

VEGETABLE GROWING - HOBBY AND BENEFIT FOR AGED PERSON HEALTH

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Abstract

Vegetable growing in small areas (open field, plastic tunnels, unheated or heated green house or even in balcony) may be a very pleasant activity for many old persons who want to preserve their physical and mental health. Beside many common vegetable species like tomatoes, pepper, eggplant, onion, garlic, cabbage, cucumber, lettuce and so on - can be cultivated in small areas many others vegetables like broccoli, Brussels cabbage, Scorzonera hispanica, asparagus, Witloof Chicory (French endive) and vegetable with medicinal properties.

Keywords: vegetable growing, vegetable species, small cultivable areas, health of third-aged people.

1. INTRODUCTION

Vegetable growing is a very important activity for socio-economic life of a nation. Vegetables occupy an important place in the diet of modern rational man, along with other foods such as bread, meat, milk, eggs, fish, etc.

The presence of vegetables in human nutrition provides, in addition to the change in diet and normal functioning of the human body, protecting it at the same time pursue some very serious diseases and early aging. It also contributes to a better assimilation of other foods. These beneficial effects of vegetable products is the fact that they, in addition to a high content of water (75-95%) contain essential food components: carbohydrates (sucrose, glucose, starch), protein and nitrogenous substances (amino acids and amides), mineral salts of calcium, iron, potassium, sodium and phosphorus, organic acids (oxalic, citric, malic, lactic) aromatic oils, vitamins, fitoncide (Dumitrescu et al., 1998).

Vegetables have a lower value than animal products in terms of fat, protein and sometimes definitely bring a smaller amount of calories- but compensated by the high content of vitamins and varied mineral salts. On average, vegetables provides over 90 % of the body's needs of vitamin C , about 50 % of vitamin A, over 35% of vitamin B6, and important quantity of magnesium, iron, thiamine, calcium, etc. (Dumitrescu et al., 1998).

Although, in general, producing vegetables for fresh consumption of the population, and especially those for cannery remains a concern specialized farms, some of the vegetables needed each family consumption can occur in their own household. This is particularly so since the family have a piece of land for cultivation and one or more people who have the time, skill and knowledge about culture

techniques. Vegetable growing through that requires diverse knowledge and skills of growers, is a school for raising the professional enrichment of knowledge, training of skills (perseverance, patience, discipline), whose positive effects to manifest in raising the level of life of those who practice it. Vegetable growing is not only a science but an useful art for ensuring good nutrition and an opportunity for economic and physical maintenance of the body.

For people with intellectual activity, growing vegetable is safe means of alternating physical and mental work, relaxing brain. Exercise of various works of growing vegetables contributes to the maintenance of good health, vitality body due to hardening by air and sun baths practicing accompanying vegetables culture.

For „seniors” (aged person), the cultivation of vegetable species is a useful and pleasant occupation, if exercise is properly dosed depending of each age and health status. In some cases, some works such as irrigation or easier maintenance, can be performed by the elderly and work requiring greater efforts can be made to their children or grandchildren. However, the involvement of older people in cultivation of vegetable species offers them the advantage of feeling useful either directly, through fresh products they acquire, or indirectly by advising younger family members about different aspects of this activity. In the practice of their household vegetable, a special incentive is the fact that the products obtained are eaten fresh and do not contain or should not contain residues of pesticides or other toxic products. Moreover, in small spaces can practice organic gardening using only a natural fertilizer (compost usually) and avoiding chemical treatments with products that may cause harmful.

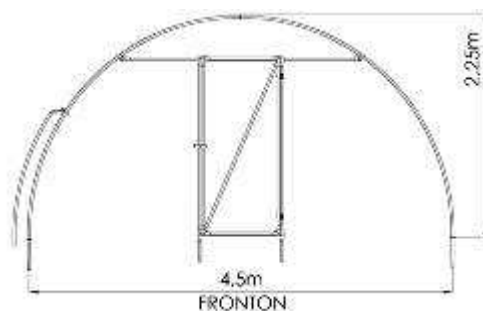
Many retirees want to produce some of the vegetables like a hobby, by choosing less common vegetables or varieties selection of special shape, color, aroma, resistance to unfavorable factors or other features related to the variety. In some cases, older people living in an area other than where they were born and grew up, trying to satisfy a whim given up to retirement, by growing some species or varieties assortment of vegetables grown in the native area.

2. MATERIALS AND METHODS

For seniors who want and can practice farming in confined spaces are some varieties of national range with possibilities for crop protection and basic technological elements of vegetable species less prevalent.

