyphylla* (Schur) Domin	Dağ eriği (purple)	Fr	f/a	170, 184, 339
P. × *domestica* L.	Erik*	Fr	f	168, 331
Pyrus communis L.	Armut*	Fr	f	346, 347
P. communis L. ssp. *sativa* (DC.) Hegi	Armut*/Topuklu armut	Fr	f	342
P. elaeagnifolia Pallas	Ahlat/Dağ Armutu	Fr/P	f/u/e	348, 551
Rosa canina L.	Gülpüntü/Kuşburnu	Fr	f/a/r	175, 185
R. hemisphaerica J. Herrm.	Yabani sarı gül	F	e	436
Rubus sanctus Schreber	Böğürtlen	Fr	f/a/r	176
Sorbus torminalis L.	Kuş üvezi	Fr	f?	444

TABLE 1. CONTINUED.

Family/Species	Local names	Plant part	Use category	Voucher specimen no.
S. umbellata (Desf.) Fritsch	Yabani elma	Fr	f?	530
Rubiaceae				
Galium cf. *cornigerum* Boiss. et Hausskn.	Top ot ?	P	e	577
Rubia tinctorum L.	Boya kökü/Kökboya	R	m	179, 227, 505
Rutaceae				
Haplophyllum vulcanicum Boiss. et Heldr.	Yabani kekik ?	L?	f	47
Salicaceae				
Populus nigra L. ssp. *nigra*	Kavak*	P	m/u	204, 372
P. tremula L.	Dağ kavağı/Titrek kavak	P	u	529
Salix alba L.	Söğüt*	P	m/u	203, 371
S. babylonica L.	Salkımsöğüt*	P	e	329
Scrophulariaceae				
Scrophularia libanotica Boiss. subsp. *libanotica* var. *nevsehirensis* R. Mill	Kutnu otu	P	r	31, 216, 379
Verbascum lasianthum Boiss. ex Bentham	Sığır kuyruğu/Yalangı	P	m	266, 499
Veronica anagallis-aquatica L.	Camak	L	f/a	231, 305
Solanaceae				
Capsicum annum L.	Biber*	Fr	f	—
Datura stramonium L. ?	Mang otu	Se?	s/p	—
Hyoscyamus niger L.	Yılan otu	Se?	p	—
Lycium anatolicum A. Baytop et R. Mill	Beyaz çalı/Termiye çalısı	S	r	36
Lycopersicum esculentum L.	Domates/Firek*	Fr	f	—
Solanum alatum Moench	İt üzümü	P	a	92
S. melongena L.	Patlıcan/Baldırcan*	Fr	f	—
S. tuberosum L.	Patates/Kümpür*	B	f	265
Tamaricaceae				
Tamarix parviflora DC.	Ilgın	P	u/e	400, 481
Thymelaeaceae				
Daphne oleoides Schreber ssp. *oleoides*	Yaygıç	R/L	r	539
Typhaceae				
Typha laxmannii Lepechin	Hasır otu	P	a/m	85, 278

TABLE 1. CONTINUED.

Family/Species	Local names	Plant part	Use category	Voucher specimen no.
Ulmaceae				
Celtis tournefortii Lam.	Çitlembik/Kıliğli	Fr	f/a	163, 171, 214, 273, 281, 374, 378, 413
Ulmus minor Miller ssp. *minor*	Karaağaç	P	u/m	218, 310, 319, 375
Urticaceae				
Urtica dioica L.	Cızlagan/Isırgan otu	L	f/r	360, 517
Violaceae				
Viola odorata L.	Menevşe	L/F	a	323
Vitaceae				
Vitis vinifera L.	Asma*	Fr/L	f/m/r	—
Zygophyllaceae				
Peganum harmala L.	Üzerlik	Se/P	m/s/r	167, 482
Tribulus terrestris L.	Çoban çöküren	L	a	75
Fungi				
Agaricaceae				
Agaricus subperonatus (Lange) Sing.	Has mantar	M	f	288
Amanitaceae				
Amanita argentea Huijsman (A. mairei Foley)	Büyük Melek mantarı	M	f	368
Bolbitiaceae				
Agrocybe praecox (Pers.) Fayod	Melek mantarı	M	f	364
Coprinaceae				
Coprinus atramentarius (Bull.) Fr.	Söğüt mantarı	M	f	363
Helvellaceae				
Helvella lacunosa Afz.	Kulak mantarı	M	f	362
Hymenogastraceae				
Rhizopogon obtextus (Spreng.) Rauschert.	Domalan mantarı	M	f	361
Sclerodermataceae				
Scleroderma bovista Fr.	Foskulak mantarı	M	r	541

to brushwood, and only *Q. robur* was encouraged by cultivation in gardens for its larger acorns. Neither *Pinus* nor *Juniperus* are represented in the present steppe-forest, but species that originally grew together with *Pinus nigra,* such as *Q. vulcanica,* and *Acer hyrcanum* are still present. There are also some small patches within the volcanic areas, where some wild fruit trees (such as *Crataegus, Prunus, Pyrus,* and *Amygdalus*) have survived. The rivers and small streams provide moisture for the grazing lands and are the site of some aquatic edible species, such as *Berula erecta, Rorippa nasturtium-aquaticum,* and *Veronica anagallis-aquatica.* Some patches of archaic cereals, such as einkorn *(Triticum boeticum*), and wild barleys (*Hordeum bulbosum, H. murinum, H. spontaneum*) are also present. It is not surprising that this area with its high ecological diversity attracted and hosted several hunter gatherer groups and was the location of the earliest villages. Today, most of the area is devoted to cereal production, with gardens near the channels or rivers, and some orchards and vineyards, so the anthropogenic landscape is larger than the original steppes.

