TABLE 1

Maize genotype	Starch + protein / Protein + fat
A 204 +/+	4,35
W 155 +/+	4,22
W 64A +/+	4,16
Wf 9 +/+	4,17
A 204 o2/o2	4,00
W 155 o2 o2	3,62
W 64A o2/o2	3,70
Wf 9 o2/o2	3,58
A 632 o2 o2 Su2 Su2	4,04
A 619 o2 o2 Su2 Su2	4,25
Mk 302 o2/o2 Su2/Su2	4,17
oh 43 o2/o2 Su2/Su2	4,36
W 64A o2/o2 Su2/Su2	4,11
A 293 o2 o2 Su2/Su2	4,08

forms and the increased biological value of the grain coincides with an improvement in the consistency of the endosperm [1].

Thus, the proposed comparative index found as the result of a determination of the chemical composition can be used for selecting mutant forms of maize with improved grain quality.

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PHOTOMETRIC DETERMINATION OF AMINO ACIDS IN PLANT RAW MATERIAL

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The plant camel thorn, family Leguminosae, genus Alhagi, that we are studying is rich in polyflavans, carbohydrates, flavonoids, amino acids, and microelements.

Paper, ion-exchange, and column chromatographies and amino acid analyzers are used for the quantitative determination of amino acids [1-5]. The aim of the present work was the quantitative determination of amine nitrogen in 1-2 h by the ninhydrin reagent in the presence of polyflavans, carbohydrates, and flavonoids.

Construction of a Calibration Graph. As the standard we used artificially composed mixture of four known amino acids (phenylalanine, asparagine, proline, and glutamic acid), the violet color of this mixture corresponding to the color of an aqueous mixture of the material under investigation (raw material) with the ninhydrin reagent. The four amino acids (50 mg each) were dissolved in water in a 100-ml measuring flask.

For each analysis we took 10 ml of a standard solution, added 10 ml of ninhydrin reagent, heated the mixture at a bath temperature of 80-85°C for 15 min, and cooled it.

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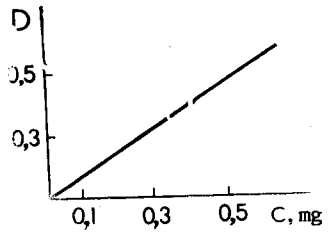

Fig. 1. Calibration graph of the mixture of amino acids.

To construct the calibration graph, 0.1, 0.2, 0.3, 0.4 ml, etc., of the colored solution of the standard sample were placed in a number of flasks, the volume in each flask was made up to 10 ml, and the optical density was measured.

Ninhydrin reagent: 4 g of ninhydrin, 150 ml of dioxane, 50 ml of acetate buffer (pH 5.0), and 76 mg of tin chloride.

Determination of the Sum of the Amino Acids in the Raw Material. A 1-g sample of the raw material was steeped in 20 ml of water for 24 h at room temperature. A filtered extract (10 ml) was treated with 10 ml of the ninhydrin reagent, and then the reaction was performed by the procedure described above. After this, 2 ml of the solution was taken from the reaction mixture and was diluted with water to 10 ml. The density of the solution obtained was measured in a photoelkectric colorimeter at a wavelength of 540 nm in a 10-mm cell with a No. 9 light filter. Water with the ninhydrin reagent was used as the control solution. Then the amount of amino acids in the sample, which was about 4%, was determined from the calibration graph.

Metrological Treatment of the Results:

f	AAs in the raw material, %	$\bar{X}$	S	$S_{\bar{X}}$	tan	$\pm\Delta X$	$\pm E$, %	$\pm E_n$, %
8	3,45–3,63	97,8%	2,4239	0,8570	2,4	2,0568	2,1	0,061

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