METROLOGY SERVICE

50006
Перевірка
професійного рівня

Director
Metrology service Ltd.

Nataliia Bozhko
May 07th 2026

PROFICIENCY TESTING PT.UA.1.5.2017

OILSEEDS (QUALITY)

PROFICIENCY TESTING REPORT –

ROUND 26 APRIL 2026

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Status:	Final

Kyiv-2026

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2. SUMMARY

2.1. The purpose of proficiency testing in oil seeds testing is to demonstrate the laboratory's competence (as described in ISO/IEC 17043:2023[1]) and improve the reliability of test results.

2.2. This proficiency testing involves the use of inter-laboratory comparisons to confirm the performance of individual laboratories' abilities and/or identify areas of improvement. Current PT scheme is registered in the EPTIS database.

2.3. This is the final report on the PT.UA.1.5.2017 ROUND 26 held in March-April 2026. This report is issued according to ISO/IEC 17043[1] and PT.UA.1.5.2017 ROUND 26 Programme. The report is issued in two languages – Ukrainian and English. English should be considered as the basic language of the report. Both versions of this report can be found at: http://www.metrologyservice.com.ua

2.4. A total of 26 participants have reported. Their results are presented in the next clauses.

2.5. Technical experts list and/or subcontractors for this round can be provided to the Participant by request.

2.6. Any calculations, formulas, raw and intermediate data used in this round can be provided to the Participant by request, except confidential information about other participants and information that may contain commercial secret.

2.7. If the Participant does not agree with the proficiency testing results or has any comments on the Provider's work, one can submit a complaint or appeal within 10 days. More information on the complaint procedure can be found at https://www.metrologyservice.com.ua/ or by contacting the Provider.

2.8. The Provider declares that all results presented in this report are confidential. Each participant is identified by a unique number assigned to them based on their registration application for each round of the program separately. This number is confidential information and may only be disclosed at the participant's request

2.9. Where applicable, the metrological traceability of assigned values is ensured, as confirmed by the use of measurement equipment properly calibrated in accordance with current EA and NAAU policies.

2.10. The uncertainty of the assigned values (for quantitative evaluation) may be provided upon the participant's request.

2.11. All users of this report are prohibited from copying or reproducing it, in whole or in part, without the written consent of the Provider.

2.12. Provider is accredited by NAAU in accordance with the requirements of ISO/IEC 17043. The list of parameters is specified in the scope of accreditation, which can be found on the website https://www.metrologyservice.com.ua/ or obtained upon request from the Provider.

3. GENERAL PROTOCOL FOR PROFECIENCY TESTING

3.1. MANAGEMENT SYSTEM.

3.1.1. The functioning management system of Metrology service Ltd. (further - Provider) complies with ISO/IEC 17043[1] requirements and covers all aspects of proficiency testing (further - PT) for all proficiency tests.

3.2. SAMPLES PREPARATION, HOMOGENITY AND STABILITY

3.2.1. Provider has used ППТ 7.3.1 procedure and appropriate technical experts and contractors for the samples' selection, production, homogenization and division designs that is proved to be satisfactory for the purposes of PT programme PT.UA.1.5.2017 ROUND 26. Details of test material preparation and homogenization are not published in the report, though can be provided to the Participant by request. Tests, required to prove (validate) homogeneity and stability of samples were performed by competent contracting laboratories according to [1]. These results with statistics are published in the report.

3.2.2. Participants may contact the Provider to request details of test material selection, preparation, homogenization and division of those test material samples, for which they tested in PT. Such information can be provided to the Participant in confidence and only if it cannot compromise other Participants and/or is not a commercial secret.

3.2.3. During sample preparation, all necessary procedures (where applicable) were performed, such as the removal of impurities. Sample preparation report can be provided upon request.

3.3. DISPATCH AND RECEIPT OF SAMPLES

3.3.1. Samples of test material – **soybean (Sample A and Sample B)** were dispatched 16.03.2026 according to schedule of proficiency testing programme PT.UA.1.5.2017 ROUND 26.

3.3.2. Each produced and identified sample was additionally hermetically sealed.

3.3.3. A total of 26 participants **from 4 countries** received samples (Sample A and Sample B). Results were returned from 26 participants.

3.3.4. The samples were shipped to participants via the commercial delivery service "Nova Poshta" LL, the delivery to abroad was done by courier delivery.

3.4. FOLLOW-UP SERVICES

3.4.1. If a participant wishes to obtain advice/consultation on any aspect of their performance, one should contact the Provider. Provider can (with agreement with Participant) pass on the Participant's inquiry to a technical expert and/or contracting laboratory.

3.4.2. Surplus samples from this round are available for sale as certified reference materials (CRM) with the certified values and uncertainties. Please email Provider for details.

3.5. PERFORMANCE ASSESMENT

3.5.1. Provider expressed Participant's results as traditional z-scores according to [1].

3.5.2. The assigned value for each analyte was calculated as the robust mean of the trial data using Huber H15 method [2] or Algorithm A variation, Annex C.3 [4].

3.5.3 The target standard deviation for each analyte was chosen from either the appropriate form of the Horwitz equation, method trial standard deviation (if stated in the method from inter-laboratory comparisons), standard deviation from the previous trials (PT rounds), or the robust trial standard deviation, after the removal of outliers. The choice was made using current industry practices used in other collaborative trials and proficiency testing schemes.

3.5.4. z-Scores were deemed satisfactory if $|z| \leq 2$. z-Scores were deemed questionable if $2 < |z| \leq 3$ (marked yellow in tables). If $|z| > 3$, the results were considered to be unsatisfactory

(marked red in tables). The calculations were made according to [1,3,5]. Provider recommends corrective actions if $|z| > 3$ and preventive actions if $2 < |z| \leq 3$.

3.5.5. Only 1.70% (6 results) of all results in this round are considered to be unsatisfactory. 1.65% (4 results) of all results were deemed unsatisfactory in Round 23 (soybean as test material).

3.5.6. Participant №11 stated results for: «Foreign impurities, %» and «Oleaginous impurities, %» according to the «ГОСТ 10854-88» instead of the «ДСТУ 8837:2019/ ДСТУ 4964:2008» method proposed by the Provider; «Moisture content, %» according to the «ГОСТ 10856-96» instead of the «ДСТУ 4811:2007 п.4» method proposed by the Provider. These results were assessed by the Provider and were taken into account when calculating robust mean and robust SD.

3.5.7. Participant №13 stated result for «Crude protein content, % (Expressed as a percentage by mass of the product as received)» according to the «ДСТУ ISO 20483:2016» instead of the «ISO 5983-1:2005/ ДСТУ EN ISO 5983-1:2022 (EN ISO 5983-1:2005, IDT; ISO 5983-1:2005, IDT)» method proposed by the Provider. This result was assessed by the Provider but was not taken into account when calculating robust mean and robust SD.

4. HOMOGENITY AND STABILITY ASSESMENT

4.1. Qualitative methods.

4.1.1. Samples were testes for homogeneity and stability after blending, preparation, packing and identification by selecting five samples (Sample A) of material of all produced. All these samples were tested under repeatability conditions as only 34 samples were produced according to [7]. All samples for stability and homogeneity testing were stored in appropriate conditions in the preparation and reporting of this round.

4.1.2. Homogeneity and stability were deemed satisfactory only if 100% of results are identical with intended results, i.e. with “Satisfactory (S)” result.

4.1.3. Homogeneity and stability for «Colour»

Sample N	Colour	Test result	Satisfactory/ Not satisfactory
1	Colour	Typical of normal grain	«Satisfactory (S)»
2	Colour	Typical of normal grain	«Satisfactory (S)»
3	Colour	Typical of normal grain	«Satisfactory (S)»
4	Colour	Typical of normal grain	«Satisfactory (S)»
5	Colour	Typical of normal grain	«Satisfactory (S)»

Homogeneity and stability confirmed by 100% of satisfactory results.

4.1.4. Homogeneity and stability for «Odor»

Sample N	Odor	Test result	Satisfactory/ Not satisfactory
1	Odor	Complies with healthy grain	«Satisfactory (S)»
2	Odor	Complies with healthy grain	«Satisfactory (S)»
3	Odor	Complies with healthy grain	«Satisfactory (S)»
4	Odor	Complies with healthy grain	«Satisfactory (S)»
5	Odor	Complies with healthy grain	«Satisfactory (S)»

Homogeneity and stability confirmed by 100% of satisfactory results.

4.2. Quantitative methods.

4.2.1. Samples were assessed for homogeneity and stability after blending and packing by selecting five samples (Sample A and Sample B) of material at random from all those produced.

Three of these samples were tested in duplicate under repeatability conditions as only 34 samples (Sample A) and 48 samples (Sample B) were produced according to [6]. Two other samples (Sample A and Sample B) for stability tests were stored in appropriate conditions for the period of preparation and test submission for this round. They were also tested in duplicate.

4.2.2. Statistical analysis of the resulting data for homogeneity and stability was carried out using the industry standard Cochran's 'C' test and analytical variance test for 'sufficient homogeneity' according to [3] or Annex B.2[4].

4.2.3. Produced samples were found to be sufficiently homogeneous and stable for every analyte according to programme, except for those that can be considered equivalent or homogeneity can be assumed from other analyte homogeneity.

4.2.4. ISO 665:2020/ ДСТУ EN ISO 665:2022 (EN ISO 665:2020, IDT; ISO 665:2020, IDT)/ДСТУ ISO 665:2008 Moisture and volatile matter content, %

Moisture and volalile matter content, %	ISO 665:2020/ ДСТУ EN ISO 665:2022 (EN ISO 665:2020, IDT; ISO 665:2020, IDT)/ДСТУ ISO 665:2008									
Дослідження гомогенності/Homogenity test										
Аналіз викидів за тестом Кохрана(С -тест)/Cohran's C test for outliers						Аналіз на 'достатню однорідність'/Test for 'sufficient homogenity'				
Номер зразку/ Sample number	Результат/ Result A	Результат/ Result B	Average	SD²		Номер зразку /Sample number	Результат/ Result A	Результат/ Result B	SUM	Difference²
1	10,280	10,310	10,295	0,0005	0,00	1	10,28	10,31	20,59	0,0009
2	10,400	10,320	10,360	0,0032	0,00	2	10,40	10,32	20,72	0,0064
3	10,270	10,270	10,270	0,0000	0,00	3	10,27	10,27	20,54	0,0000
4	10,300	10,380	10,340	0,0032	0,00	4	10,30	10,38	20,68	0,0064
5	10,300	10,380	10,340	0,0032	0,00	5	10,30	10,38	20,68	0,0064
										0,0201
Mean	10,321		Worst pair	0,0032		Mean	10,321			
Max	10,40		SUM of SD²	0,0101		Max	10,40			
Min	10,27		C	0,3184		Min	10,27			
			Ccr, 5%	0,8413						
			Ccr, 1%	0,9279		Analytical variance S²an	0,0020	SD	0,0484	
			Conclusion			Sanal	0,0448	RSDR	0,4690	
			5%	PASS		Ssums	0,0055			
			1%	PASS		MSb	0,0028			
					Between sample variance S²sam		0,0004			
Remarks										
1. Cohran's C test is described in ISO 5727-2 and ISO 13528:2022										
2. Test for 'sufficient homogenity' is performed according to Annex B ISO 13528:2022										

Source of σp value to use Use(write '1')	Source	σp
	C>13.8%, HORWITZ	0,3213
1	120ppb<C<13.8%, HORWITZ	0,2905
	C<120 ppb	2,2706
MASS NEGATIVE POWER FOR HORWITZ EQUATION(%=2, ppb=9,ppm=6)		2
	SD	0,0459
	Trial SD	0,2880
	Target SD chosen	0,2905
	σ²all	0,0076
	Replicates	5
	F1	2,372
	F2	2,096
	Critical value	0,0222
	Between sample variance S²sam	0,0004
	Sufficient homogenity test	PASS

4.2.5. Data for all analytes

4.2.5.1. Sample A

	ISO 658:2002/ ДСТУ ISO 658:2006	ISO 605:1991/ ДСТУ ISO 605:2007	ISO 605:1991/ ДСТУ ISO 605:2007	ДСТУ 8837:2019/ ДСТУ 4964:2008	ДСТУ 8837:2019/ ДСТУ 4964:2008	ДСТУ ГОСТ 10840:2019 (ГОСТ 10840–2017, IDT)
	Total impurities content, %	Defective seeds, %	Organic and inorganic impurities, %	Foreign impurities, %	Oleaginous impurities, %	Test weight, g/l
Homogenity and stability (Гомогенність та стабільність)						
Cohran's 'C' test (С-тест "Кохрана")						
Crtitical value (5%,5pairs)=0,8412	0,2857	0,4961	0,5766	0,7258	0,3930	0,4737
Mean Result	0,3960	9,0010	0,6490	0,9800	8,4100	707,7000
Conclusion (Висновок)	PASS	PASS	PASS	PASS	PASS	PASS
Analytical variance test (тест аналітичної дисперсії)						
S^2anal	0,0013	0,0427	0,0011	0,0031	0,0636	1,9000
Sanal	0,0355	0,2065	0,0333	0,0557	0,2522	1,3784
S^2sample	0,0011	0,0041	0,0025	0,0033	0,0088	0,6250
σ_p	0,0182	0,2586	0,0277	0,0393	0,2441	9,5590
σ_p source	Horwitz	Horwitz	Horwitz	Horwitz	Horwitz	Trial SD
σ^2all	0,00003	0,0060	0,0001	0,0001	0,0054	8,2237
Critical value	0,00271	0,1037	0,0025	0,0068	0,1461	23,4886
Conclusion (Висновок)	PASS	PASS	PASS	PASS	PASS	PASS

4.2.5.2. Sample B

	ISO 665:2020/ ДСТУ EN ISO 665:2022 (EN ISO 665:2020, IDT; ISO 665:2020, IDT)/ ДСТУ ISO 665:2008	ISO 5983-1:2005/ ДСТУ EN ISO 5983-1:2022 (EN ISO 5983-1:2005, IDT; ISO 5983-1:2005, IDT)	ISO 659:2009 / ДСТУ EN ISO 659:2022 (EN ISO 659:2009, IDT; ISO 659:2009, IDT)	ISO 660:2020/ ДСТУ EN ISO 660:2022 (EN ISO 660:2020, IDT; ISO 660:2020, IDT)**	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001
	Moisture and volalile matter content, %	Crude protein content, % (Expressed as a percentage by mass of the product as received)	Oil content, % (Expressed as a percentage by mass of the product as received)	Acidity of oil (as oleic acid), %	Palmitic acid C16:0, %*	Stearic acid C18:0, %*	Total C18:1 (Sum of isomers), %*	Total C18:2 (Sum of isomers), % *	Total C18:3 (Sum of isomers), %*
Homogenity and stability (Гомогенність та стабільність)									
Cohran's 'C' test (C-тест "Кохрана")									
Crtitical value (5%,5pairs)=0,8412	0,3184	0,7024	0,6243	0,3077	0,4623	0,3311	0,3224	0,2857	0,3315
Mean Result	10,3210	34,5930	20,1010	0,7170	10,3320	5,0240	23,7460	51,4140	7,9050
Conclusion (Висновок)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Analytical variance test (тест аналітичної дисперсії)									
S^2anal	0,0020	0,0400	0,0052	0,0001	0,0011	0,0121	0,0015	0,0006	0,0037
Sanal	0,0448	0,2000	0,0720	0,0114	0,0326	0,1099	0,0390	0,0237	0,0604
S^2sample	0,0004	0,0000	0,0004	0,0008	0,0017	0,0000	0,0171	0,0070	0,0019
σ_p	0,2905	0,5882	0,4483	0,1320	0,2908	0,1576	0,4873	0,7170	0,2316
σ_p source	Horwitz	Horwitz	Horwitz	Trial SD	Horwitz	Horwitz	Horwitz	Horwitz	Horwitz
σ^2all	0,0076	0,0311	0,0181	0,0016	0,0076	0,0022	0,0214	0,0463	0,0048
Critical value	0,0222	0,1577	0,0538	0,0040	0,0203	0,0306	0,0539	0,1109	0,0191
Conclusion (Висновок)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

*Calculate the area fraction of the individual fatty acid methyl esters, expressed as a percentage by sum of areas under all peaks of all individual fatty acid methyl ester, without correction factors

** Oil extraction - according to ISO 659:2009/ ДСТУ ISO 659:2007 in seeds separated from the total impurity according to ISO 658:2002/ ДСТУ ISO 658:2006.

5. DATA SUMMARY
Sample A

Method	ISO 658:2002/ ДСТУ ISO 658:2006	ISO 605:1991/ ДСТУ ISO 605:2007	ISO 605:1991/ ДСТУ ISO 605:2007	USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020	USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020	USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020	USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020
	Total impurities content, %	Defective seeds, %	Organic and inorganic impurities, %	Foreign material, %	Damaged kernels, %	Soybeans of other colors, %	Splits, %
No of Results	19	14	14	7	7	7	8
No of Results |z|>3 or NS	1	2	1	0	1	0	0
No of Results |z|>3, % or NS,%	5,263	14,286	7,143	0,000	14,286	0,000	0,000
Mean	0,755	9,058	0,816	0,634	1,820	1,480	6,458
Min	0,240	2,600	0,340	0,350	0,990	0,470	4,840
Max	4,800	13,370	2,200	1,060	3,690	3,050	8,400
SD	0,996	2,265	0,429	0,249	0,913	0,829	1,210
Median	0,520	9,090	0,750	0,550	1,400	1,470	6,590
Robust mean (assigned value)	0,542	9,233	0,740	0,671	1,639	1,370	6,428
Robust SD	0,180	0,537	0,143	0,216	0,522	0,608	1,158
SD from method (Tr.SD)	0,174	N/A	N/A	N/A	N/A	N/A	N/A
SD from Horwitz eq.	0,024	0,264	0,031	0,028	0,061	0,052	0,194
Target SD	0,174	1,110	0,159	0,216	0,522	0,608	1,158
Source of target SD of PT	Method Tr SD	Trial SD	Trial SD	Trial SD	Trial SD	Trial SD	Trial SD

Method	ДСТУ 8837:2019/ ДСТУ 4964:2008	ДСТУ 8837:2019/ ДСТУ 4964:2008	ДСТУ ГОСТ 10840:2019 (ГОСТ 10840–2017, IDT)	USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020	Laboratory choice	Laboratory choice
	Foreign impurities, %	Oleaginous impurities, %	Test weight, g/l	Test weight, lb/bu	Odor	Color
No of Results	22	22	13	2	14	14
No of Results |z|>3 or NS	0	0	0	0	0	0
No of Results |z|>3, % or NS,%	0,000	0,000	0,000	0,000	0,000	0,000
Mean	1,043	9,396	715,157	56,800		
Min	0,570	6,180	706,000	55,100		
Max	1,410	12,350	729,000	58,500		
SD	0,221	1,417	7,552	2,404		
Median	1,030	9,150	713,000	56,800		
Robust mean (assigned value)	1,049	9,340	714,799	56,800		
Robust SD	0,177	1,019	6,918	2,404		
SD from method (Tr.SD)	N/A	N/A	N/A	N/A		
SD from Horwitz eq.	0,042	0,267	N/A	N/A		
Target SD	0,194	1,358	9,559	0,864		
Source of target SD of PT	Trial SD	Trial SD	Trial SD	Trial SD		

