General status of cucurbit genetic resources in Turkey

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Abstract

Turkey is very rich in cucurbit genetic resources due to its diverse geographical and ecological situation. Turkey is one of the important diversity centers for cultivated cucurbits because of the adaptation to diverse ecological conditions as result of natural selection and also the farmers selection in accordance with their preference.

National collection of Cucurbitaceae species at National Gene Bank of Turkey (AARI) consists of 2223 accessions. Collecting activities have been systematically conducted since early 1960s. 25.7% of this amount is melon, 20.5% is Cucurbita spp., 16.1% is watermelon, 13.4% is cucumber, 7.7% is bottle gourd, 7.2% is squash, 4.2% is winter squash, 3.3% is snake melon, 1.3% is pumpkin, 0.3% is other cucumbers, 0.2% squirting cucumber and 0.1% of bryony.

Melon and watermelon genetic resources collections and their morphological and molecular characterization trials were done in Çukurova University and approximately 400 melon and 355 watermelon accessions were collected. Squash and pumpkin studies were done in Ondokuz Mayıs and Ankara University and 128 winter squash, 40 pumpkin populations and 20 snack seed squash were collected and characterized. Selected pumpkins also were characterized molecularly. Bottle gourd characterization trials were done in Mustafa Kemal University and 188 accessions were characterized. Snake melon research activities were conducted at Ankara and Çukurova Universities and 62 accessions were characterized. The evaluation and breeding programs of these genetic resources are ongoing.

INTRODUCTION

Vegetable production of Turkey is approximately 24 million tons covering approximately an area of 1 million ha. About 35% of the production comes from the species which belongs to the family Cucurbitaceae. Watermelon (Citrullus lanatus

Cucurbitaceae 2008, Proceedings of the IXth EUCARPIA meeting on genetics and breeding of Cucurbitaceae (Pitrat M, ed), INRA, Avignon (France), May 21-24th, 2008
(Thunb.) Matsum. and Nakai), melon (Cucumis melo L. var. inodorus and var. cantalupensis), cucumber (Cucumis sativus L.), summer and snack squash (Cucurbita pepo L.), pumpkin (Cucurbita maxima Duch. ex Lam. and Cucurbita moschata Duch. ex Poir) are the most commonly grown cucurbit in Turkey. Snake melon (Cucumis melo var. flexuosus L.), bottle gourd (Lagenaria siceraria (Molina) Stand.), sponge gourd (Luffa cylindrica L.), bitter melon (Momordica charantia L.), Sechium edule (Jack.) Swartz and squirting cucumber (Ecbalium elaterium L.) are minor cucurbits in Turkey.

Harlan (1951) described Turkey as a microcentre for many landraces including Cucurbitaceae species, like C. melo (subtropical and tropical Africa), C. lanatus (subtropical and tropical Africa), C. sativus (Central Asia and Himalayas), C. moschata (South America) and C. pepo (South America). In almost all regions of Turkey Cucurbitaceae landraces are still grown by farmers and are highly variable in morphology and taste and also used as vegetable or pickling.

Plant genetic resources are the most important material for breeding new cultivars. Use of genetic resources is as old as the history of agriculture. Hundreds of plants have been bred over years and thousands of varieties have been developed by natural and artificial selection. Genetic erosion occurred by natural causes in earlier times whereas recently forest fire, misuse of forest and agricultural fields, excessive and unconscious use of fertilizer and pesticides have caused the decrease of plant genetic diversity. Nowadays, many serious studies have been conducted for preserving genetic resources in many countries (Anonymous 2003).

Turkey is an important and rich genetic diversity center because its location in intersection of Euro-Siberian, Irano-Turanian and Mediterranean Phytogeographic regions. In addition, Turkey is an immigration road as a bridge between three continents and Anatolia had climatologically different regions (Tan 1998a).

The Cucurbitaceae consists of two well defined subfamilies, eight tribes representing varying degrees of circumscriptive cohesiveness and about 118 genera and 825 species (Jeffrey 1990).

The origin of melon is in dispute. Some researchers suggested that India is the centre of domestication because melon had been cultivated there for centuries and inedible forms grow wild in India. Others believe that melon domestication began in Iran. However, most authorities consider that melon, like other species in the subgenus Melo, originated in Africa. Melons can be divided into two subspecies as C. melo ssp. agrestis and C. melo ssp. melo. C. melo ssp. melo is also divided into six subgroups consist of cantalupensis, inodorus, flexuosus, conomon, dudaim-chito and momordica (Robinson and Decker-Walters 1997). Turkey has valuable genetic resources for melons (cantalupensis, inodorus, and flexuosus) (Küçük et al. 2002; Gómez-Guillamon et al. 2004; Sari and Solmaz 2007).

