

The Flora of the Agricultural Areas in Enez (Edirne) and Environs

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Abstract: This work was carried out in the agricultural areas of Enez (Edirne) and environs. The study area has suitable conditions for plant species richness such as different microclimates, soils, and intensive agricultural activities. A total of 150 taxa were identified belonging to *Pteridophyta* (2), and *Spermatophyta* (148). Of these, 118 taxa of *Spermatophyta* are in *Dicotyledoneae* and 30 taxa are in *Monocotyledoneae*. The results show that 8 taxa are new records, 1 for Thrace, 5 for A1 square and 2 for European part of A1 square.

Key Words: Enez, agricultural areas, flora.

Enez (Edirne) ve Civarındaki Tarım Alanlarının Florası

Özet: Bu araştırma Enez (Edirne) ve civarının tarım alanlarında gerçekleştirilmiştir. Araştırma sahası yoğun ziraat kadar, farklı mikroiklimler ve toprak yapıları gibi tür zenginliği açısından elverişli özellikleri sahiptir. 2'si *Pteridophyta* ve 148'i *Spermatophyta*'ya ait toplam 150 takson teşhis edilmiştir. *Spermatophyta*'ya ait taksonların, 118'i *Dicotyledoneae* ve 30'u *Monocotyledoneae*'ye aittir. Sonuçlara göre; 1'i Trakya, 5'i A1 karesi ve 2'si de, A1 karesinin Avrupa bölümü için olmak üzere, 8 takson, yeni kayıttır.

Anahtar Sözcükler: Enez, ziraat alanları, flora.

Introduction

Botanists have shown great interest in the Thrace region for the last couple of centuries owing to its rich flora. Indeed, having different climates and geographical structures, this region has a very rich flora. According to the latest studies, Thrace flora includes 2450 vascular plant taxa (1). Studies on the Turkish flora including Thrace flora were listed by Demiriz (2).

Agricultural activities are intensively carried out in the Thrace region. The flora of agricultural areas have been mainly researched by agronomists (3, 4). However, the research area has not been studied to date. Therefore, this study aims to agricultural areas of Enez and its surroundings. Also, we aimed to find out the main weeds in the agricultural areas and there by help the agronomists and farmers for weed control in Enez and environs.

The study area is located in the north of Aegean Sea (Saros gulf) where the River Meriç joins the Aegean Sea (Figure 1). It is in the semi-arid Mediterranean climate region with hot and dry summer and cool winters (5, 6).

The study area mainly consists of agricultural areas. Total agricultural areas in Enez and its surroundings are about 45.000.000m². Of these, dry areas consist of

97.550.000m² whilst aquatic areas consist of 47.450.000m². The main agricultural plants in the region are; wheat, sunflower, sugar beet, squash, onion, potato, clover, melon, watermelon, tomato, pepper, cabbage, cucumber and eggplant (7).

The general vegetation consist of maquis and pseudomaquis with the dominant species *Quercus coccifera* L. Bush formation containing *Phyllirea latifolia* L., *Rosa sempervirens* L., *Paliurus spina-christi* Miller, *Cistus salviifolius* L. and *Crataegus monogyna* Jacq, (5, 8). *Carpinus orientalis* L. can be found locally. Meadow plants are distributed in the open areas. Aquatic and coastal plants and halophytes can also be found because of aquatic and salty habitats in the region (8).

Materials and Methods

Samples were collected from the agricultural areas of Enez (Edirne) and the surrounding villages then dried using standard herbarium methods. Samples were identified following "Flora of Turkey (9)" and "Flora Europaea (10)" and compared with the herbarium specimens of EGE Herbarium (Izmir). Specimens are kept in EDTU Herbarium (Edirne). New records were determined by checking the publications on the flora of