The village of Kızılkaya is about 25 kilometers southeast of the city of Aksaray, and one kilometer north of the pre-ceramic Neolithic site of Aşıklı Höyük (38° 15′ E 38° 22′N), dated from 8000 to 7450 years B.C. (calibrated). A team from the University of Istanbul, under the direction of Dr. U. Esin (1996, 1998) has been excavating this site for the past nine years. The economy of Aşıklı was based on crop husbandry, gathering wild plants (van Zeist and de Roller 1995), and hunting game animals. They were probably in the process of the transition from hunting-gathering to food-producing. My fieldwork (Ertuğ-Yaraş 1997) provided comparative data for the interpretation of the archaeobotanical remains from Aşıklı Höyük, as well as a resource for ethnobotanists, pharmacologists, and perhaps for the planners of local development projects.

Material and Methods

In the process of documenting all species known to the villagers, some 600 plant specimens in the B5 square of the *Flora of Turkey* grid-system (Davis 1965) were collected. Although this study was mainly in the immediate environment of Kızılkaya, the surrounding area, which extends about 20–25 km around Kızılkaya was also investigated. Kızılkaya proper covers 2047 ha within this core area. It is not possible to identify specific catchment areas for wild plant gathering, as plants were gathered almost anywhere. The plants were collected at an altitude of approximately 1050 to 2000 m. Of the 600 plant specimens, including the cultivars (see Table 1), 340 plant species could be identified to the level of genus or species. They comprise 225 genera and 73 families. Most of the identifications were made in the Department of Biology, Gazi University, Ankara, and the samples were deposited in the Gazi University Herbarium. A file was made, ordered according to the local names of the plants, the Latin names, the information about where each plant was seen, at what altitude, the type of soil, the local use and processing methods, and a photograph was included.

About 30 endemic and rare species were collected during the fieldwork, and a few species such as *Galanthus fosteri,* and *Tulipa armena* were found outside their known distribution areas. The most important information is keyed to about 300 locally-named plants, their distribution, use and management with a collection of corresponding botanical specimens. This information has been confirmed in 14 surrounding villages and towns with about 60 community members in several social categories rich and poor, young and old, men and women.

Questionnaires were completed in Kızılkaya

←

* indicates cultivated taxa; ? Question marks after local names indicate that these names are not used by everyone, and sometimes given arbitrarily. **Plant Parts B** Bulb; **Br** Bark; **C** Chaff; **F** Flower; **Fr** Fruit; **L** Leaf; **P** Whole Plant; **R** Root; **S** Stem; **Se** Seed/Grain.

Use Categories (after Phillips and Meilleur 1998) **a** animal food (forage, fodder); **b** bee plants (pollen or nectar sources); **e** environmental uses (ornamentals, windbreaks etc.); **f** food (including grains, flowers, tea, etc.); **g** gene resources; **m** materials (including lumber, fibre, tannin, resin, wax, oils etc.); **p** poisons (useful and harmful); **r** remedies (medicine for both humans and animals); **s** social products (narcotics, ritual/religious value, used in children games, etc.).

for a randomly chosen sample of 30 households in three income groups concerning land-ownership, agriculture, and about plant gathering and gardening. With these questionnaires the different attitudes of rich and poor towards gathering and/or agricultural decisions were detected. These also helped in the quantification of wild plant use, and for comparisons between different income groups. However, the most satisfactory way to collect information about the plants was to accompany and question the women while they were gathering, as well as attending all agricultural activities, such as planting, weeding, harvesting, processing, and cooking.

The Subsistence of the Modern Village

The contemporary village of Kızılkaya has a population of about 1300 people occupying some 300 houses. Historical tax records for this village and many others in the area go back as far as the sixteenth century, thus they have at least a 500 year history of settlement. The main economic activities are field cropping and gardening, and the husbandry of sheep and cattle (Ertuğ-Yaraş 1997).

The total number of cultivated plants was 70, including 20 trees, 10 fodder plants, of which four species were no longer cultivated, and some cultivars which were planted only rarely. The basic cereal crops were bread wheat, and legumes such as beans, lentil, and chickpea. About 20 vegetables were regularly planted in spring and consumed during the summer. Some were dried, made into paste or pickled, and stored for winter. Onions, potatoes, garlic, green beans, squash, peppers, and tomatoes were the most important. Beet, spinach, cabbage, leek, purslane, green onion, cress, lettuce, parsley, and chicory were regularly planted for the consumption of their green leaves. Whereas the number of cultivated green leafy vegetables did not exceed 10 during the summer, as many as 40 different kinds of wild greens were gathered during the winter and spring. Although the women tried to plant some wild species in their gardens they didn't like the taste. Chicory and wild spinach were the most common of these. Although the women planted commercial seeds of beet and spinach in their gardens, they also collected the wild spinach (*Spinacia tetranda*) and wild beet (*Beta macrorhiza*) in winter from fallow fields.

