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TERMINATION OF SHADE VARIETIES IN SYRDARYA CONDITIONS AND BIOSTATISTIC BASIS OF ITS SELECTION

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Abstract: This article contains information on the timing of sowing of soybean varieties in the Syrdarya region. Varieties of shade such as Tomaris Man-60, Selekta-302 belonging to the genus Glycine hispida were selected as the object of research. In the Syrdarya region, when soybean varieties were planted in early April, the yield was 24.81 s/h, on April 10 26.85 s/h, on April 20 28.85 s/h, and on April 30 25.86 s/h. The protein content of soybeans sown in early April was 37.5%, 36.98% on April 10, 35.75% on April 20 and 35.02% on April 30. Using factor analysis, it was determined that the optimal planting date for soybean varieties is April 20. It was noted that the amount of protein in soybeans was affected by sowing dates.During this period, soybean varieties yielded an additional 4.04 s/h, much. An inverse correlation was noted between grain protein content and yield.

Keywords: soybean varieties, sowing dates, yield, protein, oil content, factor analysis, correlation coefficient

Introduction: Satisfying the population's demand for food remains one of the most pressing issues today. Here, soybeans play an important role in food, agriculture and animal husbandry. According to scientific sources, it is possible to prepare 0.12-0.16 tons of vegetable oil and 0.75-0.80 tons of degreased soy flour from the processing of one ton of soybean grain. Soybeans belong to the family of legumes, leaving 2.3-2.7 s/a of organic products rich in biological nitrogen in the soil, as well as 70 kg of nitrogen, 30 kg of phosphorus and 80 kg/h of potassium in the topsoil. It was noted that up to 300 kg/h of biological nitrogen was accumulated in soybean fields. This, in turn, increased the amount of humus in the soil from 0.65-0.72% to 0.95-1.03%.

Soy products are of great importance for the livestock and poultry industries. Soybean grain and its stalk are used in animal husbandry in the preparation of high-quality mixed fodder.

For this reason, in recent years in our country great attention is paid to the cultivation of soybeans. Resolutions of the President of the Republic of Uzbekistan No. PP-2832 of March 14, 2017 and No. PP-3144 of July 24, 2017 set as a priority the expansion of soybean fields, selection of its high-protein and oil varieties, improvement of agricultural technology. [1]

An analysis of the literature relevant to the topic shows that there is insufficient data on the cultivation of soybean varieties in saline soil conditions. This may be

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primarily due to the fact that soybean varieties are recognized as a salt-tolerant crop. According to the Russian Institute of Botany (VIR), agricultural crops are in the following order in terms of salt resistance: barley> rice> rye> oats> millet> donnik> corn> peas> lentils> lupine> chechevitsa> beans> vika> hashish peas > shadow placed [2].

Therefore, it is important to select new varieties to determine the timing of sowing of soybean varieties in saline soil conditions. Because 90% of the lands of Syrdarya region are saline to varying degrees.

This article contains information on determining the timing of planting soybeans in weakly saline soils of Syrdarya region. The main purpose of this study was to determine the optimal planting times of soybean varieties in saline soils and the possibility of growing high quality products.

Location, object and method of research: The research was conducted at the Syrdarya Experimental Station of the Scientific Research Institute of Cereals and Legumes in 2020-2021. The object of study was Tomaris Man-60, Selekta-302, Vilana varieties belonging to the genus Glycine hispida. All phenological observations and calculations were carried out in accordance with the guidelines issued by UzPITI [3]. The SPSS-17 statistical program was used to calculate the correlation (r) coefficients between the studied characters [4]. Appropriate methodological guidelines for correlation and factor analysis between shadow quantitative markers. Calculated on the basis of [5,6].

Research results: Productivity is the main criterion in the selection of agro-technical measures related to the cultivation of agricultural crops. Because genotype (variety) productivity indicates the effective use of environmental conditions. This information can also be seen in Table 1. The average yield of soybeans at the beginning of April (1.04) was 24.81 s/h, on April 10 - 26.45 s/h, on April 20 - 28.85 and on the 30th of this month - 25.85 s. From these primary data, it can be seen that the high rate of yield of soybean varieties was higher (28.85 s/h) in the variant planted on the twentieth of April. The high yield from soybean varieties this month is due to the high performance of yield elements that affect yield.

The average height of soybean varieties planted in early April (1.04) was 104.16 cm, the number of branches on the stem was 1.9, the average height of the first pod was 11.33 cm, the number of pods was 46.65, the number of grains per pod was 2.20., while the total number of grains was 102.51 grains, in soybean varieties planted on the twentieth of April these figures were 108.16, respectively; 2.68; 11.86; 54.70; 2.31; 126.83.

