MORPHOLOGICAL-BIOMETRIC ASSESSMENT OF ASPARAGUS HYBRIDS (*ASPARAGUS OFFICINALIS* L.) IN THE STEPPE OF UKRAINE.

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Introduction. Intensive vegetable growing in Ukraine is more than a decade old and can be proud of its achievements at the European and world level. Modern hybrids of vegetable crops, plant protection products, drip irrigation and fertigation systems, mechanization of all processes - all this has firmly taken its place in the vegetable fields of farmers and agricultural holdings of Ukraine. Along with the cultivation of traditional vegetable crops, the technologies of which have been studied at a high level, in recent years there has been a great demand for less common species, which Ukrainian farmers are just learning to grow. One of such crops is asparagus, which from year to year increases its presence in the diet of Ukrainians.

Food organ of asparagus - tender, juicy shoots bleached, green or purple are very useful and low in calories. Demand for this delicious early spring vegetable is beginning to gain momentum. Consumers are enthusiastic about locally grown fresh shoots of asparagus, which exceed the quality of exported. Asparagus shoots, in addition to high dietary and medicinal properties, are the earliest products from the open ground. They can also be raw materials for the vegetable processing industry, making them available all year round. In Ukraine, farms engaged in the cultivation of asparagus shoots are still few, the area of cultivation is about 150-200 hectares. There is no asparagus market in Ukraine today, it is just being formed and production cannot

meet demand. Many are frightened by the time-consuming technology of growing bleached shoots, as well as a small variety. In this regard, the study of introduced asparagus hybrids in the steppe of Ukraine is relevant.

Methods. Experimental studies were conducted during 2018-2019 in the farm of LLC "Agroexpert Trade" (Ivankiv district of Kherson region). The object of research were hybrids of Dutch selection - Xenolim Gijnlim F1, Grolim F1 and Backlim F1. The research was conducted according to the Methodology of field experiment edited by B.A. Armor and Methods of research in vegetable growing and melon growing.

The experiments were established in 2017 after black steam with planting material (rhizomes) of class A (weight more than 70 g). They were planted in a trench 15–18 cm deep and 10 cm wide, and sprinkled with a layer of soil 8–10 cm on top. The direction of the rows was from north to south. The size of the experimental plots is 30 m2, the repetition is three times. The layout of the plants is 2.0 x 0.25 m. Agrotechnical measures of planting and plant care were carried out in accordance with the requirements of this culture and the questions posed for research. Growing technology is ridgeless to obtain green shoots. Harvesting began depending on the weather conditions of the year.

During the growing season, hybrids were observed and described. Phenological observations included: beginning of shoot regrowth, mass regrowth of shoots, beginning of harvest, end of harvest, beginning of regrowth of vegetative shoots, loosening of shoots, budding, flowering, end of vegetation.

Biometric measurements were performed during growth and at the end of the growing season of plants, determining the height, number of shoots, stem diameter at the base. Measurements were performed using a ruler. Morphological features were determined visually, the number of shoots by counting. Observations and measurements were performed on 10 control plants in each variant of three replicates.

Harvest accounting was performed by weight method, allocating commodity shoots in accordance with the requirements of the current standard (UNECE DSTU FFV-04: 2007). The first commodity grade included shoots over 20 mm thick, the second - 14–19 mm, the third thinner 14 mm, 20–22 cm long. The marketability of shoots was influenced by the degree of loosening of their tops. Statistical analysis of experimental data was performed by B.A. Successful using the Microsoft Excel computer program.

Results and Discussion. The results of research show that the regrowth of shoots in the spring in asparagus hybrids significantly depends on the ambient temperature and the maturity group of hybrids. According to phenological observations, the beginning of regrowth in 2018 was observed simultaneously in the hybrids Gijnlim and Grolim - on April 14, in the hybrid Xenolim - earlier by one day. In the hybrid Backlim shoots began to grow seven days after control. In 2019, the weather conditions were more favorable and the beginning of shoot regrowth was recorded earlier than in 2018,

12 days in the hybrids Gijnlim, Xenolim and Grolim and four days earlier in the hybrid Backlim.

The studied hybrids at the beginning of the harvest in 2018-2019 showed themselves in different ways. In 2018, the hybrids of Xenolim, Gijnlim and Grolim shoots reached commercial sizes on April 16 and 18, which is 10-12 days earlier than the hybrid Xenolim. It should be noted that in 2019, due to weather conditions, hybrids Xenolim, Gijnlim and Grolim came into fruition on April 9-10, and the hybrid Backlim on April 21, which is a decade earlier than the previous year. This is due to the earlier. but in a cooler spring, although the mass regrowth of shoots in early April was somewhat slower.

Harvesting of biennial plants in 2018 did not last long - from 14 to 22 days, depending on the hybrid, in order to avoid depletion of young plants. In 2019, the collection of shoots lasted two months. During the harvesting period, the temperatures were favorable and the tops of the shoots remained closed and dense for a long time. The intensity of shoot growth depended on temperature, precipitation and features of hybrids. The Backlim hybrid required more frequent harvesting (twice a day) due to the rapid loosening of the tops. After harvesting the green shoots, the plants, regardless of the hybrid, began to grow in one day, and two days later there was loosening of the tops. High temperature, low humidity and no precipitation in June accelerated the pace of development and shortened the duration of interphase periods of all hybrids. Plants of all hybrids were close in development. The budding phase occurred twelve to sixteen days after the beginning of regrowth of vegetative shoots, flowering - in 21-27 days. The longest interphase period of regrowth - flowering was in the hybrid Backlim - 27 days, which is four days later than the control, and the shortest in the hybrid Xenolim - two days before the control.

All studied hybrids grew for a long period and yellowing of shoots came in the second – third decades of October. The earliest extinction of shoots began in the hybrid Backlim - in the late last decade of October. The rest of the hybrids had the end of the growing season in the first decade of November.

The length of the growing season is an important biological feature, which is determined by weather conditions and genetic characteristics. The total duration of vegetation from the regrowth period was 144 days in hybrids Xenolim, Gijnlim and Grolim and 130 days in hybrid Backlim. Such a long period of nutrient synthesis through assimilation contributes to the accumulation of nutrients for a high yield of shoots next year.

Thus, it can be considered that in the steppe zone of Ukraine hybrids Xenolim, Gijnlim and ‘Grolim are early ripening, and Backlim - late ripening.

The degree of influence of this or that factor of the environment is shown through morphological signs. The size of the trait can vary considerably depending on the growing conditions, technological methods, climatic conditions, etc. On average, during the harvest period, the shoots of the Gijnlim hybrid grew more intensively. The

smallest increase was observed in the hybrid Backlim. The largest number of shoots 6.3 pieces was observed in the hybrid Xenolim. The control variant had the largest length of shoots - 27.2 cm, but they were inferior in thickness to all other hybrids (1.8-2.3 mm). Shoots in plants of the hybrid Grolim were long (26.7 cm) and the thickest (2.3 cm), but they were formed less than in the hybrid of the control variant Gijnlim by 0.6 pcs. The Backlim hybrid formed the smallest length - 23.6 cm and the smallest number of shoots - 4.6 pieces, but they were quite thick 1.9 cm.

Thus, among asparagus hybrids, the Backlim hybrid had the shortest shoot length. In Grolim and Xenolim hybrids, the rates were higher and closer to the control variant - Gijnlim hybrid. The Grolim hybrid stood out in terms of the thickness of the shoots - 2.3 cm. The largest number of shoots of 6.3 pieces was formed by the Xenolim hybrid.