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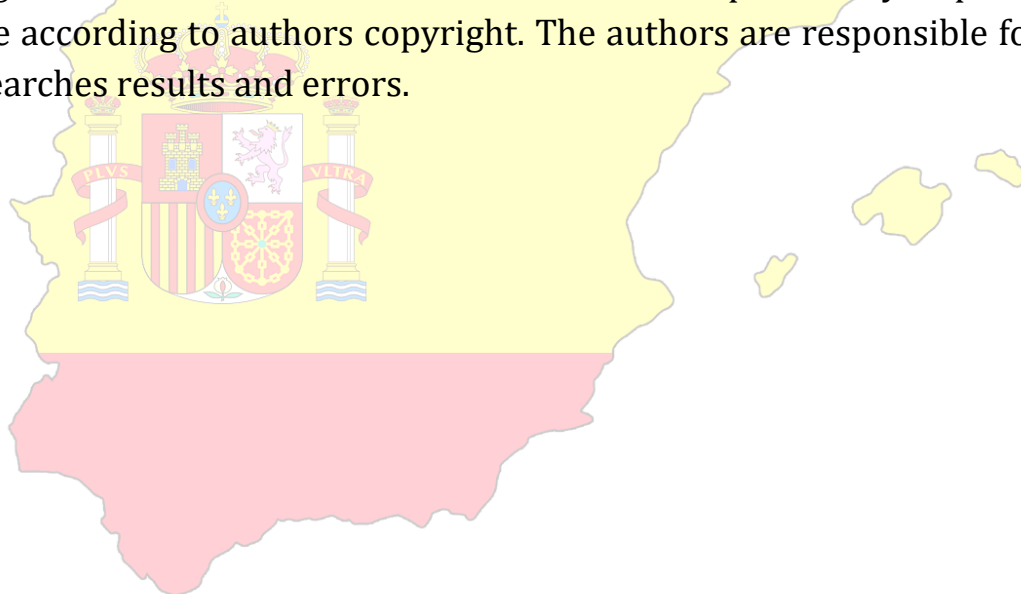


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Analysis of the Total Protein Content in Soybean Seeds under the Conditions of Andijan Region

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Annotation: This article examines the total protein content of some soybean varieties. The objects of the study were local and foreign soybean varieties grown in an experimental field located in the Asaka district of the Andijan region. When cultivating the varieties, the agrotechnical measures given in the description of each variety were carried out.

Key words: soybean, variety, nitrogen, total protein, grain.

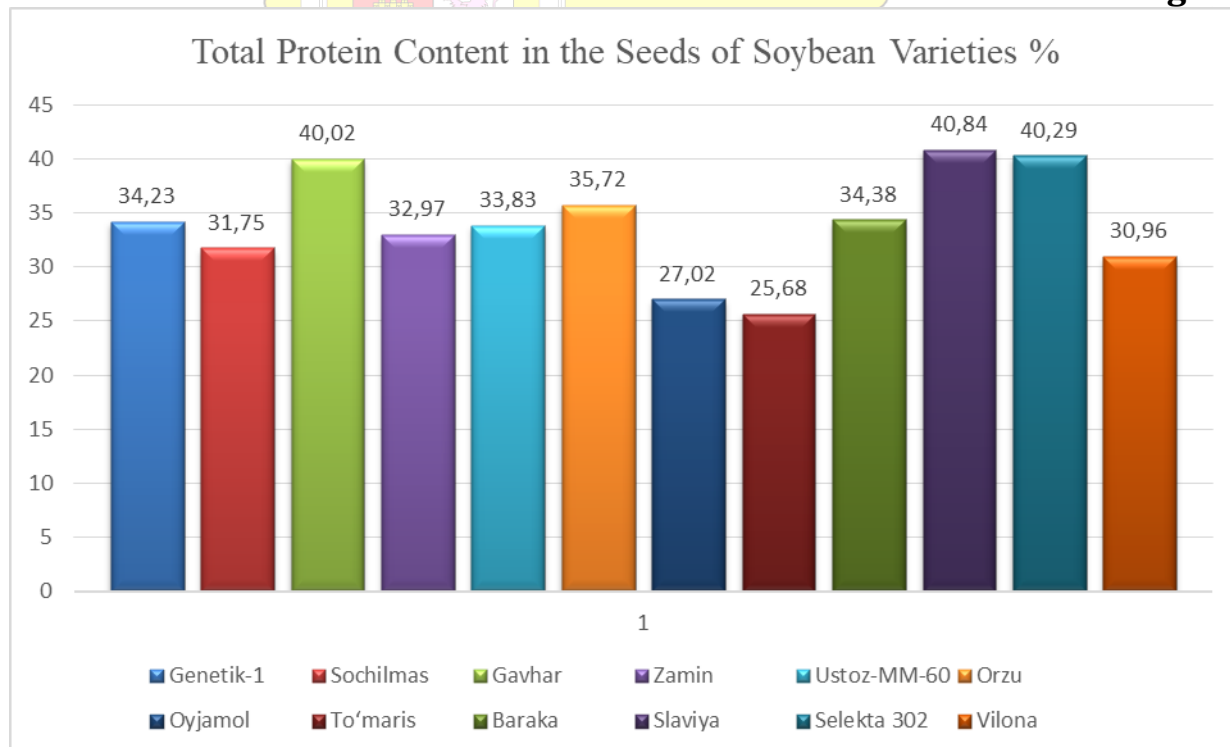
Soybean (*Glycine max* L.) is a valuable legume crop of strategic importance in the worldwide, distinguished by its unique biochemical composition and high nutritional value [7, p. 1313]. The protein content of soybean seeds is comparable to that of meat products. These products typically contain proteins derived from soybean, pea, or wheat plants [8, pp. 1–10]. Until 1990, according to protein efficiency evaluation standards, soybean protein had a lower coefficient compared to animal protein. Currently, the Protein Digestibility-Corrected Amino Acid Score (PDCAAS) is accepted as a quality criterion, which compares the amino acid composition of a protein with that of animal protein. Moreover, for soybean amino acids, this coefficient equals that of animal proteins, which opens up great opportunities for the production of high-protein food products [11, p. 85].