Gardening has gradually increased during the preceding 20 to 30 years but the climate being continental, the frost starts as early as October, limiting gardening to the summer. Until recently, the last fresh products from the village gardens, such as tomatoes and leeks, were eaten during October. From November until June, a period of seven or eight months, no fresh garden vegetables could be brought to the table. With the use of plastic greenhouses and the increased availability of transportation to markets, fresh vegetables and fruit became available during the whole year. Despite this accessibility, the local traditions of wild plant gathering for food persists in Central Anatolia, and probably goes back at least 500 years.

Edible Wild Plants

Over 100 wild plant species in the Melendiz Plain are considered by the local people as edible. These edibles belong to 36 plant families, and 42 wild greens (representing 18 families) make up the group most commonly and regularly consumed, followed by wild fruits, roots, and stems. Species belonging to the Asteraceae and Brassicaceae families are the most numerous among the greens exploited by the villagers. Of the 100 edible species 37 are not reported as edible in the general ethnobotanical literature (Table 2). To be able to tell this the extensive data base of SEPASAL in the Center of Economic Botany, Royal Botanical Gardens, Kew have been searched as well as other local and regional literature. An additional 18 plants available in the Melendiz area, were reported in the literature as edible in other areas, but were not used for food in the study area. Thus the number of possible edible wild greens should be increased to 121. Peddlers and the villagers from neighboring areas, who brought plants to trade may increased this number even more.

Greens

Wild greens were the most consistent component of the local diet, and were regularly gathered between October and June, when fresh greens were most needed. During the winter, unless the snow was deep, it was possible to find green leaves of 13 to 16 different varieties of edible plants. The minimum number of species with edible leaves was 9 in June, and the number reached 33 in April, and 35 in May. Three different kinds of edible aquatic plants could also

TABLE 2. WILD FOOD PLANTS IN AND AROUND THE KIZILKAYA VILLAGE, AKSARAY, TURKEY.

Species	Use frequency	References
EDIBLE GREENS		
Amaranthus retroflexus	xx	Baytop 1994
Anchusa undulata ssp. *hybrida***	x	Not reported
Barbarea plantaginea	xxx	Not reported
Berula erecta	xxx	Not reported
Beta macrorhiza	xx	Tanaka 1976
Camelina hispida var. *grandiflora*	xx	Not reported
*Campanula cymbalaria***	x	Not reported
Capsella bursa-pastoris	xxx	Baytop 1994; Işık et al. 1995; Grieve 1984; Pieroni 1996
*Centaurea depressa***	x	Not reported
Chenopodium album ssp. *album*	x	!Baytop 1994; Tanaka 1976; Grieve 1984
C. album ssp. *iranicum*	x	!Baytop 1994; Renfrew 1973
Chondrilla juncea. var. *juncea*	xxx	Baytop 1994; Forbes 1976; Feinbrun & Zohary 1930
Cichorium intybus	xxx	Baytop 1994; Lyle-Kalças 1974; Tanaka 1976; Grieve 1984
Convolvulus lineatus	xx	Not reported
Crepis foetida ssp. *rhoadifolia*	xxx	Not reported
Erodium cicutarium ssp. *cicutarium*	xxx	!Lyle-Kalças 1974
Lactuca serriola	xxx	Öztürk and Özçelik 1991; Tanaka 1976
*Malva neglecta**	x	Baytop 1994; Işık et al. 1995
*M. sylvestris***	x	Baytop 1994; Işık et al. 1995
Ononis spinosa ssp. *leiosperma*	x	!Tanaka 1976; Öztürk & Özçelik 1991
Papaver rhoeas	xx	Baytop 1994; Lyle-Kalças 1974; Öztürk & Özçelik 1991; Forbes 1976; Feinbrun & Zohary
Polygonum bellardii	x	Not reported
P. cognatum	xx	Baytop 1994; Öztürk & Özçelik 1991
Portulaca oleracea ssp. *oleracea*	xxx	!Baytop 1994; Öztürk & Özçelik 1991; Tanaka 1976; Zohary 1973; FAO 1988
Rorippa nasturtium-aquaticum	xxx	Baytop 1994; Öztürk & Özçelik 1991; Zohary 1973; Boulos 1985; Işık et al. 1995; Grieve 1984; Gonzalez 1984
Rumex acetosella	x	Baytop 1994; Işık et al. 1995; Öztürk & Özçelik 1991; Tanaka 1976; FAO 1988
R. crispus	x	Baytop 1994; Tanaka 1976; Grieve 1984; FAO 1988; Renfrew 1973
R. scutatus	xx	Baytop 1994; Öztürk & Özçelik 1991; Tanaka 1976
Scariola viminea	x	Öztürk and Özçelik 1991
Scorzonera cana var. *radicosa*	xxx	!Baytop 1994; Öztürk and Ozçelik 1991; Işık et al. 1995
Sempervivum armenum var. *armenum***	x	Baytop 1994
Silene vulgaris var. *vulgaris***	xx	Baytop 1994; Forbes 1976; Zohary 1973; Öztürk & Özçelik 1991; Pieroni 1996

TABLE 2. CONTINUED.

