



**“SHIMOLIY MINTAQALARDA QISHLOQ XOJALIGINI
RIVOJLANTIRISHNING DOLZARB MASALALARI VA
ULARNING INNOVATSION ECHIMLARI”
mavzusidagi Respublika ilmiy-amaliy konferensiya**



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**ANALYSIS OF MORPHOLOGICAL TRAITS OF MUNGBEAN CULTIVARS AND
SAMPLE**

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This article provides an analysis of the main morphological traits of mungbean cultivars and samples. The research mainly focused on morphological differences among the characteristics of plant height, number of yield branches and pod length. According to the results of the study, the highest result in plant height belonged to the Durdona cultivars (42.29 ± 2.21), while the highest result in terms of yield branches and pod length belonged to the VI-060020 A-G cultivars. The results obtained are of great importance in breeding practice for creating promising varieties and obtaining quality samples.

Key words: mungbean, morphological characteristics, cultivars, samples, plant height, productive branches, pod length.

Ushbu maqolada moshning nav va namunalaridagi asosiy morfologik belgilari tahlil qilingan. Tadqiqotlarda asosan o'simlik bo'yi, hosil shoxlari soni va dukkak uzunligi belgilari ortasidagi morfologik farqlar organilgan. Tadqiqot natijalariga ko'ra o'simlik boyi boyicha eng yuqori natija Durdona naviga ($42,29 \pm 2,21$) tegishli bo'lgan bo'lsa, hosil shoxlari va dukkak uzunligi bo'yicha esa VI-060020 A-G naviga tegishli bo'ldi. Olingan natijalarga seleksiya amaliyotida istiqbolli navlar yaratish va sipatli bo'lgan namunalar olishda katta ahamiyatga ega.

Kalit so'zlar: mosh, morfologik belgilar, navlar, namunalar, o'simlik bo'yi, hosil shoxlari, dukkak uzunligi

В данной статье представлен углубленный анализ основных морфологических характеристик сортов и образцов маша. Исследования в основном были сосредоточены на морфологических различиях между такими характеристиками, как высота растения, количество ветвей, дающих урожай, и длина боба. Согласно результатам исследования, наивысший результат по высоте растения был получен у сорта Дурдона ($42,29 \pm 2,21$), а наивысший результат по количеству ветвей, дающих урожай, и длине стручка — у образца VI-060020 A-G. Полученные результаты имеют большое значение в селекционной практике для создания перспективных сортов и получения качественных образцов.

Ключевые слова: маш, морфологические признаки, сорта, образцы, высота растения, плодоносящие ветви, длина боба

INTRODUCTION

Mungbean (*Vigna radiata*) is one of the most important legume crops in Uzbekistan's agriculture. This crop is characterized by its tolerance to adverse environmental conditions and low water requirements. In addition, certain morphological features of mung bean indicate its response to stress factors. In recent years, due to the increasing demand for local and foreign cultivars of mungbean with high yields and good grain quality, it is considered urgent to conduct



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in-depth scientific research on this crop, mainly to study its morphological characteristics. One of the main criteria for determining differences in the external structure of the plant and analyzing yield indicators is its morphological traits.

X. A. Idrisov., M. Abdirakhimova., G. Ashiraliyeva [3 ; 110–116-p.]. experiment revealed that in the studies conducted in the breeding selection nursery of mungbean cultivars and samples, mainly morphological and biological indicators were measured, among which the number of pods per plant, the number of upper branches, the upright growth of the stem, the weight of 1000 grains and the bush thickness per unit area showed higher results than the Radost cultivars due to the shorter growing season. The required seedling thickness creates the basis for increased productivity and good development.

According to the data of X. Idrisov [4; 30-31-p.]. mungbean is a herbaceous and branched plant with a hollow succulent stem. The leaves of the mungbean plant are green and trifoliate, the flowers are yellow and the pods are brown, each stem contains 10-12 seeds. The seeds are green and round in shape. Mungbean plants require less fertilizer, since their plant roots have nodules. It has a strong root system and is able to fix atmospheric nitrogen into ammonia, which can be used as fertilizer. According to the biometric indicators of the Navruz cultivars of mungbean, the seeds begin to germinate when the soil temperature is 12-15 °C. The optimal temperature for seed germination is 20-25 °C. The growing period is 80-110 days, depending on the variety, agricultural technology, and planting date. The plant dies when the temperature drops to -1 °C.

H. N. Atabayeva and X. A. Idrisov [1; 422-426-p.]. say that the development of leaves directly depends on the planting date and standards. The number of leaves increases in mungbeans planted in early July, but with an increase in the planting rate, the number of leaves decreases. When the planting rate for any cultivars was set at 40 kg/ha, the leaf surface area had the highest index at all times. However, as the planting date was delayed, the leaf surface area showed a tendency to decrease.