The Citrullus genus contains 4 diploid species that thrives in Africa, Asia and Mediterranean (Levi et al. 2001). C. lanatus, which is found in tropical and subtropical climates worldwide, comprises the cultivated watermelon C. lanatus var. lanatus and C. lanatus var. citroides (Bailey) Mansf. which is known as citron. Citrullus colocynthis (L.) Schrad., also known as bitter gourd, is a perennial wild species growing in northern Africa, southwestern Asia and the Mediterranean. Citrullus ecirrhosus Cogn. and Citrullus rehmii De Winter (De Winter 1990) are wild species endemic to Namibia (Meeuse 1962). Watermelon is one of the most
important fruit crops in Turkey. Watermelon has been cultivated over years in almost all part of Turkey. Extensive polymorphism has been occurred over years in Turkey. Despite the extent of distribution and cultivation, watermelon germplasm of Turkey is poorly described.

Pumpkins and squash (Cucurbita spp.) are important crops and are grown in almost all arable regions of the world. There are three economically important Cucurbita species, namely C. pepo, C. maxima and C. moschata, which have different climatic adaptations and are widely distributed in agricultural regions worldwide (Robinson and Decker-Walters 1997; Paris and Brown 2005; Wu et al. 2007). Cultivation of pumpkins and squash has a long history and it can be said that these cucurbits are associated with the origins of agriculture. The genus Cucurbita is native to the Americas. There is convincing evidence from archaeological sites in Central and South America that C. pepo, C. maxima and C. moschata and C. mixta were widely cultivated in pre-Colombian times (Whitaker and Robinson 1986). In Turkey, we have very important genetic diversity for squash (summer or snack) and pumpkin.

Cucumber (C. sativus) is of Asiatic origin and probably of Indian origin and was domesticated around 1500 BC (Pitrat et al. 1999). China is considered a secondary centre of genetic diversification. Cucumber is the second most important vegetable crops for greenhouses in Turkey after tomato. Since Turkey is not the center of the origin for cucumber, there is not a great genetic diversity.

Snake melons (C. melo var. flexuosus) are very long, grooved and consumed as cucumber in some Asiatic and African countries. Turkey is located in the origin centre of snake melon. The origin centre of snake melon is accepted as South East Anatolia, Azerbaijan, Iraq, Palestine and Central Asia (Besirli and Yanmaz 1999). In this area, snake melon is used fresh like cucumber or cooked or pickled.

L. siceraria is commonly known as the white-flowered bottle gourd. Annual monoecious, vigorous climber species and five wild perennial dioecious species are cultivated. The genus Lagenaria also contains five wild species: L. brevifilora (Benth) Roberty, L. abyssinica (Hook F.) Jeffreyy, L. rufa (Gilg) Jeffreyy, L. spherica (Sonder) Naudin and L. guineensis (G. Don) Jeffreyy (Motimoto et al. 2005). The fruits of bottle gourd are generally eaten as a vegetable in Africa and Asia. Immature fruits are eaten by boiling, frying or stuffing like fruit of Cucurbita pepo. The mature fruit is often scooped out and the skin used as containers, bowl, music instrument, decorative purposes or in some cases, fishing floats. Shoots, tendrils and leaves are also cooked and the seeds are removed for oil extraction or for use in cooking. Seeds, tendril and young leaves are also used for some medical purposes (Herklots 1972; Moerman 1998; Manandhar 2002). Furthermore, L. siceraria is used as rootstocks for watermelon against soil-born diseases and low soil temperature. Grafting of watermelon onto bottle gourd was first performed in Korea and Japan in the late 1920s (Ashita 1927). L. siceraria is one of the species used as rootstock for watermelon and it shows high compatibility with watermelon (Lee 1994; Oda 1995; Yetisir and Sari 2003).

PRODUCTION

Total vegetable production in Turkey is about 24 million tons. The most important vegetables are tomato, watermelon, melon, cucumber, pepper, eggplant and
squash cultivated for their fruits (Turkish Statistical institute 2006). The ratio of Cucurbit crops in total vegetable production is 32 % and in fruit bearing vegetables is 38 % (Tab. 1).