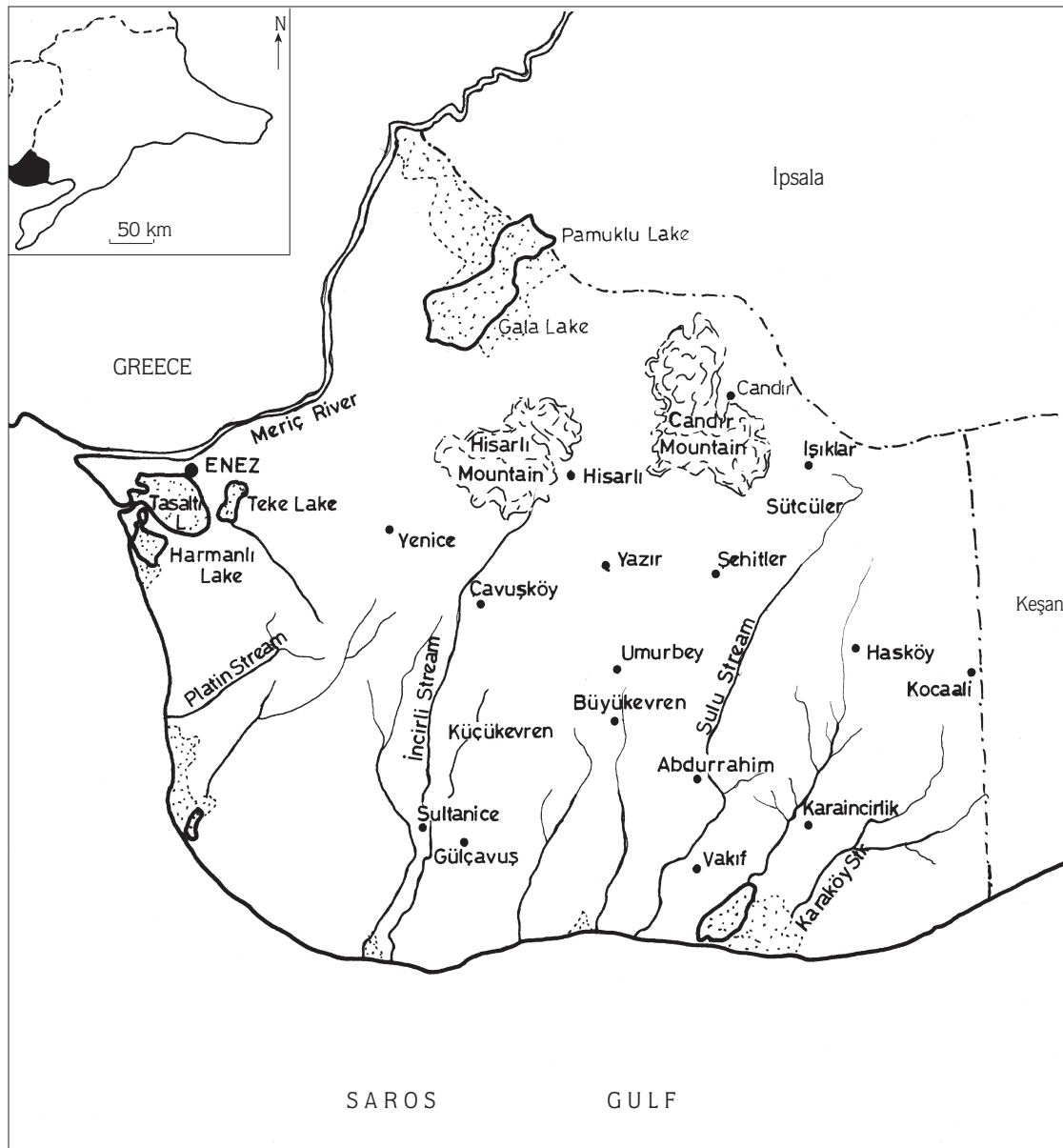


Figure 1. Location and general view of the study area in Thrace Region.

Thrace (11, 12, 13). In addition the list of ISTE plants (14, 15) was scanned. The study area lies entirely within

“A1 (E) Edirne”, which has been omitted from the citations.

Results and Discussion

PTERIDOPHYTA

Equisetaceae

Equisetum sylvaticum L.

Abdurrahim Village, Ova, bean field,
21.08.1994, M.K. 453.

This taxon was collected only in Istanbul in Turkey (11). This species is distributed in temperate Eurasia and North America (26). This study confirms its presence in the Thrace region.

E. arvense L.

Işıklar Village, Baraj Altı, wheat field,

23005.1995, M.K. 521.

SPERMATOPHYTA

DICOTYLEDONES

Ranunculaceae

Consolida phrygia (Boiss.) Soo' subsp.
thessalonica (Soo') Davis

Between Şehitler and Hasköy Villages, 200 m., wheat field, 21.05.1994, M.K. 227.

This taxon has been recorded from only one locality in Turkey (Domuzdere/Istanbul) and from Europe (Thessalia/Greece, 26). We confirmed its presence in the Thrace region with this study.

C. regalis S.F. Gray subsp. *regalis*

Yenice Village, Küçükova, wheat field, 21.05.1994, M.K. 235; Abdurrahim Village, Ova, wheat field, 05.06.1994, M.K. 283; Yenice Village, Çakıllık, wheat field, 21.05.1994, M.K. 234.

C. regalis S.F. Gray subsp. *paniculata* (Host) Soo' var. *paniculata* Abdurrahim Village, Gökgür sunglower fields, 17.07.1994, M.K. 368.

Adonis flammea Jacq.

Umurbey Village, Cemetery environs, wheat field, 16.04.1994, M.K. 103; Yazır Village, Ağlatıkaya wheat field, 01.05.1994, M.K. 132.

Ranunculus scandinavicus (Boiss.) Davis

Between Enez and Keşan, Dalyan Island, wheat field, 21.05.1994, M.K. 254.

R. muricatus L.

Vakıf Village, Örenler, wheat field, 09.04.1994, M.K. 86.

R. arvensis L.

Yenice Village, Kepirler, wheat field, 01.05.1994, M.K. 137; Küçükövenren Village, wheat field, 03.04.1994, M.K. 59; Sultanıçe Village, Pelişte, wheat field, 03.04.1994, M.K. 60.

R. ficaria subsp. *ficariiformis* Rouy & Fouc.

Yenice Village, Kepirler wheat field, 20.03.1994, M.K. 18; Vakıf Village, Örenler, wheat field, 09.04.1994, M.K. 87.

Berberidaceae

Leontice leontopetalum L. subsp. *leontopetalum*

Yenice Village, Kepirler, wheat field, 01.05.1994, M.K. 140; Hasköy, Cevizli, wheat field, 20.03.1994, M.K. 10.

Papaveraceae

Glaucium corniculatum (L.) Rud. subsp. *corniculatum*

Işıklar Village, Baraj altı, squash field, 19.06.1994, M.K. 301; Yenice Village, Küçükova, wheat field, 21.05.1994, M.K. 231.

Roemeria hybrida (L.) DC. subsp. *hybrida*

Yenice Village, Kepirler, wheat field, 01.05.1994, M.K. 160.

Papaver rhoeas L.

Büyükevren Village, Kufalcı, wheat field, 15.05.1994, M.K. 213.

P. argemone L.

Büyükevren Village, Kufalcı, wheat field, 15.05.1994, M.K. 210.

P. hybridum L.

Yenice Village, Köyaltı, wheat field, 01.05.1994, M.K. 143.

Hypecoum procumbens L.