Growing space. Regarding the area for growing vegetable, it may be smaller or larger, according to the possibilities of each household. Many species of vegetables such as tomatoes, peppers, eggplants, cucumbers and others with excellent care, irrigation and fertilizer, give very high yields even grown on a few square meters. Where there are possibilities, can be constructed with or without heating, a small greenhouses or tunnels. Currently, both national research and some specialized companies offer various special solutions, seeds and seedlings of many species, varieties and hybrids of vegetables. One example is the recently approved prototype of a vertical greenhouses made from Vegetable Research and Development Station in Buzau.

The advantages of a vertical greenhouses are many. For example, it multiplies, even five times the area occupied at ground level. Another important aspect to consider is the low power consumption required for heating greenhouses: if the surface is small and thermal energy consumption will be less than 60% even in a greenhouse horizontal.



Standard sizes : 4,5x6m / 4,5x8m / 4,5x10m / 4,5x12m

Figure 1 Plastic tunnel „Hobby,,

Figure 2 Garden greenhouses Euro Maxi



Figure 3. Vertical greenhouse „RDSVG BUZAU”

Assortment of varieties and species. In our country can grow a wide assortment of vegetable species among which (Scurtu and Lăcătuș, 2014):

- a) fruit solanaceous vegetables: tomatoes, peppers, eggplants;
- b) cucurbit vegetables: cucumber, zucchini, watermelon, melon, pumpkin and patison edible;
- c) cabbage and its relatives: white cabbage, red cabbage, cauliflower, kohlrabi and some other forms which are cultivated occasionally (Chinese cabbage, Brussels sprouts, broccoli);
- d) vegetables for roots: carrot, parsley root, parsnips, celery root, beets, radishes and some species which occur rarely (salsify);
- e) vegetables for bulbs and false stems: onions, garlic, leeks or some rare species such as shallots and onion of Egypt;
- f) vegetables for pods and capsules: garden peas, garden beans, okra and broad bean;
- g) vegetables for herbs, leaf buds, petioles and spicy vegetables: lettuce, spinach, chicory of Brussels, dill, ribbed celery, spinach of New Zealand, sweet fennel, thyme, mint, basil, coriander, white mustard and some other species;
- h) perennial vegetables: asparagus, rhubarb, horseradish, lovage.

In Romania, currently working four units of vegetable research and development: R & D Institute for Vegetable and Flower Vidra - Ilfov, together with others three research stations in Buzau, Bacau and Iernut –Mureș. With all the difficulties related to lack of funding and sometimes abduction of land, these units are obtained every year new varieties of vegetables, high yielding with special nutritional qualities.

Also, the institute and research stations produce a large assortment of vegetable seeds and offers technological solutions adapted to each type grower, large or small.

The offer of the Romanian cultivars, by the research vegetable sector. Currently, the official catalogue are recorded 303 varieties and hybrids of vegetable which 193 (64%) were obtained in the research sector, RDIVFG Vidra and RDSVG Bacău, Buzău, Iernut and Işalniţa. From different groups of vegetable species we note that at bell pepper varieties predominate *Asteroid 204*, *Cornel 209*, *Creola* and *Splendens*. In general, the Romanian varieties of bell peppers are the most popular on the market. Yield, color and thickness of the pulp, as well as tolerance to some soil pathogens (*Verticillium dahliae*), make the true brands. Sweet peppers are varieties *Dariana Bac*, *Dariocheea*, *Galben Superior*, *Arum* and *Buzau 10*. *Ionel* and *Cosmin* varieties you notice the long peppers. For tomato, the research offer is extremely large (21 cultivars) varied in size, shape and final destination: tomatoes for fresh consumption; tomatoes for processing; cherry tomatoes grown in plastic house or in open field.

Thus the determined growth with the largest claims are the varieties *Unibac*, *Pontica 102*, *Viorica* and *Romec 554j*. For eggplants note the *Drăgaica* and *Luiza* varieties and *Belona* of white color. Mention in this species the newest hybrid F1, *Virginia* with large fruit (1-1.5 kg), dark blue.

In the group vegetables for Brassicas, is a rich offer of autumn cabbage varieties. Of these, the most requested and greatly appreciated are *Silviana*, *De Buzau*, *Buzoiana* and followed by *Andrei* and *Mocira*. Autumn cabbage romanian varieties are recognized for their qualities at preservation in salt.

