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SPECIES AND CULTIVARS OF TREES AND SHRUBS SUITABLE FOR URBAN AGRICULTURE

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Abstract

Urban agriculture is a concept that has great potential growth in developed countries, where the urbanization rate will increase by FAO data to 65%, by the year 2025. The rate of urbanization is growing also in the other countries, sustainable development of the developing countries an urban development of rural areas, e.g. situation of Romania. Feeding and especially the food which contributes to the growing urban population health becomes an issue of national strategy. The role of fruit in general and ecological in particular, especially remarked in balanced dietis certainly undeniable. For this reason is therefore very important to encourage the increasing number of trees in urban area sand of course the diversification of species and varieties of trees and shrubs grown. Successful implementation of such a strategy is based among others on knowledge. In this knowledge, we want to make our contribution by presenting the results of research synthesis developed over the years 2007-2014 at USAMV Bucharest, regarding the fruit growing ecosystem sustainability and increasing the diversity of species and varieties of trees and shrubs adapted to the urban agriculture.

Key words*: fruit growing, cultivars, urban horticulture.*

INTRODUCTION

The expansion of urban agriculture and alternative food system is a global phenomenon which included policy makers, interdisciplinary specialists, and financiers, in response to new issues of food security, economic development, poverty, stress, urban scourge, recycling and environmental preservation. Urban agriculture produces 1/7 of the food provided to people across the globe, and of these, it is estimated that 30% of U.S.A. agricultural outputs derived from peripheral metropolitan areas (The future of our food system uc berkeley college of natural resources 2014, http://www.rbd.ro).

Based on analysis conducted on the safety of future agricultural production worldwide, FAO makes a number of recommendations on how we can achieve the objectives of these productions by using and applying the concept of Sustainable Crop Production Intensification (SCPI), which was developed and detailed within the paradigm "Save and Grow" (H. Konumal, 2014). The basic principle of this FAO initiative is to have a higher production but not at cost of environmental sustainability as it was until recently. In the globalization of research on Urban Agriculture (UA), there is an approach to this subject at a continental level, including the European one.

In response to the need to integrate in an European context the structure of the urban landscape, the important role of Community Agricultural Policy (PCA) and the requirements of companies that make up Europe, various actions have been initiated, one of them being COST-Action Urban Agriculture Europe (UAE).

COST operates under existing research projects and reference regions in partner countries, which are: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, France, Germany, Greece, Iceland, Israel, Italy, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, and United Kingdom. In addition to experts from the European partner countries, the COST program cooperates with international experts in urban agriculture in Canada, (Prof. Dr. Christopher R. Bryant-University of Montréal), Cuba (Prof. Dr. Jorge Pena-Diaz) - Polytechnic University José

Antonio Echeverría), Ghana (Dr. Bernard KERA) and Japan (Prof. Makoto Yokohari-University of Tokyo).
The first results of COST's action were embodied by specifying basic concepts and overview of urban agriculture (AU) entrepreneurship and developing models, including social and environmental, which can be followed in future from the partners study cases and the contribution of invited contributors (ex. Christopher Bryant-University of Montreal), types of approach to urban agriculture, ideas for possible indicators (Willemvander Schans) and questions that must be asked and to make them stakeholders in urban agriculture (Report of the working meeting in Aachen, Germany, 2012). Food security is a major challenge to agriculture and the alimentation of the XXI century people in general and implicitly the urban agriculture. An important component of food security is that of fruit consumption, mainly ecological ones, making a contribution to a healthy diet and can help to improve preventive micronutrient deficiency or degenerative diseases. According to the WHO (World Health Organization) in 2002, the low intake of fruits along side vegetables (F&V) is considered to bea major risk factor. In this context WHO and FAO have decided to join forces to promote fruit and vegetable consumption, encouraging interdisciplinary activities and initiatives based on national health-agriculture-education-business partnerships. World Horticulture is now heavily involved in such initiatives. There are messages based on science that show that the best diet or eating habits are composed of a minimum consumption ration of different fruits and vegetables (F&V) per day per person to be 400g, in this ration fruits having a significant share (Ganry J., 2014).
One way of raising awareness in public institutions and promoting national initiatives, is to organize and set up workshops all over the world, especially in developed countries, organized in promoting fruit and vegetable (F&V) health (initiatives PROFAV). Such workshops are intended to improve actions in the multi-sectors of agriculture, health and education, in order to address food shortages in major support action-based campaigns, developing of an efficient supply chain and public awareness about the importance of fruits and vegetables (F&V) in balanced diets.
The University of Agronomic Sciences and Veterinary Medicine Bucharest, one of the partners of COST has initiated some studies on urban agriculture among which are the underlying basis of this paper, through which results wishes to contribute to the knowledge and dissemination of support models for those interested persons and entrepreneurs involved in urban agriculture.

