

Uzbekistan-made biometric plant detectors for hazardous substance identification

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Abstract. This article provides information on the complex assessment of the morpho-biological and value-added characteristics of non-conventional vegetable varieties grown in the irrigated soil-climatic conditions of Samarkand region, as well as on the study of their growth and development properties. With the availability of opportunities to increase the production of sustainable vegetables for export, the use of agrotechnology is of great importance in the correct selection of new and secondary crops, depending on the biological characteristics of the crop. The purpose of the study is to conduct a complex assessment of the morpho-biological and value-economic signs of the most suitable varieties and samples for the soil-climatic conditions of the republic, to study the characteristics of growth and reproduction. The tasks of the research are to select the most acceptable samples for the soil-climatic conditions of the region on the basis of a complex assessment of the morpho-biological and value-economic signs of the susceptible new samples, to study their growth, reproduction, yield of new varieties, as well as the methods of preparation of seedlings.

1 Introduction

Asparagus has been used for thousands of years by many ancient civilizations, including the Egyptians, the ancient Greeks, and the Romans. There are many sources of its use in ancient Greece and Rome, both as a food and as a medicinal herb. It is known that the asparagus was cultivated in France in the mid-15th century, and in Germany and England a century later [1]. Asparagus's (*Asparagus officinalis* L.) dishes of jasil, purple and powdered pink new (fresh) branches are popular with consumers around the world. Asparagus differs from many other vegetable varieties in that it is a perennial plant that can be grown in one place for many years.[2] Due to its biological functions and medicinal properties, it has been called "king of vegetable?" by the scientific community and researchers alike. In asparagus, the soil is usually used as vegetation, and sometimes the soil is used for other purposes, and in the composition of the plant there are different

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phytochemical substances [4]. When compared to the 23 most widely consumed vegetables in the human diet, they were found to be the most abundant antioxidants in the total amount and quality of functional foods. It is also a vegetable that is rich in vitamins A, C, riboflavin (B2), niacin (B3), and thiamine (B1), as well as iron, phosphorus, and potassium minerals [5, 6]. Among its major chemical constituents, saponins are known to be beneficial to human health and to play an important role in biological processes, including antioxidant, immunomodulatory, anti-cancer, anti-microbial, anti-inflammatory, and hypoglycemic effects [7].

According to the data, today asparagus is grown on more than 200,000 hectares of land worldwide. China, the United States, Mexico, Peru, Spain, and the Netherlands are considered the world leaders in sustainable development. Asparagus's worldwide export trade was estimated at US\$1.17 billion in 2022 (<https://www.freshplaza.com/asia/article/2194891/global-asparagus-production/>). China is now the world's largest field producer of military equipment and the largest publicly traded country in the world. According to the FAO, China has an estimated production area of 144,1009 hectares (91% of the world's total production area) and a total production output of 734,490 tons (88% of the world's total production output). Shandong Province is the largest producer and exporter of Chinese porcelain [8]. Considered the world's leading vegetable, the average annual production cost of asparagus is 12,655 US dollars. The crop is grown on more than 62,000 hectares of land in Europe, of which 60 percent is owned by Germany and Spain. Spain is the second largest producer in Europe, producing 65000 tons of asparagus on 14020 hectares [9]. In our country there are opportunities for profitable processing of export-friendly vegetables, which is important for the correct selection of new and durable crops, the use of agrotechnology for cultivation, depending on the biological characteristics of the crop. However, the republic has not conducted research on the study of morpho-biological and value-economic signs of non-conventional vegetable varieties and samples in soil-climatic conditions, the development of agrotechnology for production. The purpose of the study is to conduct a complex assessment of the morpho-biological and value-economic signs of the most suitable varieties and samples for the soil-climatic conditions of the republic, to study the characteristics of growth and reproduction. Research tasks include complex assessment of morpho-biological and value-economic characteristics of susceptible new samples; analysis of the growth, reproduction, yield of new samples, and methods of seed production and seed preparation.