Table 1. Fruit bearing vegetables production of Turkey (103 tons) (Turkish Statistical Institute. 2006.)

<table>
<thead>
<tr>
<th>Years</th>
<th>Total</th>
<th>Tomato</th>
<th>Melon-Watermelon</th>
<th>Cucumber</th>
<th>Pepper</th>
<th>Eggplant</th>
<th>Squash</th>
<th>Pumpkin</th>
<th>Okra</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>13958</td>
<td>6000</td>
<td>4950</td>
<td>1000</td>
<td>900</td>
<td>735</td>
<td>294</td>
<td>57</td>
<td>22</td>
</tr>
<tr>
<td>1994</td>
<td>15080</td>
<td>6350</td>
<td>5400</td>
<td>1140</td>
<td>1008</td>
<td>810</td>
<td>285</td>
<td>62</td>
<td>26</td>
</tr>
<tr>
<td>1998</td>
<td>18246</td>
<td>8290</td>
<td>5815</td>
<td>1475</td>
<td>1400</td>
<td>915</td>
<td>262</td>
<td>65</td>
<td>25</td>
</tr>
<tr>
<td>2002</td>
<td>20596</td>
<td>9450</td>
<td>6395</td>
<td>1670</td>
<td>1750</td>
<td>955</td>
<td>280</td>
<td>65</td>
<td>31</td>
</tr>
<tr>
<td>2006</td>
<td>20394</td>
<td>9855</td>
<td>5571</td>
<td>1800</td>
<td>1842</td>
<td>924</td>
<td>288</td>
<td>77</td>
<td>37</td>
</tr>
</tbody>
</table>

THE STATUS OF NATIONAL GENE BANK (NGB) OF TURKEY

Cucurbitaceae genetic resources have been collected by the National Plant Genetic Resources and Plant Diversity Research Program (NPGRRP) since 1964. The total number of accessions collected is over 2000. Table 2 shows the number of collections at NGB collected from different provinces in Turkey. Systematic collections and surveys are conducted taking various priorities into account such as extent of the replacement of landraces by improved varieties, erosion factors, construction of dams and irrigation canals, land opening to industry and settlements, tourism which affect the farming lands especially in the coastal areas (Tan 1998a.)

Collecting of wild and cultivated species is still a priority in order to fill gaps of collections, especially from regions of Turkey not visited previously.

Conservation

Ex situ conservation activities started in 1964. It is still on process within the framework of NPGRRP. The ex situ conservation is implemented both for seed propagated and vegetative collections which are preserved in seed gene bank and field gene banks respectively. The National Seed Gene Bank operated since the beginning of 1970’s at Aegean Agricultural Research Institute (AARI) to preserve the genetic resources collected since 1964. Ex situ and on-farm conservation activities are undertaken for targeted species and ecosystems (Tan 1995, 1998b, 2000 and 2001).

Storage facilities

The facilities of NGB for seed collection have been designed for the needs of long-term and medium-term storage for both base and active collections of multi species crops and plants, respectively (Tan 1998a). Cold rooms operate at international standards with -18°C for long-term and 0°C for medium term storage. There are also facilities for temporary storage, with rooms working at 4°C. The seeds are dried to 5-6 % moisture content and kept in the sealed can containers for base and
active collections. Cryo-preservation and \textit{in vitro} conservation facilities also exist for specific species.

Table 2. National \textit{ex situ} Cucurbitaceae collections of Turkey, at National Gene Bank, AARI (1964-2007)

