

COLLECTION OF USEFUL PLANTS IN GREENHOUSES BOTANICAL GARDEN OF THE UNIVERSITY OF CRAIOVA

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ABSTRACT

Botanical Gardens are responsible for ensuring optimum plant growth and to present them to the public.

*This paper presents data on useful plants from different geographical regions grown in greenhouses of the Botanical Garden of the University of Craiova. Are presented the data on taxonomic classification, origin, use, part(s) used. These species are edible fruit gives us: *Persea americana* (Avocado), *Eriobotrya japonica* (Japanese medlar), which provides textile plants: *Boehmeria nivea* (Ramie), plants used in food: *Manihot esculenta* (Cassava), *Olea europaea* (Olive), *Citrus spp.*, plants with stimulant, aromatic and therapeutic properties: *Coffea arabica* (Coffee tree), *Piper nigrum* (Black pepper), *Vanilla planifolia* (Vanilla), *Cinnamomum camphora* (Camphor tree), *Myrtus communis* (Myrtle), many of species entered the plants fail to reach flowering and fruiting.*

INTRODUCTION

From the great variety of exotic plants cultivated in the Botanical garden greenhouses Craiova much help create a unique exotic ambience for visitors, but many of the plants are considered useful plants because they may have different uses: provide edible fruits: Avocado (*Persea americana*), Japanese medlar (*Eriobotrya japonica*), Psidium (*Psidium cattleyanum*), citrus known and large economic weight. Optimal growth and development found here which provides textile plants: Ramie (*Boehmeria nivea*), Hemp palm (*Trachycarpus fortunei*), plants with stimulant properties: species of the genus *Coffea*, aromatic and medicinal plants: Camphor tree (*Cinnamomum camphora*), Cardamom (*Elettaria cardamomum*), Pepper (*Piper nigrum*), Laurel (*Laurus nobilis*), Vanilla (*Vanilla planifolia*).

Botanical Gardens are responsible for ensuring optimum plant growth and development and to make them known to the public.

MATERIAL AND METHOD

Useful plants Botanical Garden greenhouses collection are obtained from the international exchange of seeds which institution he made with botanical gardens on all continents, multiplying the number of specimens in the collection is done mostly by seeds harvested from their own copies of the bloom and fructify in conditions in our greenhouses.

The plants are found in tropical and subtropical plants greenhouse and conservatory with succulents planted on the ground or in pots.

The taxons are presented in alphabetical order, in table are given taxon name, common name, origin, use, part(s) used, phenological observations.

The nomenclature is presented according to international databases (The Plant List, GRIN).

RESULTS AND DISCUSSIONS

In the table are presented useful plants identified in the collection greenhouses, with most important uses:

Table 1

The useful plants identified in the collection greenhouses

Taxon name (Family name)	Common names	Origin/ Native place	Use	Part(s) used	Phenological observations
Agave americana L. (Agavaceae)	American aloe, Century plant	Mexico and other parts of tropical America	Economic: fibers with important textile potential (extraction of these fibers from the leaves); culinary (agave syrup - is marketed as a natural form of sugar; the drink pulque). - in medicine: the anticancer activity, the anti anxiety effects of the ethanolic extract of leaves. Other uses: the root and leaves are the best sources of the saponins that are used for making soap (Zwane P. E. & al. 2011).	The leaves The root	has not flourished
Agave kerchovei Lem. (Agavaceae)	Century plant	Mexico	Food for humans The fibers Therapeutic – in diabetes.	The flower buds; The leaves	flourished and fructified
Agave lechuguilla Torr. (Agavaceae)	Tampico fiber	Northern America	Economic: fiber – principal source of ixtle or Tampico fiber to make ropes and mats.	The leaves	has not flourished
Agave potatorum Zucc. (Agavaceae)	Agave of Oaxaca	Northern America	Food For the production of mezcal (is obtained by fermentation and distillation of sugars from Agave plants, e.g. A. potatorum).	The flower buds; The leaves	has not flourished
Agave salmiana Otto ex Salm-Dyck (Agavaceae)	Pulque agave	Northern America	Economic: human food – beverage base (principal source of pulque in Mexico).	The leaves	has not flourished
Agave schottii Engelm. var. schottii (Agavaceae)	Schott agave	Northern America	Ethnobotanical; Is also extensively used as an amole, or soap producing plant.	Aerial parts	has not flourished
Aloe arborescens Mill. (Liliaceae)	Candelabra aloe, Krantz aloe	South eastern part of Southern Africa	Cosmetics, medicine.	The leaves (the juice is extracted from the leaf)	flourished
Aloe ferox Mill. (Liliaceae)	Cape Aloe, Bitter Aloe,	South Africa	Cosmetics, medicine – therapeutic properties,	The leaves	has not flourished

