

Interesting species of vegetable plants in the Collection of Botanical Gardens – Center for Biological Diversity Conservation of the Polish Academy of Sciences

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Summary

In the Collection of Vegetable Plants of Botanical Gardens of PAS interesting, new varieties of vegetable, particularly of Polish breeding and less known species, are presented. The aim of this work is to show and describe these species which lately have caused a special interest and are very attractive in respect of habits, colour and shape of edible parts. During the review of all species and varieties (usually more than 200 taxons) it is possible to distinguish between vegetables with edible roots, tubers, leaves, stalks, flower buds, flowers and also fruits and seeds. Among them: parsnip, Spanish salsify, salsify, globe artichoke, malabar nightshade, chinese chives, fringed cabbage, chinese cabbage, celery cabbage, mangold, watermelon, muskmelon, spaghetti squash, young fruits of calabash gourd, strawberry blite are worth attention. The list is closed by yardlong bean, chicking vetch and winged pea.

Key words: vegetables, edible parts: roots, tubers, leaves, leaf stalks, flower buds, fruits, seeds

INTRODUCTION

At the beginning of the Collection of Vegetable Plants, there are presented annual vegetables or biennial and rarely perennial plants which have been treated as annual. Many interesting species and varieties of vegetables have been cultivated recently. Hereafter, some of them are presented and described. The properties

of vegetables which could pay attention are: habit of plants, colour and shape of edible parts and also flavour and dietetic values.

It is possible to divide vegetable plants into different groups: for example with regard to plant family. In this work, plants are divided with regard to edible parts, as from roots and tubers and lastly fruits and seeds.

Among all taxons presented in 2007–2009 in the Collection of Vegetable Plants, the following species were chosen: with edible roots – Parsnip (*Pastinaca sativa* L.), Spanish salsify (*Scorzonera hispanica* L.), Salsify (*Tragaopogon porrifolius* L.), with edible tubers – Jeruzalem artichoke (*Helianthus tuberosus* L.), with edible leaves – Malabar nightshade (*Basella alba* L.), Chinese chives (*Allium tuberosum* Rottler ex Spreng.), Fringed cabbage (*Brassica oleracea* var. *sabellica* L.), Chinese cabbage (*Brassica chinensis* L.), Celery cabbage [*Brassica pekinensis* (Lour.) Rupr.], with edible leaf stalks and leaves – Mangold (*Beta vulgaris* var. *cicla* L.), with edible flower buds – Globe Artichoke (*Cynara scolymus* L.), with edible fruits – Watermelon (*Citrullus lanatus* [(Thunb.) Matsum. et Nakai]), Muskmelon (*Cucumis melo* L.), Spagetti squash (*Cucurbita pepo* L.), Calabash Gourd [*Lagenaria siceraria* (Molina) Standl.], Strawberry Blite [*Chenopodium foliosum* (Moench.) Asch.], with edible fruits and seeds – Yardlong bean [*Vigna unguiculata* var. *sesquipedalis* (L.) Bertoni.], Chicking Vetch (*Lathyrus sativus* L.), Winged Pea (*Tetragonolobus purpureus* Moench).

1. **Parsnip** (*P. sativa* L.) is a very old plant cultivated in Poland and in other countries in Europe, except North, as well as in Caucasus and Siberia. It has very distinctive habit of leaves and flavour of roots, similar to flavour of carrot's roots. For this purpose it is even named white carrot. It has quality of taste and dietetic values. These values are thanks of volatile oils and substantial quantities of mineral salts of Ca, K, Fe and ascorbic acid (vitamin C) as well as less quantities of B group vitamins [1].
2. **Spanish salsify** (*S. hispanica* L.) has a valuable nutritive and taste proprieties. It contains mineral salts, carbohydrates as well as vitamins C and from B group and also inulin sugar. Thanks to glycosides it is a very valuable agent, beneficial to human digestive system. It is very easy to grow, but prefers fertile and deeply cultivated soils, due to deep root system. This vegetable is very tasty but difficult to gather, because often long roots are brittle.
3. **Salsify** (*T. porrifolius* L.) is very closely related species with similar requirements of cultivation, values and applications. Salsify has more conical and thicker root with clear skin and more tender taste. The growing season of both is long.
4. **Jeruzalem artichoke** (*H. tuberosus* L.) has edible tubers sweeter than potatoes. Originally comes from North America and reached Europe in 17th century. Over many years it had been replaced with potatoes and carrots and was useful in forage, confectioner and alcohol industry. Nowadays, a return of Jerusalem artichoke is observed, thanks to interesting taste its of tubers and content of inulin. According

to Internet information, this species has been served in top-class restaurants, priced like caviar or salmon. Tubers shaped on the ends of short stolons and in size of potato tuber. It is easy to grow in not exacting soil.