<table>
<thead>
<tr>
<th>Botanical Name</th>
<th>English Name</th>
<th>Turkish Name</th>
<th>Collected Sites (provinces)</th>
<th>Number of Accessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>\textit{C. melo}</td>
<td>Melon, Muskmelon, Cantaloupe</td>
<td>Kavun</td>
<td>54</td>
<td>571</td>
</tr>
<tr>
<td>\textit{C. melo flexuosus}</td>
<td>Adjurmelon, Snakemelon, Serpentmelon</td>
<td>Acur</td>
<td>28</td>
<td>74</td>
</tr>
<tr>
<td>\textit{C. sativus}</td>
<td>Cucumber</td>
<td>Hıyar</td>
<td>58</td>
<td>297</td>
</tr>
<tr>
<td>\textit{Cucumis} spp.</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>\textit{C. lanatus}</td>
<td>Watermelon</td>
<td>Karpuz</td>
<td>45</td>
<td>358</td>
</tr>
<tr>
<td>\textit{C. pepo}</td>
<td>Field pumpkin</td>
<td>Yazlık kabak, Uzun kabak</td>
<td>47</td>
<td>160</td>
</tr>
<tr>
<td>\textit{C. moschata}</td>
<td>Winter squashes (cushaw)</td>
<td>Kişilik kabak (bal kabağı)</td>
<td>25</td>
<td>93</td>
</tr>
<tr>
<td>\textit{C. maxima}</td>
<td>Winter squashes</td>
<td>Kişilik kabak (kestane kabağı)</td>
<td>9</td>
<td>29</td>
</tr>
<tr>
<td>\textit{Cucurbita} spp.</td>
<td>--</td>
<td>--</td>
<td>58</td>
<td>455</td>
</tr>
<tr>
<td>\textit{L. siceraria}</td>
<td>Bottle gourd</td>
<td>Su kabağı</td>
<td>15</td>
<td>172</td>
</tr>
<tr>
<td>\textit{E. elaterium}</td>
<td>Squirting cucumber</td>
<td>Eşek hıyarı, it keleği</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>\textit{B. dioica}</td>
<td>Bryony</td>
<td>Ak asma</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>2223</strong></td>
<td></td>
</tr>
</tbody>
</table>
National Melon (C. melo) Collection” supported by TUBITAK (the Scientific and Technological Research Council of Turkey).

GENETIC DIVERSITY OF MELON

Turkey is the second largest melon producer after China with 1,765,605 tons on 103,000 ha area (FAOSTAT 2006). Turkey has valuable genetic resources for melons which are being threatened. Several studies were initiated to characterize them. A European Union project was carried out to characterize some of the Turkish melons (Gomez-Guillamon et al. 2004). Later Sari and Solmaz (2007) collected and characterized morphologically 64 new accessions from different parts of Turkey. Sensoy et al. (2007) conducted both morphological and molecular characterization of 56 Turkish melon genotypes.


GENETIC DIVERSITY OF WATERMELON

Turkey is the second most important watermelon producer country with 3.8 million tons on 137,000 ha area after China (FAOSTAT, 2006). Although Turkey is not the center of origin for watermelon it has valuable and extensive watermelon genetic resources because of its long cultivation history and the location of the country acting as a bridge between Asia and Europe.

Breeding of hybrid varieties started in Western Mediterranean Agricultural Research Institute (Antalya). Later, in the framework of the projects between Çukurova University and Ministry of Agriculture, we created new F1 hybrids resistant to Fusarium wilt via haplo-diploidisation method obtained through irradiated pollen techniques in ‘Galia’ type (C. melo var. reticulatus) (Sari et al. 1999). Currently, research is ongoing to develop new ‘Kirkagac’, ‘Yuva’ and ‘Hasanbey’ melons (C. melo var. inodorus) resistant to Fusarium wilt via haploid method (Sari et al. 2007a).
molecularly during a project supported by TUBITAK during 2004-2008. A great collection was constructed by adding reference materials and different genotypes of related species provided from different gene banks. Çukurova University watermelon germplasm has 355 accessions belonging especially to C. lanatus var. lanatus, C. lanatus var. citroides, C. colocynthis, C. ecirrhosus, C. rehmi and P. fistulosus. Turkey has only C. lanatus var. lanatus in its natural area with different types, colors and fruit size. The wild types are not found in nature. The richest regions of Turkey are the Southeastern, Aegean, Thrace and Middle Anatolia region (Sari et al. 2007b). But, the introduction of new, good quality watermelon hybrids, decreases the number of genetic resources in all regions year by year. The most common Turkish watermelon local varieties are: ‘Diyarbakır karpuzu’ (40-50 kg/fruit), ‘Tat karpuzu’, ‘Sürme’, ‘Beyaz Kış’, ‘Siyah Kış’, ‘Halep Karası’, ‘Cakal’, ‘Medine’, ‘Amerikan’, ‘Yerli’, ‘Gelin’, ‘Komando’, ‘Ankara’, ‘Kore’, ‘Akarkarpuz’, ‘Karakarpuz’, ‘Cerezlik karpuz’ etc. The Turkish watermelon accessions have generally big seeds which are still consumed fresh, dry or boiled in some regions. Our researches indicate that the distribution of seed weight in a sample of 327 Turkish watermelon is as follows: 8.0 % of genotypes have seed weight lower than 50 mg, 18.4 % of genotypes between 51 mg and 100 mg, 48.9 % of genotypes between 101 mg and 150 mg, 23.2 % of genotypes between 151 mg and 200 mg and 1.5 % of genotypes had seeds heavier than 200 mg (Sari et al. 2008).