Species	Use frequency	References
Sinapis arvensis	xxx	Baytop 1994; Lyle-Kalças 1974; Pieroni 1996
Sisymbrium altissimum	x	Not reported
Sonchus asper ssp. *glaucescens*	x	!Baytop 1994; Tanaka 1976
Spinacia tetrandra	xx	Tanaka 1976
Stellaria media ssp. *pallida***	x	!Baytop 1994; Grieve 1984; Renfrew 1973
Taraxacum microcephaloides	xx	Not reported
T. serotinum	x	Not reported
Tragopogon buphthalmoides	xxx	Baytop 1994
Urtica dioica	x	Baytop 1994; Işık et al. 1995; Öztürk & Özçelik 1991; Tanaka 1976; Grieve 1984
Veronica anagallis-aquatica	xxx	Zohary 1973; Tanaka 1976
BULBS		
Crocus ancyrensis	xxx	Baytop 1994
Gladiolus atroviolaceus	x	Öztürk & Özçelik 1991
Iris galatica	x	Not reported
Muscari comosum	x	Forbes 1976; Pieroni 1996
Scorzonera mollis ssp. *szowitzii*	x	!Baytop 1994; Öztürk & Özçelik 1991; Feinbrun & Zohary 1930; Tanaka 1976
ROOTS		
Echinophora tenuifolia ssp. *sibthorpiana*	x	Not reported
Geranium tuberosum ssp. *tuberosum*	x	!Baytop 1994; Zohary 1973
STEMS		
Echinops pungens var. *pungens*	x	Baytop 1994; Öztürk & Özçelik 1991
Salvia microstegia	x	Not reported
FLOWERS		
Crocus ancyrensis	x	Not reported
Trigonella aurantiaca	x	Not reported
Wiedemannia orientalis	x	Not reported
TEA PLANTS		
Achillea teretifolia	x	Not reported
Alcea apterocarpa	x	Not reported
Helichrysum arenarium	xx	Baytop 1984
Salvia argeaus	x	Not reported
S. hypargeia	x	Not reported

TABLE 2. CONTINUED.

Species	Use frequency	References
Thymus sipyleus ssp. *rosulans*	xx	Tabata et al. 1988; !Baytop 1994
Tripleurospermum parviflorum	x	Not reported
SPICES		
Acinos rotundifolius	x	Not reported
Mentha longifolia ssp. *typhoides* var. *typhoides*	x	!Baytop 1994; Öztürk & Özçelik 1991; Tabata 1988
SEEDS		
Anchusa azurea var. *azurea*	x	Not reported
Lathyrus cicera	x	Not reported
Malva neglecta	x	Not reported
Nigella arvensis var. *glauca*	x	Baytop 1984
Vicia narborensis var. *narborensis***	x	Tanaka 1976
V. sativa ssp. *nigra* var. *segetalis***	x	Baytop 1994; Tanaka 1976
WILD FRUITS (fresh)		
Amygdalus orientalis	xx	Baytop 1994; Zohary 1983
*Berberis crataegina**	x	Baytop 1994
*Celtis tournefortii**	xxx	Baytop 1994; Tanaka 1976; Hooper 1937
*Cerasus microcarpa***	x	Baytop 1994
*C. vulgaris**	x	Tanaka 1976
Corylus avellana	x	Baytop 1994; Tanaka 1976
Cotoneaster nummularia	x	Baytop 1994; Öztürk & Özçelik 1991
Crataegus meyeri	xx	Not reported
C. monogyna ssp. *monogyna*	xx	!Baytop 1984; Pieroni 1996
C. sinaica	xx	Not reported
Elaeagnus angustifolia var. *angustifolia*	x	Tanaka 1976
*Pistacia atlantica**	x	Baytop 1994; Tanaka 1976
*Prunus cocomilia***	x	Tanaka 1976
P. divaricata ssp. *divaricata***	x	Baytop 1994; Öztürk & Özçelik 1991; Tanaka 1976
P. spinosa ssp. *dasyphylla*	xx	!Baytop 1994; Tanaka 1976
*Pyrus elaeagnifolia**	x	Tanaka 1976; Zohary 1973; Boulos 1985
*Quercus cerris***	x	Tanaka 1976
Q. infectoria ssp. *boissieri***	x	Not reported
Q. ithaburensis ssp. *macrolepis***	x	Not reported
*Q. pubescens***	x	Not reported

TABLE 2. CONTINUED.