Sample B

Method	ISO 665:2020/ ДСТУ EN ISO 665:2022 (EN ISO 665:2020, IDT; ISO 665:2020, IDT)/ ДСТУ ISO 665:2008	ДСТУ 4811:2007 п.4	Express (By express analyzer graduated calibrated to the reference methods ISO 665:2020/ ДСТУ ISO 665:2008)	Express (By express analyzer graduated calibrated to the reference method ДСТУ 4811:2007 п.4)	ISO 5983-1:2005/ ДСТУ EN ISO 5983-1:2022 (EN ISO 5983-1:2005, IDT; ISO 5983-1:2005, IDT)	ISO 5983-2:2009/ ДСТУ EN ISO 5983-2:2022 (EN ISO 5983-2:2009, IDT; ISO 5983-2:2009, IDT)	ISO 16634-1:2008/ ДСТУ EN ISO 16634-1:2022 (EN ISO 16634-1:2008, IDT; ISO 16634-1:2008, IDT)	ДСТУ 7169:2010	Express (By express analyzer graduated calibrated to the reference methods ISO 5983-1:2005/ ДСТУ EN ISO 5983-1:2022 (EN ISO 5983-1:2005, IDT; ISO 5983-1:2005, IDT)	Express (By express analyzer graduated calibrated to the reference method ДСТУ 7169:2010)	ISO 659:2009 / ДСТУ EN ISO 659:2022 (EN ISO 659:2009, IDT; ISO 659:2009, IDT)
	Moisture and volalile matter content, %	Moisture content, %	Moisture content, %	Moisture content, %	Crude protein content, % (Expressed as a percentage by mass of the product as received)	Crude protein content, % (Expressed as a percentage by mass of the product as received)	Crude protein content, % (Expressed as a percentage by mass of the product as received, factor for converting nitrogen content to protein content – 6.25)	Crude protein content, % (Expressed on dry matter, factor for converting nitrogen content to protein content – 5.3)	Protein content, % (Expressed as a percentage by mass of the product as received)	Protein content, % (Expressed on dry matter)	Oil content, % (Expressed as a percentage by mass of the product as received)
No of Results	20	21	6	10	6	10	2	12	6	5	13
No of Results |z|>3 or NS	0	0	0	0	0	0	0	0	0	0	1
No of Results |z|>3, % or NS,%	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	7,692
Mean	10,166	9,621	10,377	9,768	34,772	34,905	34,800	32,572	34,650	38,362	20,247
Min	9,400	9,100	10,200	9,500	33,590	34,380	34,800	31,750	34,400	38,160	18,880
Max	10,600	10,080	10,650	10,200	35,340	35,960	34,800	33,250	35,000	38,570	21,050
SD	0,330	0,299	0,196	0,220	0,617	0,471	0,000	0,456	0,205	0,163	0,618
Median	10,305	9,660	10,285	9,740	34,890	34,735	34,800	32,695	34,650	38,300	20,170
Robust mean (assigned value)	10,221	9,624	10,377	9,751	35,008	34,845	34,800	32,610	34,630	38,362	20,313
Robust SD	0,223	0,290	0,196	0,188	0,240	0,342	0,000	0,356	0,166	0,163	0,486
SD from method (Tr.SD)	0,399	0,250	N/A	N/A	1,030	0,400	0,496	1,130	N/A	N/A	0,380
SD from Horwitz eq.	0,288	0,274	0,292	0,277	0,592	0,590	0,590	0,571	0,588	0,619	0,451
Target SD	0,288	0,274	0,292	0,277	0,592	0,590	0,590	0,571	0,588	0,619	0,451
Source of target SD of PT	Horwitz	Horwitz	Horwitz	Horwitz	Horwitz	Horwitz	Horwitz	Horwitz	Horwitz	Horwitz	Horwitz

Method	ДСТУ 7577:2014	Express (By express analyzer graduated/calibrated to the reference method ISO 659:2009)	Express (By express analyzer graduated/calibrated to the reference method ДСТУ 7577:2014)	ISO 660:2020/ ДСТУ EN ISO 660:2022 (EN ISO 660:2020, IDT; ISO 660:2020, IDT)**	ISO 729:1988/ ДСТУ ISO 729:2005**	ISO 660:2020/ ДСТУ EN ISO 660:2022 (EN ISO 660:2020, IDT; ISO 660:2020, IDT)**	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ДСТУ ISO 5508:2001	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001
	Oil content, % (Expressed on dry matter, in seeds, cleaned from foreign matter according ДСТУ 8839:2019/ДСТУ 4964:2008, with pre-drying)	Oil content, % (Expressed as a percentage by mass of the product as received)	Oil content, % (Expressed on dry matter)	Acidity of oil (as oleic acid), %	Acidity of oil (as oleic acid), %	Acid value, mg KOH	Palmitic acid C16:0, %*	Stearic acid C18:0, %*	Total C18:1 (Sum of isomers), % *	Total C18:2 (Sum of isomers), %*	Total C18:3 (Sum of isomers), %*
No of Results	12	8	4	10	6	9	6	6	6	6	6
No of Results |z|>3 or NS	0	0	0	0	0	0	0	0	0	0	0
No of Results |z|>3, % or NS,%	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Mean	22,309	20,476	22,493	0,663	0,675	1,343	10,207	4,937	24,025	51,453	7,772
Min	21,610	19,800	22,320	0,510	0,570	1,020	10,000	4,630	23,750	50,800	7,260
Max	23,200	21,000	22,600	0,860	0,800	1,720	10,400	5,020	24,540	51,930	7,980
SD	0,371	0,424	0,135	0,132	0,116	0,253	0,178	0,152	0,319	0,391	0,269
Median	22,320	20,450	22,525	0,620	0,665	1,240	10,205	4,995	23,865	51,470	7,895
Robust mean (assigned value)	22,301	20,485	22,493	0,663	0,675	1,343	10,207	4,988	24,008	51,485	7,831
Robust SD	0,158	0,408	0,135	0,132	0,116	0,253	0,178	0,033	0,287	0,331	0,144
SD from method (Tr.SD)	N/A	N/A	N/A	N/A	N/A	N/A	0,430	0,270	0,590	1,330	0,430
SD from Horwitz eq.	0,472	0,453	0,474	0,028	0,029	0,073	0,288	0,157	0,490	0,718	0,230
Target SD	0,472	0,453	0,474	0,132	0,116	0,253	0,430	0,270	0,590	1,330	0,430
Source of target SD of PT	Horwitz	Horwitz	Horwitz	Trial SD	Trial SD	Trial SD	Method Tr SD	Method Tr SD	Method Tr SD	Method Tr SD	Method Tr SD

*Calculate the area fraction of the individual fatty acid methyl esters, expressed as a percentage by sum of areas under all peaks of all individual fatty acid methyl ester, without correction factors

** Oil extraction - according to ISO 659:2009/ ДСТУ ISO 659:2007 in seeds separated from the total impurity according to ISO 658:2002/ ДСТУ ISO 658:2006.

6. RAW DATA
Sample A

Method	ISO 658:2002/ ДСТУ ISO 658:2006	ISO 605:1991/ ДСТУ ISO 605:2007	ISO 605:1991/ ДСТУ ISO 605:2007	USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020	USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020	USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020	USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020	ДСТУ 8837:2019/ ДСТУ 4964:2008	ДСТУ 8837:2019/ ДСТУ 4964:2008	ДСТУ ГОСТ 10840:2019 (ГОСТ 10840–2017, IDT)	USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020
Laboratory number	Total impurities content, %	Defective seeds, %	Organic and inorganic impurities, %	Foreign material, %	Damaged kernels, %	Soybeans of other colors, %	Splits, %	Foreign impurities, %	Oleaginous impurities, %	Test weight, g/l	Test weight, lb/bu
1	0,42	9,00	0,65	0,88	2,26	1,36	7,15	1,01	8,45	708	55,1
2	0,35							1,41	10,49	721,34	
3	0,76	10,82	0,76								
4								1,00	8,20	710	
5	0,48							0,95	10,06		
6								1,35	12,35	709	
7	0,37	9,09	0,68					1,03	8,81		
8								1,25	10,9	706	
9	0,63	9,23	0,9	-	-	-	-	0,97	10,19	708,2	-
10	4,8	2,6	2,2								
11	0,63							1,12	8,63		
12								0,8	9,1		
13	0,52							0,68	9,43		
14	0,35	9,04	0,76					1,17	8,59		
15								1,16	10		
16	0,63	8,91	0,68	-	-	-	-	1,03	10,71	-	-
17	0,57	7,69	0,89	1,06	1,68	0,47	6,52	1,11	8,38	713	58,5
18								0,57	12,22		
19											
20	0,27	9,58	0,57				5,85	1,25	9,2	713	
21	0,44	10,01	0,52	0,61	1,4	1,47	4,84	0,86	9,64	726	
22	0,72	9,09	0,74	0,54	0,99	1,78	7,29	1,02	6,18	715,5	
23	0,9	9,48	0,82	0,55	1,38	1,48	8,40	1,05	8,60	729	
24	0,49										
25	0,77	13,37	0,91	0,45	3,69	3,05	6,66	1,40	7,90	714,00	
26	0,24	8,9	0,34	0,35	1,34	0,75	4,95	0,76	8,68	724	

Method	Laboratory choice	Laboratory choice
Laboratory number	Odor	Color
1	Властивий нормальному зерну	Відповідає здоровому зерну
2		
3		
4	Властивий нормальному зерну	Відповідає здоровому зерну
5		
6		
7	Властивий нормальному зерну	Відповідає здоровому зерну
8		
9	Властивий нормальному зерну	Відповідає здоровому зерну
10		
11	Typical of normal grain	Complies with healthy grain
12	Властивий нормальному зерну	Відповідає здоровому зерну
13	Властивий нормальному зерну	Відповідає здоровому зерну
14	Властивий нормальному зерну	Відповідає здоровому зерну
15		
16	Властивий нормальному зерну	Відповідає здоровому зерну
17	Typical of normal grain	Complies with healthy grain
18		
19		
20	Властивий нормальному зерну	Відповідає здоровому зерну
21		
22	Властивий нормальному зерну	Відповідає здоровому зерну
23	Властивий нормальному зерну	Відповідає здоровому зерну
24		
25	Властивий нормальному зерну	Відповідає здоровому зерну
26		

Sample B

Method	ISO 665:2020/ ДСТУ EN ISO 665:2022 (EN ISO 665:2020, IDT; ISO 665:2020, IDT)/ ДСТУ ISO 665:2008	ДСТУ 4811:2007 п.4	Express (By express analyzer graduated calibrated to the reference methods ISO 665:2020/ ДСТУ ISO 665:2008)	Express (By express analyzer graduated calibrated to the reference method ДСТУ 4811:2007 п.4)	ISO 5983-1:2005/ ДСТУ EN ISO 5983-1:2022 (EN ISO 5983-1:2005, IDT; ISO 5983-1:2005, IDT)	ISO 5983-2:2009/ ДСТУ EN ISO 5983-2:2022 (EN ISO 5983-2:2009, IDT; ISO 5983-2:2009, IDT)	ISO 16634-1:2008/ ДСТУ EN ISO 16634-1:2022 (EN ISO 16634-1:2008, IDT; ISO 16634-1:2008, IDT)	ДСТУ 7169:2010	Express (By express analyzer graduated calibrated to the reference methods ISO 5983-1:2005/ ДСТУ EN ISO 5983-1:2022 (EN ISO 5983-1:2005, IDT; ISO 5983-1:2005, IDT)	Express (By express analyzer graduated calibrated to the reference method ДСТУ 7169:2010)	ISO 659:2009 / ДСТУ EN ISO 659:2022 (EN ISO 659:2009, IDT; ISO 659:2009, IDT)
Laboratory number	Moisture and volalile matter content, %	Moisture content, %	Moisture content, %	Moisture content, %	Crude protein content, % (Expressed as a percentage by mass of the product as received)	Crude protein content, % (Expressed as a percentage by mass of the product as received)	Crude protein content, % (Expressed as a percentage by mass of the product as received, factor for converting nitrogen content to protein content – 6.25)	Crude protein content, % (Expressed on dry matter, factor for converting nitrogen content to protein content – 5.3)	Protein content, % (Expressed as a percentage by mass of the product as received)	Protein content, % (Expressed on dry matter)	Oil content, % (Expressed as a percentage by mass of the product as received)
1	10,34	9,92	10,28	9,90	34,75		34,80	32,71	34,65	38,57	20,12
2	10,32	9,83				34,49					
3	10,6		10,6			34,7			34,65		20,16
4		9,8		9,6					34,7		
5	9,6	9,3	10,2			34,38			34,4	38,3	
6		9,7						33,15			
7	10,38	9,56				35,35		33,25			20,56
8		10,0		9,88				32,29		38,16	
9	10,37	9,7	10,29	9,9	-	34,7	-	32,73	-	-	20,82
10	10,34					35,96					18,88
11	10,50	9,1							34,5	38,30	
12		9,4						32,45			20,15
13	10,20				33,59			31,75			21,05
14	10,29	9,66			35,34	35,07					20,51
15		10,08						32,68			19,77
16	10,32	9,4	10,24	9,6	-	34,6	34,8	32,44	-	38,48	20,86
17	10,46	9,90	10,65		34,89	35,03		32,78	35,00		20,74
18		9,29						31,83			
19	10,12				34,89	34,77		32,8			19,42
20	10,20	10,0		10,2							
21	10,18	9,9		9,9							
22	9,40	9,2									
23	9,90	9,6		9,6							
24	10,40				35,17						20,17
25	9,70	9,20		9,60							
26	9,70	9,5		9,50							

Method	ДСТУ 7577:2014	Express (By express analyzer graduated/calibrated to the reference method ISO 659:2009)	Express (By express analyzer graduated/calibrated to the reference method ДСТУ 7577:2014)	ISO 660:2020/ ДСТУ EN ISO 660:2022 (EN ISO 660:2020, IDT; ISO 660:2020, IDT)**	ISO 729:1988/ ДСТУ ISO 729:2005**	ISO 660:2020/ ДСТУ EN ISO 660:2022 (EN ISO 660:2020, IDT; ISO 660:2020, IDT)**	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ДСТУ ISO 5508:2001	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001
Laboratory number	Oil content, % (Expressed on dry matter, in seeds, cleaned from foreign matter according ДСТУ 8839:2019/ДСТУ 4964:2008, with pre-drying)	Oil content, % (Expressed as a percentage by mass of the product as received)	Oil content, % (Expressed on dry matter)	Acidity of oil (as oleic acid), %	Acidity of oil (as oleic acid), %	Acid value, mg KOH	Palmitic acid C16:0, %*	Stearic acid C18:0, %*	Total C18:1 (Sum of isomers), % *	Total C18:2 (Sum of isomers), %*	Total C18:3 (Sum of isomers), %*
1	22,28	20,20	22,32	0,75	0,76	1,49	10,34	5,02	23,75	51,41	7,91
2	23,2			0,61		1,21					
3		20,2		0,53			10	4,99	24,54	51,53	7,26
4		19,8									
5	21,95	20,3	22,6								
6	22,39										
7	22,53			0,51		1,02	10,36	5,02	23,83	51,31	7,89
8	22,32										
9	22,17	21	-	0,8	0,78	1,58	-	-	-	-	-
10					0,57						
11		21	22,6								
12	22,4			0,63		1,24	10,4	5	23,9	50,8	7,9
13				0,57	0,57	1,14	10,07	4,63	24,3	51,93	7,69
14				0,86		1,72					
15											
16	22,32	20,71	22,45	0,82	0,8	1,59	-	-	-	-	-
17	22,36	20,60		0,55	0,57	1,10	10,07	4,96	23,83	51,74	7,98
18	22,18										
19	21,61										
20											
21											
22											
23											
24											
25											
26											

*Calculate the area fraction of the individual fatty acid methyl esters, expressed as a percentage by sum of areas under all peaks of all individual fatty acid methyl ester, without correction factors

** Oil extraction - according to ISO 659:2009/ ДСТУ ISO 659:2007 in seeds separated from the total impurity according to ISO 658:2002/ ДСТУ ISO 658:2006.

7. Z SCORES

Sample A

Method	ISO 658:2002/ ДСТУ ISO 658:2006	ISO 605:1991/ ДСТУ ISO 605:2007	ISO 605:1991/ ДСТУ ISO 605:2007	USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020	USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020	USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020	USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020	ДСТУ 8837:2019/ ДСТУ 4964:2008	ДСТУ 8837:2019/ ДСТУ 4964:2008	ДСТУ ГОСТ 10840:2019 (ГОСТ 10840–2017, IDT)	USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020	Laboratory choice	Laboratory choice
Laboratory number	Total impurities content, %	Defective seeds, %	Organic and inorganic impurities, %	Foreign material, %	Damaged kernels, %	Soybeans of other colors, %	Splits, %	Foreign impurities, %	Oleaginous impurities, %	Test weight, g/l	Test weight, lb/bu	Odor	Color
1	-0,70	-0,21	-0,57	0,97	1,19	-0,02	0,62	-0,20	-0,66	-0,71	-1,97	S	S
2	-1,10							1,86	0,85	0,68			
3	1,25	1,43	0,12										
4								-0,25	-0,84	-0,50		S	S
5	-0,36							-0,51	0,53				
6								1,55	2,22	-0,61			
7	-0,99	-0,13	-0,38					-0,10	-0,39			S	S
8								1,04	1,15	-0,92			
9	0,51	0,00	1,00					-0,41	0,63	-0,69		S	S
10	24,47	-5,98	9,18										
11	0,51							0,37	-0,52			S	S
12								-1,28	-0,18			S	S
13	-0,13							-1,90	0,07			S	S
14	-1,10	-0,17	0,12					0,62	-0,55			S	S
15								0,57	0,49				
16	0,51	-0,29	-0,38					-0,10	1,01			S	S
17	0,16	-1,39	0,94	1,81	0,08	-1,48	0,08	0,32	-0,71	-0,19	1,97	S	S
18								-2,47	2,12				
19													
20	-1,56	0,31	-1,07				-0,50	1,04	-0,10	-0,19		S	S
21	-0,59	0,70	-1,39	-0,28	-0,46	0,16	-1,37	-0,97	0,22	1,17			
22	1,02	-0,13	0,00	-0,61	-1,24	0,67	0,74	-0,15	-2,33	0,07		S	S
23	2,06	0,22	0,50	-0,56	-0,50	0,18	1,70	0,01	-0,54	1,49		S	S
24	-0,30												
25	1,31	3,73	1,07	-1,02	3,93	2,76	0,20	1,81	-1,06	-0,08		S	S
26	-1,74	-0,30	-2,52	-1,49	-0,57	-1,02	-1,28	-1,49	-0,49	0,96			

Sample B

Method	ISO 665:2020/ ДСТУ EN ISO 665:2022 (EN ISO 665:2020, IDT; ISO 665:2020, IDT)/ ДСТУ ISO 665:2008	ДСТУ 4811:2007 п.4	Express (By express analyzer graduated calibrated to the reference methods ISO 665:2020/ ДСТУ ISO 665:2008)	Express (By express analyzer graduated calibrated to the reference method ДСТУ 4811:2007 п.4)	ISO 5983-1:2005/ ДСТУ EN ISO 5983-1:2022 (EN ISO 5983-1:2005, IDT; ISO 5983-1:2005, IDT)	ISO 5983-2:2009/ ДСТУ EN ISO 5983-2:2022 (EN ISO 5983-2:2009, IDT; ISO 5983-2:2009, IDT)	ISO 16634-1:2008/ ДСТУ EN ISO 16634-1:2022 (EN ISO 16634-1:2008, IDT; ISO 16634-1:2008, IDT)	ДСТУ 7169:2010	Express (By express analyzer graduated calibrated to the reference methods ISO 5983-1:2005/ ДСТУ EN ISO 5983-1:2022 (EN ISO 5983-1:2005, IDT; ISO 5983-1:2005, IDT)	Express (By express analyzer graduated calibrated to the reference method ДСТУ 7169:2010)	ISO 659:2009 / ДСТУ EN ISO 659:2022 (EN ISO 659:2009, IDT; ISO 659:2009, IDT)
Laboratory number	Moisture and volalile matter content, %	Moisture content, %	Moisture content, %	Moisture content, %	Crude protein content, % (Expressed as a percentage by mass of the product as received)	Crude protein content, % (Expressed as a percentage by mass of the product as received)	Crude protein content, % (Expressed as a percentage by mass of the product as received, factor for converting nitrogen content to protein content – 6.25)	Crude protein content, % (Expressed on dry matter, factor for converting nitrogen content to protein content – 5.3)	Protein content, % (Expressed as a percentage by mass of the product as received)	Protein content, % (Expressed on dry matter)	Oil content, % (Expressed as a percentage by mass of the product as received)
1	0,41	1,08	-0,33	0,54	-0,44		0,00	0,18	0,03	0,34	-0,43
2	0,34	0,75				-0,60					
3	1,31		0,77			-0,25			0,03		-0,34
4		0,64		-0,55					0,12		
5	-2,16	-1,18	-0,61			-0,79			-0,39	-0,10	
6		0,28						0,95			
7	0,55	-0,23				0,86		1,12			0,55
8		1,37		0,46				-0,56		-0,33	
9	0,52	0,28	-0,30	0,54		-0,25		0,21			1,12
10	0,41					1,89					-3,18
11	0,97	-1,91							-0,22	-0,10	
12		-0,82						-0,28			-0,36
13	-0,07				-2,40			-1,51			1,64
14	0,24	0,13			0,56	0,38					0,44
15		1,66						0,12			-1,20
16	0,34	-0,82	-0,47	-0,55		-0,41	0,00	-0,30		0,19	1,21
17	0,83	1,01	0,94		-0,20	0,31		0,30	0,63		0,95
18		-1,22						-1,37			
19	-0,35				-0,20	-0,13		0,33			-1,98
20	-0,07	1,37		1,62							
21	-0,14	1,01		0,54							
22	-2,85	-1,55									
23	-1,11	-0,09		-0,55							
24	0,62				0,27						-0,32
25	-1,81	-1,55		-0,55							
26	-1,81	-0,45		-0,91							