	Red Aloe, Tap Aloe		food supplements.		
Aloe vera (L.) Burm. f. (Liliaceae)	Indian Aloe, True Aloe, Barbados Aloe.	Northern Africa	- In the cosmetics (shampoos, soaps, shaving cream, face creams etc.); alternative medicine industries; dietary supplement.	The leaves, juice of the leaves	flourished
Boehmeria nivea (L.) Gaudich. (Urticaceae)	Ramie	Western and central China	The textile	Strain	has not flourished
Cereus jamacaru DC. (Cactaceae)	Queen of the night, Mandacaru	Brazilian northeast	Food In construction, for making doors, windows, boards and laths (de Lucena et al. 2013) Medical properties	Fruit Wood Root	flourished and fructified
Cinnamomum camphora (L.) J. Presl (Lauraceae)	Camphor tree	China oriental, Japan	Pharmaceutical	Leaves and shoots	not blooming
Citrus aurantium L. (Rutaceae)	Bitter orange	Southeast Asia	Food, cosmetics	Fruit	flourished and fructified
Citrus japonica Thunb. (Rutaceae)	Kumkuat	China	Food	Fruit	flourished and fructified
Citrus limon (L.) Burm. f. (Rutaceae)	Lemon	Asia	Food	Fruit	flourished and fructified
Citrus sinensis (L.) Osbeck (Rutaceae)	Sweet orange	Asia	Food	Fruit	flourished and fructified
Coffea arabica L. (Rubiaceae)	Coffee tree	Ethiopia	Stimulating and therapeutic	Seeds	flourished and fructified
Coffea stenophylla G. Don (Rubiaceae)	Highland coffee	Guinea, Ivory Coast	Stimulating	Seeds	not blossoming
Cyperus textilis Thunb. (Cyperaceae)	Papyrus wild	South Africa	The textile	Strain	flourished
Elettaria cardamomum (L.) Maton (Zingiberaceae)	Cardamom, Nutmeg	Southeast Asia	Spice	Strain	not blossoming
Eriobotrya japonica (Thunb.) Lindl. (Rosaceae)	Loquat, Japanese mosmon	China, Japan	Food	Fruit - (Fig. 1)	flourished and fructified
Laurus nobilis L. (Lauraceae)	Laurel	Mediterranean	Flavoring, therapeutic	Leaves and fruit	not blossoming
Majorana hortensis Moench (Lamiaceae)	Sweet marjoram	Asia-Temperate	Economic: The aromatic herb Food additives: flavoring Essential oils therapeutic	Leaves Aerial parts	flourished and fructified
Manihot esculenta Crantz (Euphorbiaceae)	Manioc, Tapioca	Brazil, Paraguay	Food	Tuber	flourished and fructified
Musa x sapientum subsp. seminifera (Lour.) Baker (Musaceae)	Wild banana	Southeast Asia	Food	Fruit	flourished and fructified
Myrtus communis	Myrtle	Southern	Medical, cosmetic	Leaf	not