Species	Use frequency	References
Q. robur ssp. *robur*	xxx	!Tanaka 1976; Grieve 1984
*Q. trojana***	x	Not reported
*Q. vulcanica***	x	Not reported
Rhamnus oleoides ssp. *graecus*	x	Not reported
Rosa canina	xx	Baytop 1994; Öztürk 1991
*Rubus sanctus**	x	Baytop 1994
*Sorbus torminalis***	x	Not reported
*S. umbellata***	x	Not reported
MUSHROOMS		
Agaricus subperonatus	xxx	Bon 1987
Agrocybe praecox	xx	Bon 1987; Phillips 1983
Amanita argentea (Syn. *A. mairei*)	x	Not reported
*Coprinus atramentarius**	x	Bon 1987
*Helvella lacunosa**	x	Bon 1987; Phillips 1983
*Rhizopogon obtextus**	x	Bon 1987

Notes: (*) indicates that it is exist & known as edible, but not consumed by everyone in Kızılkaya; (**) indicates that this edible plant is not known in Kızılkaya, recorded only in mountain villages; Use frequency is an impressionistic and tentative evaluation: x rarely gathered; xx commonly; xxx most commonly gathered and used species. (!) in references indicates that it does not mentioned in ssp./var. level.

Fig. 1. A woman gatherer with an apron full of edible plants, Aksaray, Turkey, 1995.

be found, even when the ground was covered with snow.

The gathering of leafy plants was exclusively women's work (Fig. 1, 2). They gather in groups and the women were accompanied by their children. Mothers generally took a daughter along to learn the intricacies of gathering. Sometimes groups of young girls went together, but when they came back their bags were always checked by their mothers for inedible plants. The maximum distance the women went for gathering was about one to one- and-a- half kilometers from the village. In general they gathered for about two to three hours, and collected several species of edibles, which their families consumed in three to five days. The women wore aprons (Fig. 1) or brought plastic bags to carry the gathered greens, and had a big knife or adze to dig-up the plants (Fig. 2). A few men, especially those who hunt and fish, also gather some edible plants from time to time. However, it was not customary, and their knowledge of these plants was quite limited in comparison to the women's.

Fig. 2. A woman gathering greens, note the adze nearby, Aksaray, Turkey, 1994.

The middle and poorer income women gathered greens more often and less selectively than women with higher incomes, however, about 80% of women in all income groups continued to gather wild plants as food. It was clear that gathering wild greens was more related to nutrition and taste than to economic need. Most wild greens were not considered marketable. In the market of Aksaray, one could rarely see more than a few species of wild greens and mushrooms, but none of the wild fruits, bulbs, or roots were ever for sale.

Gathering was also a means of social activity for women, who took pride in providing food for their families, sharing the plants with their neighbors, and serving them to their guests. Most women considered plant gathering a good occasion to leave the house and to meet with other women.

Most of the greens were eaten raw with salt between folds of flat bread (*yufka*), but some greens required cooking. These were chopped, and cooked together with onions and cracked wheat (bulgur). This was called *cacık*, and was usually eaten with yogurt. A few, such as *Polygonum cognatum*, was sun-dried in the spring and stored for winter.

Nutritional analysis of twelve of the wild greens most commonly consumed, indicates that they were a very good source of raw protein and minerals. Most of them had protein and mineral

Fig. 3. *Iris galatica* (Navrağaz). An endemic plant with an edible bulb.

values as high as cultivated green vegetables, and probably made a significant nutritional contribution to local diets (Ertuğ-Yaraş 1997: Table 22).

Bulbous Plants

Five bulbous plants were considered edible in the area. Three of them belong to the Iridaceae, and *Crocus ancyrensis* was the one most often consumed. It was usually gathered by children and men using a special iron tool, called *Karlanguç*, used primarily for *C. ancyrensis*. This tool had an iron point, and a long wooden handle. Crocus flowers and the bulbs were considered a delicacy, and were eaten by everyone from mid February to the end of March. Bulbs

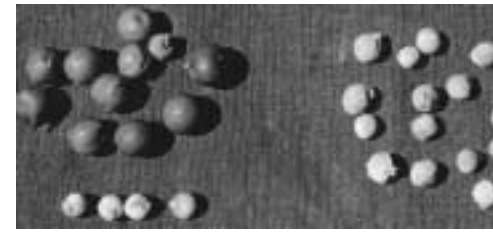

Fig. 4. *Celtis tournefortii* (Çitlembik) stones and fruits. On the left modern fruits and stones, and on the right 9000 year old stones from Aşıklı Höyük.

of other plants, such as endemic *Iris galatica* (Fig. 3), were only sporadically collected.

Mushrooms

Six different species of mushrooms could be gathered during spring and fall. To find mushrooms, young boys dug the soil like moles after every rain. The mushrooms were consumed when fresh, eaten after being roasted with onions and tomatoes, or grilled like meat. None of the species gathered in the area of study were recorded as edible in Turkey, but most of them were recorded in the ethnobotanical literature for Europe.

Fruits

Of the 24 edible wild fruits belonging to eight families, Rosaceae was the family most often consumed. Fifteen of the 28 species were in the Rosaceae, and 7 in the Fagaceae family. None of these fruits had a market value, and were only sporadically gathered for household consumption. If a woman wanted to dry wild fruits such as hawthorn, or plums, she went together with her children, and gathered large quantities.