GENETIC DIVERSITY OF SQUASH AND PUMPKIN

Total squash and pumpkin production of Turkey is 364,968 tons (FAOSTAT 2006). Summer squash (C. pepo) is produced for immature fruits in greenhouse and open field. F1 hybrids are cultivated. Squash seeds have been used as a snack in Turkey like in some Mediterranean countries and Germany, Hungary, Austria and China. In Turkey mainly C. pepo seeds are used as snacks and nearly 12,000 tons seeds have been produced for this use. A great diversity of landraces exists in the Central Anatolia (Nevşehir, Niğde, Aksaray, Kayseri, Ankara) and Thrace (Edirne, Tekirdağ, Kırklareli) areas. In order to develop new varieties of pumpkin for seed production, selection studies are conducted in the University of Ankara since 1993. In these studies, 20 different seed sources were collected and evaluated from different parts of Turkey (Düzeltir 2004). The research is ongoing together with the snack seed industry and Prof. Dr. Ruhsar Yanmaz from Ankara University. Varieties of naked-seed pumpkin are also produced in Turkey. Collecting and research is conducted with this type of varieties (Abak et al. 1990).

The cultivation of C. maxima is based on local open pollinated varieties which are maintained by farmers, produced for self-consumption and sold on local markets. The only commercially important improved cultivar of winter squash is ‘Arican 97’. Similarly, the current production of C. moschata is based on local varieties for home-consumption or sale on local markets. Winter squash and pumpkin populations of Samsun province showed a high variability for seed size, color and weight, etc. (Balkaya et al. 2005a). In a project supported by TUBITAK, 128 winter squash and 40 pumpkin populations were collected from different provinces of Turkey between 2004-2005 by University of Ondokuz Mayıs in Samsun (Balkaya et al. 2005b). The geographical distribution of pumpkin accessions was 5 from Bolu, 4 from Samsun and Hatay, 3 from Amasya and Corum, 2 from Trabzon, Tokat, Sinop and Artvin
provinces, and 1 from Adana and Giresun provinces. Additionally, six pumpkin populations were provided by the University of Çukurova in Adana. In total, 40 populations were collected.

**GENETIC DIVERSITY OF BOTTLE GOURD**

Although Turkey is not the center of origin for *L. siceraria*, the landraces of *L. siceraria* show great diversity, particularly in fruit size and shape. In most of small cities and villages of Turkey, a number of different landraces had been commonly cultivated for several uses such as food, music instruments, decorative and containers, before equipments and tools made of plastic started to be used intensively by people. Therefore, *L. siceraria* is not an economically important species in Turkey and it is grown only in some small regions of Turkey. It was common to find landraces of *L. siceraria* in many parts of Turkey about 25 years ago but they have gradually disappeared especially in central and Eastern Turkey. Genetic diversity of *L. siceraria* is still found in Southern and Western Turkey.

To analyze variation in plant, fruit and seed morphology among the *L. siceraria* landraces and to establish a core collection, 15 collection trips in southern part of Turkey (Mediterranean and Aegean Regions) were conducted by the University of Mustafa Kemal in 2003 and 2004. A total of 212 genotypes were collected. 188 of these (157 from Mediterranean, 18 from Aegean, 5 from Southeastern, 5 from Eastern, 2 from Black Sea and 1 from Thrace regions) were stored. Morphological characterization was conducted according to the descriptor list of IBPGR. A great variation was found in shape and fruit size. No patterns of the diversity were associated with the geographical origin. This may suggest that the accessions were introduced in Turkey from multiple locations and/or they have been well-mixed in Southern Turkey. This is the first report about morphological characterization of Turkish *L. siceraria* germplasm (Sakar 2007). Bottle gourd is important as a rootstock for watermelon. 72 genotypes were selected based on morphological characteristics as rootstocks candidates. Emergence rate, hypocotyl morphology, survival rate and resistance to *Fusarium oxysporum* f. sp. *niveum* (FON) were investigated. Emergence rate was ranked between 72 % and 100 % in collected genotypes. The highest graft compatibility was 99 % while the lowest was 70 %. All grafted plants showed better performance than control plants regarding plant growth. All bottle gourd genotypes showed resistance against the three known races of FON. The results showed that Turkish *L. siceraria* germplasm has powerful rootstock potential for watermelon against Fusarium wilt and is a good resource for rootstock breeding programs (Yetisir et al. 2007).