Object and Method of Research. For the study, local soybean varieties such as “Genetik-1, Ustoz MM-60, Orzu, Gavhar, Oyjamol, Zamin, Baraka, Sochilmas”, and “To‘maris”, as well as foreign varieties such as “Selekta-302, Slaviya”, and “Vilana”, were selected. These observations were conducted in 2024 on the crop fields of the “Mamadaliyev Toirjon yeri” farm, Asaka District, Andijan Region. In our research, one of the methods used to determine the total protein content in soybean seeds was the Kjeldahl method. The essence of this method lies in calculating the total protein content by determining the nitrogen content [3].

Research Results and Discussion. According to the research conducted by V.N. Bosak, V.V. Skorina, and T.V. Koloskova, when mineral fertilizers were applied the protein content in soybean seeds of the “Pripyat” variety

increased from 26.3% to 28.6–31.1%. In the “Yaselda” variety, the protein content rose from 27.1% to 30.4–32.0% [6, p. 18]. In studies by O.V. Litvinenko, E.S. Stasenko, and others on the protein content of soybean seeds’ reported that the “Nevesta” variety showed 40.70%, while the “Krujevnisa” variety exhibited an above-average result of 41.58% [9, p. 54]. D.E. Zima [10, p. 64] found that in summer sowing periods, the protein content of seeds was clearly higher—by an average of 3.1%—compared to spring sowing. During summer sowing, the maximum protein content in the “SK Farta” variety reached 44.0%, while the lowest was in the SK Agra variety 42.1%. Several studies have noted that the protein content in soybean seeds ranges from approximately 28.95% to 45.5%, depending on the genetic characteristics of the variety, environmental conditions, and breeding practices [5, pp. 74–79; 12, pp. 148–155; 1, pp. 2115–2124; 4, pp. 2–14]. Our research also aimed at determining the protein content in soybean seeds, using both local and foreign varieties as study objects. According to the results, among the local varieties, “Gavhar” 40.02% and “Orzu” 35.72% showed the highest protein content, while among the foreign varieties, “Slaviya” recorded the highest value 40.84% (diagram). The lowest results among local varieties were “To‘maris” 25.68% and “Oyjamol” 27.02%, while among the foreign varieties, “Vilana” showed the lowest result 30.96% (diagram).

Diagram



Based on the results of our research on the protein content of soybean seeds it was found that among the studied local varieties “Gavhar” and “Orzu”, as well as the foreign variety “Slaviya”, showed the highest protein content. The main reasons for these can be primarily attributed to the plant’s

individual biological characteristics, the soil and climatic conditions of the growing environment, and the applied agro-technological practices.

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