MATERIALS AND METHODS

The species of fruit tree sand bushes covered by this study were located in Biobase UASVM Bucharest, geographic coordinates 44 °28'10.14"N (latitude) and 26°4'4.82" E (longitude). Bucharest is located in the Vlăsiei Plain, central compartment of the Romanian Plain. It is bordered by Titu-Gherghita to the north, Baraganul Mostistei Plain (or Baraganul Sudic) to the east and south-east, the median of the Ialomita river to the north-east and the inferior valley of the Arges river to the west and south-west. The plain is typically tabular with large and smooth interfluves.
The climate is temperate continental with mild thermal excesses caused by massive concentration of buildings, street traffic and industrial activities. While the annual average temperature is 10.5°C in the peripheral areas, the central area is recorded at an average value of 12°C. The range of 178-205 frost-free days and the vegetation period of 245 days are generally favorable for the different fruit species adapted to the temperate climate, including those covered in this study, of the vegetable species and ornamental species.
The annual amount of rainfall is between 550 and 600 mm, with a maximum recorded between May and July. Showers and heavy rains are common. Air circulation is dominant from the east and north east during winter and west for the rest of the year.
The maximum wind speed is 3.5-4 m/sec. The plains native vegetation consists of broad leaf forests with species of quercinee-remnants of Codrii Vlăsiei - with grasslands. The predominant soils which the experiences took placed are predominantly reddish preluvosoils,

with a humus content of between 2.17 to 2.64%, a clay-loam texture and a pH of 6.2.

The biological material studied consists of these trees pecies: *Malus domestica* Borkh., *Armeniaca vulgaris* Lam, *Cerasus avium* L., *Ribes nigrum* L. trees of shrubs, *Ribes rubrum* L., *Rubus idaeus* L., *Lycium barbarum* L. and varieties belonging to the sespecies which are suitable, including, for urban agriculture. Bibliographic studies were synthesized and standardized research methods, of interdisciplinary type, collaborating to their application were didactical bodies, researchers, graduates and postgraduate stage. Evaluating the biodiversity of harmful and useful fauna was realized in the agro-ecosystems of USAMV Bucharest as an urban area and in the agro-system of Moara Domneasca as a peri-urban area samples being periodically taken which captured species were sorted and identified. To highlight the relationships between the studied plants with the specific pathogen agents and their antagonists, specific methods from the domain of plant phytosanitary protection were used.

The agro biological and technological characteristics of the varieties have been studied based on methods developed by the Research Institute for Fruit Growing Pitesti Mărăcineni (Cociu et al., 1989).

The methodology for calculating soil fertility indicators is based on the principle of numerical taxonomy (Ştefanic et al., 2001), which recognizes the equal importance of all the characteristics in soil fertility and consists on transforming the absolute values of biotic and enzymatic tests in relative values. Fruit quality characteristics were determined in the context of the current concept of quality and performance methods such as: quality, authenticity and biological material uniformity, standardization of reagents, quality parameters that are valued in the varieties of European countries.

Significant differences between varieties and biotypes from mentioned species were based on the analysis of the single factorial variance ANOVA.