Karaincılık Village, Çınarlı, wheat field, 15.05.1994, M.K. 200.

Fumariaceae

Fumaria officinalis L.

Büyükevren Village, Kufalcı, wheat field, 26.03.1994, M.K. 29; Küçükövenren Village, wheat field, 16.04.1994, M.K. 106.

Brassicaceae/Cruciferae

Brassica nigra (L.) Koch.

Between Abdurrahim and Vakıf Villages, 200 m., wheat field, 23.07.1994, M.K. 400.

Sinapis arvensis L.

Yenice Village, Kepirler, wheat field, 01.05.1994, M.K. 162; Karaincılık Village, Çınarlı, sunflower field, 23.07.1994, M.K. 396.

Diploaxis tenuifolia (L.) DC.

Şehitler Village, Çandır Bayırı, 01.05.1994, M.K. 126.

Raphanus raphanistrum L.

Kocaali Village, Dutluk, wheat field, 26.03.1994, M.K. 20; Büyükevren Village,

Kufalcı, wheat field, 15.05.1994, M.K. 221; Gülçavuş Village, Köyaltı, wheat field, 15.05.1994, M.K. 224; Şehitler Village, Çandır Bayırı, wheat field, 09.04.1994, M.K. 71; Çandır Village, Köyaltı, wheat field, 09.04.1994, M.K. 80.

Calepina irregularis (Asso) Thellung

Şehitler Village, Çandır Bayırı, wheat field, 09.04.1994, M.K. 75.

Rapistrum rugosum (L.) All.

Vakıf Village, Örenler, beet field, 17.07.1994, M.K. 370.

Conringia orientalis (L.) Andr.

Karaincılık Village, Çınarlı, sunflower field, 25.06.1994, M.K. 330.

Lepidium ruderales L.

Between Enez and Keşan, 200 m., Dalyan Island, wheat field, 21.05.1994, M.K. 255.

Cardaria draba (L.) Desv. subsp. *draba*

Karaincılık Village, Çınarlı, wheat field, 09.04.1994 M.K. 84.

Thlaspi perfoliatum L.

Sütçüler Village, lake environs, wheat field, 23.04.1994, M.K. 94.

Capsella bursa-pastoris (L.) Medik

Büyükevren Village, Kufalcı, wheat field, 26.03.1994, M.K. 30; Yenice Village, Kepirler, wheat field, 26.03.1994, M.K. 42; Şehitler Village, Çandır Bayırı, wheat field, 09.04.1994, M.K. 76. cosmopolitan.

Myagrum perfoliatum L.

Karaincılık Village, Maltepe, sunflower field, 15.05.1994, M.K. 195; Sütçüler Village, lake environs, wheat field, 28.05.1994, M.K. 280.

Neslia apiculata Fisch., Mey. & Ave-Lall.

Karaincılık Village, Kepirler, sunflower field, 17.07.1994, M.K. 362.

Bunias erucago L.

Yenice Village, Kepirler, wheat field, 01.05.1994, M.K. 135.

Alyssum repens Baumg. subsp. *trichostachyum* (Rupr.) Hayek var. *trichostachyum*

Şehitler Village, Çandır Bayırı, wheat field, 09.04.1994, M.K. 78; Işıklar Village, Çataldere, squash field, 16.04.1994, M.K. 95.

Sisymbrium officinale (L.) Scop.

Karaincirlık Village, Çınarlı, wheat field, 15.05.1994, M.K. 197.

S. altissimum L.

Abdurrahim Village, Ova, beet field, 19.06.1994, M.K. 310; Küçükkevren Village, wheat field, 03.04.1994, M.K. 54; Büyükevren Village, Kufalçı, wheat field, 15.05.1994, M.K. 216.

Erophila verna (L.) Chevall. subsp. *verna*

Küçükkevren Village, wheat field, 26.03.1994, M.K. 35; Hisarlı Village, Köysırtı, wheat field, 26.03.1994, M.K. 37; Çeribaşı Village, Gökğür, wheat field, 03.04.1994, M.K. 53.

Resedaceae

Reseda lutea L. var. *lutea*

Işıklar Village, Çataldere, wheat field, 10.05.1994, M.K. 215.

Violaceae

Viola arvensis Murray

Küçükkevren Village, wheat field, 03.04.1994, M.K. 52; Abdurrahim Village, Gökğür, 03.04.1994, M.K. 45; Yenice Village, Kepirler, wheat field, 23.04.1994, M.K. 122.

Portulacaceae

Portulaca oleracea L.

Yenice Village, Köyaltı, watermelon field, 15.07.1995, M.K. 548; Abdurrahim Village, Ova, beet field, 19.06.1994, M.K. 309.

Caryophyllaceae

Cerastium anomalum Waldst. & Kit.

Between Sultançe and Gülçavuş Villages, 300. m., wheat field, 03.04.1994, M.K. 61.

Holosteum umbellatum L. var. *umbellatum*

Sütçüler Village, lake environs, wheat field, 09.04.1994, M.K. 64.

Spergula arvensis L.

Abdurrahim Village, Gökğür, wheat field,

03.04.1994, M.K. 47. Cosmopolitan.

Spergularia marina (L.) Gris.

Between Enez and Keşan, 200. m., Dalyan Island, wheat field, 21.05.1994, M.K. 256.

Vaccaria pyramidata Medik. subsp. *grandiflora* (Fisch. ex DC.) Hayek var. *grandiflora*

Yenice Village, Kepirler, wheat field, 21.05.1994, M.K. 244.

Agrostemma githago L.

Yenice Village, Köyaltı, wheat field, 03.04.1995, M.K. 500; Sulatniçe Village, Pelişte, wheat field, 03.04.1995, M.K. 504.