L. (Myrtaceae) – Fig. 2		Europe, North Africa		Fruit	blossoming
Olea europaea L. (Oleaceae)	Olive	Mediterranean	Food, medical	Fruit	flourished and fructified
Opuntia cochenillifera (L.) Mill. (Cactaceae)	Prickly Pear, Cockineal Nopal cactus	Mexico	Fodder plant Feeding (serves as a food for humans)	The stem Fruit	flourished and fructified
Opuntia ficus-indica (L.) Mill. (Cactaceae)	Smooth prickly-pear, Tuna cactus, Indian-fig prickly-pear	Mexico, much of Latin America, South Africa and the Mediterranean area	Economic: - human food – beverage base, it is also used in local cuisine, for cakes, candies, juices, jellies soups, salads, stews, risottos or cooked with rice, beans and meat; - the fruit is considered one of the best among all the Cactaceae, being also commercialized as “figo da India” (de Lucena et al. 2013); Juice are a good source of sugar, vitamins and minerals; is a important natural food alternative. Medical; Cosmetics: body lotion, shampoo, creams etc.; As a natural food colorant becose containing betalain pigments.	Fruit The cladodes, The fruit	flourished and fructified
Pelargonium graveolens L'Hér. (Geraniaceae)	Rose geranium	Africa	Economic: Cosmetics (essential oils used in perfumery), aromatherapy, culinary, food additives – flavoring, medicines	Leaves Stems Flowers	flourished and fructified
Pelargonium odoratissimum (L.) L'Hér. (Geraniaceae)	Apple geranium, Sweet-scent pelargonium	Southern Africa	Economic: cosmetics (essential oils used in perfumery), aromatic, culinary.	Leaves Stems	flourished and fructified
Pelargonium peltatum (L.) L'Hér. (Geraniaceae)	Hanging geranium, Ivy geranium	Southern Africa	Medical properties	Leaves	flourished and fructified
Pelargonium radens H. E. Moore (Geraniaceae)	Multifid-leaf pelargonium, Rasp-leaf pelargonium	Southern Africa	Medical properties In perfumery	Leaves (extract from fresh leaves) Flowers	flourished and fructified
Pelargonium tomentosum Jacq. (Geraniaceae)	Peppermint geranium	Southern Africa	Medical, culinary, aromatic: potential as essential oils (for peppermint-scented oils)	Leaves	flourished and fructified
Persea americana Mill. (Lauraceae)	Avocado	Central and South America	Food, cosmetic	Fruit	flourished and fructified

Phoenix dactylifera L. (Arecaceae)	Persimmon	North Africa, Canary Islands	Food	Fruit	flourished
Phormium tenax J. R. Forst. & G. Forst. (Agavaceae)	New Zealand- flax, Harakeke	New Zealand	The fibres for the production or rope, sacking; Medical properties	Leaves Root (the juice of the root)	has not flourished
Piper nigrum L. (Piperaceae)	Black pepper	India, Malaysia	Spice, pharmaceutical	Fruit	not blossoming
Piper longum L. (Piperaceae)	Green pepper	India	Spice, pharmaceutical	Fruit	not blossoming
Polianthes tuberosa L. (Agavaceae)	Tuberose	Probable origin Mexico, today only cultivated	Economic: cosmetic uses - essential oil used in perfumery, the most expensive perfume oil	The flowers	flourished and fructified
Psidium cattleianum Sabine (Myrtaceae)	Guajava	Brazil	Food	Fruit	flourished and fructified
Rosmarinus officinalis L. (Lamiaceae)	Rosemary	Africa Asia- Temperate Europe	Economic: Food additives: flavoring Aromatic: essential oils Bee plants: honey production therapeutic	Leaves Aerial parts	flourished and fructified
Simmondsia chinensis (Link) C. K. Schneid. (Simmondsiaceae)	Jojoba	Arizona, California, Mexico	Cosmetic, pharmaceutical	Seeds	not blossoming
Trachycarpus fortunei (Hook.) H. Wendl. (Arecaceae)	Chinese windmill palm	China, Northern India	Fibers	Strain	not blossoming
Vanilla planifolia Andrews (Orchidaceae)	Vanilla	Mexico, Central America	Food, cosmetic	Fruit	not blossoming
Yucca aloifolia L. (Agavaceae)	Daggerplant, Spanish- dagger	Northern and Southern America	Medical	Leaves (extract) The flowers	has not flourished
Yucca guatemalensis Baker (Agavaceae)	Bluestem yucca, Giant yucca	Northern and Southern America	Food (cooked – the flowers are used as ingredients in recipes due to their bitter taste)	The flowers The buds	has not flourished



Fig. 1. *Eriobotrya japonica* (Thunb.) Lindl.



Fig. 2. *Myrtus communis* L.

CONCLUSIONS

- taxons present grown from seeds from botanical gardens abroad, multiplying the number of specimens in the collection were done by seeds collected from specimens that bloom and fructify in our greenhouses: *Coffea arabica*, *Eriobotrya japonica*, *Persea americana*, *Psidium cattleianum* by *Vanilla planifolia* cuttings, *Piper nigrum*, *Laurus nobilis*, dividing *Elletaria cardamomum*.