RESULTS AND DISCUSSIONS

1. The adaptability of *Malus domestica* Borkh., *Armeniaca vulgaris* Lam, *Cerasus avium* L., *Ribes nigrum* L., *Ribes rubrum* L., *Rubus idaeus* L., *Lycium barbarum* L. to a biotic factors

Development and growth of plants, level, consist en cyand quality of the productions that we expected from the trees species and varieties within the mare subjected especially to the satisfaction of requirements that they have to wards the main factors of the environment in which we will grow them, enzymatic and biological activity of the soil, climatic factors, useful and harmful fauna biodiversity in the area, antagonists of pathogen agents. Apple, apricot and sweet cherry have higher demands for light, unlike the shrubs: black and red currant, raspberry and wolfberry. Shrubs require as lightly acid pH (5.5 to 7) unlike tree species (6-7). Ground water maybe 1.5 m for shrubs and apple grafted on vegetative rootstock, but is preferably to be 2.5 to 3.0 m depth for apricot and cherry.

Knowing these requirements are essential for the respective species placing and implicitly the recommended varieties. The thickness of the soil to be explored by the root mass is up to 2 m for trees species and hrubs 0.6-1.0 m. If we associate the shrubs with trees species, soil thicknes must meet the trees main requirements (Table 1).

2. Biotical and enzymatic changes in the soil have a role in the availability of nutrients, which are influenced by the biology of the species studied and technological management in integrated system

Soil microbial activity, the living part of it, is greatly influenced by the interaction between plant roots (by radicelare exudates released), microorganisms and soil (Traoreet al., 2000). Exudation of carbon through the roots can vary from 5 to 20% of the carbon fixed through photosynthesis by plants (Whipps and Lynch, 1983). The nature and availability of this carbon affect ssoil microflora (Jones and Darrah, 1996). Soil microorganisms feed mainly on organic substances coming from exudates radicelare, of these simple sugars are the major source for the growth of microorganisms.

Table 1. Evolution of Dairy Cows during the period 1990-2010 (thousand heads) Requirements of factors for the studied species: light, heat, water, groundwater depth, depth of soil and pH

Specie	Light	Heat	Water	Depth ofgroundwater(m)	The thickness of the soil (m)	Soil pH
Malus domestica Borkh. (apple)	Medium	Small	High	1.5 m (on vegetative rootstock)	Up to 2 m	6-7
Armeniaca vulgaris Lam. (apricots)	High	High	Small	2.5-3.0 m	Up to 2 m	6-7
Cerasus avium L. (sweet cherry)	High	Medium	Medium	2.5-3.0 m	Up to 2 m	6-7
Ribes nigrum L. (blackcurrant)	Small	Small	High	1.5m	0.6-1.0 m	5.5-7
Ribes rubrum L. (red currant)	Small	Small	High	1.5 m	0.6-1.0 m	5.5-7
Rubus idaeus L. (rasperry)	Small	Small	High	1.5 m	0.5-1.0 m	5.5-6,5
Lycium barbarum L. (wolfberry)	Small	Small	Medium	1.5 m	0.6-1.0 m	5.5-7

Biotic changes (processes of respiration and cellulolysis) and enzymatic changes (catalase, urease, phosphatase and sucrose) occur in the soil as a result of the integrated technological management on one side (key phytosanitary treatments applied in an integrated system, foliar fertilizers and soil organically, using compost derived from plant debris recycling, maintaining natural buffer strips, placing plants according to specific requirements and possibly the variety) and on the other side the genome the fruit of biological species. Modular indicators: *Potential Enzymatic Activity* (PEA) and *Potential Vital Activity* (PVA) and *Potential Synthetic Biology* (PSB) expresses these reactions.

The depth of 0-20 cm, which is the maximum of active roots, soil enzyme activity (PAE%) was greater compared to the depth of 20-40 cm, and between species, the highest value was recorded at apricot young second year after planting, located in an area with dales (28.4%) and lowest in the apricot fruit (23.2%). The depth of 20-40 cm higher enzyme activity was detected for the apple fruit (24.7%) (Table 2).

