TECHNOLOGY OF GROWING ARUGULA (ERUCA SATIVA) LETTUCE UNDER FOIL DEVICES

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In the 30s of the last century, it was found that the consumption of vegetables and fruits is an effective means of preventing many diseases. This increases the value of vegetables and fruits. Accordingly, the "Concept of Healthy Eating" is currently being implemented in many countries of the world. Along with protein and other products, fruits and vegetables with biologically active substances occupy a special place in the organization of a healthy diet. Accordingly, the introduction of crops with biologically active substances and organization of seed production determine the main directions of our research.

In our country, special attention is paid to ensuring the food safety of the population. This can be seen in a number of directives issued on the increase of food products and their types (assortment). To fulfill the tasks specified in the decision of the President of the Republic of Uzbekistan "On measures to develop family entrepreneurship in fruit and vegetable growing and viticulture and increase the share of farmers in agricultural production" dated November 24, 2021 PQ-20 and to fully provide the population of the country with food products, including fruits and vegetables" of the President of the Republic of Uzbekistan 2021- On state support of the fruit and vegetable industry" (PQ-52, 15.12.2021 -y.) decision, 2021- "On state support of the fruit and vegetable industry, measures to further develop the cluster and cooperation system in the network" can be seen in the decisions. Year 2021 of the Cabinet of Ministers of the Republic of Uzbekistan In November 20 "Prognostic parameters for the production and use of fruit and vegetables, potatoes, rice crops and their use", it is specified to grow 10 million tons of vegetable products and 2 million tons of rice crops. According to the above, it is planned to produce more than 12 million tons of vegetable and fruit products in Uzbekistan in 2022, which is 300-350 kg per capita.

Arugula is a plant belonging to the Brassica family (Eruca sativa), and it is a vegetable crop rich in biologically active substances, and has the characteristics of early ripening and cold tolerance. This type of green vegetable is considered an unfamiliar plant for the inhabitants of our country. The introduction and production of this valuable vegetable crop is one of the most important tasks of vegetable growing science and production. Research on the subject was carried out in 2023 at the department of vegetable growing and policing of Tashkent State Agrarian University. Field experiments were conducted in the educational experimental fields of the university. Tashkent region, a region within the Republic of Uzbekistan, was established on January 15, 1938 in the north-east of the Republic. It borders the Republic of Kazakhstan to the north and northwest, the Kyrgyz Republic to the northeast, the Namangan region to the east, the Republic of Tajikistan to the south, and the Syrdarya region to the southwest.

Figure 1. Harvested arugula seeds. Sprouted arugula lawn

Some agrochemical parameters of the soils of the experimental area Table 1

Soil layeri	Hummus,%	Active, mg/kg			Rn
		Nitrogen	Phosphorus	potassium	
	1 per field area				
Fluid layer (0-30sm)	0,76	0,088	0,263	0,575	7,6
Under the soil layer (31-50sm)	0,69	0,072	0,172	0,420	7,2
	2 per field area				
Fluid layer (0-30sm)	0,81	0,083	0,217	0,509	7,6
Under the soil layer (31-50sm)	0,77	0,076	0,181	0,411	7,3

Soil layer. The soils of the place where the experiments were conducted were analyzed by taking soil samples from the soil layer and under the soil layer (0-30cm) horizons (31-50cm). The amount of humus in the soil at the depth of the fertile layer (0-30 cm) was 0.76%, and in the lower layer (30-52 cm) it was 0.69%. Total nitrogen was 0.088–0.072%, total phosphorus was 0.263–0.172%, and total potassium was 0.575–0.420%, respectively. Exchangeable potassium was 211-186 mg/kg (Osinova G.S 2010). The environment of soil water absorption is weakly alkaline, It was found that Rn is up to -7.2-76. In the Kibrai district where the research was conducted, seepage waters are located at a depth of 2.5-4 m. Due to the slowness of the flow of seepage water, the consumption of water is mainly through evaporation and transpiration of plants, which determines the level of mineralization. In Uzbekistan, the area occupied by temporary film tunnels in recent years is 1200-1500 g. They are widely used in early spring and less frequently in late spring. In early spring, they speed up the yield of the next crop from the open field by 2-3 weeks, increase the yield of the next

