ASPARAGUS PEA – AN ALIMENTARY AND ORNAMENTALY SPECIES, NEW FOR ROMANIAN HORTICULTURE

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Abstract

Lotus tetragonolobus – a herbaceous, annual legume was observed and there are data regarding the main parameters of vegetative development and fructification; also, there are presented the fruit anatomy.
***Keywords**: Asparagus pea, Winged pea*

Introduction

Great opportunities of Romania's international relationships in the last years determined the circulation of scientific and technical information and the specific biological material for vegetable crops.

From the large volume of information in this field one vegetable species of great class cultivated and consummated both by West European and North American countries catch us the attention and interest for vegetable assortment diversification – *Lotus tetragonolbus* L. (asparagus pea, winged pea).

The main characteristics, features and parameters of the species previously mentioned are presented in national premiere for Romania in this paper.

Experimental

The scientific name of the plant, which we present, is *Lotus tetragonolobus* L. (Leguminosae/Fabaceae Family), synonym: *Tetragonolobus purpureus*.

It's common name in various languages: English – asparagus pea; French – pois asperge, Romanian – mazăre asparagus, mazăre aripată.

The asparagus pea is indigenous to the Mediterranean region of Europe and Near Est.

Brief history: *Lotus tetragonolobus* was mentioned in written sources as cultural species since the beginning of XVI Century in South Italy. It was introduced in Great Britain at end of the same century, first as ornamental

plant and lather than as culinary plant. In North America was revealed as culinary plant in the first half of XVII Century.

In Romania was mentioned for the first time in 2000 with the common name from English language – "Asparagus pea" (Cornelia Atanasiu, N.Atanasiu – O monografie a mazării – Ed. Verus, Bucureşti, 2000).

Lotus tetragonolobus L. (asparagus pea or Winged pea) – is neither related with the pea (*Pisum sativum* L.), nor asparagus (*Asparagus officinalis* L.). The species common name describes the aspect of edible part (pod) similar in features with the pod of mangetout pea and also the asparagus shoots like flavor of the pods.

Lotus teragonolobus is a herbaceous annual legume and its roots create nodulation accomplished by soil bacterium *Rhizobium*.

The above ground part of the plant is formatted by numerous shoots (10-15/plant) which develop parallel with the soil; their peaks grow erect or semierect. The plant has small trifoliate leaves and beautiful ornamental brick-red flowers, which are born in pairs and they are hermaphrodite, with self-pollination.

The pods develop after 65-70 days starting from germination and they have a tetrahedral transversal section. On each of the four edges the pod has longitudinal wings, with ruffled edges, which give them a pleasant and attractive look. The whole pods can be revealed a similar nutritive value with the green bean pods. The pods can be steamed or boiled and then served as simple garniture or among other vegetables in complex dishes.

The special specific flavor of *Lotus tetragonolobus* L. pods do not recommend them to be mixed with sauces that can change their taste or aroma. The flowers are suitable for eating too and they can be used as ingredients for salads and garnitures. The mature peas have been employed as coffee substitute.

Lotus tetragonolobus L. – is a sensitive species to temperature. The seeds are middle in size with the 100 seed weight of about 40g and they rise in 2-3 weeks at 10-12^{0} C. In order to reduce time for seed germination, these can be soaking before sow.

Results and Discussions

The results regarding the main parameters of vegetative development and fructification of *Lotus tetragonolobus*L. plants at the USAMV-Bucharest, are presented in the following part.

The plants presented a number of 9-13 of principal shoots with a length of 25,6 – 50,4 cm. The number of secondary shoots developed on the tested plants was about 19-37. with a length between 3-47cm (table 1).

Table 1: Pods characteristics for *Lotus tetragonolobus*L.

Length (Class)	Diameter (mm)	Pods weight (g/pod)	Wings width (mm)	Seeds number	Observations
20-25 mm	2.3-2.5	0.8-0.9	1-1.2	4	Optimal phase for consume
30-40 mm	3-4	0.9-1.6	1.2-1.5	5-6	Optimal phase for consume
40-50 mm	3.5-4.2	1.2-1.8	1.5-2	6-7	Maximal limit of size for consume
50-55 mm	4-4.5	2.1-2.3	1.6-2	7-9	Maximal limit of size for consume
55-60 mm	5-6	2.4-2.9	2-2.2	9-10	Physiological maturity
60-70 mm	6-7	2.9-3	2.2-2.5	10-11	Physiological maturity
Over 70 mm	6-7	3.1-3.2	3-3.5	12-13	Physiological maturity

The fructification of asparagus pea plants revealed a mean number of pods per plant of 17,8, with a variation between 14 and 23 pods harvested per plant.

The analyses of the main biochemical components of the pods showed that for 100g of fresh product correspond 3,5g of crude proteins, 2,29g of total carbohydrates and 1,43g of reduced carbohydrates (table 2).

Table 2: Main biochemical components (g for 100 g of fresh product)

Pea species	Total carbohydrates	Reduced carbohydrates	Crude proteins
Asparagus pea (whole pods)	2.290	1.430	3.560
Mangetout pea (whole pods)	3.058	3.446	3.269
Sugar pea (whole pods)	2.595	3.296	3.681
Green pea (green seeds berries)	-	5.184	4.217

Cultures can be established by direct sowing in the field or by planting the seedlings after 3-4 weeks from the last frost. The asparagus pea plants require light soils, full sun and irrigation to succeed. They can be sowed or planted as edges for ornamental reasons (30/20 cm, in zigzag).