Table 2. Potential soil enzyme activity (IPAE%) in cultivated land with fruit species

Specie	Catalase		Urease		Sugars		PEA%	
	0-20 cm	20-40 cm	0-20 cm	20-40 cm	0-20 cm	20-40 cm	0-20 cm	20-40 cm
Apricot 2-nd years flat land	3863	230	56.28	34.51	939	1187	b 23.2	a 22.5
Apricot 2-nd year – dales	679	282	38.91	35.43	1208	1193	a 28.4	B 21.7
Apricot fruiting	232	236	35.55	31.41	1685	1751	b 24.7	a 24.1
Sweet cherry fruiting	149	151	41.09	36.48	1502	1605	b 24.2	B 21.7
Apple fruiting	198	238	34.18	35.21	1679	1554	a 24.32	a 24.10

The *Potential Vital Activity* (IPAV%) indicator of the soil, as result of the respiration process and cellulolysis may vary to the first 20 cm between 19.54 and 35.36 and for the 20-40 cm layer it varies between 18.86 and 30.36 which reflect that the vital activity, in general, drops with the increase of soil layer depth. Fruit tree species in turn affects the value of this indicator.

The area planted with apple varieties, vital activity was higher, with values of 35.36% (0-20 cm) and 30.36% (20-40 cm) with planted plots with apricot and cherry activity being small, values for the apricot bearing being of 26.77% (0-20 cm) and 19.64 % (20-40 cm) and

22.23% (0-20 cm), and 25.14 (20-40 cm) in cherry on the fruit.
Overall soil biological activity, as measured by *Potential Synthetic Biology* (PSB%) decreased in depth exploration of the roots of 20-40 cm. The highest biological soil activity was recorded in apple plantations and the lowest in the second year of apricot (ground plane). All three activities analyzed: enzymatic, vital and biological are more intense in soil depth of 0-20 cm, massively explored by active roots, whether we are talking about young or in fructification apricot, cherry and apple fruit, which outlines the importance which must be given to nutrients, water and soil aeration at this depth.

3. Features impacting climate adaptability of the species *Malus domestica* Borkh., *Armeniaca vulgaris* Lam., *Cerasus avium* L., *Ribes nigrum* L., *Ribes rubrum* L., *Rubus idaeus* L., *Lycium barbarum* L. (biotypes)

Overall average temperatures for a period of 23 years, the last year studied (2010) was 11.31 ± 9.1^0C for normal typical year (TMY) and 11.33 ± 10.51^0C for 2007, the coefficient of variation in this year is very high (93%). Four types of characteristic days were defined from which wodays for the hot season and two for the cold season: 1. Summer days with maximum temperature $\geq25^0$C; 2. Scorching day with maximum temperature $\geq30^0$C; 3. Freezing days in which the minimum temperature $\leq0^0$C; 4. Frosty days with maximum temperatures $\leq -10^0$C.
In some years of the last decade, appears the tendency to install three seasons, to the four known in the area, as a result of global climate change. A cold season with months of November, December, January and February, a warm season with April, May, June, July, August and finally, a season with intermediate features installed in March, September and October (Balanet al., 2010).
In such years, damage to flowers and fruits tied to species of apricot and sweet cheery with higher or smaller intensity to soil may appear. The location of apricot and cherry trees in sheltered microzones and choosing resistant varieties (´ Rares´ , ´ Carmela´ , ´ Viorica´ , ´ Dacia´ , ´ Ilinca´ , ´ Bucovina´ to apricot and ´ Giant Red´ , ´ Van´ , ´ Firm Red´ , ´ Early Red´ and ´ Ferrovia´ to sweet cherry) can prevent or reduce damage. For the apple varieties, blueberry, raspberry and biotypes of wolfberry there was no damage which might affect fruit production.