The group of root vegetables, note the carrot variety *Ceahlău*, parsley *Zaharat*, parsnip *Alb Lung*, red beets *Reta*, radishes *Roşioară*, summer radishes *Roşie de Iernut* and *Țepuşă*, summer-autumn and winter radishes *Iulia* and respective *Negre Rotunde*.

At bulb vegetable plants we notice a significant programming for white onions *De Buzău*, one of the most valuable varieties of onions from Romania and *Orizont*. For the red onions there are *Roşie de Arieş* and *Rubiniu*.

Cucurbitaceae vegetable plants we have the *Mapamond* and *Slănic* cucumbers, but also hybrid F1 *Triumf*. The courgettes are 3 varieties, of which the *Hapy* is the most known. Mention to this group of vegetable, bitter cucumber *Rodeo* intended for diabetics. Of musk melon varieties are *Briliant* and *Fondant* and the watermelon are *Oltenia* and *Dulce de Dăbuleni*.

Vegetable plants for pods by far is the climbing beans, with wide yellow pod *Auria Bacăului*, known throughout the country, with planting especially in greenhouses and plastic houses, followed by *Mădărăşeni* and *Alina*. Dwarf bean varieties note *Millenium*, *Iuliana*, *Işalniţa 43*, *Anisia* and *Menuet*. The peas have *Adela* variety and *Diana*. We note also the sweet corn *Dulce de Bacău* at RDVGS Bacău.

3. RESULTS AND DISCUSSIONS

Why is important for growing vegetables in household. Some vegetables rich composition is characterized by certain elements. For example, carotene, which the body can convert into vitamin A is found in large quantities in dark green vegetables such as spinach, lettuce, broccoli and dark yellow fruits (orange fruit tomatoes, peppers yellow-orange at physiological maturity) (Voican et al., 2006). However dark green vegetables provide outstanding amounts of iron and magnesium are also important sources of vitamin B 6.

Table 1. The content of useful substances of some vegetable species (% of the edible part, except vitamins) -valued taken from specialty literature

Specie	total carbohydrates		Protein	Lipids	Ascorbic Acid
	Average	Limits	Average	Average	Average, mg /100 g fresh product
Pepper	3.0	1.5-6.6	1.2		139
Onion	8.4	4.7-10.2	1.2	0.25	8
Green peas	3.6	1.3-5.9	6.5	0.48	25
Carrot	6.9	5.8-8.2	1.1	0.20	8
Tomato	3.8	1.8-4.3	1.1	0.21	24
Parsley	9.5	8.5-15.4	2.9	0.40	For roots -35 For leaves-171-190

The content of nutrients will vary depending on the variety and growing conditions. Fresh vegetables, just like other foods, lose some of their nutritional value from harvesting until they are consumed; losses are even greater in that the retention period is longer and higher temperature (Peirce, 1987).

vegetables during storage, especially at temperatures above 10 C depreciates and other substances; soluble carbohydrates decrease.

Table 2. Changing ascorbic acid content during storage of vegetables (Peirce, 1987)

Specie	Storage temperature	Storage period, days	Ascorbic acid level, mg/100g
Round Pepper	-	0	218.5
	10 ⁰ C	13	195.0
	20...22 ⁰ C	13	175.8
Carrot	-	0	8.95
	0 ⁰ C	160	7.85
Tomato	-	0	29.45
	10 ⁰ C	7	37.53
	20..22 ⁰ C	7	31.08
Cabbage	-	0	43.15
	0 ⁰ C	100	37.30
Onion	-	0	15.2
	0 ⁰ C	180	10.2

In the case of tomatoes, the Romanians are counting on preferences to those varieties and hybrids whose fruits they taste slightly sour taste which is given by the ratio between sugar and acidity (Scurtu and Lăcătuș, 2014). In table 3, we present an example with differences between a Romanian hybrid F1, Siriana, for cultivation in plastic houses and one from import, Yarden F1.