5. **Malabar nightshade** (*B. alba* L.) This species is not known in Poland as vegetable, but only as ornamental plant. In the small experiment [2] it was proved that this plant contains biological active components as carotenoids and polyphenoles. Corlett et al. [3] writes also about high content of Ca, Mg, Mn and Zn.
6. **Chinese chives** (*A. tuberosum* Rottler ex Spreng) is cultivated for leaves and small bulbs created on thick rhizomes, good for herbal, vegetable and ornamental gardens. The flowers of this perennial are very decorative and fragrant. The edible leaves are similar in taste to garlic and chive, good for salads. Contain proteins, carbohydrates, and small quantities of vitamin A, B1 and C and substantial quantities of β -carotene [4]. Not only leaves, but also shoots and flower buds are edible raw and cooked [5].
7. **Fringed cabbage** (*B. oleracea* var. *sabellica* L.) is the oldest species from cabbage family, rich in vitamin C, A and B, mineral salts of many essential elements as K, Mg, Ca and Fe, with high dietetic value. Completely forgotten and underestimated in Poland. It can be used similarly to spinach, in different cooked dishes but also raw in salads and in order to garnish dishes and tables. It is recommended to crop it immediately before eating as it is not a durable vegetable and fades very quickly. After chilling its taste becomes more gentle (www.ho.haslo.pl/article.php?id=2013). Some varieties of fringed cabbage are available, with green or violet leaves (a very ornamental 'Redbor' F_1 variety).
8. **Chinese cabbage** (*B. chinensis* L.) is less known than celery cabbage in Poland. The edible parts are mainly firm: white or green stalks as well as leaf's blades. It is not durable vegetable, fades quickly. Do not create heads, the leaves are placed loosely on the plant. Its habit is similar to mangold and has high nutritive value.
9. **Celery cabbage** [*B. pekinensis* (Lour.) Rupr.] is more popular than Chinese one and has been cultivated in Poland for many years. The most popular 'Optico' F_1 is good for spring and autumnal growing; the majority of varieties better grow for autumnal crop. It creates firm and heavy heads with tender, slightly wrinkled leaves. Depending on variety, more or less conical or pointed heads are created. Biggs [6] divides heads of this cabbage into groups: high cylindrical, barrel-shaped and salad.
10. **Mangold** (*B. vulgaris* var. *cicla* L.) is a very old species cultivated before beetroot, earlier in Poland than in West Europe. Despite of that it is cultivated rarely, because for alimentary aims young leaves and stalks of young beetroot are more useful. It is rich of proteins and vitamins and it is the source of carotenoids. It is used like spinach, but more gentle and tender in taste. That is why it is recommended

for children. In respect on its habit and colour of stalks it is more useful also for ornamental beds and borders, easy to grow and undemanding.