Among these wild fruits, *Celtis tournefortii* in Ulmaceae (Fig. 4) was particularly important because the stones were found in large quantities in the Aşıklı Höyük excavation, as well as several other Neolithic settlements in Anatolia (Zeist van and de Roller 1995; Helbaek 1964, 1970; Hillman 1972). These *C. tournefortii* stones are identical with those of Aşıklı and probably formed a significant part of the prehistoric diet.

Seven species of oak were documented for the area. Their acorns were edible either fresh or roasted. Fresh acorns were stored in pits covered with earth. If they were bitter, they become sweeter when embedded in the soil for a few

months. Acorns were once a very popular winter food, in addition to hackberries.

Medicinal Plants

During the study in the Melendiz area, a total of 44 species were recorded (Table 3) as having medicinal use. This included 29 plant families and 11 cultivars. One third of them have not been reported as medicinal in the folk medicine literature of Anatolia. Among these, is a fungus, *Scleroderma bovista* used for human skin wounds, and *Scrophularia libanotica* for hives on skin, while *Aristolachia maurorum* was used for animals, especially for treating wounds of sheep.

Balick and Cox (1996: 70) pointed out that many cultures do not make a clear distinction between food and medicine. There is also a similar overlap between food and medicinal plants used by rural Anatolians. In this study, the ones that the local people gathered as food, were separated from the ones gathered specifically for the treatment of illness. However, when we checked the literature of Anatolian folk medicine, it was clear that many of the common edibles were also recorded as medicinal (Baytop 1984; Fujita et al. 1995; Sezik et al. 1991, 1992, 1997; Tabata et al. 1988). For example, Sezik et al. (1997) refers to *Tragopogon bupthalmoides* as stomachic, and document its use as internal. Similarly Sayar et al. (1995) lists many common species of *Malva* and *Portulaca* as medicinal. In the present study however, because of village usage the same taxa were considered as food plants.

Animal Fodder

Barley, rye, oats, and vetch were cultivated as animal fodder. In addition to those intentionally grown plants, animals grazed about 170 wild species representing 35 different plant families. The fodder plants include 41 species that were also consumed by humans as fresh shoots, before the flowers or seeds appear. Some of these were cut during summer and fall, and stored as winter fodder, such as *Lactuca serriola* and *Sonchus asper*. A few plants were considered harmful to animals, such as *Lotus aegaeus* and *Trigonella coerulescens,* while some others such as *Allium* and *Muscari* species were avoided, because they give the milk an unpleasant taste.

Fodder plants were gathered by women if they were in close proximity to the village, but sometimes they were cut by men with scythes, and piled in front of the family house. Most women brought an animal load of grasses when returning from the fields or vineyards.

Tinder And Fuel Plants

Dung cakes are the basic fuel throughout Central Anatolia. Seven different varieties of dung were prepared and used in Kızılkaya village (Anderson and Ertuğ-Yaraş 1998). Fifteen species were gathered as tinder for both wood and dung fires (Ertuğ 1998b). *Astragalus, Genista* and *Salsola* species were the most commonly gathered tinder plants, *Jurinea pontica* was only used as tinder in an ''old fashion'' kind of lighter with flint and an iron striker.

Poplar and willow trees were cultivated all over Anatolia for their wood, and for fuel. Oak and elm, before they became scarce were the preferred fuels. In some areas, near the remnants of steppe-forests, people still cut oak trees as fuel. In addition to these trees, shrubs such as *Eleagnus angustifolia, Rosa canina,* and *Crataegus* were used as fuel. Branches of grape vines, dry stems and leaves of maize and beans were also used either as fodder or fuel.

The gathering of fuel plants and dung for fuel was done by women near their home, and men sometimes gathered them from a greater distance. Tinder gathering from the gardens, and accumulating it in a corner were also part of women's daily activity during most of the year. Cutting branches, preparing and piling dungcakes, were done by women during the spring and summer.

Plants Used in Handicrafts

Several plants were used for weaving mats, and to make baskets and brooms. Among those *Phragmites australis* was primarily used to plait mats for the construction of ceilings in village houses (Fig.5). The craft was common in Akhisar. *Typha laxmannii* was used in several ways, as mats for floor covering, containers to carry goods, or as basket-like general purpose containers (Fig. 6). *Juncus inflexus* was widely used to make special containers for linseed oil presses. Brooms were made from six different plants, such as *Centaurea pulchella* or *Chenopodium album.*

Until recently the fibers of hemp, *Cannabis sativa,* in addition to wool, were used in weaving. Several dye plants for wool (17 species, including 7 cultivated plants) should also be in-

TABLE 3. MEDICINAL PLANTS USED IN AND AROUND THE VILLAGE OF KIZILKAYA, AKSARAY, TURKEY.