Polygonaceae

Polygonum aviculare L.

Abdurrahim Village, Ova, beet field, 19.06.1994, M.K. 311; Karaincirlık Village, Taşlıburun, sunflower field, 25.06.1994, M.K. 340.

Rumex conglomeratus Murray

Karaincirlık Village, Çınarlı, sunflower field, 25.06.1994, M.K. 342.

Chenopodiaceae

Chenopodium album L. subsp. *album* var. *album*

Gülçavuş Village Köyaltı, sunflower field, 17.07.1994, M.K. 378; Abdurrahim Village, Ova, beet field, 05.06.1994, M.K. 284.

Amaranthaceae

Amaranthus retroflexus L.

Abdurrahim Village, Ova, beet field, 19.06.1994, M.K. 314; Yenice Village, Köyaltı, watermelon field, 23.07.1994, M.K. 444.

Malvaceae

Malva sylvestris L.

Büyükevren Village, Kufalçı, wheat field, 05.06.1994, M.K. 294; Çavuş Village, Çayırılı, wheat field, 20.05.1994, M.K. 519; Çeribaşı Village, Gökğür, wheat field, 01.05.1994, M.K. 128.

Malvella sherardiana (L.) Jaub & Spach.

Karaincirlık Village, Çınarlı, sunflower

field, 25.06.1994, M.K. 333.

Althaea cannabina L.

Karaincirlık Village, Maltepe, sunflower field, 17.07.1994, M.K. 361.

Geraniaceae

Geranium molle L. subsp. *molle*

Küçükkevren Village, wheat field, 16.04.1994, M.K. 113.

Erodium cicutarium (L.) L'Herit subsp. *cutarium*

Yenice Village, Kepirler, wheat field, 21.05.1994, M.K. 245.

Fabaceae/Leguminosae

Vicia villosa Roth. subsp. *villosa*

Yenice Village, Kepirler, wheat, field, 05.03.1994, M.K. 4.

V. peregrina L.

Yenice Village, Köyaltı, wheat field, 01.05.1994, M.K. 168.

V. lutea L. var. *hirta* (Balbis) Lois.

Yenice Village, Kepirler, wheat field, 01.05.1994, M.K. 152.

V. pannonica Crants. var. *pannonica*

Şehitler Village, Çandır Bayırı, wheat field, 13.05.1995, M.K. 517.

V. sativa L. subsp. *nigra* (L.) Ehrn.

Yenice Village, Kepirler, wheat field, 05.03.1994, M.K. 7. East Medit. element.

V. narbonensis L. var. *narbonensis*

Yenice Village, Köyaltı, wheat field, 16.04.1994, M.K. 116.

Lathyrus annuus L.

Yenice Village, Kepirler, wheat field, 21.05.1994, M.K. 248. Medit. element.

L. sativus L.

Yenice Village, Kepirler, wheat field, 01.05.1994, M.K. 155.

L. aphaca L.

Şehitler Village, Çandır Bayırı, wheat field, 15.05.1994, M.K. 187, East Medit. element.

Trifolium campestre Scherb.

Yenice Village, Kepirler, wheat field, 01.05.1994, M.K. 161.

T. spumosum L.

Büyükevren Village, Kufalcı, wheat field, 18.05.1994, M.K. 208.

T. arvense L.

Büyükevren Village, Kufalcı, wheat field, 18.05.1994, M.K. 207.

T. purpureum Lois. var. **purpureum**

Büyükevren Village, Uzun Kelemeler, wheat field, 11.06.1994, M.K. 320.

T. balansae Boiss.

Büyükevren Village, Kufalcı, wheat field, 18.05.1994, M.K. 209.

T. echinatum Bieb.

Karaincılık Village, Çınarlı, sunflower field, 25.06.1994, M.K. 331; Büyükevren Village, Kufalcı, wheat field, 18.05.1994, M.K. 204.

Melilotus officinalis (L.) Desr.

Between Enez and Keşan, 200. m., Dalyan Island, wheat field, 21.05.1994, M.K. 264; Büyükevren Village, Uzun Kelemer, wheat field, 11.06.1994, M.K. 321.

Trigonella monspeliaca L.

Yenice Village, Kepirler, wheat field, 01.05.1994, M.K. 152; Büyükevren Village, Kufalcı wheat field, 15.05.1994, M.K. 185.

Apiaceae/Umbelliferae

Eryngium campestre L. var. **campestre**

Kocaali Village, Dutluk, sunflower field, 24.07.1994, M.K. 446.

Myrrhoides nodosa (L.) Canon

Şehitler Village, Çandır Bayırı, wheat field, 15.05.1994, M.K. 185.

Scandix australis L. subsp. **grandiflora** (L.) Thell.

Yenice Village, Kepirler, wheat field, 21.05.1994, M.K. 250.

S. pecten-veneris L.

Karaincılık Village, Çınarlı, sunflower field, 25.06.1994, M.K. 332.

Torilis arvensis (Huds.) Link. subsp.

neglecta (Sprengel) Thelung

Karaincılık Village, Çınarlı, sunflower field, 17.07.1994, M.K. 358.

Asteraceae/Compositae

Xanthium spinosum L.

Yazır Village, Ağlatlıkaya, sunflower field, 10.07.1995, M.K. 543; Çeribaşı Village, Gökgür, sunflower field, 20.07.1995, M.K. 555; Kocaali Village, Dutluk, sunflower field, 24.07.1994, M.K. 445.