11. **Globe Artichoke** (*C. scolymus* L.) – the flower bottom and augmentative base of leaves clothe are edible parts of this species. In Mediterranean countries artichoke is very popular perennial vegetable, but in Polish climate it is treated as an annual plant. Unfortunately, climate is too frosty and flowering buds are not as tender and soft as in South Europe. In warm and moist years artichokes create flower shoots and tasting the flower bottom is possible.
12. **Watermelon** [*C. lanatus* (Thunb.) Matsum. et Nakai] is a vegetable with tasty, dessert fruits containing about 95% of water and 5% of sugars, mineral salts, proteins and vitamins; ideal to satisfy the thirst in very hot days. There are some varieties for outside growing, good for Polish climate conditions. Their vegetation period is short and the fruits are resistant of fusarium wilt.
13. **Muskmelon** (*C. melo* L.) like watermelon has dessert, very taste fruits and very short vegetation period. After planting in the middle of June, the crop is ready to pick in the middle of August. There are registered some varieties of Polish breeding, which are possible to maintain in Polish climate conditions. In favourable conditions the fruits are very juicy and tasty.
14. **Spaghetti squash** (*C. pepo* L.) is known in Poland for 20–25 years. In contrast to other forms of *C. pepo*, the flesh after cooking disintegrate into threads similar to spaghetti. The fruits are picked when they reach their maturity.
15. **Calabash Gourd** [*L. siceraria* (Molina) Standl.] only young fruits are used as vegetable. It is strongly growing annual plant with white flowers. All plants and young fruits are slightly hirsute and have specific, rather low pleasant flavour of musk [7]. They are good for cooking, picking, baking, frying. The leaves and young shoots are edible too and also seeds, rich in oil, are useful as a soup spice. Not all varieties are eatable due to their bitter taste. There were affirmed as a good variety of ‘Cougourda’ (www.ibibliop.org/pfaf/cgi-bin/arr_html?Lagenaria+a+siceraria).
16. **Strawberry Blite** [*C. foliosum* (Moench) Asch.] edible leaves can be consumed in small doses due to the content of poisonous saponins. Red fruits, similar to strawberries, are also edible. The species is less known. The seeds are useful in bread baking (http://www.ibibliop.org/pfaf/cgi-bin/arr_html?Chenopodium+foliosum). Originates from Eurasia.
17. **Yardlong bean** [*V. unguiculata* var. *sesquipedalis* (L.) Bertoni] is an interesting species similar to bean. Two flowers and after pollination two long and narrow pods on

the shoot are created. The plant originates from West Africa, is cultivated in South East Asia, California and Surinam. In the warm climate the pods can reach 1 m, but in Poland only 40–50 cm. The pods have bigger nutritive value than pods of bean. They are sweeter, more tender in taste [8].

18. **Chicking Vetch** (*L. sativus* L.) is a rather old plant. Some people use it like poisonous (due to heavy intoxicative effect). Others use chicking vetch as a valuable vegetable with edible seeds, also useful for forage. Pisulewska (www.ho.haslo.pl/article.php?id=1987) said that seeds have an effect for healthy and thanks of it, *L. sativus* ought to be widespread used both in consumption and cultivation. It originates from Mediterranean region and has been known in Poland from 17th century. Recently, two varieties: ‘Derek’ and ‘Korab’ have been registered and also their mutants are being tested, displaying high contents and nutritive value of protein. The authors also recommended chicking vetch to broader use [9].
19. **Winged Pea** (*T. purpureus* Moench) is a species seldom cultivated in Poland. Originates from Mediterranean region, till now is cultivated in Sicily, Spain and in England. It is cultivated for edible, young pods, winged very ornamentally and for beautiful, red flowers. All plant can be recognized like ornamental and could be seeded on ornamental beds. The pods can be cooked on steam or fried; after that the pods have a taste similar to asparagus (www.invista.com/health/foods/vegetables/asparpea.htm).

It is a big need to restore the abovementioned species, particularly those less known and forgotten, on the big way, not only in plots or house gardens. They will establish and enlarge diversity of food and deliver valuable, nutritive components. The requirements for growing and for climate of most of them are low.

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CIEKAWY GATUNKI WARZYW W KOLEKCJI OGRODU BOTANICZNEGO – CENTRUM
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Streszczenie

W Kolekcji Roślin Warzywnych Ogrodu Botanicznego prezentowane są interesujące nowe odmiany warzyw pochodzących przede wszystkim z polskiej hodowli, a także gatunki mało znane. Celem niniejszej pracy jest omówienie tych gatunków, które w ostatnim okresie wzbudziły szczególne zainteresowanie i są ciekawe ze względu na pokrój, barwę i kształt części jadalnych. Dokonując przeglądu wszystkich gatunków i odmian (zwykle ponad 200 taksonów), można wyróżnić warzywa o jadalnych korzeniach, bulwach, liściach, ogonkach liściowych, pąkach kwiatowych i kwiatostanach, a także owocach i nasionach. Wśród nich warte uwagi są: pasternak zwyczajny, wężymord czarny korzeń i salsefia, słonecznik bulwiasty (topinambur), miłowój biały, szczypior czosnkowy, jarmuż, kapusta chińska i pekińska, burak liściowy (boćwina), karczoch zwyczajny, kawon, melon, dynia makaronowa, młode owoce tykwy pospolitej, komosa różgowa. Listę zamykają: wspięga, groszek siewny (lędźwian) i głąbigroszek szkarłatny.

Słowa kluczowe: warzywa, części jadalne: korzenie, bulwy, liście, ogonki liściowe, pąki kwiatowe, owoce, nasiona