MATERIALS AND METHODS

Field experiments were conducted mainly at the experimental site of the Karakalpakstan Institute of Agriculture and Agrotechnologies, and laboratory experiments were conducted at the laboratory of the department of Farming, agricultural crop Breeding and seed production. The experiments mainly analyzed the morphological characteristics of local Durdona and Asia cultivars and foreign VI-062909 and VI-060020 A-G samples. Field experiments, sowing process, phenological observations, crop care, biometric measurements, and statistical analyses are carried out based on B. A. Dospekhov's "Methodology of Field Experiment" (Moscow 1985) and other sources, recommendations, and methods. In the experiment, statistical analysis on morphological characteristics of mungbean cultivars and samples was carried out by the means of MS Excel and Mal-Viva programs.

Observations and measurements of economically important traits in mung bean varieties and samples were conducted during the experiments, using the specified indicators.

- Plant height per plant (sm)
- Productive branches (piece)
- Length of per pods (sm)

RESULTS AND DISCUSSION



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The studies mainly studied the characteristics of plant height, number of fruit branches and pod length in Durдона, Osiyo cultivars, VI-062909, VI-060020 A-G lines, and determined the average values ($M \pm m$), sum of square deviations (G) and coefficient of variation ($V\%$) in the samples. These indicators describe the degree of heritability of traits in environmental factors.

According to studies conducted on the plant height trait in mungbean cultivars and samples, the tallest plants were identified in the Durдона cultivar, which averaged 42.29 ± 2.21 cm. The sum of square deviations in this cultivar was $G=6.7$ and the coefficient of variation was 16.42% , which indicates that the phenotypic variability is average. This indicator indicates that the Durдона cultivar is sensitive to environmental factors in addition to genetic heredity. In the Osiyo cultivar, the plant height was 39.1 ± 1.77 cm, $G=5.59$ and $V\%=14.29$. This trait indicates stable heredity in this cultivar. The lowest plant height belonged to the VI-062909 line and was 35.8 ± 1.74 cm. The sum of squared deviations was 5.53 and the coefficient of variation was 15.45% , indicating high phenotypic differences within these samples. In the VI-060020 A-G line, the plant height was 39.7 ± 1.5 cm, with $G=4.76$ and $V\%=11.99$. These values indicate that the plant height trait is relatively genetically stable. The number of fruit branches in the studies conducted shows that environmental factors have a strong influence. In the Durдона cultivar, the average number of productive branches was 4.0 ± 0.25 , with $G=1.05$ and a coefficient of variation of 20.41% . These indicators indicate that there are high phenotypic differences in the trait. In the Osiyo cultivar, the number of productive branches was 4.0 ± 0.33 . The sum of square deviations was 1.05 and $V\%=26.35$. This indicates that the productive branch trait in the studied samples is sensitive to environmental conditions. In the VI-062909 line, the number of productive branches was less than in other samples, 3.4 ± 0.22 , $G=0.69$ and $V\%=20.46$. The VI-060020 A-G line had 4.3 ± 0.03 productive branches, which indicates a high average value in this line. The sum of square deviations was $G=0.94$, and the coefficient of variation was 22.06% . These indicators indicate the presence of valuable morphological characters affecting yield in this sample selection studies.

Pod length is considered one of the most important varietal and morphological traits in genetics and selection researches, indicating the hereditary characteristics of the samples. According to the results of the study, the longest pods were identified in the VI-060020 A-G line, with an average length of 9.4 ± 0.16 cm, and the sum of square deviations was equal to $G=0.51$ and $V\%=5.5$. This indicates that the pod length trait is stable in this line and the level of heritability is high. Pod length in the Durдона cultivar was 8.4 ± 0.16 cm, with $G=0.51$ and $V\%=6.14$, indicating that the trait is stable. In the Osiyo cultivar, the pod length was 8.1 ± 0.23 cm, with the sum of square deviations being $G=0.73$ and $V\%=9.11$. In line VI-062909, the pod length was 8.3 ± 0.36 cm, and the values of $G=1.16$ and $V\%=13.97$ indicate high phenotypic differences. (Table 1)



1-table

Motfological indicators of mungbean cultivars and samples

№	Cultivars and samples	Plant height (sm)			Productive branches (piece)			Pod lenght (sm)		
		M±m	G	V %	M±m	G	V %	M±m	G	V %
1	Durdona	42,29 ±2,21	6,7	16,42	4±0,25	0,8 1	20,41	8,4±0,16	0,5 1	6,14
2	Osiyo	39,1± 1,77	5,5 9	14,29	4±0,33	1,0 5	26,35	8,1±0,23	0,7 3	9,11
3	VI-062909	35,8± 1,74	5,5 3	15,45	3,4±0,22	0,6 9	20,46	8,3±0,36	1,1 6	13,97
4	VI-060020 A-G	39,7± 1,5	4,7 6	11,99	4,3±0,3	0,9 4	22,06	9,4±0,16	0,5 1	5,5

CONCLUSION AND RECOMMENDATIONS

Based on the results of the expirement, we can conclude that the phenotypic differentiation and genetic stability of the studied morphological characters are strong. Among the analyzed cultivars and samples of mungbean, the best indicator in terms of plant height was observed in the Durdona cultivar, while positive results were recorded in the VI-060020 A-G sample in terms of the number of branches and pod length. These cultivar and sample can be recommended for the selection process as primary source in future expirements. Genetic evaluation of morphological characters in mungbean selection serves as an important scientific basis for the selection of promising lines and cultivars.

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