Table 3. The main biochemical characteristics of two tomato hybrids

Biochemical characteristics	Hybrid <i>Siriana</i> F1	Hybrid <i>Yarden</i> F1	Figures from speciality literature	Range of variation for romanian tomatoes grown in field
t.d.m., %	5.40	5.57	6.55	5.55 – 6.20
s.d.m., %	4.50	4.0	5.40	4.95 – 5.52
Acidity, %	0.40	0.35	0.41	0.37 – 0.51
Total sugar, %	3.08	4.80	3.46	2.70 – 3.25
Rate sugar:acidity	7.7	13.7	8.44	5.83 – 8.85
Ascorbic acid, mg	17.84	15.0	22.4	6.38 – 15.48
Pigments, mg licopen	5.00	3.55	4.4	4.48 – 6.38
NO ₃ , ppm	2.00	10.00	21-146	10 – 25
Mean weight, g ± a.s.	154 ± 20	130 ± 28	-	80 – 450

Notice that between the two hybrids are the obvious differences in terms of the concentration of sugar, which together with acidity value have resulted in a very high acidity: sugar rate for the imported hybrid. We have in this case a typical example for what the Romanians usually do not appreciate the taste of tomatoes imported flavourless. You may also notice that in the case of Romanian hybrid there are greater contents with 41% and 19% for lycopene and ascorbic acid or vitamin C. May see that biochemical parameters of *Siriana* F1 hybrid are more close to the areas of variation for Romanian tomatoes grown in the field. They have a specific Romanian taste. These nutritional qualities no doubt recommend promoting the local cultivar as the biological material. It is much better adapted to our specific environmental conditions, get generally constant yields, and the shape, color and size are traditional features. To this add the prices of seeds, which are also Romanian, i.e. prices lower. Also biochemical analysis of the Romanian tomatoes grown in the field shows very good values (table 4).

Table 4. Mainly biochemical characteristics of some tomato varieties grown in field and of some cherry tomatoes

Biochemical characteristics	Varieties				
	<i>Dacia</i> ^a	<i>Viorica</i> ^b	<i>Vipon</i> ^b	<i>Coralina</i> ^c	<i>Carisma</i> ^c
t.d.m., %	5.51	5.40	6.57	8.72	9.13
s.d.m., %	4.50	4.50	4.50	8.50	8.00
Acidity, %	0.35	0.36	0.40	0.37	0.35
Total sugar, %	4.14	3.19	4.28	6.34	6.59
Rate sugar:acidity	11.63	8.86	10.7	17.13	18.82
Ascorbic acid, mg	11.97	9.21	10.13	19.62	18.37
Pigments, mg licopen	8.00	6.92	9.09	3.26	3.74
NO ₃ , ppm	Sub 1	Sub 1	Sub 1	3.00	1.00
Mean weight, g ± a.s.	205±44	99±20	85±21	13 ± 4	23 ± 5

- a) Tomatoes for fresh consumption and processing;
 b) Tomatoes for processing;
 c) Cherry tomatoes grown in plastic house

Basic technological elements of vegetable species less prevalent. Given the large number of vegetable species and that those who want to cultivate possess some knowledge of common species, in the following we present some aspects of some vegetable species highly valued in other countries, but less common to us although the culture technique is not so difficult to master.

Broccoli (*Brassica oleracea*), from brassicaceae family (cruciferous vegetables), is a vegetable whose inflorescence is used in the preparation of various dishes. It has a high nutritional value and is rich in carbohydrates, vitamins and minerals. It has a common origin with cauliflower and is prevalent in the same areas. Inflorescence, which is less compact, is mostly green, but may in certain varieties, yellow or purple. Culture technology is very similar to that of cauliflower. The production is 10-12 t / ha, can reach up to 25 t / ha.



Figure 4. Inflorescence of broccoli

Brussels sprouts (*Brassica oleracea gemmifera*) is a variety of cabbage cultivated for its edible buds. The difference between cabbages such that you buy from shops and fresh, you can even pick your garden, you can see clearly the difference in taste. Brussels sprouts acquires a pleasant aroma especially after a frost easily. The strain grows in the first year, in the form of a rod unbranched, 0.6-1.2 m reaches the number of leaves that are attached. The small cabbage form at each leaf armpit. If consumed fresh, slightly cooked, are a delicacy. Brussels sprouts is a vegetable that grows slowly. It can be cultivated through seedlings that occurs under the same conditions as cabbage seedlings.

For cultivation, choose a piece of land located in full sun and well drained. Prepare layer before: in general it is good to make sowing about 4 months before the autumn frosts. Brussels sprouts can sow directly in place permanently. In this case resembles more often than thins when seedlings are 9-12 cm high, in such a way that it remains the healthiest; the distance between them should be 40-60 cm. When the plant is half of the desired height of the lower leaves can be removed to allow the bud sprouts to grow to a maximum of (Scurtu, 2001).



Figure 5. Brussels Sprouts -plant and buds

Bruxelles sprouts harvested after frost, when the buds are hard, compact shape and deep green color; should have a diameter of about 2.5-4 cm. Buds place as the plant matures down first. Cabbage matures in 80-100 days from sowing. It can be stored for 3-5 weeks at 0°C under conditions of very high humidity (95%).