Table 1

Influence of sowing dates on the yield of soybean varieties and its quality

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Plant height, cm	Number of horns on stem, pcs	The average height of the first pod from the ground, cm	Number of beans, pcs	Number of grains per pod, pcs	Total number of grains, pcs	Grain weight, grams	1000 grain weight, grams	Productivity, s / h	Oil content,%	Protein content,%
Sowing time 1.04										
104,16 ±1,27	1,90 ±0,08	11,33 ±0,35	46,65 ±0,84	2,20 ±0,06	102,51 ±3,15	15,56 ±0,43	152,0 ±1,12	24,81 ±0,44	20,13 ±0,18	37,5 ±0,34
Sowing time 10.04										
106,0 ±1,31	1,97 ±0,07	11,71 ±0,40	50,11 ±1,22	2,25 ±0,04	112,66 ±3.24	17,33 ±0,43	154,0 ±1,26	26,45 ±0,33	20,63 ±0,28	36,98 ±0,37
Sowing time 20.04										
108.16 ±1.76	2,68 ±0,05	11,86 ±0,41	54,70 ±0,74	2,31 ±0,05	126,83 ±3,44	19,91 ±0,52	157,33 ±1,33	28,85 ±0,67	21,78 ±0,19	35,73 ±0,32
Sowing time 30.04										
110.0 ±1,63	2,11 ±0,06	11,88 ±0,41	49,83 ±1,38	2,23 ±0,04	111,11 ±3,30	17,23 ±0,48	155,33 ±1,40	25,86 ±0,50	21,51 ±0,17	35,02 ±0,36

From these data, the quantitative indicators of the above-mentioned yield elements were higher in the soybean varieties planted on the twentieth of April than in the variant planted in early April. This in turn led to higher yields. Not only yield but also grain quality was affected by sowing times. From the data in the table, the protein content of the grain was 37.5% in the early sown (1.04) variant, while on April 20 this figure was 35.73%.

From the primary data (Table 1) it can be seen that the planting times affected the yield and yield elements of the soybean varieties. From these data, it is reasonable to say that in the conditions of the Syrdarya it is advisable to sow soybeans on the twentieth of April. It was found that this option could yield 4.04 ts / ha more than other options, such as the option planted in early April. Not only productivity but also changes in grain protein content were noted. (Figure 1) From the data in the figure, the relatively high protein content of soybean varieties was in early April (37.50%), while on the twentieth of April this figure was 35.75%. The relatively high amount of protein in early planted soybean varieties may be related, firstly, to an increase in temperature and, secondly, to a correlation between yield and protein. (Figure 2).

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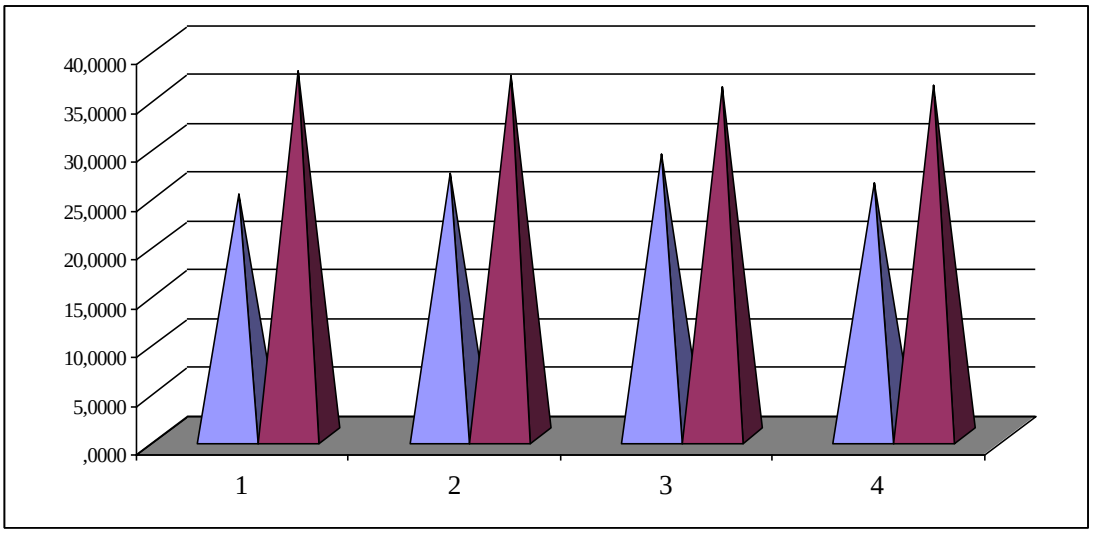