- most of these taxons are less well known, especially visitors: *Cinnamomum camphora*, *Vanilla planifolia*, *Manihot esculenta*, *Piper nigrum*, *Eriobotrya japonica*. Collections are found mainly in botanical gardens and is known mainly grown for ornamental purposes: *Phoenix dactylifera*, *Trachycarpus fortunei*, *Citrus limon*, *Coffea arabica* etc.

BIBLIOGRAPHY

1. **Arellanes, Y., Casas, A., Arellanes, A., Vega, E., Blancas, J., Vallejo, M., Torres, I., Rangel-Landa, Selene, Moreno, Ana, Solis, L., Pérez-Negrón, E.,** 2013 - *Influence of traditional markets on plant management in the Tehuacán Valley*, Journal of Ethnobiology and Ethnomedicine 9: 38. [Online] Available at <http://www.ethnobiomed.com/content/9/1/38> (accessed 9th of August, 2013).
2. **Arias Toledo, B., Galetto, L., Colantonio, Sonia,** 2009 - *Ethnobotanical knowledge in rural communities of Cordoba (Argentina): the importance of cultural and biogeographical factors*, Journal of Ethnobiology and Ethnomedicine 5: 40. [Online] Available at <http://www.ethnobiomed.com/content/5/1/40> (accessed 9th of August, 2013).
3. **Boira, H., Merle, H.,** 2003 - *Chemical composition of the essential oil of Eriobotrya japonica (Thunb.) Lindl. flowers in the western Mediterranean area*. First international symposium on loquat, Série A. Séminaires Méditerranéens, pag. 191- 193. Zaragoza.
4. **Burté, J.N.,** 1992 - *Le bon jardinière*, Edition 153. Vol II, III. La maison rustique, Paris.
5. **Brena-Bustamante, Paulina, Lira-Saade, R., Garcia-Moya, E., Romero-Manzanares, Angélica, Maya-Cervantes, H., López-Carrera, M., Chávez-Herrera, S.,** 2013 - *Aprovechamiento del escapo y los botones florales de Agave kerchovei en el Valle de Tehuacán-Cuicatlán, México*, Botanical Sciences 91 (2): 181-186.
6. **Ceccarelli, Donatella, Ovidi, Elisa, Triggiani, Doriana, Morelli, C., Speranza, Giovanna, Taddei, Anna Rita, Tiezzi, A.,** 2012 - *Antiproliferative Activity of Aloe arborescens Leaf Skin Extracts Tested on Murine Myeloma Cells: Cytological Studies and Chemical Investigation*, Medicinal and Aromatic Plant Science and Biotechnology 6 (Special issue 2): 31-36.
7. **Floria Tănăsescu, Violeta, Teodorescu, Georgeta,** 2006 - *Exotic useful plants cultivated in the greenhouse complex from the Botanical Garden from Iași (Note II)*, Buletinul Grădinii Botanice Iași, Tomul 13: 33-41.
8. **Ghannadi, A., Bagherinejad, M.R., Abedi, D., Jalali, M., Absalan, B., Sadeghi, N.,** 2012 - *Antibacterial activity and composition of essential oils from Pelargonium graveolens L'Her and Vitex agnus-castus L., Iran. J. Microbiol.* 4 (4): 171-176. [Online] Available at <http://ijm.tums.ac.ir> (accessed 9th of August, 2013).
9. **Juárez, C., Durán, A., Valdez, P., Fajardo, G.,** 2007 - *Performance of "Agave lechuguilla" natural fiber in portland cement composites exposed to severe environment conditions*, Building and Environment 42: 1151-1157.
10. **Khade, K., Dubey, H., Tenpe, C., Yeole, P., Patole, A.,** 2011 - *Anticancer activity of the ethanolic extracts of Agave americana leaves*, Pharmacologyonline 2: 53-68.
11. **Khalid, M. S., Abrar, S., Khan, H.,** 2013 - *Anti-anxiety effect on ethanolic extracts of Agave americana Linn*, Asian J Pharm Clin Res Vol. 6, Suppl. 1: 43-48.
12. **Lucena, C. M., Lucena, R. F. P., Costa, G. M., Carvalho, T. K. N., Silva Costa, G. G., Nóbrega Alvez, R. R., Pereira, D. D., Silva Ribeiro, J. E., Alves, C. A. B., Quirino, Z. G. M., Nunes, E. N.,** 2013 - *Use and knowledge of Cactaceae in Northeastern Brazil*, Journal of Ethnobiology and Ethnomedicine 9: 62-73. [Online] Available at <http://www.ethnobiomed.com/content/9/62> (accessed 16th of August, 2013).
13. **Maurer, E. S.,** 1956 - *The Geranium Family in Perfumery*, Journal of the Society of Cosmetic Chemists: 2-18.
14. **Morton, Julia, Dowling, C. J. Jr.,** 1991 - *The spineless Yucca deserves more attention as an ornamental and food plant*, Proc. Fla. State Hort. Soc. 104: 341-345.
15. **Msahli, S., Sakli, F., Drean, J.-Y.,** 2006 - *Study of textile potential of fibres extracted from Tunisian Agave americana L.*, Autex Research Journal, Vol. 6, No 1: 9-13. [Online] Available at <http://www.autexrj.org/No1-2006/0170.pdf> (accessed 9th of August, 2013).
16. **Mulford, Isabel,** 1896 - *The Agaves of the United States*, Vol. 7 Annual Report, Missouri Botanical Garden, Edit. Missouri Botanical Garden, 136 pag.