X. strumarium L. subsp. **strumarium**

Umurbey Village, Dereboyu, sunflower field, 20.07.1995, M.K. 558; Enez, Çataltepe, sunflower field, 10.07.1995, M.K. 542; Kocaali Village, Dutluk, sunflower field, 24.07.1994, M.K. 449.

Filago vulgaris Lam.

Büyükevren Village, Kufalcı, wheat field, 05.06.1994, M.K. 299.

F. pyramidata L.

Yenice Village, Köyaltı, wheat field, 21.05.1994, M.K. 238.

Senecio vulgaris L.

Yazır Village, Ağlatlıkaya, wheat field, 03.04.1994, M.K. 50; Sütçüler Village, lake environs, wheat field, 09.04.1994, M.K. 66; Umurbey Village, Dereboyu, wheat field, 09.04.1994, M.K. 92.

Anthemis tomentosa L. subsp. **tomentosa**

Abdurrahim Village, Ova, beet field, 19.06.1994, M.K. 308; Yenice Village, Kepirler, wheat field, 01.05.1994, M.K. 165.

Matricaria chamomilla L. var. **chamomilla**

Between Enez and Keşan, 1. km., wheat field, 21.05.1994, M.K. 260.

Carduus pycnocephalus L. subsp. **albidus** (Bieb.) Kazmi

Abdurrahim Village, Ova, beet field, 19.06.1994, M.K. 307; Sütçüler Village, lake environs, 13.05.1995, M.K. 516.

Centaurea solstitialis L. subsp. **solstitialis**

Büyükevren Village, Kumgeçit, wheat field, 05.06.1994, M.K. 296; Hisarlı Village, Köy Sırtı, wheat field, 11.06.1994, M.K. 325.

Cnicus benedictus L. var. **benedictus**

Büyükevren Village, Kufalcı, wheat field, 15.05.1994, M.K. 218.

Echinops ritro L.

Umurbey Village, Kufalcı, wheat field, 23.07.1994, M.K. 395.

Cichorium intybus L.

Karaincılık Village, Çınarlı, sunflower field, 23.07.1994, M.K. 397; Sütçüler Village, lake environs, sunflower field, 08.07.1995, M.K. 540.

Chondrilla juncea L. var. **juncea**

Abdurrahim Village, Ova, watermelon field, 23.07.1994, M.K. 407.

Primulaceae

Anagallis arvensis L. var. **arvensis** 01.05.1995, M.K. 512; Çavuşköy, Çayırılı, wheat field, 15.05.1994, M.K. 226; Hasköy, Cevizli, wheat field, 15.05.1994, M.K. 205.

Convolvulaceae

Convolvulus arvensis L.

Karaincılık Village, Maltepe, sunflower field, 25.06.1994, M.K. 336.

C. betonicifolius Miller subsp. **betonicifolius**

Abdurrahim Village, Ova, beet field, 23.07.1994, M.K. 408. Ir.-Tur. element.

Cuscutaceae

Cuscuta campestris Yuncker

Abdurrahim Village, Ova, beet field, 23.07.1994, M.K. 432.

Boraginaceae

Heliotropium europaeum L.

Abdurrahim Village, Ova, beet field, 23.07.1994, M.K. 413. Medit. element.

H. hirsutissimum Grauer

Abdurrahim Village, Ova, beet field, 23.07.1994, M.K. 410; Karaincılık Village, Taşlıburun, tomato field, 18.07.1995, M.K. 550 East Medit. element.