Figure 1. Influence of sowing dates on the yield of soybean varieties and the amount of protein in the grain

Note: first column yield s/h*, second column protein content,%:*
1 - sowing time 1.04; 2nd sowing period 10.04; 3- 20.04 and 4- 30.04

From the data in the figure, the height of the plant (the number 1 symbol) is the amount of grain per grain (5), the average number of grains per 1000 grains (8) (r = 0.5-0.7), the total number of grains (6).), a weak (r = 0.3–0.5) correlation between grain weight (7) and fat content (10) was noted. This means that tall plants had a large number of grains, which in turn led to an increase in grain weight.

While a strong (r => 0.7) correlation correlation was noted between the number of stalks on the stem (2) and the number of pods (4), it was found that there was a moderate correlation between the total grain number (6) and yield (9). From this data, the large number of stems led to an increase in the number of pods and, in turn, an increase in yield. A strong correlation was observed between the number of grains (4), total grain size (6), grain weight (7), and yield (9). From these data it can be seen that the yield depends primarily on the number of pods, the amount of grain and its weight.

A straight weak correlation was noted between the amount of fat in the grain (10) and the yield, while an inverse correlation was noted between the amount of protein (11). This means that the amount of protein will decrease as productivity increases. A strong inverse relationship between grain fat content (10) and protein content (11) was noted. In this case, as the grain's fat content increases, its protein content may decrease.

The results of the correlation analysis showed that the yield of soybean varieties is strongly dependent primarily on the number of legumes, the number of grains in legumes, the total amount of grain, grain weight. A strong correlation was noted between these indicators. If it did not directly affect the yield per plant, it

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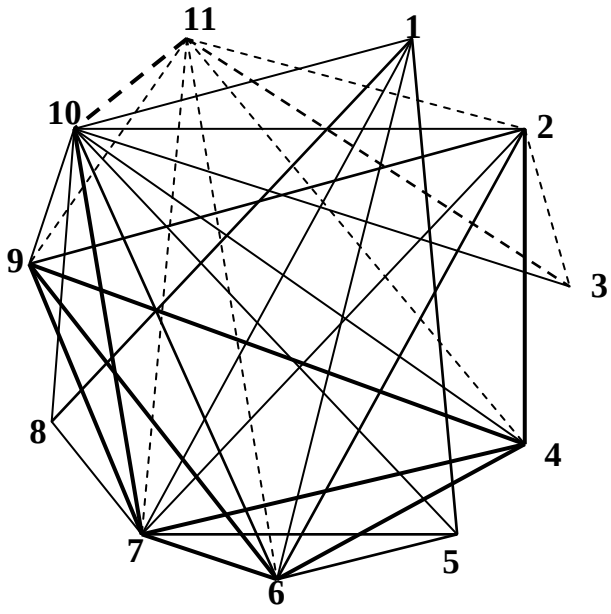
affected the yield through them by affecting the number of grains in a single legume, the total number of legumes, grain weight, and the amount of oil.

This means that tall plants had higher grain content and weight, and such plants were found to be more productive. A weak inverse correlation was noted between characteristics such as grain protein content (11), stem number (2), legume number (4), total grain number (6), grain weight (7), and yield (9). This means that the amount of protein decreases as productivity increases. For this reason, the protein content in early planted soybean varieties (1.04) was higher than in late planted soybean varieties. (Table 1).



Note numbers represent symbols:
1. Average height of main stem, cm;
2- Number of horns on stem, pcs;
3- The average height of the first pod from the ground, cm;
4- Number of beans, pcs;
5- Number of grains per pod, pcs;
6- Total number of grains, pcs;
7- Grain weight, grams;
8- 1000 grain weight, grams;
9- Productivity, s / h;
10- Oil content,%
11- Protein content,%

Figure 2. Indicators associated with the growth and development of shade varieties and the degree of correlation between them.

r=0,3-0,5; r=0,5-0,7; r=>0,7;

r=-0,3-0,5; r=-0,5-0,7 r=-0,5-0,7

Using factor analysis, it was determined that the shadow quantity signs formed a correlation. These data are presented in Table 2. From the data in the table, the first factor is the number of stems (0.605), the number of pods (0.836), the number of grains per pod (0.591), the total number of grains (0.961), grain weight (0.961), yield (0.846) and oil content (0.846). had a high factor load on.