Method	ДСТУ 7577:2014	Express (By express analyzer graduated/calibrated to the reference method ISO 659:2009)	Express (By express analyzer graduated/calibrated to the reference method ДСТУ 7577:2014)	ISO 660:2020/ ДСТУ EN ISO 660:2022 (EN ISO 660:2020, IDT; ISO 660:2020, IDT)***	ISO 729:1988/ ДСТУ ISO 729:2005***	ISO 660:2020/ ДСТУ EN ISO 660:2022 (EN ISO 660:2020, IDT; ISO 660:2020, IDT)***	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001	ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ ДСТУ ISO 5508:2001
Laboratory number	Oil content, %*	Oil content, % (Expressed as a percentage by mass of the product as received)	Oil content, % (Expressed on dry matter)	Acidity of oil (as oleic acid), %	Acidity of oil (as oleic acid), %	Acid value, mg KOH	Palmitic acid C16:0, %**	Stearic acid C18:0, %**	Total C18:1 (Sum of isomers), % **	Total C18:2 (Sum of isomers), %**	Total C18:3 (Sum of isomers), %**
1	-0,05	-0,63	-0,36	0,66	0,73	0,58	0,31	0,12	-0,44	-0,06	0,18
2	1,90			-0,40		-0,53					
3		-0,63		-1,01			-0,48	0,01	0,90	0,03	-1,33
4		-1,51									
5	-0,74	-0,41	0,23								
6	0,19										
7	0,48			-1,16		-1,28	0,36	0,12	-0,30	-0,13	0,14
8	0,04										
9	-0,28	1,14		1,04	0,91	0,93					
10					-0,91						
11		1,14	0,23								
12	0,21			-0,25		-0,41	0,45	0,04	-0,18	-0,51	0,16
13				-0,71	-0,91	-0,80	-0,32	-1,33	0,49	0,33	-0,33
14				1,50		1,49					
15											
16	0,04	0,50	-0,09	1,19	1,08	0,97					
17	0,12	0,25		-0,86	-0,91	-0,96	-0,32	-0,10	-0,30	0,19	0,35
18	-0,26										
19	-1,46										
20											
21											
22											
23											
24											
25											
26											

* Expressed on dry matter, in seeds, cleaned from foreign matter according ДСТУ 8839:2019/ДСТУ 4964:2008, with pre-drying

**Calculate the area fraction of the individual fatty acid methyl esters, expressed as a percentage by sum of areas under all peaks of all individual fatty acid methyl ester, without correction factors

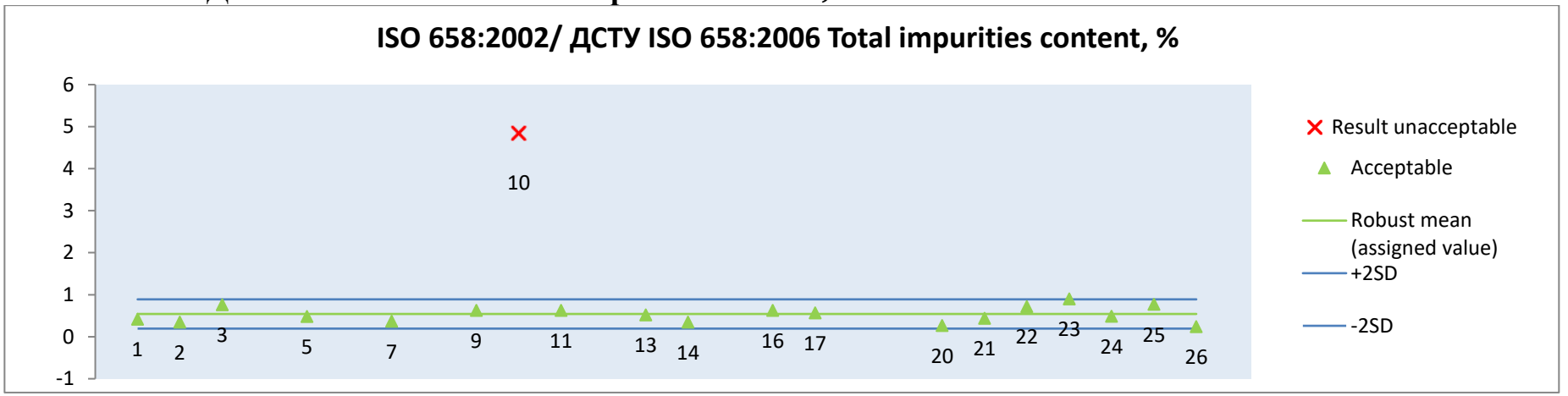
*** Oil extraction - according to ISO 659:2009/ ДСТУ ISO 659:2007 in seeds separated from the total impurity according to ISO 658:2002/ ДСТУ ISO 658:2006.

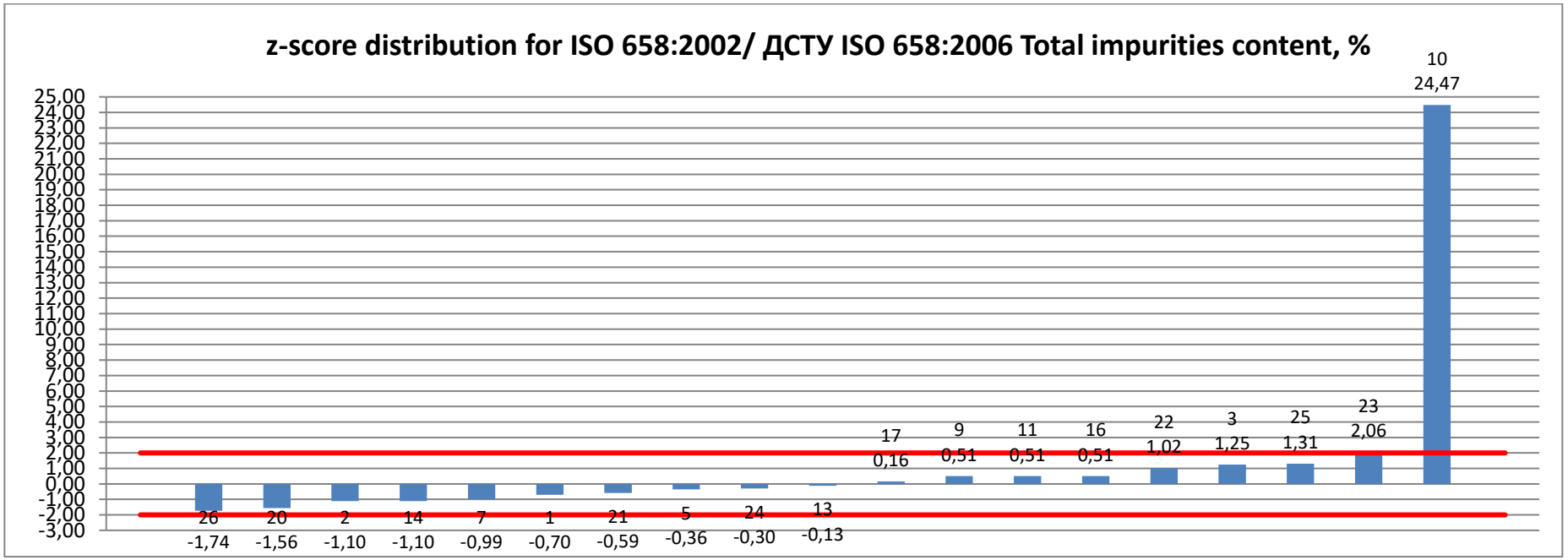
Remarks

1. Green colored cells contain results that are considered to be satisfactory.
2. Red colored cells contain results that are considered to be not satisfactory.
3. Results that are considered to be questionable are marked by yellow colored cell.
4. Blank cell – results were not reported by the Participants.

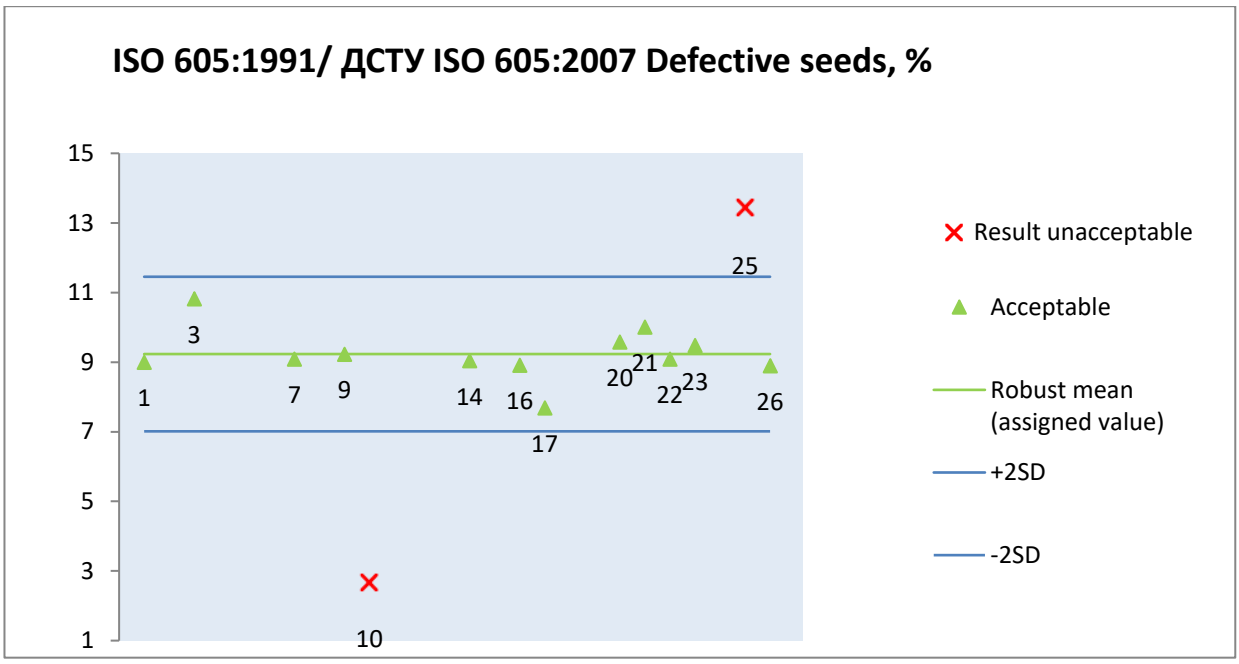
8. Z SCORE PLOTS AND RESULTS CHARTS.

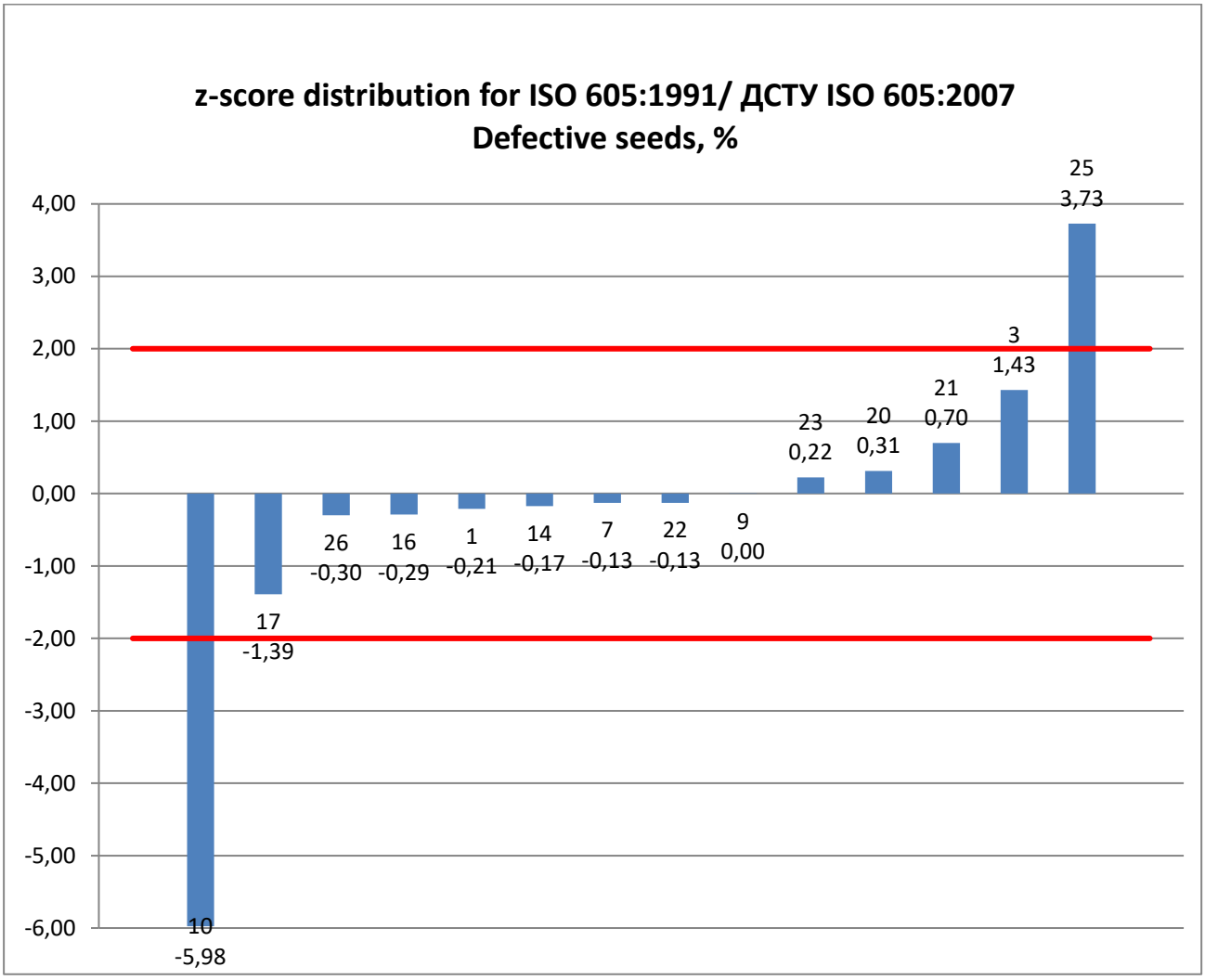
8.1 ISO 658:2002/ДСТУ ISO 658:2006 Total impurities content, %



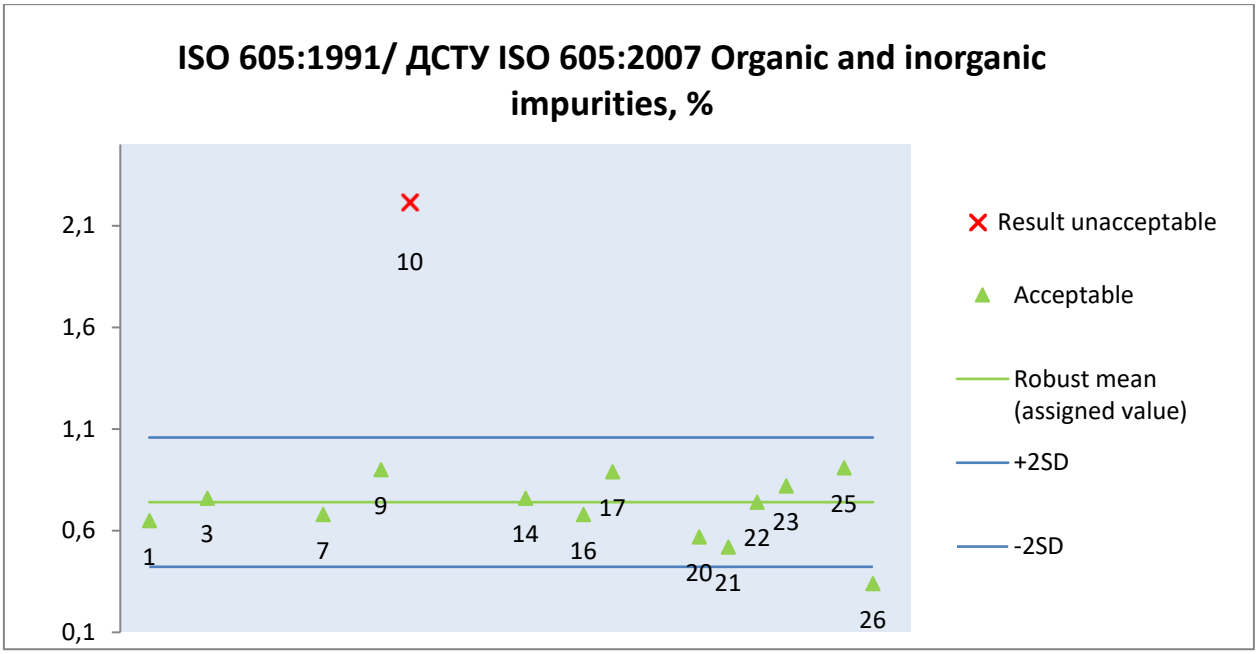


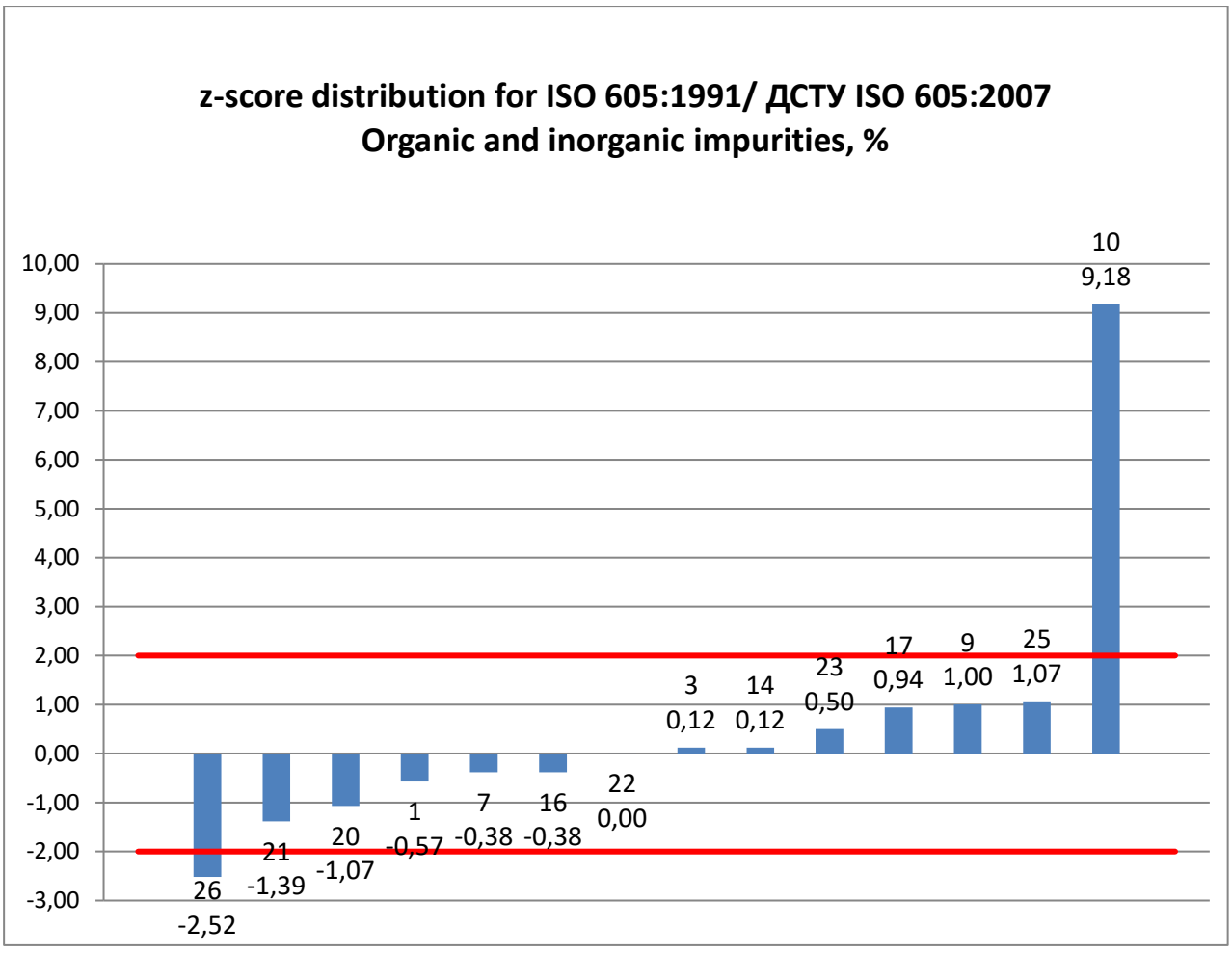
8.2 ISO 605:1991/ДСТУ ISO 605:2007 Defective seeds, %