- Asperugo procumbens** L.
Küçükevren Village, wheat field, 16.04.1994, M.K. 110. Eur.-Sib. element.
- Myosotis stricta** Link. ex Roemer & Schultes
Küçükevren Village, wheat field, 16.04.1994, M.K. 112. Eur.-Sib. element.
- Neotostema apulum** (L.) Johnstone
Hasköy, CEvizli, wheat field, 02.05.1995, M.K. 514. Medit. element.
- Echium italicum** L.
Büyükevren Village, Kufalcı, wheat field, 05.06.1994, M.K. 291. Medit. element.
- E. plantagineum** L.
Vakıf Village, Koçmanlar, wheat field, 21.05.1994, M.K. 229. Medit. element.
- Anchusa azurea** Miller var. **azurea**
Karaincirlık Village, Çınarlı sunflower field, 17.07.1994, M.K. 355; Umurbey Village, Dereboyu, sunflower field, 17.07.1994, M.K. 383.
- Solanaceae**
Solanum nigrum L.
Gülçavuş Village, Suat, watermelon field, 21.08.1994, M.K. 487; Abdurrahim Village, Ova, beet field, 20.06.1995, M.K. 526; Karaincirlık Village, Taşlıburun, tomato field, 12.08.1995, M.K. 560. Cosmopolitan.
- Datura stramonium** L.
Sultaniçe Village, Pelişte, watermelon field, 17.07.1994, M.K. 394. Cosmopolitan.
- Scrophulariaceae**
Kickxia spuria (L.) Dumort. subsp. **integrifolia** (Brot) R. Fernandez
Sütçüler Village, lake environs, corn field, 08.07.1995, M.K. 534.
- Veronica bozakmanii** M.A. Fischer
Vakıf Village, Örenler, wheat field, 09.04.1994, M.K. 89. Ir.-Tur. element.
- V. grisebachii** S.M. Walters
Yenice Village, Kepirler, wheat field, 07.05.1994, M.K. 181. East Medit. element.
- V. triphyllos** L.
Vakıf Village, Örenler, wheat field, 09.04.1994, M.K. 91; Büyükevren Village, Kufalcı, wheat field, 26.03.1994, M.K. 25.
- V. hederifolia** L.
Işıklar Village, Çataldere, wheat field, 09.04.1994, M.K. 69; Yenice Village, Kepirler, wheat field, 20.03.1994, M.K. 15; Büyükevren Village, Kufalcı, wheat field, 26.03.1994, M.K. 23; Çavuş Village, Çayırli, wheat field, 20.03.1994, M.K. 13. Cosmopolitan.
- Orobanchaceae**
Orobanche nana Noe ex G. Beck.
Abdurrahim Village, Ova, sunflower field, 19.06.1994, M.K. 305; Karaincirlık Village, Maltepe, tomato field, 18.07.1995, M.K. 552.
- Verbenaceae**
Verbena
Sütçüler Village, lake environs, corn field, 08.07.1995, M.K. 537.
- Lamiaceae/La.iatae**
Phlomis pungens Willd. var. **laxiflora** Velen
Karaincirlık Village, Çınarlı, sunflower field, 25.06.1994, M.K. 337.
- Lamium amplexicaule** L.
Çavuş Village, Köyaltı, wheat field, 26.03.1994, M.K. 40; Gülçavuş Village, Suat, wheat field, 03.04.1994, M.K. 51; Sultaniçe Village, Pelişte, wheat field, 03.04.1994, M.K. 63; Hasköy, Cevizli, wheat field, 26.03.1994, M.K. 21. Eur.-Sib. element.
- Mentha pulegium** L.
Sütçüler Village, lake environs, wheat field, 28.06.1995, M.K. 529.
- Plantaginaceae**
Plantago coronopus L. subsp. **coronopus**
Between Enez and Keşan, Dalyan Island, wheat field, 21.05.1994, M.K. 267. Eur.-Sib. element.
- P. lagopus** L.
Karaincirlık Village, Çınarlı, wheat field 15.05.1994, M.K. 1920 between Enez and Keşan, Dalyan Island, wheat field, 21.05.1994, M.K. 269. Medit. element.
- Euphorbiaceae**
Chrozophora tinctoria (L.) Rafin
Abdurrahim Village, Ova, beet field, 23.07.1994, M.K. 427; Gülçavuş Village, Suat, watermolen field, 03.04.1994, M.K. 55.
- Euphorbia amygdaloides** L. var. **robbiae** (Turrit) Roddiffe-Smith
Yenice Village, Kepirler, wheat field, 21.05.1994, M.K. 241. Eur.-Sib. element.
- Rubiaceae**
Galium verum L. subsp. **verum**
Karaincirlık Village, Taşlıburun, sunflower field, 17.07.1994, M.K. 364. Eur.-Sib. element.
- G. aparine**
Şehitler Village, Çandır Bayırı, wheat field, 09.04.1994, M.K. 73; Işıklar Village, Çataldere, wheat field, 13.05.1995, M.K. 518; Karaincirlık Village, Taşlıburun, sunflower field, 17.07.1994, M.K. 360.
- MONOCOTYLEDONES**
Alismataceae
Alisma lanceolatum With.
Işıklar Village, lake environs, rice field, 11.09.1995, M.K. 564.
- Potamogetonaceae**
Potamogeton natans L.
Işıklar Village, lake environs, rice field, 11.09.1995, M.K. 566.
- Lemnaceae**
Lemna minor L.
Vakıf Village, between Vakıf and Abdurrahim Villages, 500 m., rice field, 03.09.1995, M.K. 562.
- Liliaceae**
Allium myrianthum Boiss.
Çavuş Village, Çayırli, wheat field, 08.07.1995, M.K. 535; Sütçüler Village, lake environs, wheat field, 18.07.1995, M.K. 553. Ir.-Tur. element.

A. scorodoprasum L. subsp. **rotundum** (L.) Stearn.

Yenice Village, Küçükova, wheat field, 21.05.1994, M.K. 240. Medit. element.

A. nigrum L.

Yenice Village, Küçükova, wheat field, 01.05.1994, M.K. 146. Medit. element.

Ornithogalum umbellatum L.

Kocaeli Village, Dutluk, wheat field, 07.04.1994, M.K. 509.

Muscari comosum (L.) Miller

Yenice Village, Kepirler, wheat field, 15.05.1994, M.K. 187. Medit. element.

M. neglectum Guss.

Küçükevren Village, Kepirler, wheat field, 03.04.1994, M.K. 57; Yenice Village, wheat field, 15.05.1994, M.K. 188.

Gagea pratensis (Pers.) Dumort.

Büyükevren Village, Kufalçı, wheat field, 26.03.1994, M.K. 28. Eur.-Sib. element.

G. vilosa (Bieb.) Duby. var. **vilosa**

Kocaeli Village, Dutluk, wheat field, 07.04.1995, M.K. 510.

Typhaceae

Typha angustifolia L.

Işıklar Village, lake environs, rice field, 11.09.1995, M.K. 567; between Vakıf and Abdurrahim villages 500 m. rice field, 27.08.1994, M.K. 471.

Cyperaceae

Cyperus longus L.

Between Vakıf and Abdurrahim Villages, 500 m., rice field, 27.08.1994, M.K. 470.

C. glaber L.

Between Vakıf and Abdurrahim Villages, 500 m., rice field, 23.07.1994, M.K. 437.

C. difformis L.

Between Vakıf and Abdurrahim Villages, 500 m., rice field, 27.08.1994, M.K. 479.

Poaceae/Gramineae

Eremopyrum triticeum (Gaertner)

Nevski

Between Enez and Keşan, 200. m., Dalyan Island, wheat field, 21.05.1994, M.K. 271.

This species is a new record for the Thrace Region. It is mainly distributed in north, west and central Anatolia in Turkey and SE Europe, Crimea and Central Asia. Its presence in Thrace is an expected result since its distributed extends to Northwest Anatolia and Southeast Europe.