These traits are closely related traits in terms of the degree of correlation and determine the yield of shade varieties. For this reason, this factor can be called the

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"Productivity" factor. The height of the second factor was the height of the main stem (0.790) and the average height of the first stem above the ground (0.581) with a relatively high factor load, and this factor was called “Plant Height”. The third factor has a high load, such as the weight of 1000 grains (0.459) and the amount of protein (0.767), and this factor is called "protein content". (Table 2).

Table 2

The load of quantitative indicators of shadow marks on factors

Quantitative indicators of shadow studied	**Factors**		
	1	2	3
1- Average height of main stem, cm	0,460	**0,790**	0,187
2- Number of horns on stem, pcs	**0,605**	-0,568	-0,098
3- The average height of the first pod from the ground, cm;	-0,011	**0,581**	-0,764
4- Number of beans, pcs	**0,836**	-0,479	-0,114
5- Number of grains per pod, pcs	**0,591**	0,465	0,402
6- Total number of grains, pcs;	**0,961**	-0,099	0,136
7- Grain weight, grams	**0,961**	0,017	0,224
8- 1000 grain weight, grams	0,308	0,469	**0,459**
9- Productivity, s / h	**0,759**	-0,496	-0,008
10- Oil content,%	**0,846**	0,388	-0,234
11- Protein content,%	-0,600	-0,158	**0,767**

Based on these factors, it is possible to determine the optimal planting time of shade varieties. These data are presented in Table 3. From the data in the table, the factor load of soybean varieties planted on April 20 was higher than in other periods (1.1946). This indicates that the optimal time for planting soybean varieties is April 20.

During this period, high yields were obtained from soybean varieties. (Table 4) The second factor was called “plant height”. A relatively high rate of Mazur factor was recorded in soybean varieties planted in late April (30.04). During this period, the height of soybean varieties was higher than in other periods. (110.0 cm) This indicates that late planted soybean varieties are taller than early planted soybean varieties. The third factor, the relatively high protein content, was recorded on April 1 (0.217205, April 10 (0.155062)) and April 30 (0.34171). . We also mentioned this above, because the soybean varieties planted on the twentieth of April yielded a high yield, which in turn reduced the protein content compared to other periods.

Table 3

Factor loads by sowing dates

Sowing dates	**Factor loads**		
	1	**2**	**3**
1.04	-1,1247	-0,22708	**0,217205**

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10.04	-0,226	0,147515	**0,155062**
20.04	**1,1946**	-0,00442	-0,03056
30.04	0,1507	**0,3790133**	**0,34171**

Table 4

Practical indicators of soybean varieties by factors

Sowing dates	**Practical indicators**		
	Pruductivity s/h	**The plant height, cm**	**Protein amount,%**
1.04	24,81	104,16	**37,5**
10.04	26,45	106,00	**36,98**
20.04	**28,85**	108,16	35,73
30.04	25,86	**110,00**	35,02

Conclusion 1. In the Syrdarya region, when soybean varieties were planted in early April, the yield was 24.81 s/h, 10.04-26.45 s/h, 20.04-28.85 s/h, 30.04-25.86 s/h.

2. The amount of protein in soybeans changed depending on the sowing period. The protein content in soybeans sown on April 1 was 37.5%, on April 10 36.98%, on April 20 35.73% and on April 30 35.02%.

3. Using statistical analysis, it was determined that the optimal sowing period for soybean varieties in the Syrdarya conditions is April 20. It was noted that in this period it is possible to get 4.04 s/h more than in the beginning of April and 2.99 s/h more than in the end of April.

4. It was noted that the yield of soybean varieties depends primarily on the number of legumes, the number of grains in legumes, grain weight.

5. It was found that there is an inverse correlation between the amount of protein in the grain and the yield.

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References

1. Resolution of the President of the Republic of Uzbekistan dated March 14, 2017 No PP-2832 "On measures to increase the sowing of soybeans and soybeans in the country in 2017-2021." Resolution of the President of the Republic of Uzbekistan dated March 14, 2017 No. PP-2832.

2. L.A.Chudinova, N.V.Orlova. Physiology of plant tolerance. Perm. un-t. - Perm, 2006. - 124p

3. Methods of conducting field experiments. O'zPITI. Tashkent, 2007-147 p.

4. L. M. Shishlyannikova Mathematical support of scientific works using SPSS statistical package for Windows 11.5.

5. N.S. Rostova Correlations: structure and variability. St. Petersburg: St. Petersburg University Press, 2002. T.94. S.-61-72.

6. Analysis of key components and factors. www.web Statistica (StatSofr, Inc.) - 2001.