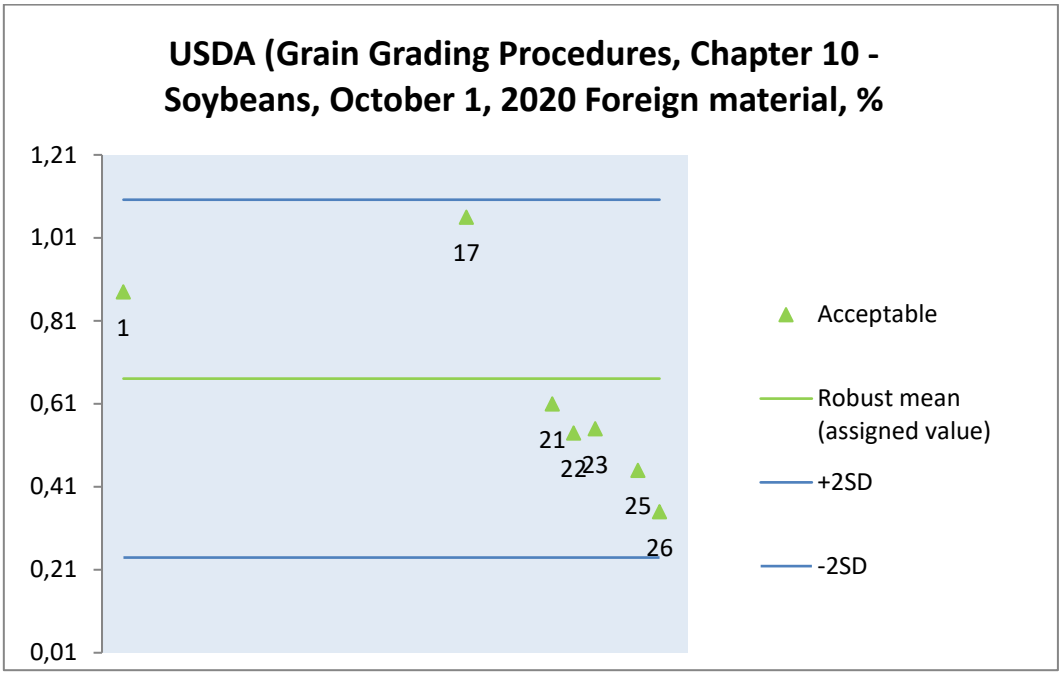


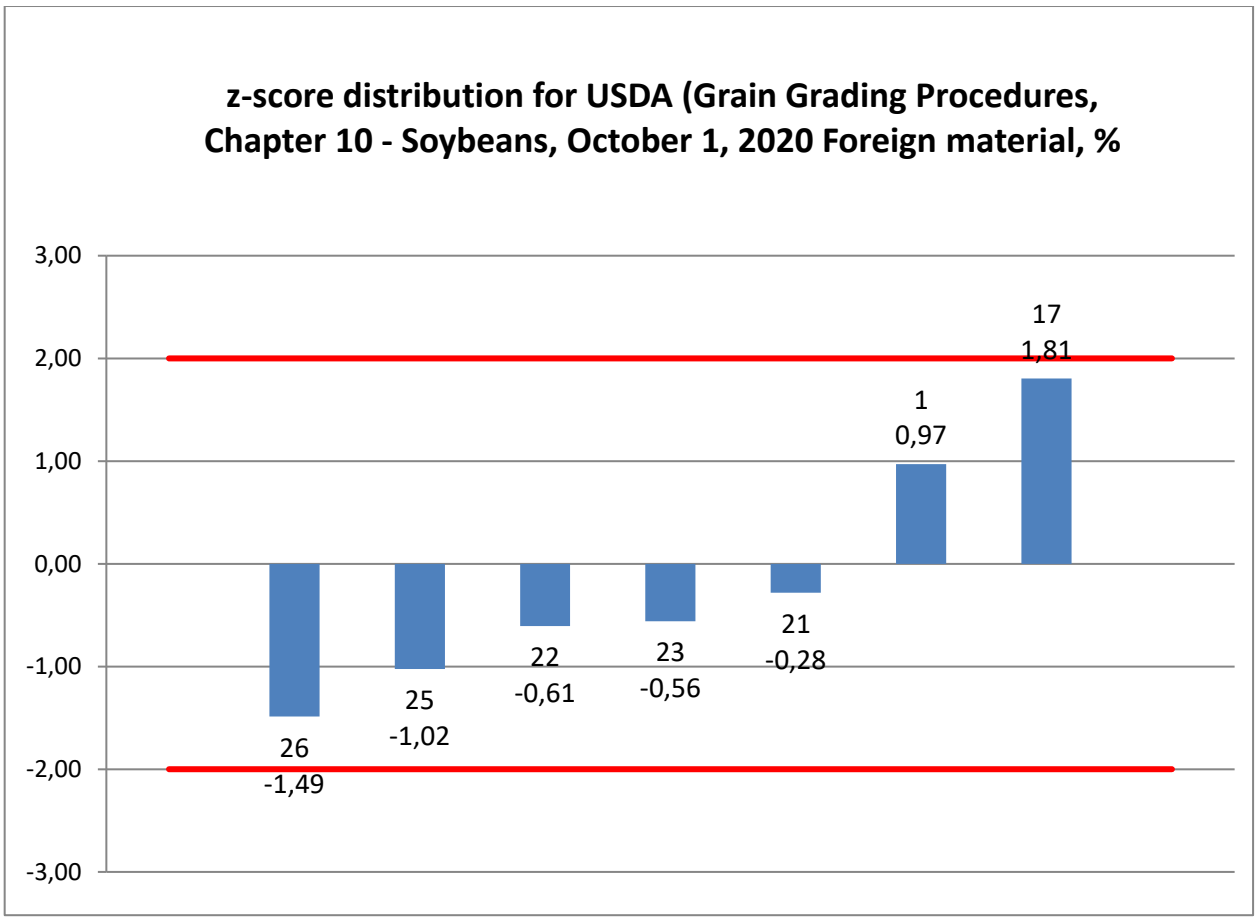
8.3 ISO 605:1991/ДСТУ ISO 605:2007 Organic and inorganic impurities, %



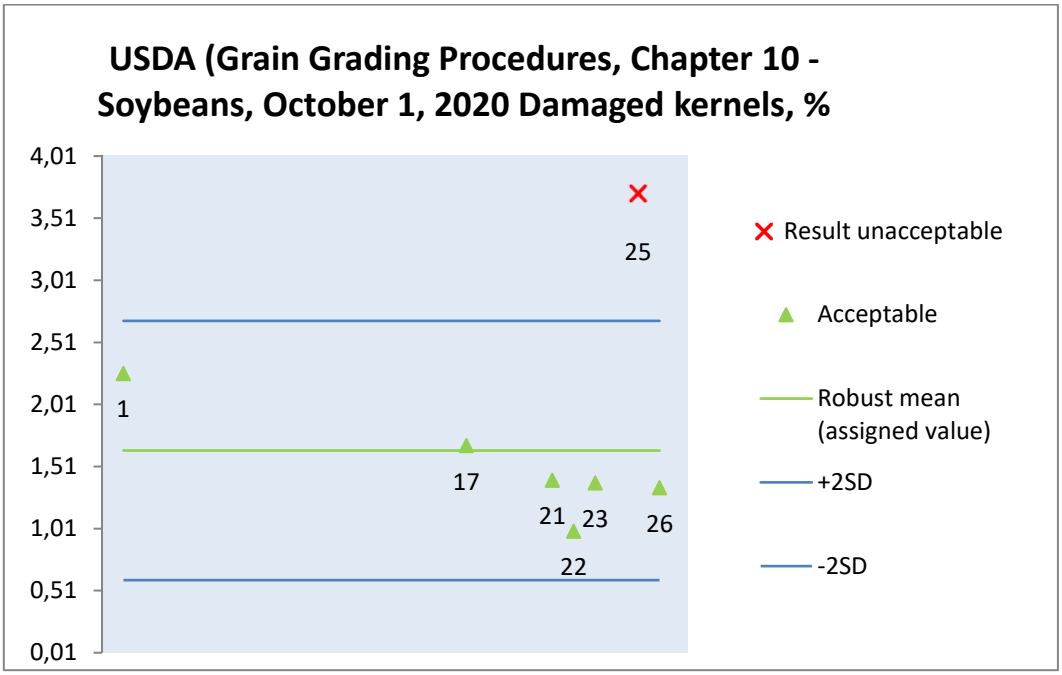


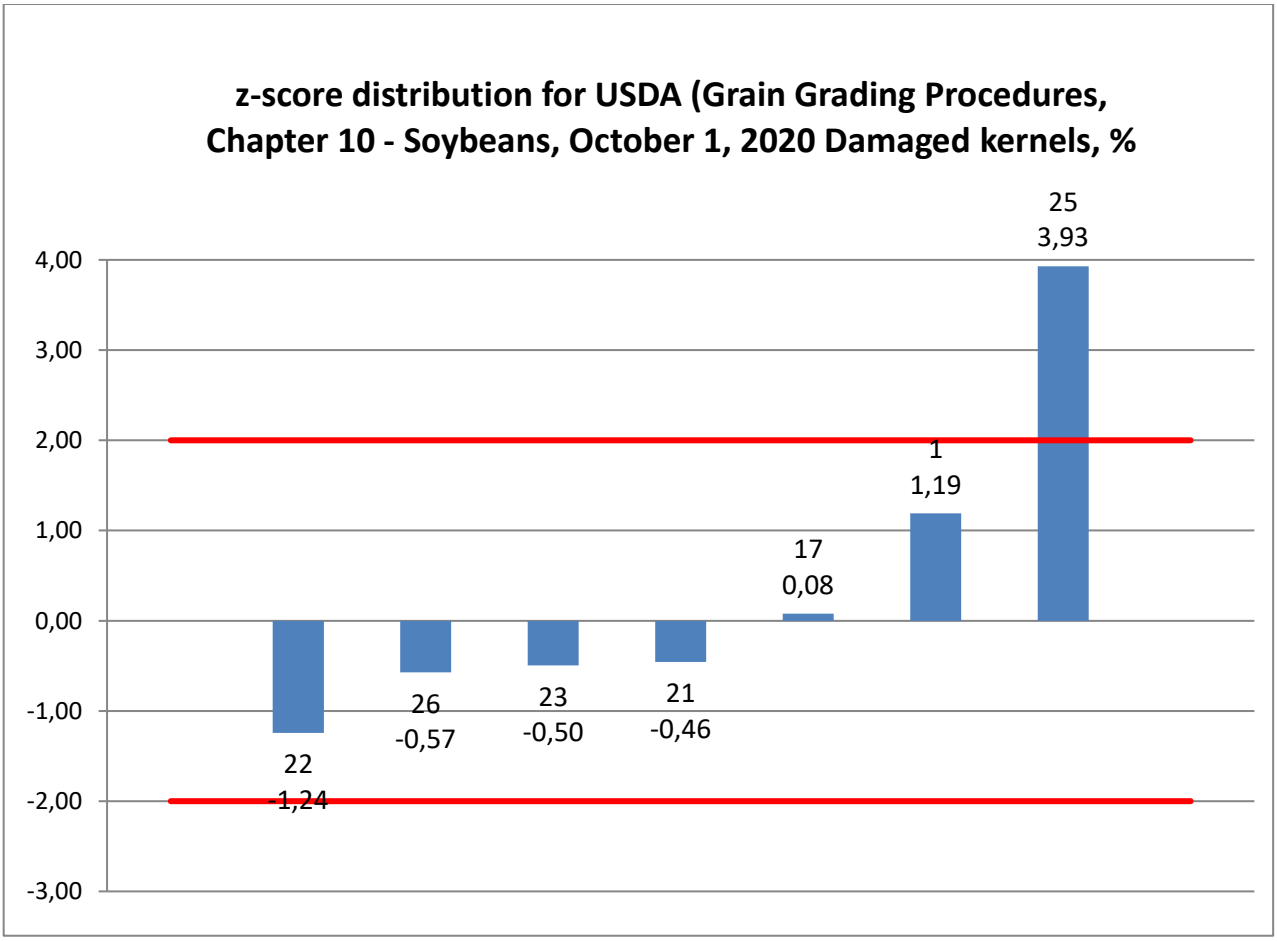
8.4 USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020) Foreign material, %



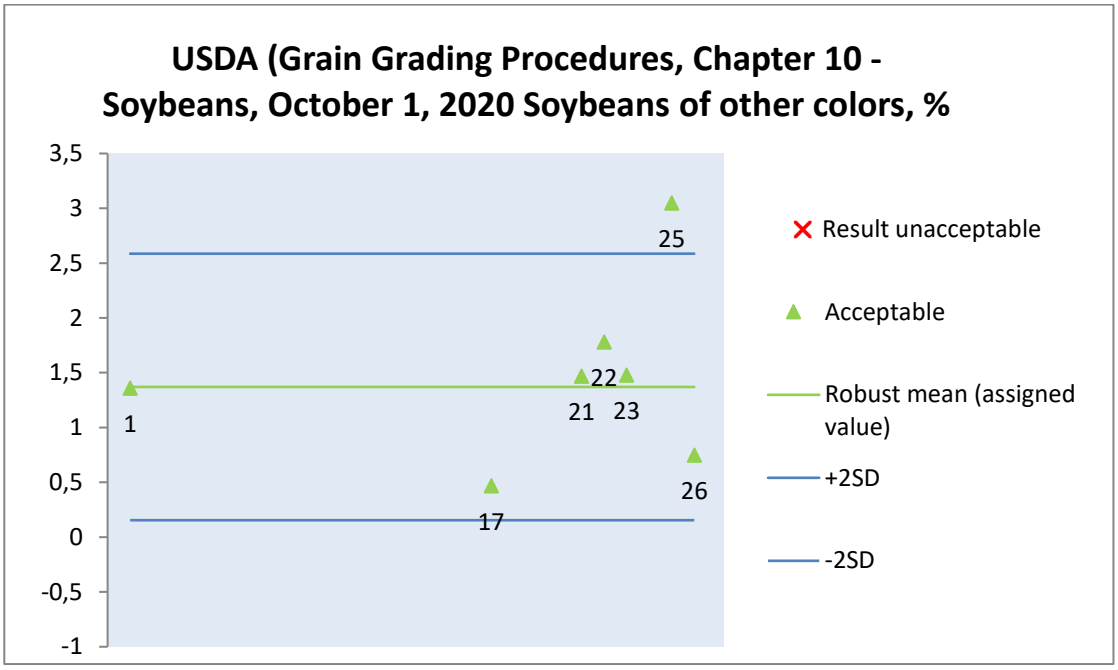


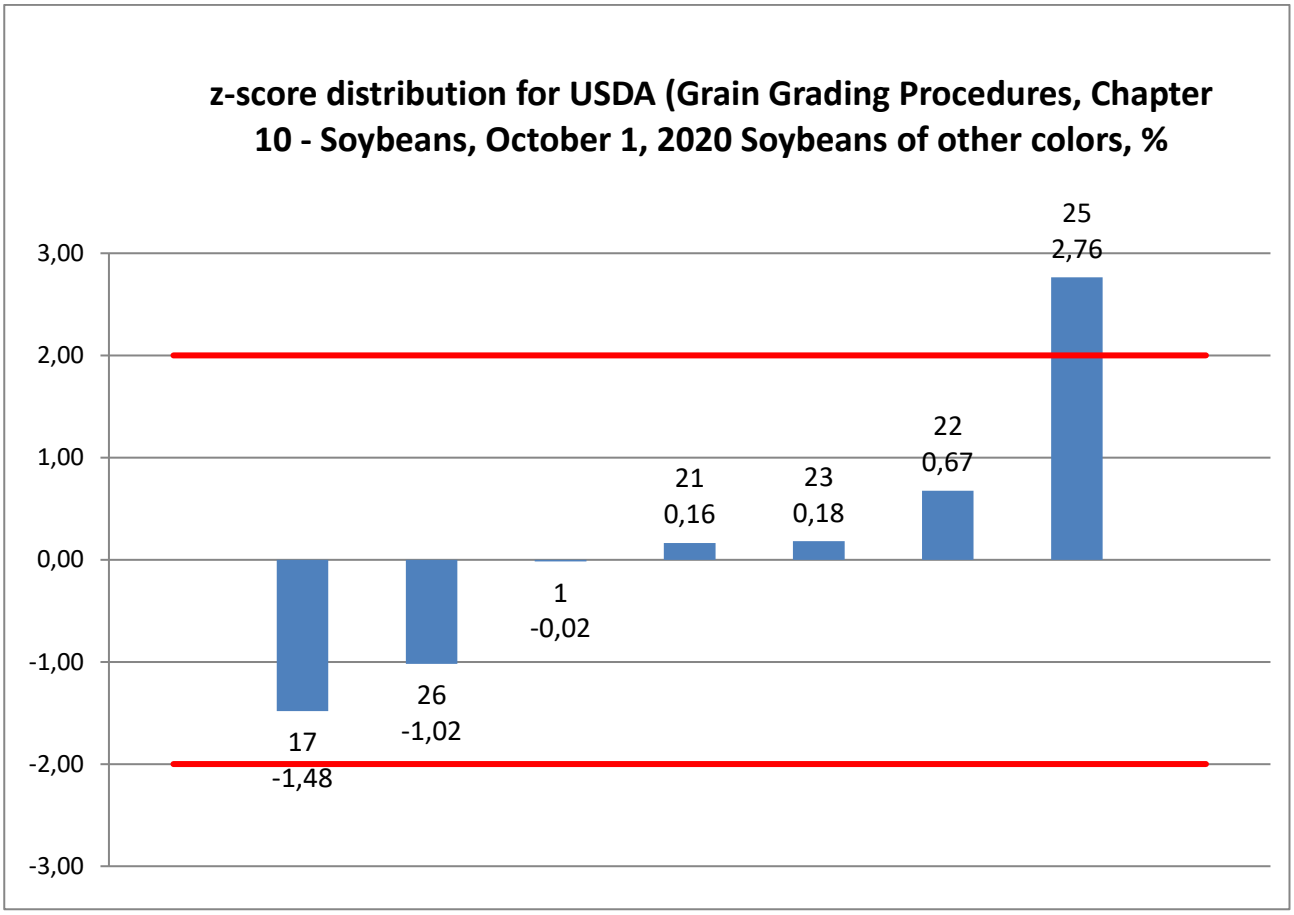
8.5 USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020) Damaged kernels, %