2 Materials and methods

Studies on the study of biometric indicators of the asparagus variety and hybrids are being carried out in the experimental fields of the Research Institute of Vegetable, melon crops and Potato of the Samarkand Scientific Experimental Station. In the experimental field, two motherly cultivars were found of the Argentine, Tsar, Maria, Mary Washington, Delicacious, Green, Violet varieties of asparagusli and the durian varieties Apollo F1, Atlas F1, Grande F1, Purple passion F1, Backlim F1, Xenolim F1, Vitalim F1, Aspalim F1. The complex evaluation of the morpho-biological and value-household signs, the growth, reproduction, yield of new varieties, as well as the methods of coarse preparation of seeds are being studied, depending on the soil-climatic conditions of these varieties and the biological characteristics of the plant. In the field of experience, all calculations, calculations, analyses, and calculations are based on generally accepted styles and recommendations [10,11].

Table 1. Description of the organized asparagus variety and hybrids name

№	Variety and hybrids name	Seasonality	Rank of the unit in the input output
1	Argentine (green)	middle ripening	green
2	Argentine (white)	early ripening	white
3	Tsarskaya	middle ripening	green
4	Mary	middle ripening	green
5	Delicious	middle ripening	green
6	Greenish	early ripening	green
7	Purple	middle ripening	purple
8	Mary washington	middle ripening	green
9	Apollo F1	early ripening	green
10	Atlas F1	early ripening	green / white
11	Grande F1	early ripening	green / white
12	Purple passion F1	middle ripening	purple
13	Backlim F1	late ripening	green /white
14	Xenolim F1	early ripening	green
15	Vitalim F1	early ripening	green /white
16	Aspalim F1	early ripening	green

3 Results and discussion

It is common to use the seeds or pre-prepared cuttings of the plant to make vegetable peas. In our study, we used seedlings to create viable maternal cell networks. There are two methods of making asparagus from the seeds:

- planting the seeds directly in the field;
- planting the seeds in the boiler room by preparing cuttings.

While the technological processes required to perform the first method are much less, when the seeds are crushed in the wild, their yield is much lower than that of seeds crushed in the laboratory. As a result, the top of the field where the seedling was sown was overturned. In addition to this, spring rainfall occurs in the upper layer of the tuff soil. This also has a negative effect on the ability of the mice to shed excess fat. In our study, we used a second method, in which 50 seeds from each new and old variety were soaked in fresh water for two days and changed every 12 hours. Then, the coated seeds were taken into Peter's cups and sealed. At room temperature, the seeds hatch in about 4-5 days. The seeds are packed in cassettes or special dishes with a depth of 2-3 cm (Table 2). Experimental results show that in the temporary growing environment, the yield of fertilized seeds ranges from 60.98 to 93.75 percent in novices, and from 57.58 to 81.82 percent in long-lived birds.

Table 2. Seed yield and viability of asparagus seeds sown in a temporary growing environment, 2023

№	Variety and hybrids name	Bruise pulled grain asparagus, grain	Flowers that have sprouted		Stored plants	
			quantity, piece	%	quantity, piece	viability, %
1	The Argentine (green)	48	45	93,75	43	95,56
2	The Argentine (white)	43	40	93,02	35	87,50
3	Tsarskaya	36	31	86,11	23	74,19
4	Mary	29	20	68,97	14	70,00
5	Mary washington	39	27	69,23	19	70,37
6	Delicious	37	25	67,57	22	88,00
7	Greenish	34	21	61,76	19	90,48
8	Purple	41	25	60,98	22	88,00
average			29,3	75,2	24,6	83,0
9	Apollo F1	44	36	81,82	33	91,67
10	Atlas F1	31	24	77,42	19	79,17

11	Grande F1	39	27	69,23	17	62,96
12	Purple passion F1	44	33	75,00	30	90,91
13	Backlim F1	40	31	77,50	25	80,65
14	Xenolim F1	31	22	70,97	14	63,64
15	Vitalim F1	39	25	64,10	19	76,00
16	Aspalim F1	33	19	57,58	11	57,89
	medium		27,1	71,7	21,0	75,4