crop by 1.3-1.5 times, and when used in late autumn, they significantly increase the yield by extending the growing period by 4-6 weeks. . (Berbekov K.Z. 2014) The microclimate of small film devices is determined by the intensity of solar radiation, the presence of cloudy days and the presence of external temperature. It is characterized by sudden changes in temperature, high air humidity, overheating of the outdoor air temperature on sunny days, and insufficient protection of plants from cold weather conditions. Nevertheless, the microclimatic characteristics of small-scale film constructions are the reason for determining the place occupied by them. Illumination. Due to the fact that a certain part of the light is captured by the film, the light inside the building is 15-30% less than in the open area. The brightness of film devices depends on the type of film used. Polyvinyl chloride and copolymer ethylene vanillinacetate types of the film are the most transparent. Heat-retaining polyethylene film transmits less sunlight. However, under the conditions of Uzbekistan, the intensity of illumination in February and March is not considered a limiting factor for the cultivation of vegetables and sugarcane crops under small film devices. (Berbekov K.Z. 2014). According to the researches of Tashkent DAU, the average amount of photosynthetically active radiation (FFR) absorbed into film tunnels during the day is 45-47 kcal/cm2 in February and 60-65 kcal/cm2 in March. This is 1.5-2.0 times more than the (minimum) temperature required for fruit and vegetable crops. Films lose light transmission by 39-47% in the first year of use, but they can be used for two years in the conditions of Uzbekistan. Illumination can be improved in film devices. The way (method) of shutters are closed and the arrangement of the devices in relation to the direction of light has a certain influence on the increase of the intensity of illumination. The light in structures with arched shutters is 10-15% higher than in two-slope shutters. One-slope devices are built from north to south, two-slope and arc-shaped ones are built from north to south, and the illumination is enhanced. Illumination also depends on the surface of the light-transmitting cinches (frames). Therefore, it is inappropriate to build the device from wide beams and to build them close to each other. The white color of the fins improves the light distribution and extends the service life of the film. Dust accumulates during the use of polymer materials. This happens as a result of the film attracting dust particles due to the formation of electric charges on it. A dusty film does not transmit sunlight well. If the film is used in one season, it will lose light transmission by 15-20%, if it is used in two or three seasons, it will lose 40-50%. Due to the reduction of light transmittance of the films due to dust, the yield of cultivated vegetables will be late, and the yield will also decrease. Therefore, dusty film should be washed with a soft brush and cleaner before use. If the film does not look clear after washing, it is not used. Heat procedure. Transmissive polymer materials transmit light well and heat poorly. Due to the heating of the soil and plant surface during the day, the temperature inside the device rises.

Figure 2. Arugula growing under a foil device.

It is very important to heat the soil layer under the film coverings, where the root part of the plant is located. In tunnels, a film is laid on the surface of the soil to accelerate the heating of this layer. Covering the soil with a film is called "mulching". In this case, the film is on the ground, and the above-ground part of the plant is on it. A lot of heat accumulates under the film (accumuliruetsya), and the heat collected during the day is well stored at night. Due to this, the daily average temperature of the bush rises by 2-3°C. Light-transmitting, black and old films can be used for mulching. Air and soil moisture. In devices with a film, a specific relative humidity of the air occurs. Due to the hermetic nature of polymer materials, the relative humidity of the air in film devices is 10-30% higher than in open space, and several times more than in glass buildings. In most cases, it reaches 100%, and during daytime it drops to 45-60%.di.

Figure 3. Flowering arugula.

According to the researches of the Tashkent DAU, the relative humidity of the air in the conditions of February-March in Uzbekistan is 14-24% higher than in the open area. Vegetables are busy reducing the excess relative humidity of the air when growing vegetables in small-scale film devices. The main means of reducing the relative humidity of the air is ventilation. The duration of ventilation is determined according to the intensity of solar radiation. On hot days, the film is opened more and ventilated. On cool days, when heat does not require ventilation, ventilation is not necessary in order to reduce the relative humidity of film devices. It is useful to use perforated films to cover vegetables that require little high relative air humidity. When they are used, the air is rapidly exchanged through the holes, and the relative humidity of the air is much lower than in the tunnel closed with a film without holes.

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