Species	H.	A.	Parts/application	Related disease in Aksaray area	Reference	Uses given in references
*Alcea apterocarpa**	x		Flowers boiled as tea	Coughs	Öztürk & Özçelik 1991	2, 5, 13
Amaranthus retroflexus	x		Whole plant boiled w. others	Sterility	No reference	
Aristolochia maurorum		x	Leaves/roots pounded	Wounds on sheeps' tail	Baytop 1984; Öztürk & Özçelik 1991	5
*Astragalus elatus**	x		Roots pounded, boiled w. milk	Stomach pains	No reference	
*A. kirshehiricus**	x		Not directly used	Wound at heels	No reference	
Avena sativa (cultivar)	x		Grains boiled as tea	Good for health	Baytop 1984	2, 5, 8, 11, 17
Berberis crataegina	x	x	Roots boiled as tea, drunk by both humans & sheep	Diabetics & for sheep sickness	Baytop 1984; Fujita et al. 1995	2, 3, 14, 11, 15 33
Ceratocephalus falcatus	x		Leaves pounded raw & applied	Inflamed wounds	Öztürk & Özçelik 1991	27
Cichorium intybus	x		Roots boiled as tea	Weakness	Baytop 1984; Öztürk & Özçelik 1991	2, 3, 8, 9, 10, 11, 12 6, 7
Cydonia vulgaris (cultivar)	x		Leaves boiled as tea	Good for health	Baytop 1984	14, 17
Daphne oleoides ssp. *oleoides*	x		Stems with leaves boiled & bathed in its water	Against magic	Öztürk & Özçelik 1991; Fujita et al. 1995	30 34
Eruca sativa (cultivar)	x		Leaves eaten raw	Epilepsy	Baytop 1984	2, 16
Eryngium campestre	x		Leaves & roots applied on boil	Boils & sterility	Baytop 1984; Öztürk & Özçelik 1991	1, 2, 3, 4 5
Euphorbia macroclada	x		Juice of stems mixed rye flour	Malaria	Baytop 1984	8
Glaucium leiocarpum	x		Leaves pounded, applied wounds	Skin inflammation & on burnt skin	No reference	
Helichrysum arenarium	x		Flowery stems boiled as tea	Stomach pain	Baytop 1984; Öztürk & Özçelik 1991	2, 12, 13 13
Hibiscus esculentus (cultivar)	x		Flowers dried & boiled as tea	Shortness of breath	Baytop 1984	1, 5, 8
Hordeum distichon (cultivar)	x		Grains recited -indirect use	Wart	Baytop 1984	2, 15
Juglans regia (cultivar)	x		Leaves boiled, mixed with henna & applied on hair	For mouth and nostril wounds	Baytop 1984	3, 11, 18, 19, 20
Linum usitatissimum (cultivar)	x	x	Seeds roasted & pounded, boiled in milk	Cough, pains	Baytop 1984	8, 21, 22
*Lycium anatolicum**	x		Branches & leaves burnt its juice is applied	Skin disease, redness, allergy	No reference	
Malva neglecta	x		Leaves boiled or applied raw/drink as tea	Skin, rheumatism & sterility	Baytop 1984 Öztürk & Özçelik 1991	8, 21, 22 5, 15
Mentha longifolia ssp. *typhoides*	x		Leaves & stems boiled as tea	Stomach pains	Tabata et al. 1988; Fujita et al. 1995	1, 6, 22, 29, 31, 32 22

TABLE 3. CONTINUED.

Species	H.	A.	Parts/application	Related disease in Aksaray area	Reference	Uses given in references
Nigella arvensis var. *glauca*	x		Seeds pounded, eaten w. honey	Stomach pains, ulcer	Baytop 1984	2
Peganum harmala	x		Seeds pounded, eaten w. honey	Stomach pains	Baytop 1984	9, 17, 32, 33
Plantago lanceolata	x		Leaves cut or pounded	Wounds/rheumatism/ boils	Baytop 1984	2, 5, 8, 15
P. major	x		Leaves cut or pounded	Wounds/rheumatism	Baytop 1984	2, 5, 8, 15
*Prunus cocomilia**		x	Fruits boiled, mash applied	Nipple wounds	No reference	
Reseda lutea var. *lutea*	x		Bittery roots eaten raw	Stomach pains	Baytop 1984	2, 8
Robinia pseudoacacia (cultivar)	x		Flowers dried & boiled as tea	Good for health	Baytop 1984	12, 17, 18
Rosa canina	x		Fruits boiled as tea	Stomach pains	Baytop 1984	11, 18, 19
Rubus sanctus	x		Roots boiled as tea	Pains, aches	Baytop 1984	2, 5, 11, 18, 19, 20
Rumex crispus	x		Leaves pounded or boiled	Skin wounds & hemorrhoids	Baytop 1984	8, 11, 18, 25, 26
*Salvia cryptantha**	x		Flowery stems boiled as tea	Good for health	No reference	
*S. hypargeia**	x		Flowery stems boiled as tea	Stomach pains, coughs	No reference	
*Scleroderma bovista**			Mushroom itself pounded & applied	Skin wounds, cracks, itch	No reference	
Scrophularia libanotica ssp. *libanotica* var. *nevsehirensis**	x		Leaves & stems burnt, its ash mixed w. oil & applied	Inflamed wounds, itch	No reference	
Trigonella aurantiaca	x		Whole plant boiled w. others	Sterility	No reference	
Triticum aestivum or *T. durum*	x		Grains recited- indirect use	Wart	No reference	
Umbilicus erectus	x		Whole plant boiled w. others	Sterility	Baytop 1984	2, 5
Urtica dioica	x		Leaves applied on skin raw or boiled/used as tea	Rheumatism, pains & sterility	Baytop 1984 Fujita et al. 1995	2, 3, 25, 27 19, 27, 35
Viscum album ssp. *album*	x		Leaves pounded & applied on bite	Snake bites	Baytop 1984; Fujita et al. 1995	2, 11, 18, 23, 24 33
Vitis vinifera (cultivar)	x		Leaves used raw	Pain or aches	Baytop 1984	5, 18, 28
Zea mays (cultivar)	x		Stylus is boiled as tea or mash	Hemorrhoid	Baytop 1984	2, 13