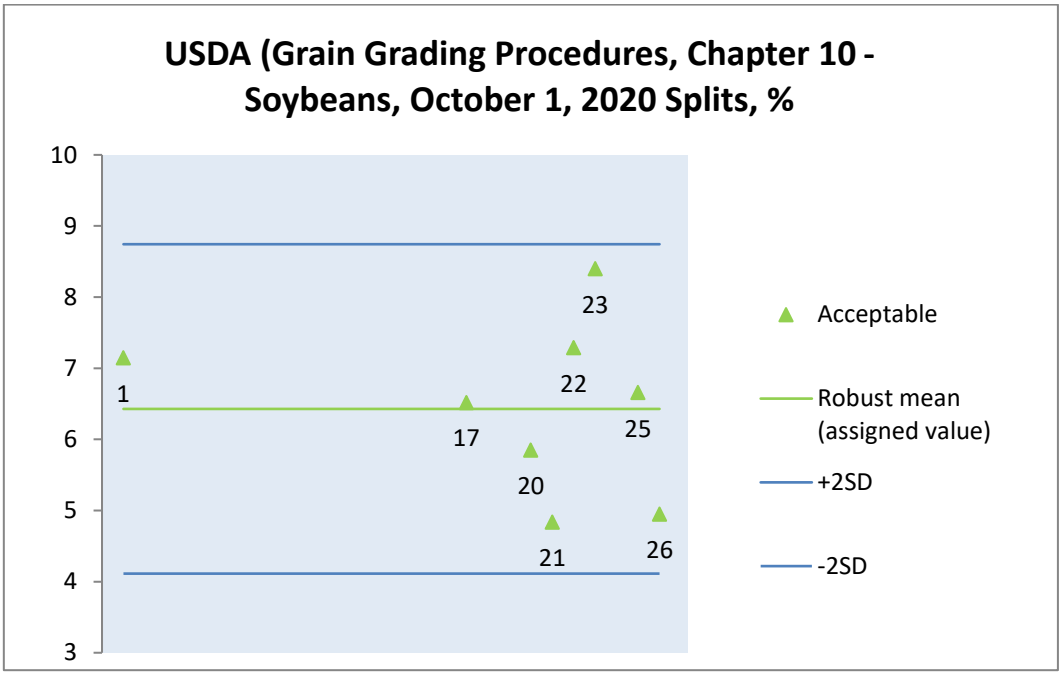


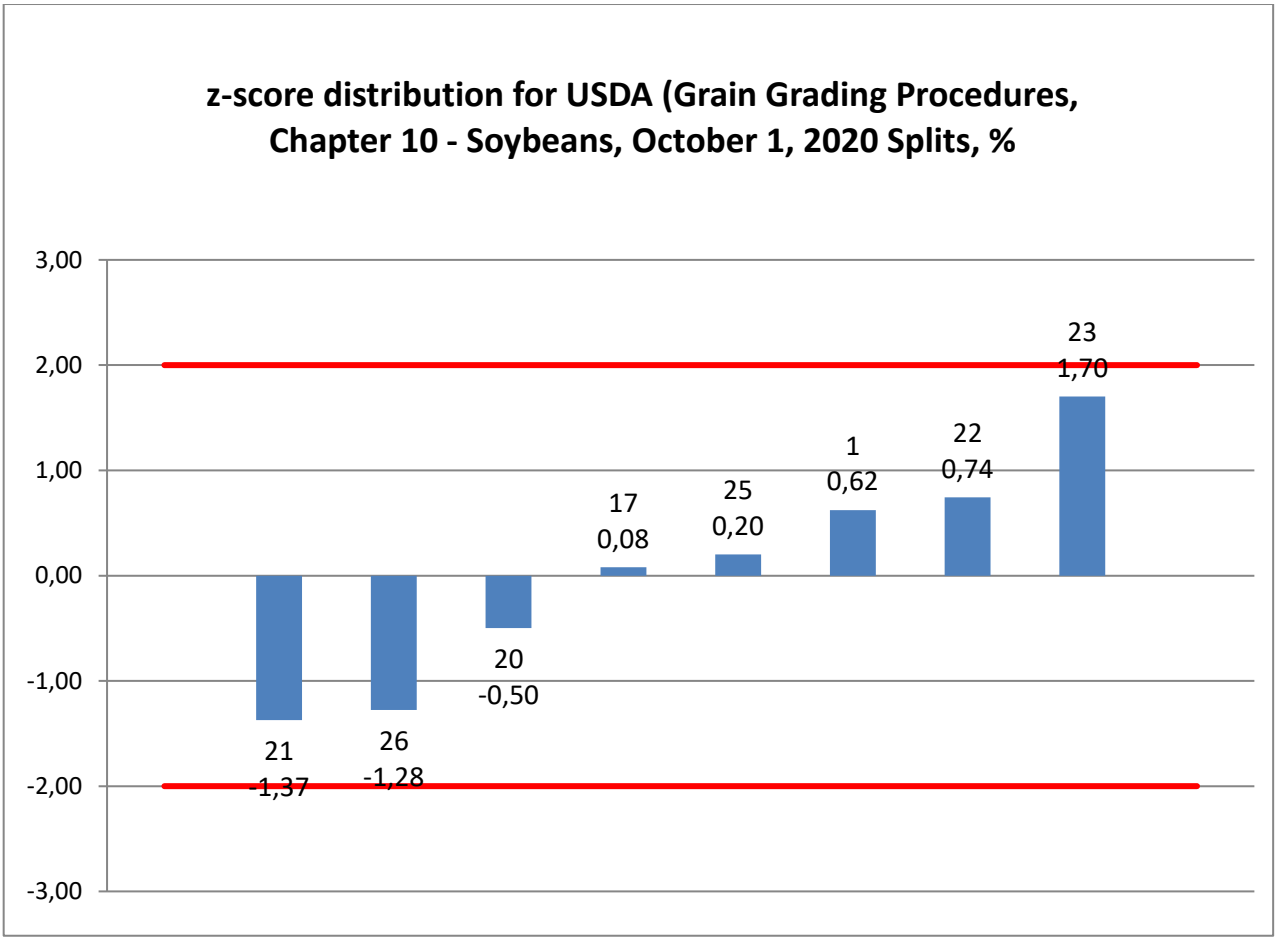
8.6 USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020) Soybeans of other colors, %



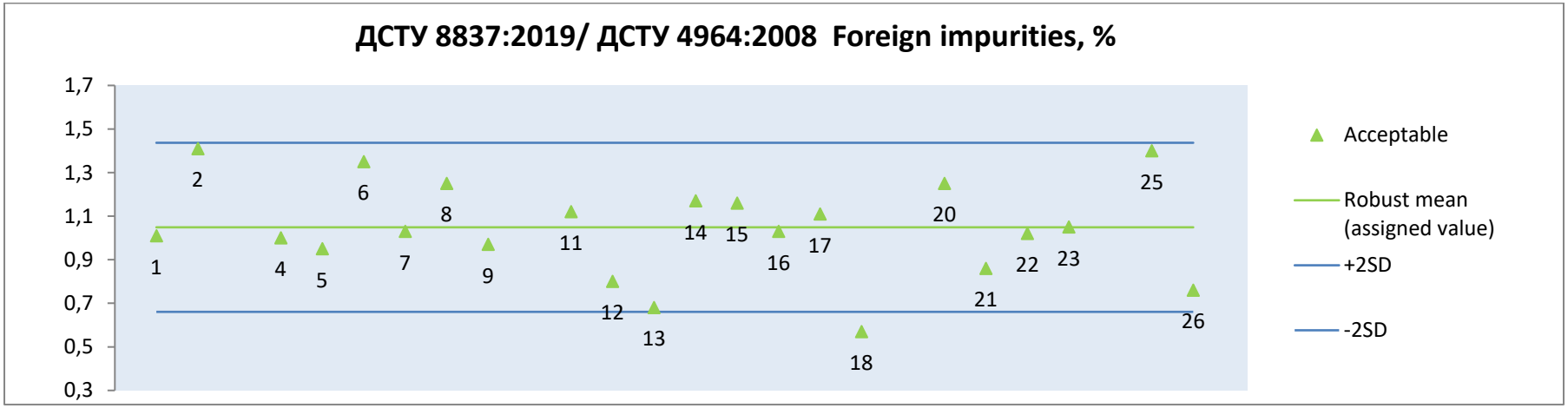


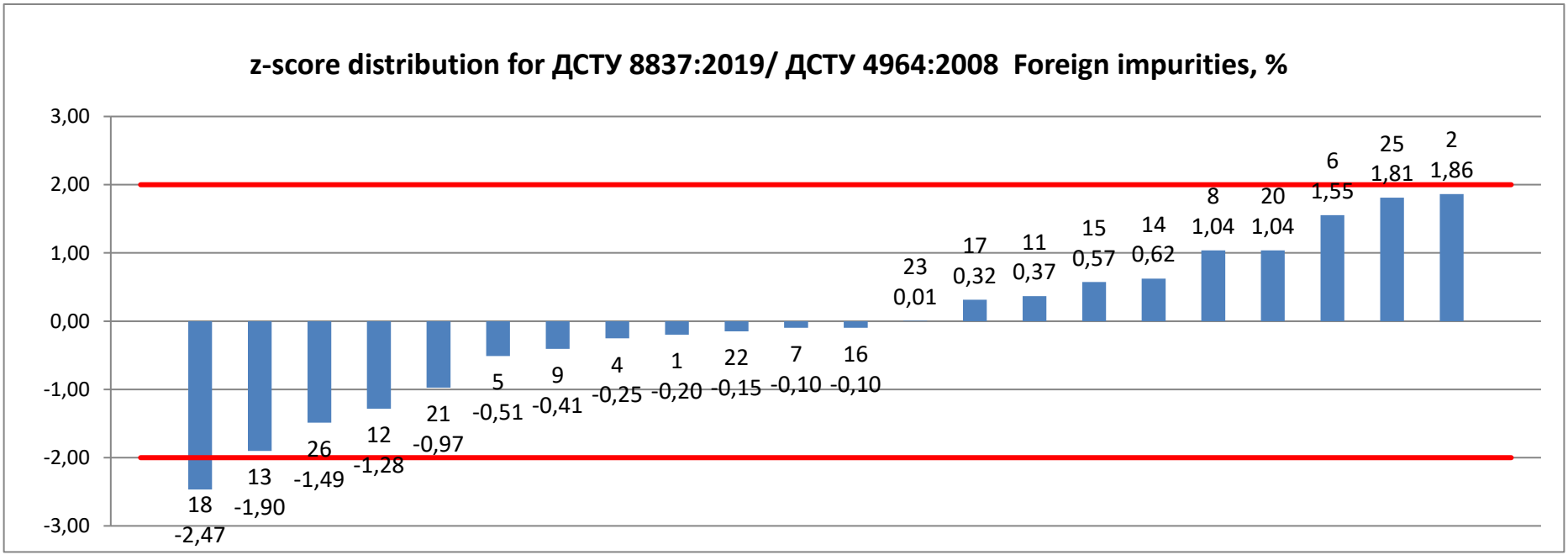
8.7 USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020) Splits, %



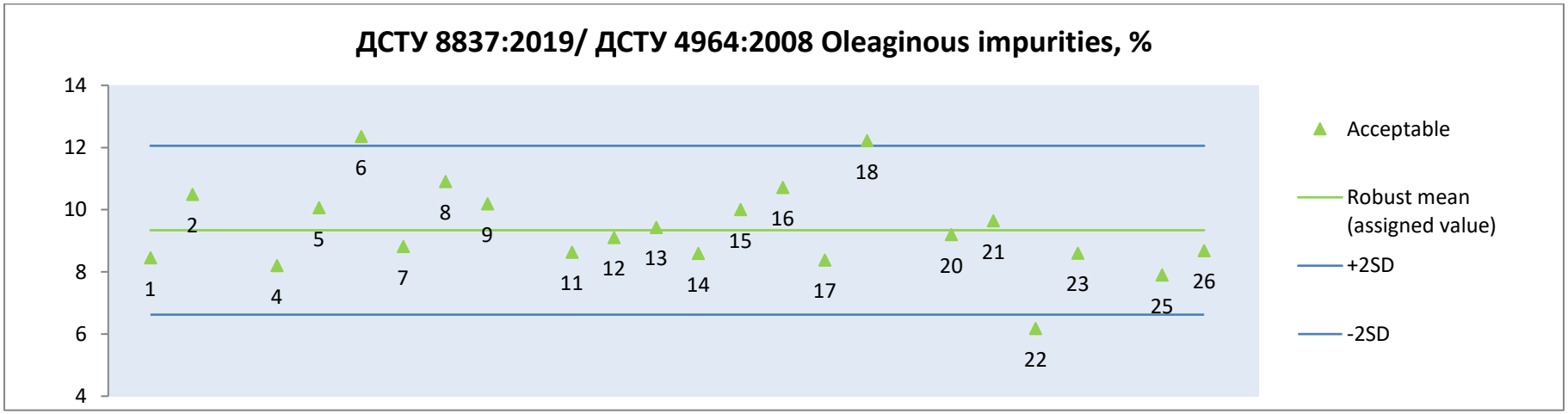


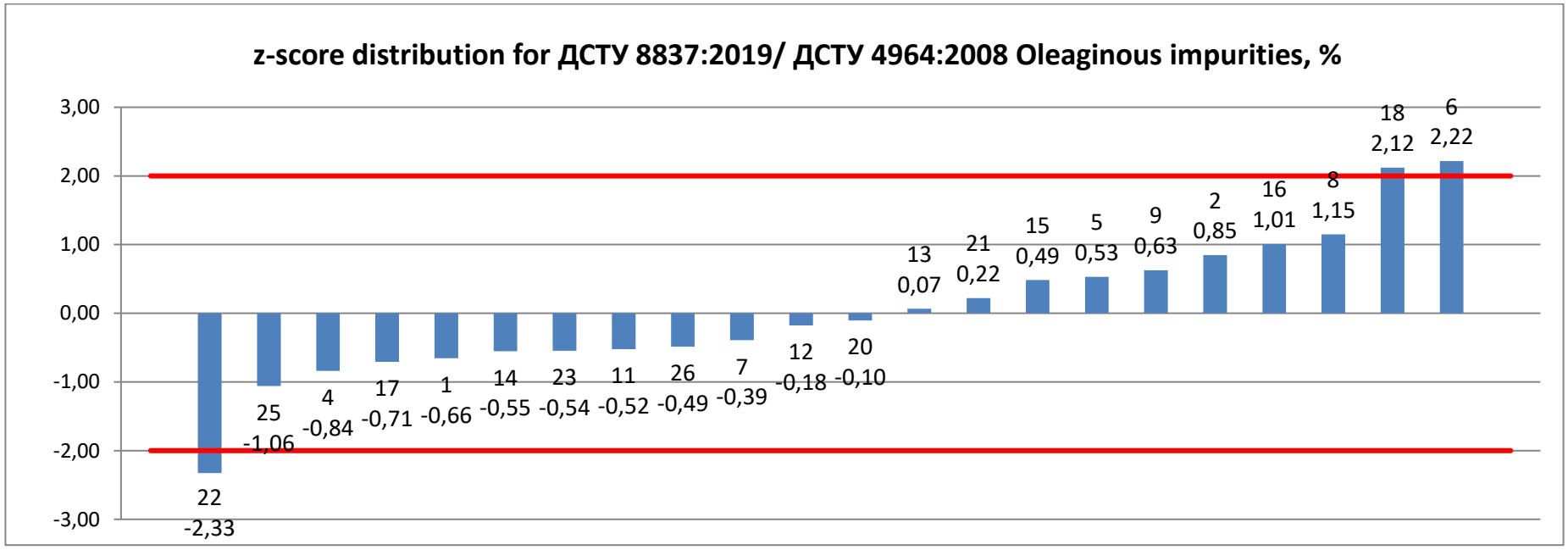
8.8 ДСТУ 8837:2019/ДСТУ 4964:2008 Foreign impurities, %



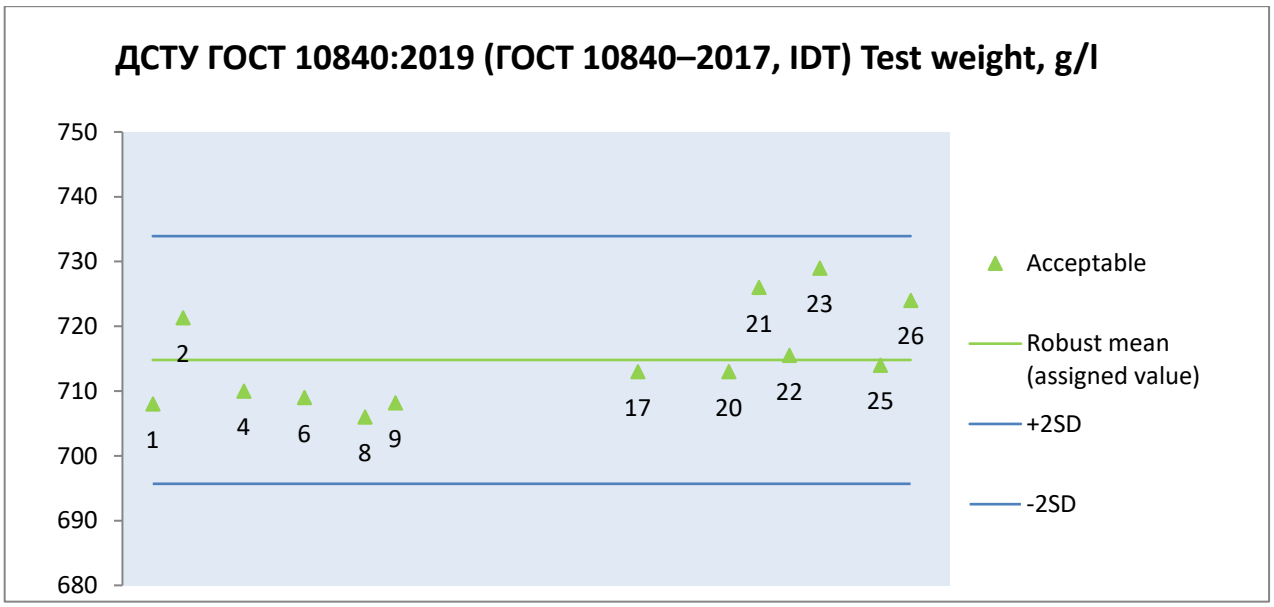


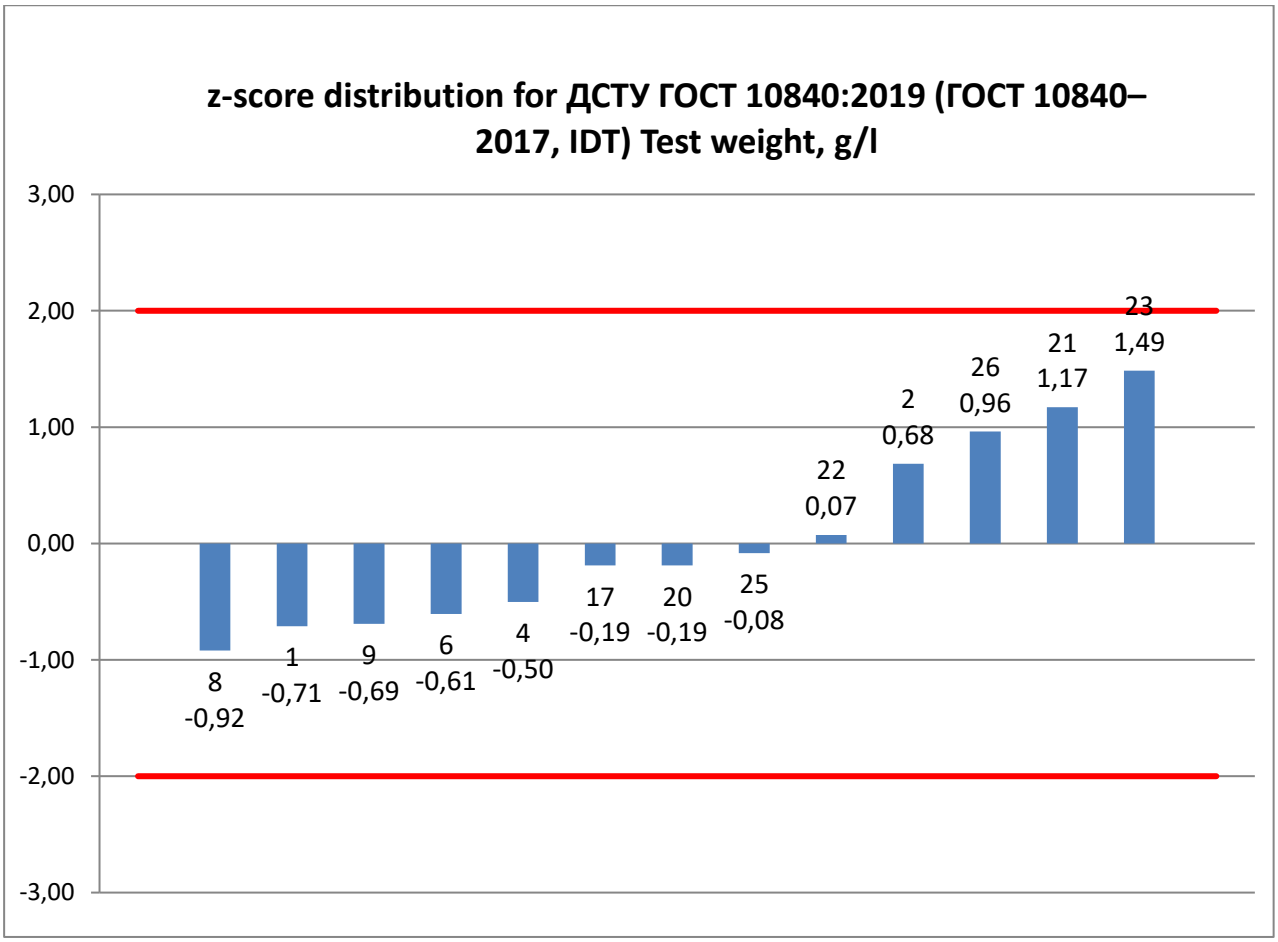
8.9 ДСТУ 8837:2019/ДСТУ 4964:2008 Oleaginous impurities, %