**GENETIC DIVERSITY OF CUCUMBER**

Turkey is not a good source for cucumber genetic resources. Local varieties were replaced, both in greenhouse and open field conditions, with foreign European F1 hybrids. In open field production Dutch, Russia and gherkin types have increased in recent years. Dutch types are produced in Gazipasa district of Antalya. These are consumed in Turkey and exported to Balkan countries such as Bulgaria and Romania.

In our country, breeding for hybrid varieties started in 1970. During 1970-2000 years 4 hybrid cultivars were developed. Collected samples of land races, during this period were evaluated for their morphological characteristics in autumn and spring.
seasons in the Western Mediterranean Agricultural Research Institute (Antalya). Within this research 141 different breeding lines were evaluated and selected female and male lines were crossed and 40 hybrid combinations treated in autumn and spring growing period under cold greenhouses conditions (Gozen 2008). Breeding efforts have focused on improving yield, earliness, fruit quality, disease resistance and abiotic stresses.

GENETIC DIVERSITY OF SNAKE MELON
Snake melon cultivation is located in Southeastern, Aegean and Mediterranean region of Turkey. Genetic resources of snake melon were collected from Southeastern Anatolia region in 1992 and collected material was evaluated according to different plant and fruit characters (Besirli and Yanmaz 1999). Later, collecting activities as well as evaluation continued (Solmaz et al. 2004). There is an ongoing project aiming to compare morphological and molecular diversity of Turkish and world’ snake melons (collected in Pakistan, India, Iraq, Spain, Syria, Afghanistan, Saudi Arabia, Sudan, Egypt, Morocco and Tunisia by M. Pitrat) and relationship with wild and cultivated melon-snake melon-cucumber at Çukurova University (Sari et al. 2006)

GENETIC DIVERSITY OF MINOR CUCURBITS
In Turkey, *Luffa* spp. is very common in home gardens as a climbing plant and for the production of sponge that is sold in local markets. *E. elaterium* is widespread in Mediterranean region as a wild plant. *S. edule* and *M. charantia* are less common species.

CONCLUSION
*Cucurbitaceae* is one of the most important families with significant genetic resources in Turkey. In this paper, the general status of Cucurbits in Turkey are discussed and summarized. The number of accessions increased from 1616 in the Turkish Gene Bank and 387 accessions in the universities in the years 2000 (Kücük et al. 2002), to 2223 in the Turkish Gene Bank (AARI) and about 1500 in the universities and research institutes in 2008. Breeding lines and hybrid cultivars are not included in these quantities. However, duplications probably exist in these collections.

Literature Cited
genotypes collected from Samsun region (in Turkish). Turkey IIнд Seed Science Congress. Adana (TR) pp 120-127
Harlan JR (1951) Anatomy of gene centres. Amer Natur 85: 97-103
Herklots GAC (1972) Vegetables in South East Asia. George Allen and Unwin Ltd. London (GB)
Sari N, Kose MT, Aka-Kacar Y, Solmaz I (2006) Genetic and morphological characterization of Turkey Snake melon. Çukurova University Research Project Unit. (Project number:ZF2006YL71, Adana (TR)}
Sari N, Yucel S, Tunali C, Solmaz I (2007a) Breeding of Kirkagac, Yuva and Hasanbey melon genotypes for Fusarium wilt resistance. Turkish Scientific and Technological Research (TUBITAK) Project (project number: 106T760) Ankara (TR)
Sari N, Yucel S, Ekiz H, Yetisir H, Tunali C (1999) Improvement of new melon varieties resistant to Fusarium oxysporum f.sp. melonis by dihaploidization techniques. Turkish Scientific and Technological Research (TUBITAK) Project Final report (project number: TOGTAG 1430, Ankara (TR), 148 p
Solmaz I, Aras V, Unlu H, Sari N (2004) Characterization of snake melon (Cucumis melo var. flexuosus) genotypes which are collected from the different regions of Turkey. In Vth Vegetable Production Symposium, Canakkale Onsekiz Mart University (TR) pp. 75-81