4. Phytosanitary protection of integrated plant species and varieties studied, the technological component with obvious influences on agroecosystems health and reducing urban and suburban sites input

In the actual European and international context great emphasis has been put on the conservation of biodiversity and the different types of ecosystem, numerous programs been developed for this. In the frames of this programs, attention must be granted when evaluating health state for different ecosystem by surveying and monitoring fauna and existing flora.
Application of an integrated system of phytosanitary protection is one of the important links for reducing inputs in agriculture and at the same time to better the health of agricultural ecosystems of anthropic type and its application is conditioned by the soils resistance to disease and pathogens and the biodiversity of useful fauna and it's antagonists.
An interdisciplinary study conducted at UASVM Bucharest in the frame of the SAFAR project (2010) showed that biodiversity in agricultural ecosystems at Moara Domneasca, represents approximately 9.36% of the biodiversity of natural habitats (Popa L., 2010), as an a example the forest complex of Cernica Pustnicul near Bucharest. Species collected from Moara Domnea scaare generally euribionte species with a high capacity for adaptation, species that do not require special conditions of habitat.
Many of them are pests or their predators (Ord. Orthoptera, Heteroptera, Coleoptera) which generally have a specificity for harvested plants. Monitoring of key pests such as fruit worm *Cydia molesta* in apricot and *Ragoletis cerasi* for sweet cherry, achieved by installing pheromone traps, revealed a degree of harm of only 1% (Chireceanu C., 2010).
In entomophagus population a greater abundance had *Forficula auricularia* L. and *Chelitureaa cantopigia* the order Dermaptera

and *Adalia bipunctata* L., *Coccinella septempunctata* L., *Adonia variegata* (Goeze), *Propylea 14 punctata* L. in order Coccinelidae.

The number of captures (April-July) of *Cydia pomonella* (apple fruit worm) was lower by 17% in terms of applying a minimum of permitted organic substance treatments versus the failure of no treatment (Dobrin I., 2010). Apple blossom weevil attack was also reported only in plantation with untreated apple varieties.

Species of *Hoplocampa testudinata* (wasp apples) was not present in the Moara Domneasca plantation, while in the didactical field plantation of UASVM Bucharest attack was nearly 40%. Useful fauna was present regard less of the type of plantation, represented by the species of Coccinellidae (*Coccinella septempunctata*, *Adalia bipunctata*) and chrisopidae (*Chrysoperla carnea*) (Dobrin I., 2010).

The degree of attack by the fungus *Venturia inaequalis* (apple scab) has recorded values between 0.03% for the 'Florina' variety and 2.25% for the 'Mutsu' variety (B.Iacomi, 2010). For the varieties: 'Romus3', 'Florina', 'Aura', 'Pionier' and' Ciprian' there was no observed symptoms of scab (*Venturia inaequalis*). The frequency sprouts with symptoms of powdery mildew (*Podosphaera leucotricha*) has recorded values between 2% ('Pionier') and 11.20% ('Voinea').

Apricot species studied had no degree of attack from the main pathogensthat can causegreat damage, such as *Monilinia laxa* (Aderh et Ruhl), *Stigmina carpophilla* (Lev.) M.B. Ellis and *Cytospora cincta* Sacc. There was no report of the attack virus symptom and the main Plum-pox (Balan V., Tudor V., 2014). Blueberry bush varieties were attacked by the pathogen *Cromatium ribicola* - Fischerd.w (black currant bush leaf rust), but the economic damage threshold (EDT) of only3-5% is not a concern, especially since no treatments were applied (Manole C., 2014).

Polyphagous pests identified using Atracerus type plates, did not specifically target wolfberry biotypes. There was also detected a number of entomophagous, parasites with higher frequency from the orders of Hymenoptera, Coleoptera, Neuroptera and bugs from the order of Hemiptera (Chireceanu C., 2013 cited by Balan V., 2014).

V2 wolfberry biotype showed no distinct symptom of any pest or pathogen attack, during the three years of study (Mencinicopschi O., 2014).