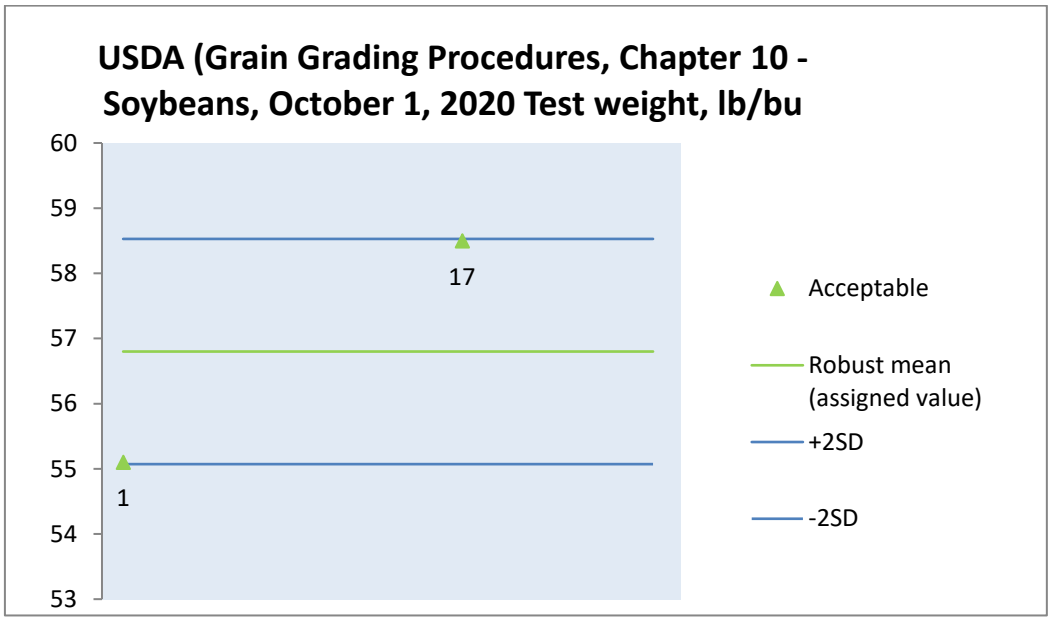


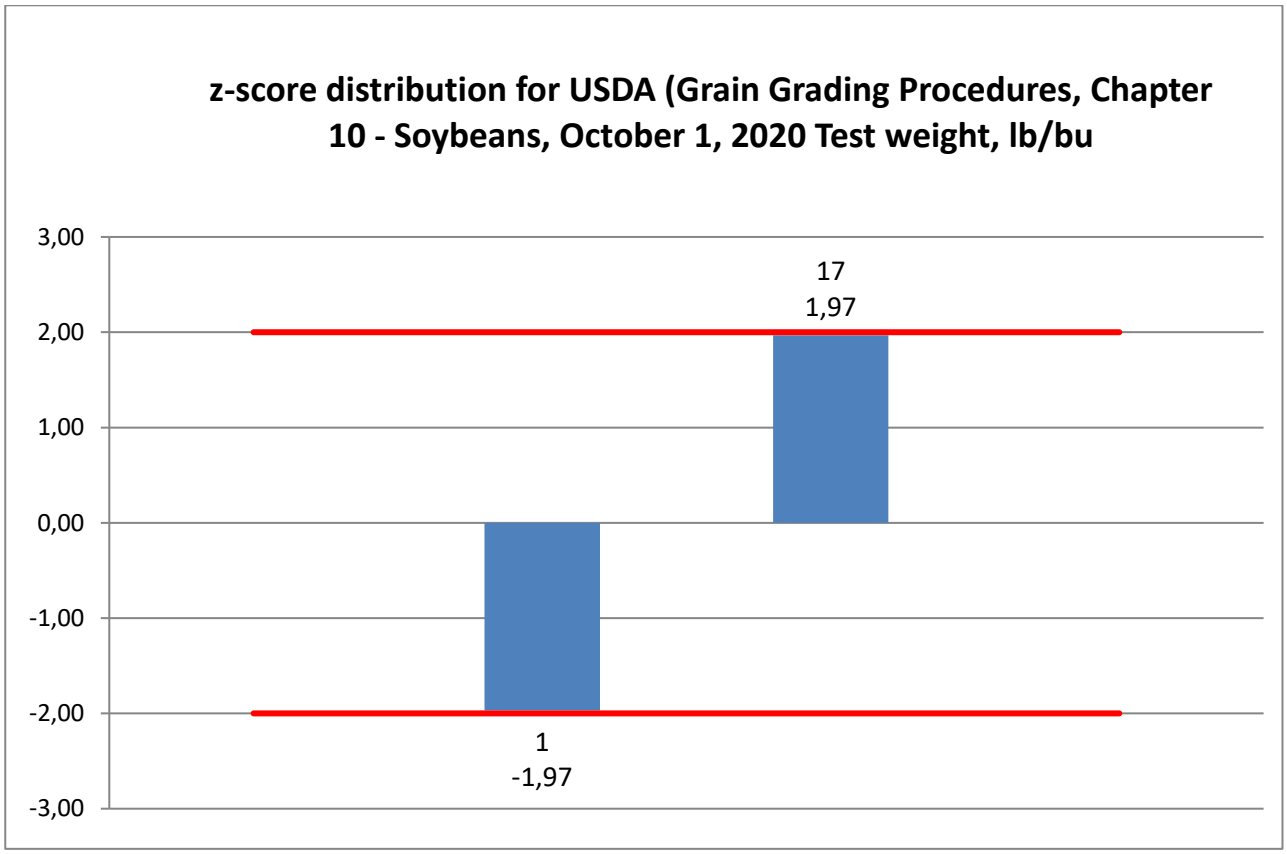
8.10 ДСТУ ГОСТ 10840:2019 (ГОСТ 10840–2017, IDT) Test weight, g/l



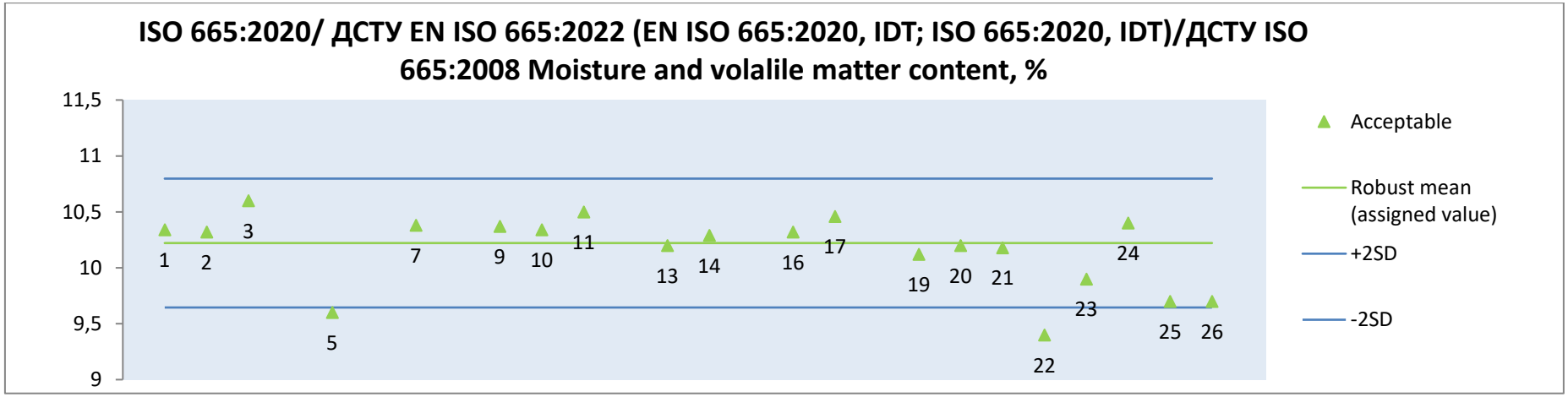


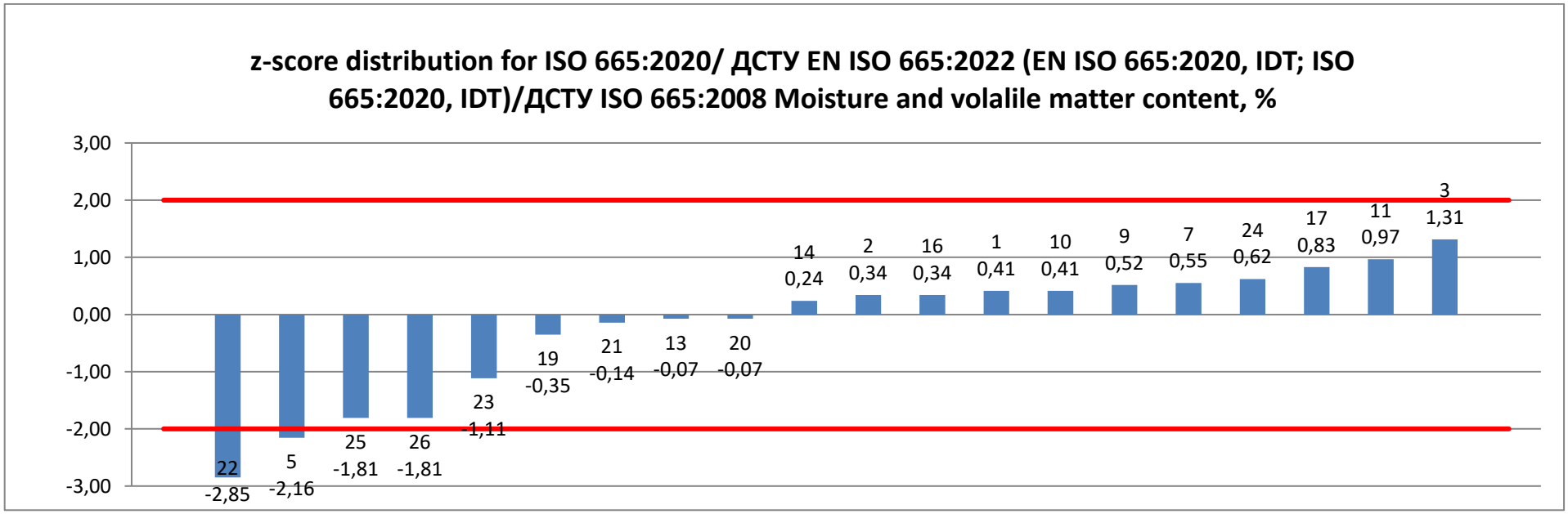
8.11 USDA (Grain Grading Procedures, Chapter 10 - Soybeans, October 1, 2020) Test weight, lb/bu



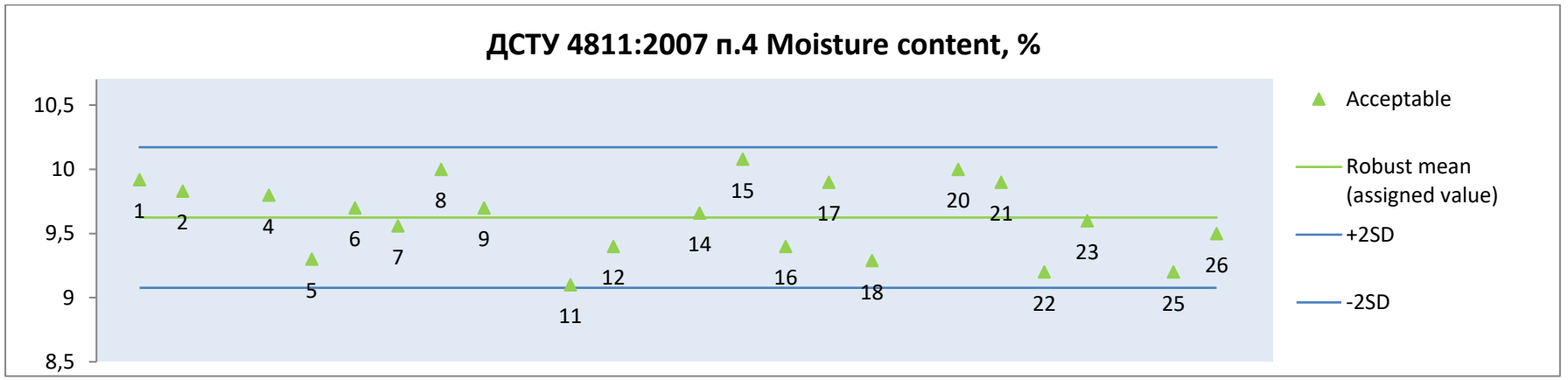


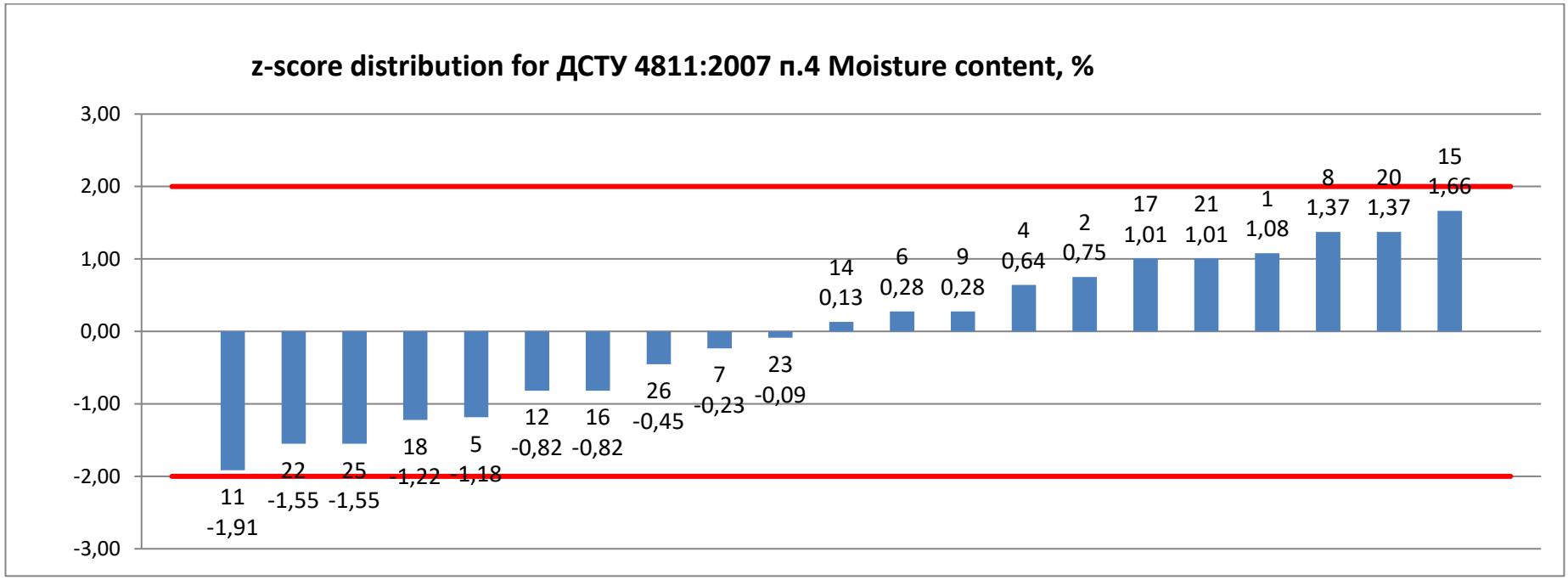
8.12 ISO 665:2020/ ДСТУ EN ISO 665:2022 (EN ISO 665:2020, IDT; ISO 665:2020, IDT)/ДСТУ ISO 665:2008 Moisture and volatile matter content, %