Chicory, *Cichorium intybus* is a vegetable of the family Asteraceae. Chicory can be cooked or used raw in salads. The species is known as witloof chicory. In our country chicory culture was introduced during the 1920-1930 by Belgian missionaries around the Roman sugar factory. Today, the most important pool of chicory production remained the Gherăieștii Noi - Roman. Chicory cultivation technique was discovered accidentally in 1830 in Belgium. By sowing the optimal distance, possibly by thinning the plants, rooted obtained to be stored through the winter until the constraint we want to at suitable temperatures in the presence of moisture in the absence of light, to obtain those hypertrophy and etiolated shoots (dolls), much appreciated in the culinary arts.

Till roots can be obtained from April to mid-May. The culture was maintained and harvesting is done after 19 to 21 weeks, depending on variety and growing conditions. Period for obtaining dolls forcing of chicory takes 30-40 days.



Figure 6. The roots of chicory which buds formed after forcing



Figure 7. Endives prepared for delivery on the market

Asparagus - *Asparagus officinalis* L. belongs to the family Asparagaceae. *Asparagus officinalis* is more native to Europe, northern Africa and western Asia, and is cultivated on a large scale as a vegetable crop. The culture of asparagus is a perennial, so once established can be exploited many years (Dumitrescu et al., 1998). Asparagus is considered a delicious vegetable spring with a high content of nutrients that helps preserve health. A portion of asparagus provides approx. 65% of the recommended daily intake of folic acid, a vitamin B group, essential for the production of bone marrow cells and hemoglobin.

Asparagus contains protein and fiber, while being low in calories. Asparagus is a good source of potassium, thiamine, riboflavin, niacin, vitamins C and K, and beta-carotene, iron, zinc, copper, manganese, and selenium. Benefits of eating asparagus are appreciating positive by many specialists for effects in strengthening capillary walls, anti-inflammatory, antioxidant and anticancer and the list could continue. Thin shoots are superior quality, but there are varieties with thick but tender shoots and high nutritional value.

Asparagus reach maturity between April and July each year. If you find asparagus in other period in the the stores, it may be forced cultivated in greenhouses. It does not mean it's not good, but it does not have the same qualities as its natural period. Considered "vegetable luxury" asparagus is used more in kitchens in Germany, the Netherlands and Belgium, in salads and as a garnish served kitchens in Spain or Italy.



Figure 8. Asparagus ready for delivery on the market

Bitter Cucumber. whose scientific name is *Momordica charantia*, is known as bitter melon, fully deserves its name because of its taste unbearable, but despite this, contains a number of active ingredients which make cure a number of diseases, mainly digestive diseases. It is native to southern Asia, but is widespread in Africa and Australia. It appears as a climber, lobed and serrated leaves. The flowers are small and yellowish, and the fruits are orange when ripe. In shape, the latter are almost cylindrical and have a rough surface and components. After extensive studies, doctors were able to argue that, unlike other vegetables, bitter cucumber possess medicinal properties if it is consumed in their natural state. Among the substances found in it are vitamins A, B1, B6, B9, B12, C, E and K, and minerals such as calcium, magnesium, potassium, sodium, iron and zinc. Also, the fruit contains large amounts of dietary fiber and carbohydrates, that is recommended in the diet of people suffering from digestive disorders (Scurtu and Lăcătuș, 2014). Consumption of bitter cucumber lowers sugar levels. People with diabetes should not avoid bitter cucumber. Thus, a number of surveys conducted in recent years has shown that the level of blood sugar is balanced by eating this vegetable.

Another bitter cucumber quality that reduces irritation and inflammation states of the body. Therefore, nutritionists recommend to take seriously consider introducing bitter cucumber detoxification treatments.



Figure 9. bitter cucumber - ready for delivery in the market

Since bitter vegetable considerably strengthens the health system against attacks bacteria and viruses currently investigating the possibility that it will cure HIV / AIDS.

Although not originally from Romania, vegetable is readily adaptable to weather conditions in our country. Experts say that it can be planted in any conditions from a closed pot balconies or greenhouses. He just needs constant light and heat. Seeds can be purchased at specialty shops and harvest makes its appearance very soon.

4. CONCLUSIONS

One of the ways in which seniors can maintain and improve the health is growing vegetables in the household. There are solutions for small areas of cultivation in the open or protected areas. Research units can deliver seeds and seedlings from different species and varieties of vegetables

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