5. The productivity level, quality and nutritional characteristics of the fruit varieties studied within the species of *Malus domestica* Borkh., *Armeniaca vulgaris* Lam., *Cerasus avium* L., *Ribes nigrum* L., *Ribes rubrum* L., *Rubus idaeus* L., *Lycium barbarum* L. (biotypes)

5.1. The productivity level of the most competitive varieties and biotypes of the studied species

Fruit-bearing trees and production levels are quantitative characteristics determined genetically and like any quantitative characteristic they are influenced by the environment. The tree is in fact the result of two partners living together, we recall here the influence of rootstock, to which we the conduction system of the tree's architecture.

Production of first fruits has a practical and economic importance, it recording to studied tree species in the following order: apple grafted on vegetative rootstock second year after planting, sweet cherry grafted on mahaleb generally in two or three, apricot grafted on mirabelle tree or franc in three. Among the shrubs studied, wolfberry and raspberry are early; they produce fruit in the first year after planting, varieties of black currant fruit entering the second year.

Years of full production may be extended to 15 years in intensive plantations of trees and shrubs for10 years, but are commonly found in rural, urban and peri-urban of Romania, sweet cherry and heirloom apple trees, which we call sacred with an age of 50-60 years.

Each studied plant fruit tree and shrubs type will feel comfortable and will bear constant and be programmed at the genetic level, in an nutrition area of 6-7 m^2 for the varieties of apple and sweet cherry, apricot varieties 14 m^2, 0.64 m^2 black and redcurrant varieties and 4 m^2 for wolfberry.

The first place to feature *production level* (during fruiting), were located 'Florina'/M9 (22

kg/tree 31.4 t/ha, 3.14 kg/m^2) on apple species, 'Ferrovia'/Colt (5.84 kg/tree, 9.72 t/ha, 0.972 kg/m^2) in sweet cherry, 'Bucovina'/Franc (22.5 kg/tree, 14.09 t/ha, 1.409 kg/m^2) in apricot, 'Deea' (3.12 kg/shrub, 4.87 t/ha, 0.487 kg/m^2) on blackcurrant, 'Rolan' (3.12 kg/shrub, 4.87 t/ha, 0.467 kg/m^2) to redcurrant, 'Gustar' (3.52 kg/shrub, 5.50 t/ha, 0.55 kg/m^2) to raspberry and V2 wolfberry (1.3 kg/bush, 3.25 kg/ha, 0.325 kg/m^2) in wolfberry (Table 3). Ranked followers stood varieties 'Generos' and 'Ciprian' (apple), 'Early Red'/CAB11E (sweet cherry), 'Elite 124' (blackcurrant), 'Jh. Van Tets' (redcurrant), 'Opal' (raspberry), 'V1' (wolfberry).

Table 3. Average yields achieved for the most competitive varieties of the studied species

Specie	Apples	Sweet cherry	Apricots	Black currant	Red currant	Rasberry	Wolfberry
Variety /Rootstock	Florina /M9	Ferrovia /Colt	Bucovina /Franc	Deea	Rolan	Gustar	V2
Average production per plant (kg)	22	5.84	22.5	3.12	2.70	3.52	1.3
Average production (t/ha)	31.4	9.72	14.09	4.87	4.21	5.50	3.25

5.2. Nutrition and quality characteristics for the fruit species and studied varieties

Knowing the nutritional wealth of fruit components, has a part in the research campaigns and disseminating results of several research projects and national programs (PNII, Human Resources) and international (ISAFRUIT, PROFAV, COST, FAO, ISHS) a wareness of all the factors responsible for food in general and especially healthy food, from which fruits should not be missed. The wealth of nutritional characteristics (proteins, carbohydrates, energy, minerals, vitamins), Fruits make a contribution to reducing the risk of cardiovascular disease, obesity and nutritional problems.

Nutrients required for a healthy dietare found in all seven studied species, some of them being representative of one of the species. For example, wolfberry excel being rich in proteins (12 g%), carbohydrates (67.7 g%), heat (370 cal), calcium (112 mg%), phosphorus (178 mg%), vitamin A (5000 I.U.).Vitamin K is found in redcurrants and raspberries, zinc and magnesium only in raspberry. Vitamin A is found in substantial amount in apricot (2700I.U rich in C vitamin are black currant (177 mg%), as well as vitamin B5 (400 mg%) (Table 4).