* Endemic plants; (H.) for human treatments; (A.) for animal treatments; Uses given in references: 1. Against cough, 2. Diuretic, 3. Appetizer, 4. Aphrodisiac, 5. Vulnerary, 6. Agains asthma, 7. Healing ulcer, 8. Laxative or purgative, 9. Perspirator, 10. Stomachic, 11. Strengthening, 12. Carminative, 13. Against kidney stone, 14. Antipyretic, 15. Expectorant, 16. Stimulatory, 17. Relaxant, 18. Astringent, 19. Hypoglycaemic, 20. Antiseptic, 21. Against gastrologic infections, 22. Pain reliever, 23. Emetic, 24. Depressor, 25. Depurative, 26. Digestive, 27. Against rheumatism, 28. Styptic, 29. Against cold, 30. Treating animals' broken bones, 31. Against palpitation. 32. Anthelmintic-Vermifuge, 33. Antihaemorrhoidal, 34. Against malaria, 35. Against snake bite.

Fig. 5. Plaiting a reed mat (Tavan hasırı) from *Phragmites australis* (Kamış) in Akhisar, Aksaray, Turkey.

cluded in this group. A well-known dye-plant, madder, *Rubia tinctorum* was no longer used in the Kızılkaya and surrounding villages, but some other villages in the region collected the roots to sell at the Aksaray carpet market. The red dyed wool used in weaving the famous Taşpınar carpets, was dyed with madder and plants such as *Pistachia lentiscus*, *Plumbago europaea*, and *Verbascum lasianthum* were used to dye various colors. Many of these plants were gathered and processed by women.

Almost all available trees were used as building materials in carpentry, woodwork, furniture making, and utensils. Although wood was scarce in Central Anatolia, more than 70 wooden tools and household items were recorded in one of the villages studied.

Other Plant Uses

One wild plant and two cultivated species were used to produce oil for lamps, for food, and for medicinal purposes. These local oil plants were: *Eruca sativa*; *Linum usitatissimum*

Fig. 6. A basket (Ot sele) made of *Typha laxmannii* (Hasır otu).

and *Sinapis arvensis.* They have been used to produce oil probably from at least the fifteenth century (Ertuğ 1998 a). A variety of plants have been recorded for various purposes, such as: incense and amulets against the evil eye (e.g., *Peganum harmala, Nigella arvensis*), glue (e.g., *Astragalus kirshehiricus, Acantholimon kotschyi*), gum (e.g., *Chondrilla juncea, Gundelia tournefortii*), a tobacco substitute (e.g., *Fumaria vaillantii*), bee plant (e.g., *Anchusa azurea*), a musical instrument (e.g., whistle made of *Salix* branches), and some plants were essential parts of childrens games (e.g., *Saponaria prostrata, Ajuga chamaeritys*).

Discussion

Turkey has one of the richest floras in the Near East, with over 10 000 species of vascular plants, and about one third of these are endemic. What we do not know is how many of these are useful. A 12 volume vernacular dictionary of Turkish words provides about 3000 names of plants, which are either considered useful or harmful (Derleme Sözlüğü 1963–1982). The present study indicated that about 300 useful plants were known to local farmers in a limited area of the Melendiz Plain of Central Anatolia, and about 30% of these had not been recorded previously in the scientific literature of Anatolia and the Near East. In a recent study, Fujita et

al. (1995) note that 50% of the medicinal remedies that they recorded in Northern Anatolia, had not been reported in Turkish folk medicine. This, as well as the high number of the unrecorded medicinal plants in the present study shows the amount of work still needed. It also means that potential sources of food, medicine, dyes, and elements possibly useful to industry as well as genetic sources are being neglected.

Some ethnobotanical studies have been published, including the useful plants of Eastern Anatolia studied and published by Öztürk and Özçelik (1991) and wild edible plants sold in Aegean markets by Lyle-Kalças (1974). In addition, several articles have been published recently on the ethnomedicine of Anatolia (Fujita et al. 1995; Sayar et al. 1995; Sezik et al. 1991; Sezik, Zor and Yeşilada 1992; Sezik et al. 1997; Tabata et al. 1994). Further, Baytop's intensive research provided considerable information not only on medicinal but also on edible plants, fodder, fuel, dyes and gums (1984, 1994). However, until this study there was no ethnobotanical research available on the variety of plants used and/or consumed in one limited geographical area of Anatolia. The floral potential of one specific area in Anatolia, and the richness of the traditional knowledge about its plants had not been documented before. Many more detailed studies are needed to obtain a comprehensive picture of plant-human interactions in Turkey.

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