Table-3. Biometric signals of the new and secondary schools of Asparagus, 2023

№	Variety and hybrids name	General stem of quantity, piece	of which			Length of waist, cm			Stem diameter, mm		
			during the 1st wet season	during the 2st wet season	during the 3st wet season	min	max	middle	min	max	middle
1	The Argentine (green)	21	4	6	11	67	115	91,0	4	8	6,0
2	The Argentine (white)	17	3	5	9	61	117	89,0	3	7	5,0
3	Tsarskaya	18	4	5	9	47	105	76,0	4	7	5,5
4	Mary	16	3	6	7	59	107	83,0	3	5	4,0
5	Mary washington	14	3	3	8	77	122	99,5	3	7	5,0
6	Delicious	16	4	5	7	71	111	91,0	3	6	4,5
7	Greenish	14	2	4	8	90	123	106,5	4	6	5,0
8	Purple	16	4	5	7	95	124	109,5	4	7	5,5
	average	16,5	3,4	4,9	8,3	70,9	115,5	93,2	3,5	6,6	5,1
9	Apollo F1	12	2	3	7	65	103	84,0	4	8	6,0
10	Atlas F1	13	2	3	8	55	79	67,0	5	6	5,5
11	Grande F1	11	3	2	6	67	77	72,0	4	7	5,5
12	Purple passion F1	13	3	3	7	85	131	108,0	4	8	6,0
13	Backlim F1	10	2	2	6	64	76	70,0	4	7	5,5
14	Xenolim F1	12	3	2	7	59	71	65,0	5	6	5,5
15	Vitalim F1	14	3	3	8	70	82	76,0	4	8	6,0
16	Aspalim F1	11	2	2	7	65	73	69,0	4	7	5,5
	medium	12,0	2,5	2,5	7,0	66,3	86,5	76,4	4,3	7,1	5,7

The highest incidence of crop losses was reported in the Argentine crop (93.75%), the lowest in the Violet crop (60.98%), while the same was reported for the beef cattle (Apollo F1 81.82%) and the Aspalim F1 57.58%. Also, preserved specimens were analyzed to determine the viability of specimens. He was able to save 14-43 grains of cork, 14-43 grains of navel, and 11-33 grains of seed. The highest incidence of ossification was reported in the Argentine sea (95.56%), followed by the Apollo F1 (91.67%). Cuckoos are mated for four to six weeks and then released into the wild. The couchettes are paired in a 90x20 cm mating scheme. During the flood period, the plants in seedling were treated 2-3 times with nitrogen-containing mineral fertilizers, and their roots were harvested and purified from foreign fires. Cuttings can be left to breed for a period of time and then be transplanted to larger fields. In the preparation of the coats, the shape of the elastic bands is taken into account, especially the weight of the coats. Because he's predicting the future. The continuation of the cycle of declining prices has a positive effect on the cost of litigation. Biometric indicators of the swimming period of the swimsuits of the Asparagus variety and hybrids cottages planted in the open field were analyzed (Table 3).

In Asparagus, during the growing season, the amount of earthworm pollination, the diameter of the flowers, and the height at which they grow are directly related to the yield of young plants that are harvested for consumption in the coming year. During the wet

period, the abundance of earthworms and the larger diameter of the worms resulted in the accumulation of sufficiently fine substances in the earthworms, which had a positive effect on the formation of the shells of the crustal skeleton.

According to the data obtained, during the Yasukuni period, the earliest stems were formed in the asparagus varieties up to 14-21 grains, and in the hybrids - up to 10-14 grains. The largest number of earthworms formed in a single seedling is 21 in the Argentine variety, the smallest is 14 in the Mary Washington and Green varieties, the largest is Vitalim F1 -14 in the hybrids, and the smallest is Backlim F1 (10 in) cultivated. Conclusions In our country, it is advisable to carry out scientific research on the introduction, breeding and selection of non-natural vegetable eggs in order to ensure the hygiene of vegetable eggs. Asparagus is a perennial vegetable and medicinal plant, which is considered highly profitable despite the fact that it can be grown in the republic without soil and climate conditions. The planting of seedlings in an open ground allows 2-3 times during the growing cycle to be embellished with mineral fertilizers, to clean the corners and leaves, to correctly shape the leaves in the mating cuttings, and to remove the new leaves from the stems in the next year. In the mother plant, the plants can be propagated for a certain period of time (from six months to 4 years) and then transplanted to larger fields.

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