Table 4. Characteristics nutritional fruit species studied

Components	Apples	Apricots	Sweet cherry	Black currant	Red currant	Rasberry	Wolfberry (dried fruits)
Water (%)	84.2	85.3	80.4	81.30	81.89	84-87	
Proteins (g%)	0.2	1.0	1.3	1.2	1.6	1.2	12
Fats (g%)	0.6	0.2	0.3	0.22	0.2	0.65	8.2
Carbohydrates (g%)	14.1	12.8	17.4	6.11	15.5	11.94	67.7
Heat (cal)	56	51	70	39	62.7	52	370
Minerals							
Calcium (mg%)	7.68	27	22	46	37	25	112
Phosphorus (mg%)	10.6	23	19	40	49.3		178
Iron (mg%)	0.3	0.5	0.4	1.3	1.1	0.69	9
Sodium (mg%)	1.0	1.0	2.0	1.7	1.1	1	150
Potassium (mg%)	110	281	191	303	306	151	11.32
Vitamins							
A (U.I.)	94	2700	110	81	47	33	5000
B1 (mg%) thiamine	0.03	0.03	0.05	51		0.01-0.03	153
B2 (mg%) riboflavin	0.02	0.04	0.06	44	0.1	0.038	1.3
B3 (mg%) niacin	0.4	0.6	0.4	200	0.1	0.59	4.3
B6 (mg%) pyridoxin	0.03	0.07	0.05	80	0.1	0.055	1.7
C (mg%)	7	10	10	177	45.9	26.2	29
B5 Panthotenic acid (mg%)	0.10	0.24	0.26	400	0.1		
K Vitamin					12.3	7.6	

The varieties that have quality performed through their biophysical, biochemical and sanogene characteristics were mainly those who have excelled in terms of production level. Externalizing quality and productivity characteristics are two of the main criteria for their adaptability to the conditions of urban and suburban areas.

In terms of fruit size, in the frame of the *Malus domestica* species, first place stood the 'Florina' variety (196.60 g), followed by 'Aura' (143.49 g), 'Ciprian' (119.25 g) and 'Romus3' (103.84 g). Regarding dry matter content of 14.07%, 'Romus3' ranks first place (Table 5). Ascorbic acid level was elevated in all varieties,'Romus 3' with an amount of 12.7 mg%, some what higher than the 'Aura', 'Florina' and 'Ciprian' (Table 5).

Table 5. Characteristics of quality fruit varieties of the species *Malus domestica* Borkh.

Variety /Rootstock	Average weight of the fruit (g)	DM%	Ascobic acid mg%
Florina/M9	196.60	10.40	10.50
Aura/M9	143.49	13.80	12.20
Ciprian/M9	119.25	10.80	10.80
Romus 3/M9	103.80	14.07	12.70

In the framework of the species *Cerasus avium* L. in the urban part of Bucharest it has excelled in fruit size for the variety 'Firm Red'/CAB6P (7.7 g), followed by 'Giant Red'/CAB6P (7.2 g) and 'Early Red'/CAB11E (6.6 g).

'Van' variety, appreciated and already spread in the area had less than 5.8 g. Dry matter content peaked for the variety 'Giant Red'/CAB6P (16%), followed by 'Van'/mahaleb (15%). The variety' Giant Red'/CAB6Pis found the highest amount of ascorbic acid, of 23.73 mg% (Table 6).

Table 6. Characteristics of quality fruit varieties of the species *Cerasus avium* L.