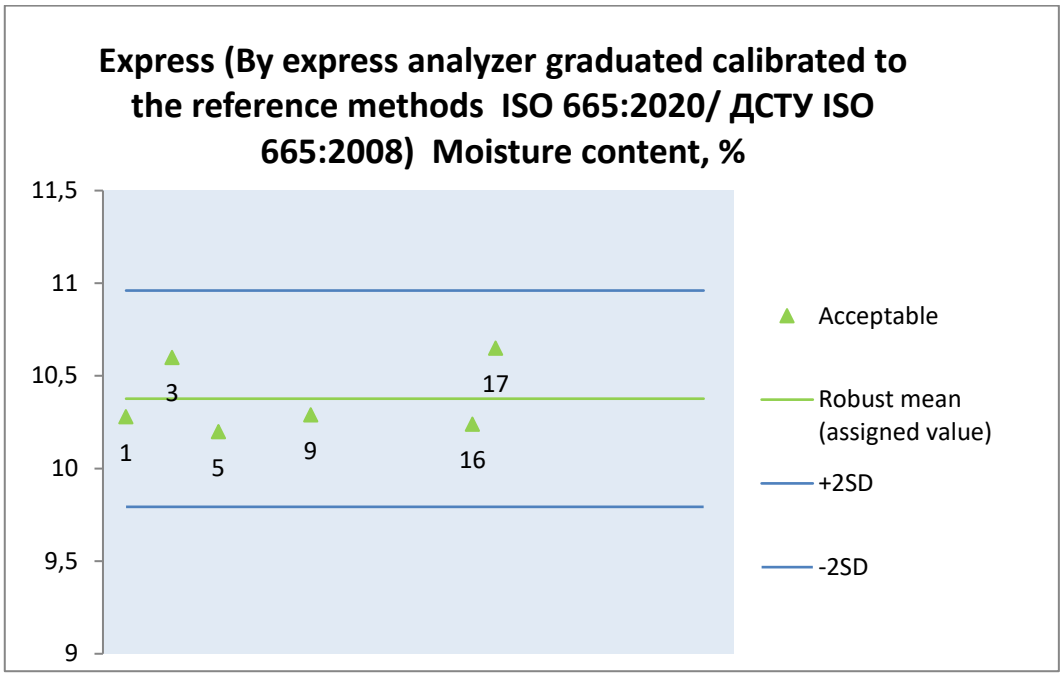


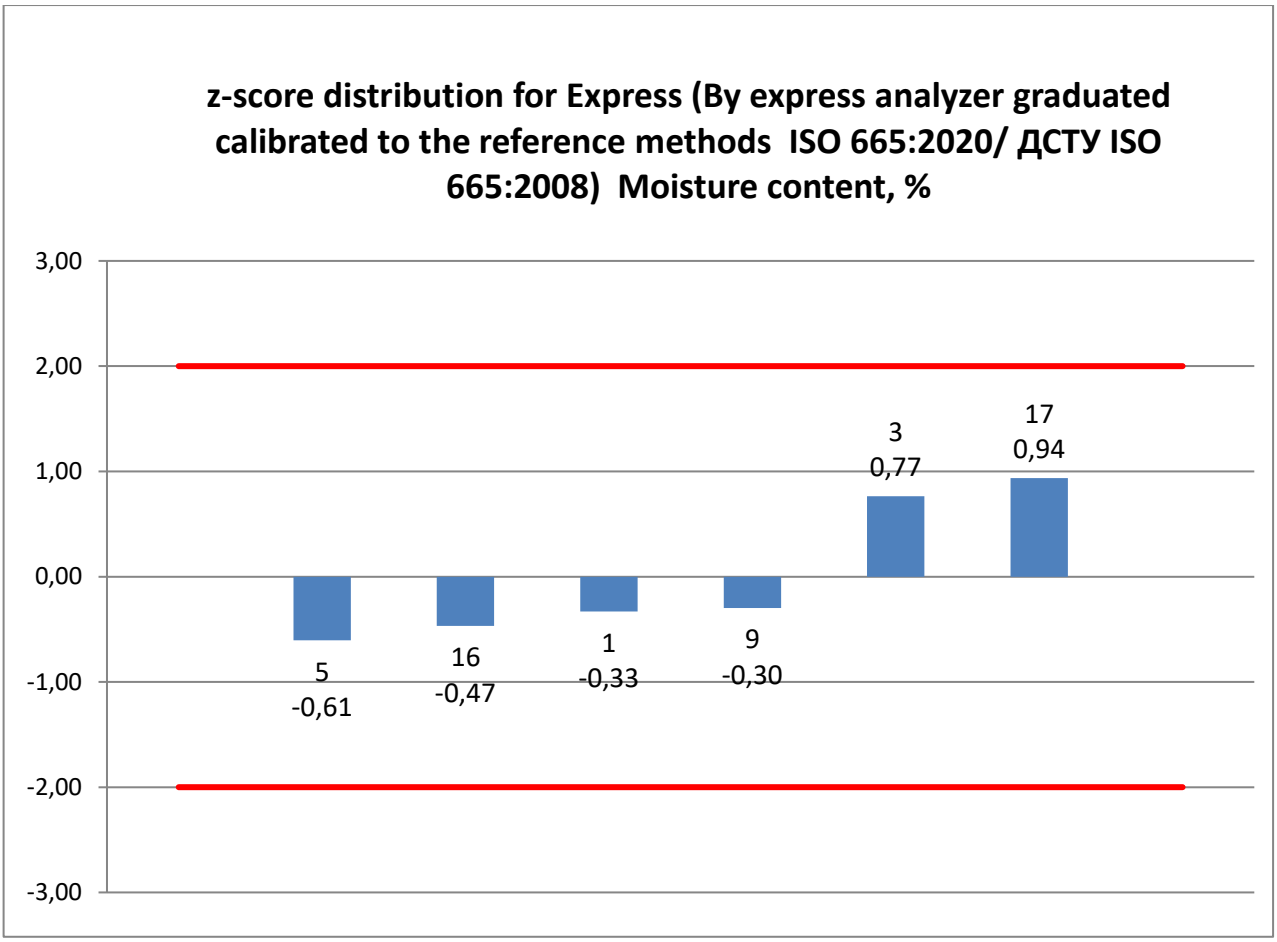
8.13 ДСТУ 4811:2007 p.4 Moisture content, %



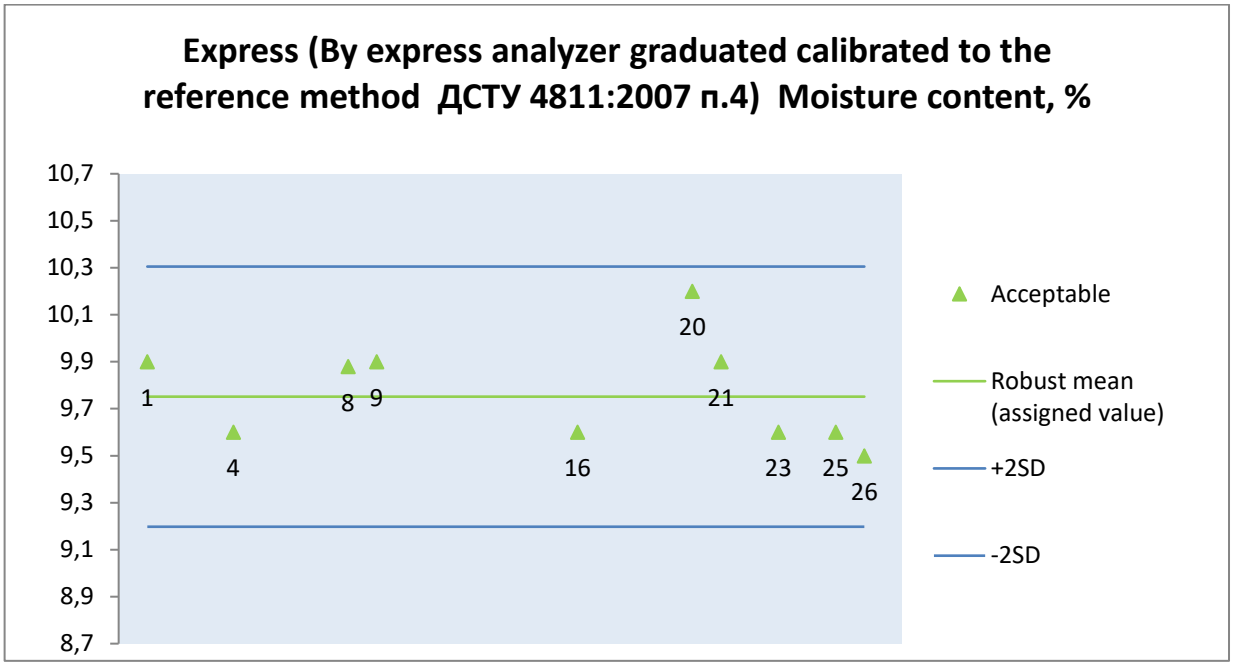


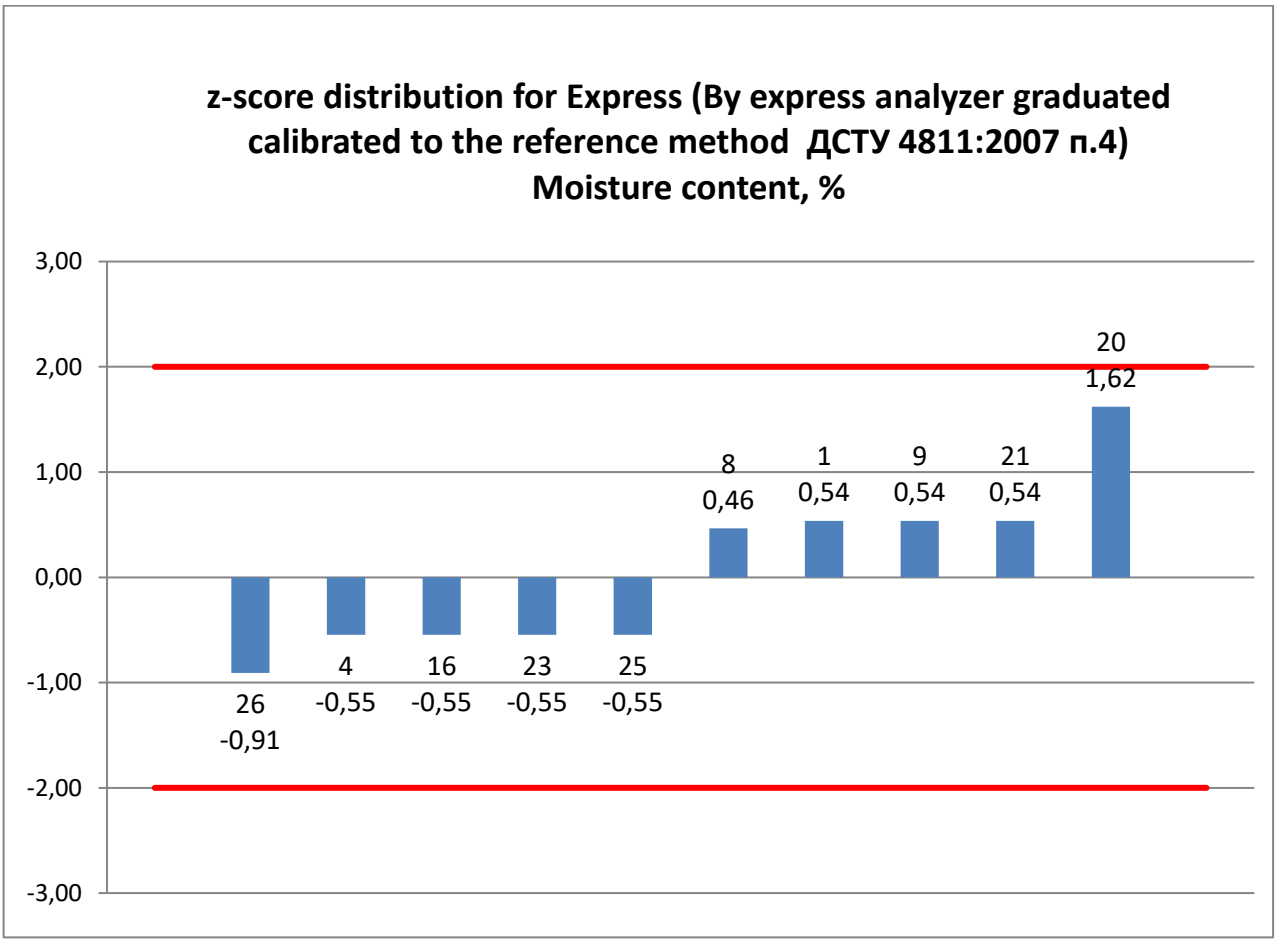
8.14 Express (By express analyzer graduated calibrated to the reference methods ISO 665:2020/ ДСТУ ISO 665:2008) Moisture content, %



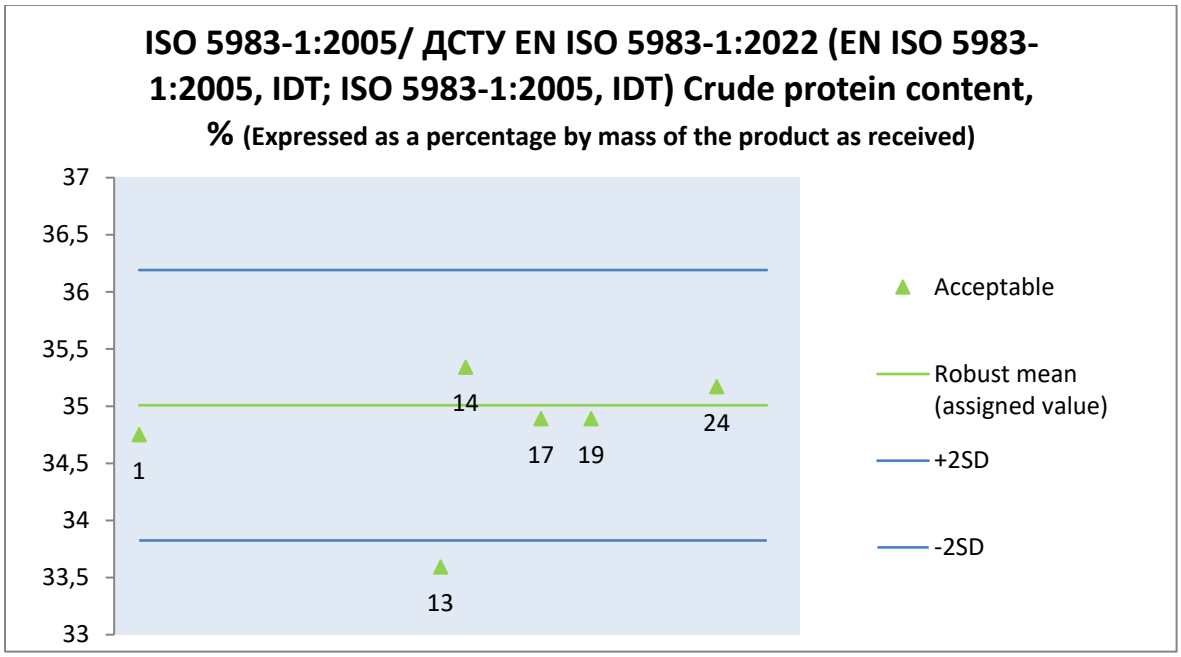


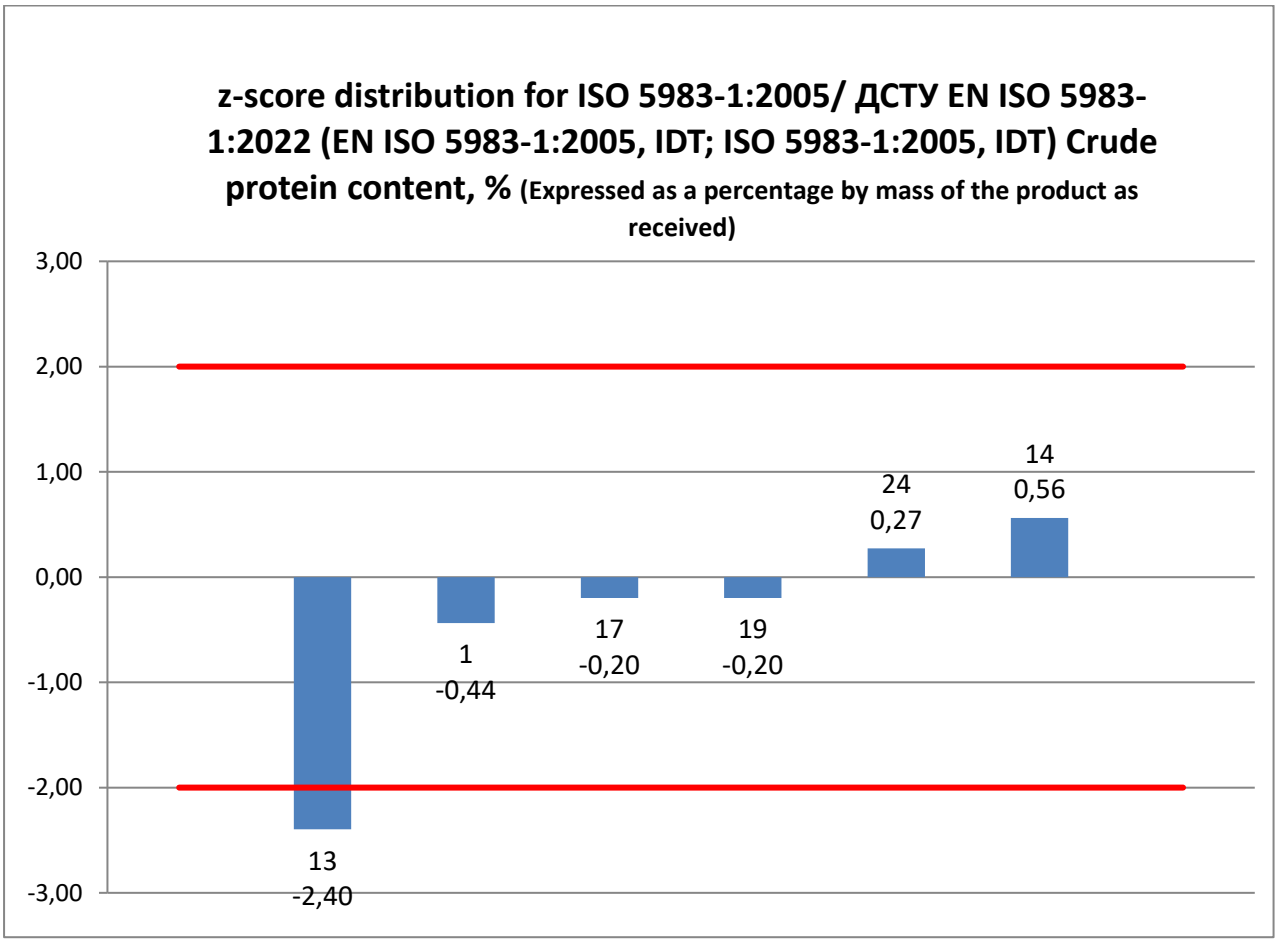
8.15 Express (By express analyzer graduated/ calibrated to the reference method ДСТУ 4811:2007 п.4) Moisture content, %