17. **Nema, Jyoti, Shrivastava, S. K., Mitra, N. G.,** 2013 - *Chemical composition of Aloe ferox under stresses of soil pH and desiccation*, International Journal of Chemistry: 43-48.
 18. **Pepeljnjak, S., Kalodera, Z., Zovko, Marijana,** 2005 - *Investigation of antimicrobial activity of Pelargonium radula (Cav.) L'Hérit*, Acta Pharm. 55: 409–415.
 19. **Sabiha Sumbul, M., Aftab Ahmat, M., Asif, Mohd Akhtar,** 2011 - *Myrtus communis Linn.- A review*, Indian Journal of Natural Products and resources, Vol. 2(4): 395- 402, India.
 20. **Sharma, A., Gautam, S.,** 2013 - *An Overview on Medicinal Properties of Aloe vera: Antibacterial & Antifungal Aspects*, Int J Pharm Bio Sci 4(3): 694 – 705.
 21. **Sharma, V.,** 2013 - *Comparative Studies on Essential Oil Compositions of Rose Scented Geranium "Pelargonium graveolens" from Different Higher Altitude Ranges of North Indian Himalayas*, International Journal of Recent Scientific Research. 4(6): 742-746. [Online] Available at <http://www.recentscientific.com> (accessed 9th of August, 2013).
 22. **Sharma, Surendra Kumar, Singh, Ajay Pal,** 2011 - *Pharmacognostical Evaluation of Roots of Simmondsia chinensis Schneider*, International Journal of Pharmaceutical Science and Drug Research, 3(4): 323-326.
 23. **Sheil, D., Salim, A.,** 2012 - *Diversity of locally useful tropical forest wildplants as function of species richness and informant culture*, Biodiversity and Conservation, Vol. 21, pag. 687-696.
 24. **Starr, F., Starr, K., Loope, L.,** 2003 - *Cinnamomum comphora on Maui (Hawaii, U.S.A.)*, Geological survey, biological resources division Haleakala Field Station, Maui, Hawaii.
 25. **Vera-Guzman, A. M., Guzman-Geronimo, R. I., Lopez, M. G.,** 2010 - *Major and Minor Compounds in a Mexican Spirit, Young Mezcal Coming from Two Agave Species*, Czech J. Food Sci. Vol. 28, No 2: 127-132.
 26. **Wehi, Priscilla, Clarkson, B. D.,** 2007 - *Biological flora of New Zealand 10. Phormium tenax, harakeke, New Zealand flora*, New Zealand Journal of Botany, Vol. 45: 521-544. [Online] Available at <http://www.tandfonline.com/loi/trzb20> (accessed 9th of August, 2013).
 27. **Zwane, P. E., Masarirambi, M. T., Magagula, N. T., Dlamini, A. M., Bhebhe, E.,** 2011 - *Exploitation of Agave americana L. plant for food security in Swaziland*, Am. J. Food. Nutr 1(2): 82-88. [Online] Available at <http://www.scihub.org/AJFN> (accessed 9th of August, 2013).
- <http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl>: accessed 9th of August, 2013
- <http://www.theplantlist.org/tpl/record/tro>: accessed 9th of August, 2013