Variety /Rootstock	Average weight of the fruit (g)	DM%	Ascobic acid mg%
Giant Red/CAB 6P	7.2	16	23.73
Van/Mahaleb	5.8	15	21.42
Firm Red/CAB6P	7.7	13	14.31
Early Red/CAB11E	6.6	13	16.17
Ferrovia/COLT	4.9	14	21.08

Assessment of quality fruit varieties of *Armeniaca vulgaris* L. was made according to their maturation age. Fruit size had maximum values for varieties 'Viorica' (93.6 g), 'Carmela' (89.6 g) and 'Ilinca' (80.6 g). Level of biophysical and biochemical characteristics of the fruit were raised in all varieties of apricot. Dry matter content (DM%) ranged from 15.4% ('Valeria') -21.3% ('Viorica'), ascorbic acid from 13.8 mg/100 g ('Ilinca') -21 mg/100 g ('Carmela'), malic acid between 1.14 g% ('Dacia')-1.83 g% ('Ilinca') and percentage of seed from 3.5 ('Rares') -4.2% ('Bucovina').

According to data published in 2014, to *Ribes rubrum* L. species, first place is 'Tatran' variety, which has large fruit 3.27 g, high levels of flavonoids (rutin 1.12 mM/ml) polyphenols (5.77 Mm GAB/ml) of sucrose (23.94%), the rate of antiradical activity (88%) and hence the antioxidant capacity. High levels of polyphenols and antiradical activity takes place of 'Elite' and 'Jh. Van Tets' varieties.

For the *Ribes nigrum* L. species, fruit weight varies from 4.27 g ('Ebony') -5.91 g ('Tinker'), DM% from 14.66 ('Tinker'), 17.36 ('Ebony'), polyphenols between 7.06 Mm GAB/ml -8.06 MmGAB/ml ('Elite'), flavonoids rut in from 0.93 mM/mlto 1.37 Mm rut in/ml and antiradical activity of 64.2% ('Elite 124') to 63.2% ('Deea').

The studied wolfberry V2 biotype, compared to biotype V1 has a higher content insoluble dry matter (DM = 17.3%), ascorbic acid (59.9 mg/100 g), total sugars (58.9 mg/ml), total polyphenols (200 mg gallic acid/100 g) and antioxidant capacity (RA 45%) 'Heritage', 'Opal' and 'Elite' varieties, for the *Rubus idaeus* L. have small fruit, 1.7-2.9 g, compared to 'Gustar' variety which has very large fruit 6.90 g.

The dry matter had a maximum value for the 'Heritage' variety, and the other three varieties values were close to the threshold of 11.20% ('Elite') -11.42% ('Gustar') (Table7).

Table 7. Characteristics of quality fruit varieties of the species, *Rubus idaeus* L.

Variety	Average weigh of the fruit (g)	DM%
Heritage	1.90	13.20
Opal	2.90	11.40
Elita	1.70	11.20
Gustar	6.90	11.42

CONCLUSIONS

University of Agronomic Sciences and Veterinary Medicine Bucharest, one of the partners of COST has initiated studies, through these results contributing to the knowledge and dissemination of models to support those interested and entrepreneurs involved in urban agriculture.

The species of *Malus domestica* Borkh., *Armeniaca vulgaris* L., *Cerasus avium* L., *Ribes nigrum* L., *Ribes rubrum* L., *Rubus idaeus* L., *Lycium barbarum* L. and some varieties are adapted to urban and suburban area of Bucharest.

Fulfill abiotic and biotic conditions of the area, quality requirements and application of technologies with low imput for the varieties:

- 'Romus 3', 'Ciprian', 'Florina', 'Aura', on the vegetative rootstock M9 of *Malus domestica* Borkh.

-'GiantRed'/CAB6P, 'Van'/mahaleb, 'Firm Red'/CAB6P, 'Early Red'/CAB11E, 'Ferrovia'/COLT of *Cerasus avium* L.

-'Valeria', 'Rares', 'Carmela', 'Viorica', 'Bucovina', 'Ilinca' on the rootstock Franc, of *Armeniaca vulgaris* L.

- 'Deea', 'Elite 124' and 'Roxie' of *Ribe snigrum* L. and 'Rolan', 'Jh.VanTets' of *Ribes rubrum* L.

- Biotype 'V2' of *Lycium barbarum* L.

- 'Heritage', 'Opal', 'Elite', 'Gustar' of *Rubus idaeus* L.

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