Hordeum marinum Hudson var. **marinum**

Between Enez and Keşan, 200. m., Dalyan Island, wheat field, 21.05.1994, M.K. 274.

H. murinum L. subsp. **murinum**

Abdurrahim Village, Ova, wheat field, 05.06.1994, M.K. 285; Vakıf Village, Eski Bağlar, wheat field, 11.06.1994.

Bromus diandrus Roth.

Büyükevren Village, Kufalçı, wheat field, 05.06.1994, M.K.290.

Avena barbata Pott ex Link. subsp. **barbata**

Abdurrahim Village, Ova, wheat field, 05.05.1994, M.K. 287; Vakıf Village, Eski Bağlar, wheat field, 11.06.1994, M.K. 318. Medit. element.

Alopecurus myosuroides Hudson var. **myosuroides**

Abdurrahim Village, Örenler, wheat field, 16.04.1994, M.K.100. Eur.-Sib. element.

Phleum exaratum Hochst. subsp. **exaratum**

Karaincılık Village, Çınarlı, wheat field, 15.05.1994, M.K. 199.

Lolium perenne L.

Abdurrahim Village, Ova, beet field,

23.07.1994, M.K. 414. Eur.-Sib. element.

Puccinella distans (Jacq.) Parl. subsp. **distans**

Between Enez and Keşan, 200. m., Dalyan Island, wheat field, 21.05.1994, M.K. 277.

Phragmites australis (Cav.) Trin. ex Steudel

Abdurrahim Village, Ova, rice field, 27.08.1994, M.K. 457. Eur.-Sib. element.

Cynodon dactylon (L.) Pers. var. **dactylon**

Yazır Village, Ağlatlıkaya, sunflower field, 23.07.1994, M.K. 441; Çeribaşı Village, Gökgür, sunflower field, 23.07.1994, M.K. 439; Sütçüler Villagelake environs, corn field, 17.07.1994, M.K. 351; Abdurrahim Village, Ova, beet field, 23.07.1994, M.K. 401; Işıklar Village, Çataldere, squash field, 09.07.1994, M.K. 346.

Echinochloa crus-galli (L.) P. Beauv.

Sütçüler Village, lake environs, corn field, 17.07.1994, M.K. 350; Abdurrahim Village, Ova, beet field, 23.07.1994, M.K. 405.

Digitaria Sanguinalis (L.) Scop.

Gülçavuş Village, Suat, watermelon field, 17.07.1994, M.K. 380; Yenice Village, Köyaltı, watermelon field, 23.07.1994, M.K. 442.

Paspalum paspaloides (Michx.) Scribner

Between Vakıf and Abdurrahim Villages, 500. m., rice field, 27.08.1994, M.K. 472.

Sorghum halepense (L.) Pers. var. **halepense**

Yazır Village, Ağlatlıkaya, sunflower field, 19.06.1994, M.K. 322; Çeribaşı Village, Gökgür, sunflower field, 25.06.1994, M.K. 343; Yenice Village, Köyaltı, watermelon field, 23.07.1994, M.K. 443; Abdurrahim Village, Ova, beet field, 23.07.1994, M.K. 406; Sütçüler Village, lake environs, corn field, 17.07.1994, M.K. 354.

Discussion

A total of 150 taxa belonging to 37 families were determined in this study. Distribution of these taxa according to their families are as follows:

Family Name:	Number of taxa
<i>Brassicaceae</i>	18
<i>Fabaceae</i>	18
<i>Poaceae</i>	15
<i>Asteraceae</i>	14
<i>Boraginaceae</i>	8
<i>Liliaceae</i>	8
<i>Ranunculaceae</i>	7
<i>Papaveraceae</i>	6
<i>Caryophyllaceae</i>	6
<i>Apiaceae</i>	5
<i>Scrophulariaceae</i>	5
<i>Lamiaceae</i>	3
<i>Malvaceae</i>	3
<i>Cyperaceae</i>	3

Equisetaceae, *Polygonaceae*, *Plantaginaceae*, *Euphorbiaceae*, *Convolvulaceae*, *Rubiaceae*, *Solanaceae* and *Geraniaceae* families include 2 taxa whilst the families *Berberidaceae*, *Fumariaceae*, *Resedaceae*, *Violaceae*, *Portulacaceae*, *Chenopodiaceae*, *Amaranthaceae*, *Primulaceae*, *Cuscutaceae*, *Orobanchaceae*, *Verbenaceae*, *Alismataceae*, *Potamogetonaceae*, *Lemnaceae* and *Typhaceae* include one taxon.

There is no endemic species among the taxa determined in this study. The reason for this perhaps that the study area is not isolated geographically and the altitude is low.

Phytogeographical origins and ratios of some known taxa are given below (Table 1.):

As shown in Table 1, Mediterranean originated taxa are the largest group. This is a rather predictable result since the study area has a generally Mediterranean climate allowing suitable growing conditions for Mediterranean elements. Euro-Siberian elements form the second largest group within the taxa. This might be a result of the local humid and rainy climate in the study area. In addition, Irano-Turanian elements appear to be the third largest group indicating that the study area is also locally under the influence of the hard continental climate.

The only new record found for European Turkey is *Eremopyrum triticeum* (Gaertner) Nevski and its explanation is in the floristic list.

A total of 5 new records for A1 square are given below:

Equisetum sylvaticum L.

Consolida phrygia (Boiss.) Soo' subsp. *thessalonica* (Soo') Davis

Allium nigrum L.

Diplotaxis tenuifolia (L.) DC.

Spergula arvensis L.

Two new records for the European part of the A1 square are as follows:

Hordeum marinum Hudson var. *marinum*

Heliotropium hirsutissimum Grauer

Regarding these new records, some taxa might be disseminated by means of their diaspores as well as by mixing into the agricultural seeds.

The comparison of the ratios of some families which include the largest number of taxa using the data of this study and some other studies on the Thrace regions is given in Table 2.

Table 2 shows that the results of our study are in broad agreement with other studies. Differences in several taxa, as seen in Table 2, might be the result of dissimilarities in local habitats.

The comparison of the ratios of some genera which include the largest number of taxa based on the data of this study as well as covering some other studies is presented in Table 3.

Since this study was carried out in various crop fields (i.e. wheat, sunflower, corn, rice etc.), the dissimilarities between our data and Eliçin (16) and Yarcı (17) who studied mountains and Kara & Erdiler (3) who studied wheat fields are quite expected.

A total of 150 taxa were determined in the fields and the distribution of these taxa regarding the types of fields is as follows: 97 taxa in wheat, 28 taxa in sunflower, 18 taxa in beet, 9 taxa in watermelon, 9 taxa in rice, 6 taxa in corn, 3 taxa in squash, 3 taxa in tomato and 1 taxon in bean fields. The weeds except the ones found in the rice fields are common terrestrial plants (i.e. *Consolida regalis*, *Papaver rhoeas*, *Sinapis arvensis*, *Cardaria draba*, *Chenopodium album* etc.). The weeds found in the rice fields are aquatic (i.e. *Alisma lanceolatum*, *Potamogeton natans*, *Lemna minor*, *Typha angustifolia* etc.). Many taxa are field-specific, namely, they can be found only in one type of field (i.e. the weeds in the wheat field) but not in the others, with the exception of some weeds which can

Phytogeographical elements	Taxa Number	%
Mediterranean elements	12	8.0
Euro-Siberian elements	10	6.6
East-Mediterranean elements	4	2.6
Irano-Turanian elements	3	2
Unknowns	121	80.6

Table 1. Pyhtogeographical origins and ratios and ratios of some known taxa.

be found in more than one type of the field. This can be explained by their high ecological tolerance, and such weeds are given below:

The weeds fownd both in wheat and sunflower fields are:

Sinapis arvensis

Myagrurn perfoliatum

Trifolium echinatum

Galium aparine

The weeds found both in wheat and squash fields are:

Glaucium corniculatum subsp. *corniculatum*

Alyssum repens subsp. *trichostachyum* var. *trichostachyum*

The weeds found both in sunflower and beet fields are:

Sisymbrium altissimum

Anthemis lomentosa subsp. *tomentosa*

The weeds found both in sunflower and beet fields are:

Polygonum aviculare

Chenopodium album subsp. *album*

Furthermore, *Orobanche nana* is found in sunflower and tomato fields; *Cynodon dactylon* var. *dactylon* in sunflower, squash, beet and corn fields; and *Sorghum halepense* var. *halepense* is found in sunflower, beet, corn and watermelon fields.

Kara and Erdiller (3) studied the weeds in the wheat fields in Tekirdağ Province. The taxa found in this study are in broad agreement with those of Kara and Erdiller with the exception of some taxa. For instance, the laxa *Bromus madritensis*, *Apera spica-venti*, *Lolium multiflorum*, *Polygonum persicaria*, *P. bellardii* could not been obtained in this study. However, Kara and Erdiller's work does not include a number of taxa (i.e. *Bromus diandrus*, *Eremopyrum triticeum*, *Puccinella distans*, *Geranium molle*) which were found in this study. The

Families:	Kireç & Yarci %	Yarci %	Elicin %	Kara & Erdiller %	The ratio in Thrace Flora %
<i>Ranunculaceae</i>	4.66	4.21	2.62	7.69	2.36
<i>Papaveranceae</i>	4.00	0.60	1.63	3.84	0.85
<i>Brassicaceae</i>	12.00	2.60	3.27	7.69	4.48
<i>Caryophyllaceae</i>	4.00	5.20	4.59	2.88	4.12
<i>Fabaceae</i>	12.00	8.00	10.49	9.61	9.79
<i>Asteraceae</i>	9.33	10.60	8.19	13.46	10.57
<i>Boraginaceae</i>	5.33	2.80	3.93	2.88	2.73
<i>Scrophulariaceae</i>	3.33	3.80	4.26	2.88	3.75
<i>Lamiaceae</i>	2.00	5.60	3.93	1.92	4.85
<i>Rubiaceae</i>	1.33	1.60	2.95	2.88	1.42
<i>Liliaceae</i>	5.33	2.40	5.24	0.00	3.63
<i>Poaceae</i>	10.00	5.00	3.93	13.46	9.91

Table 2. The comparison of the ratios of some families.

Genera:	Kireç & Yarci %	Yarci %	Elicin %	Kara & Erdiller %	The ratio in Thrace Flora %
<i>Ranunculaceae</i>	2.00	2.00	1.31	1.92	1.22
<i>Papaver</i>	2.00	0.20	0.32	1.92	0.20
<i>Vicia</i>	4.66	1.20	0.98	3.84	1.30
<i>Trifolium</i>	4.00	3.20	1.96	0.00	2.57
<i>Veronica</i>	2.66	0.60	0.98	2.88	1.14
<i>Allium</i>	2.00	0.00	1.31	0.00	1.10
<i>Cyperus</i>	2.00	0.60	0.00	0.00	0.28

Table 3. The comparison of the ratios of some genera.

reason for this can be that the field studies we performed covered different localities.

Consequently, this work suggests that such field studies should be planned in the future covering the other parts of the Thrace region in order to contribute to the floristic studies as well as helping the agronomists and farmers in weed control.

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