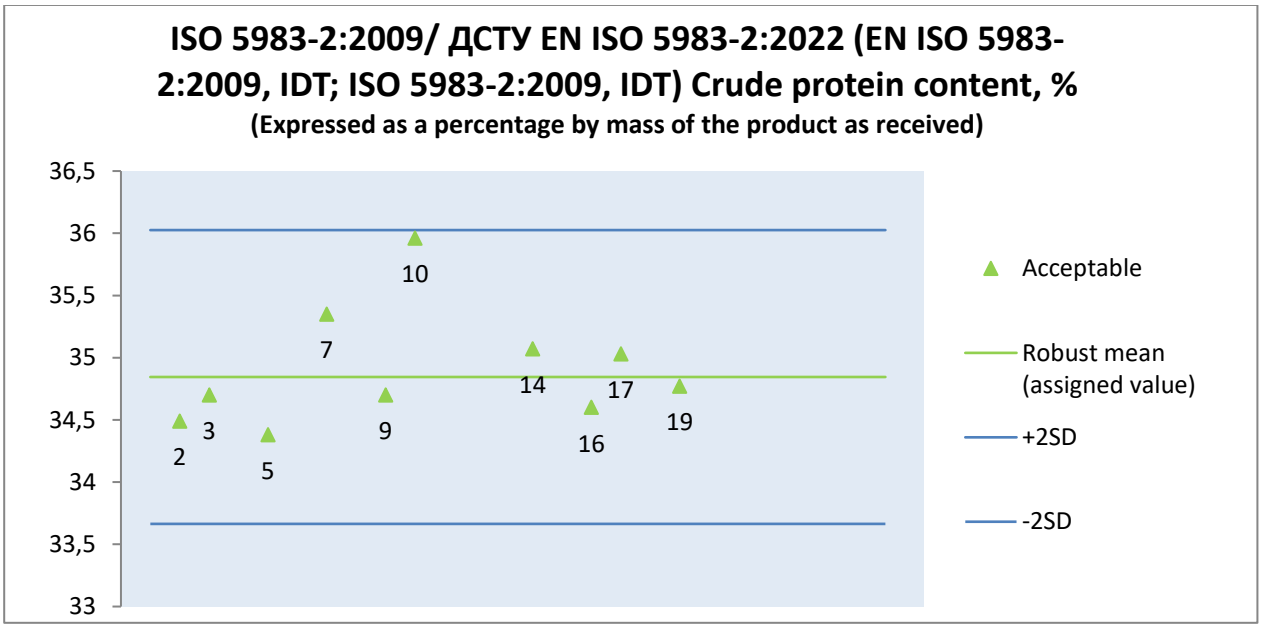


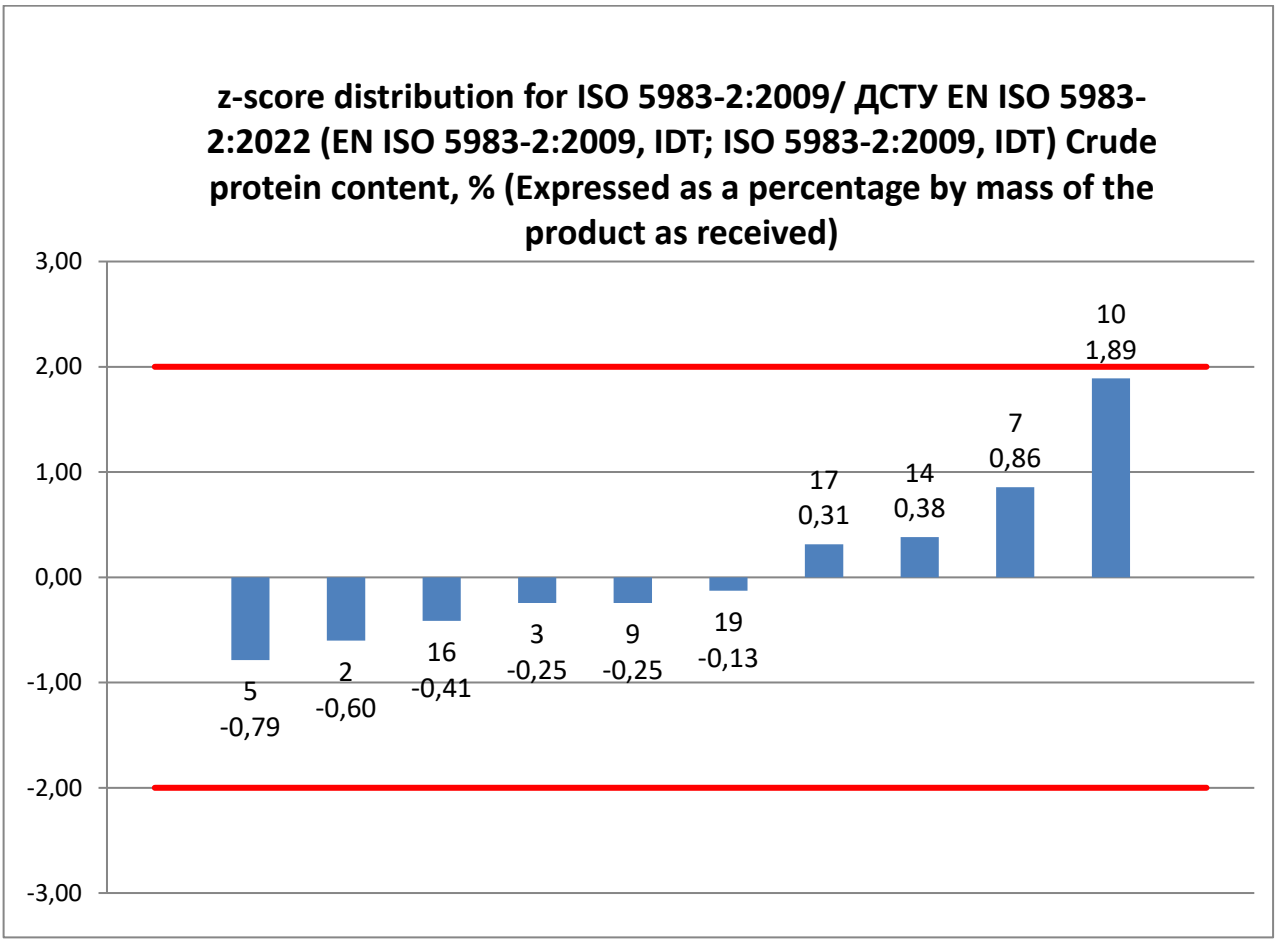
8.16 ISO 5983-1:2005/ ДСТУ EN ISO 5983-1:2022 (EN ISO 5983-1:2005, IDT; ISO 5983-1:2005, IDT) Crude protein content, % (Expressed as a percentage by mass of the product as received)



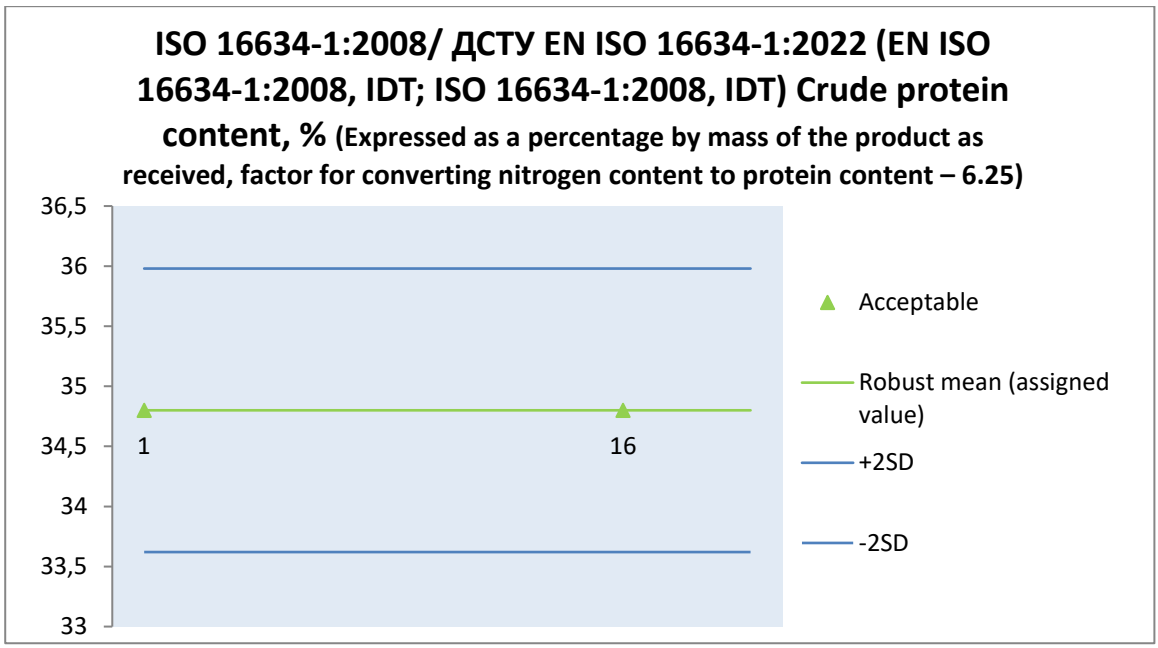


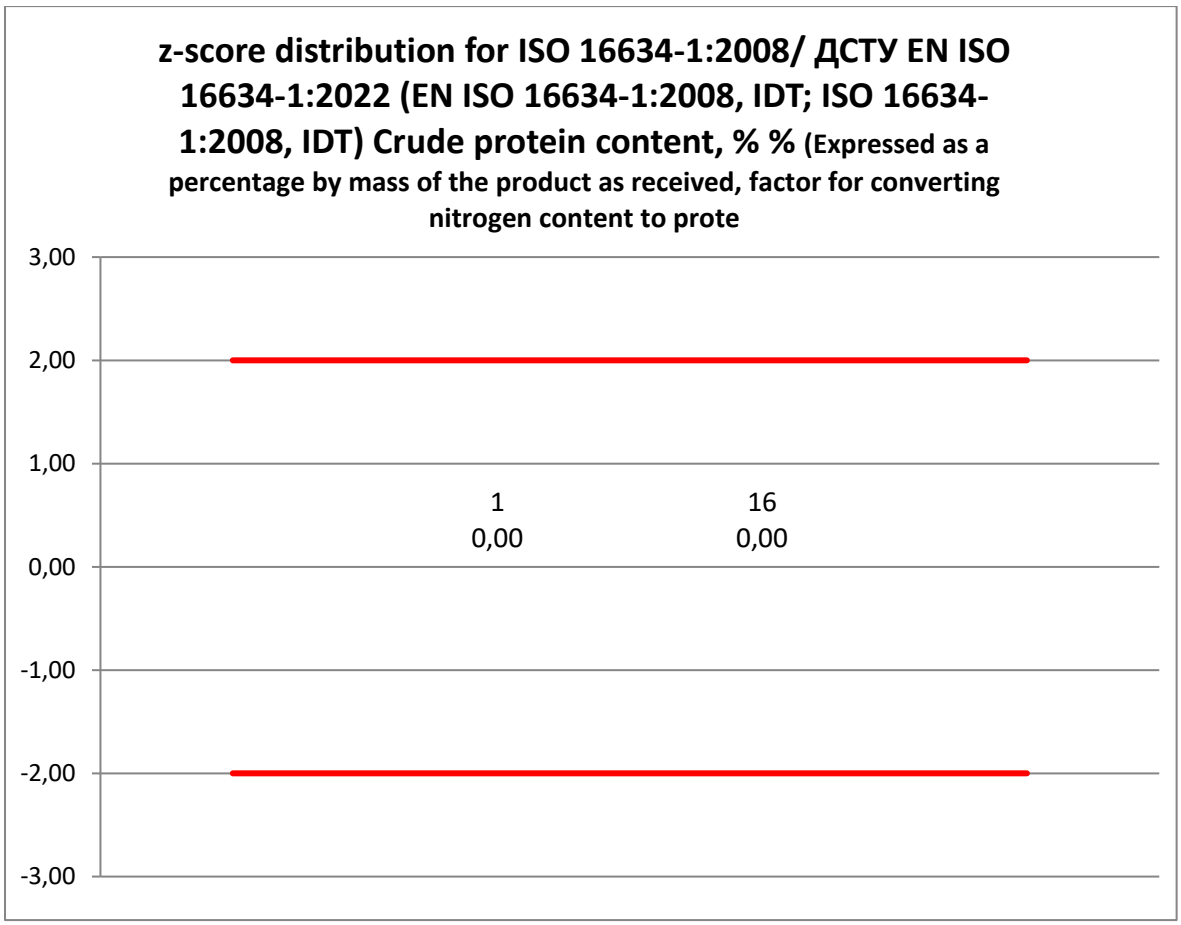
8.17 ISO 5983-2:2009/ ДСТУ EN ISO 5983-2:2022 (EN ISO 5983-2:2009, IDT; ISO 5983-2:2009, IDT) Crude protein content, % (Expressed as a percentage by mass of the product as received)



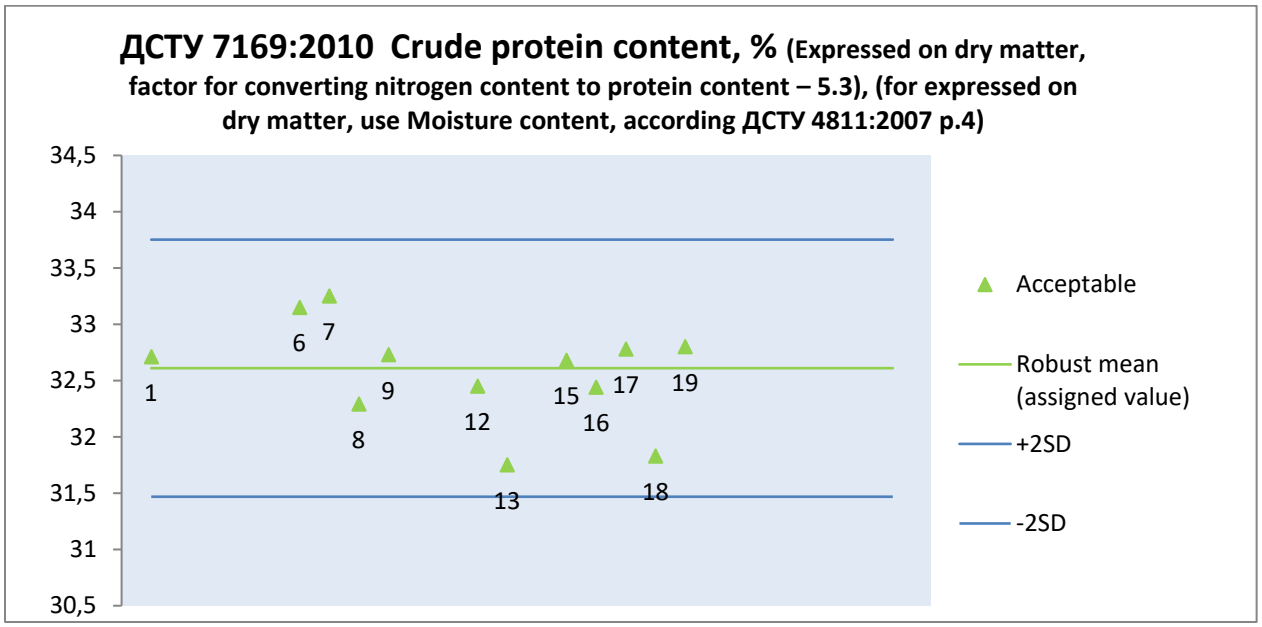


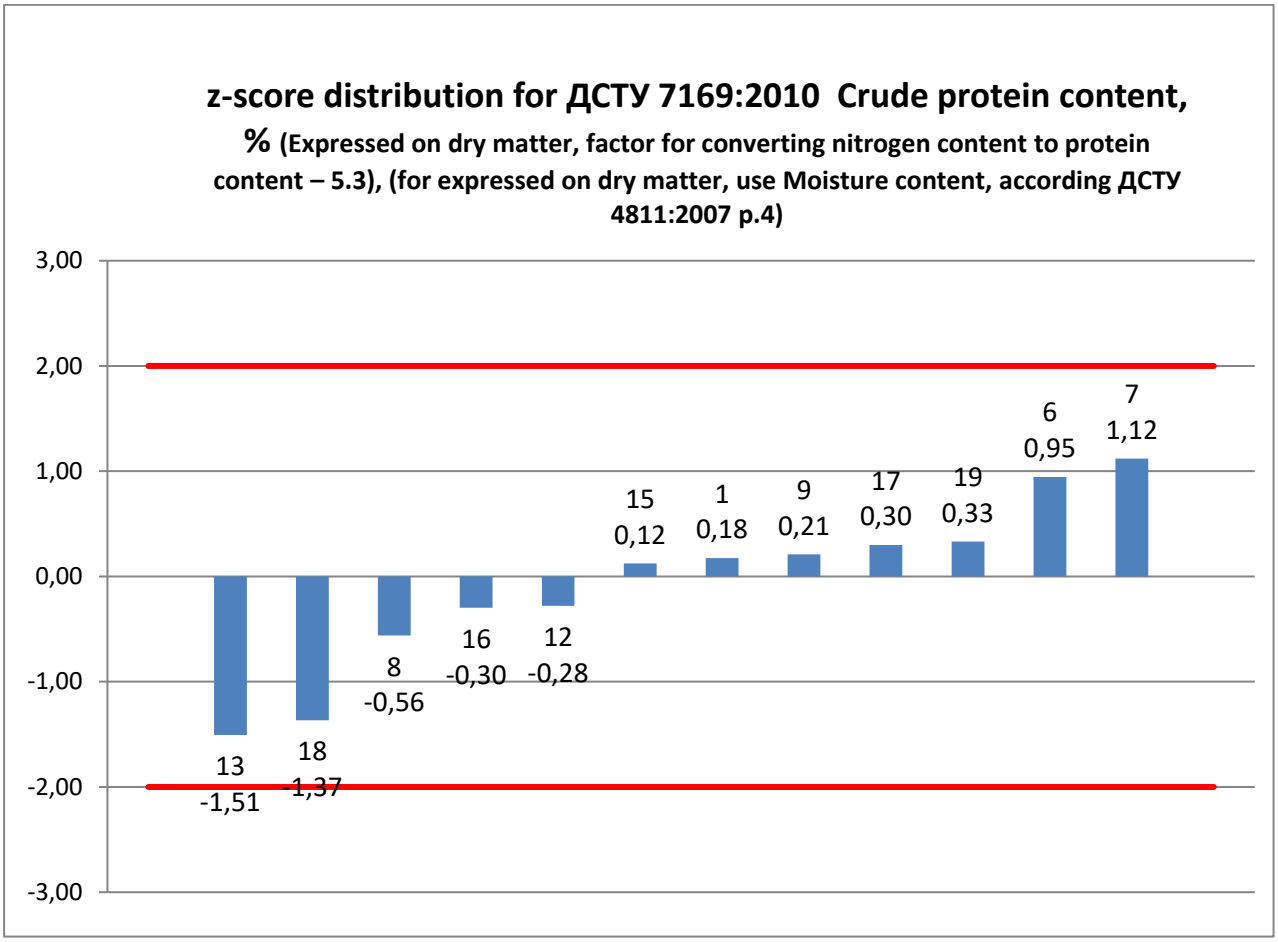
8.18 ISO 16634-1:2008/ ДСТУ 7189:2010 Crude protein content, % (Expressed as a percentage by mass of the product as received, factor for converting nitrogen content to protein content – 6.25)



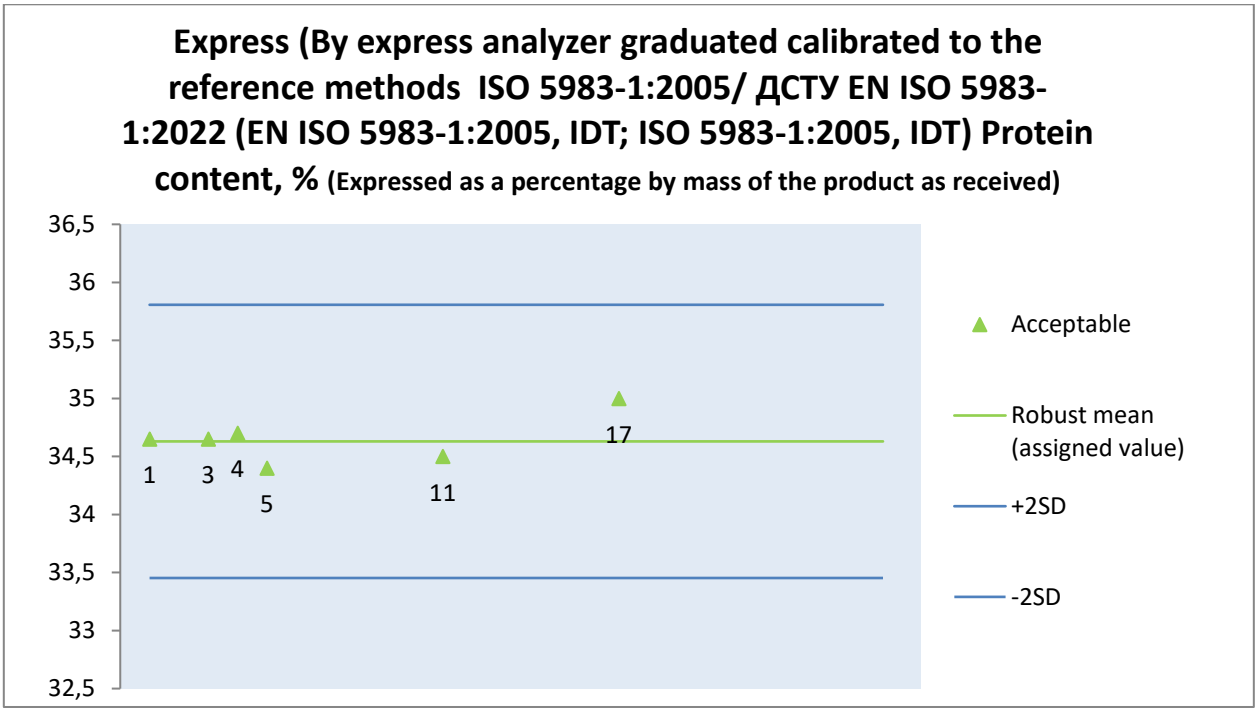


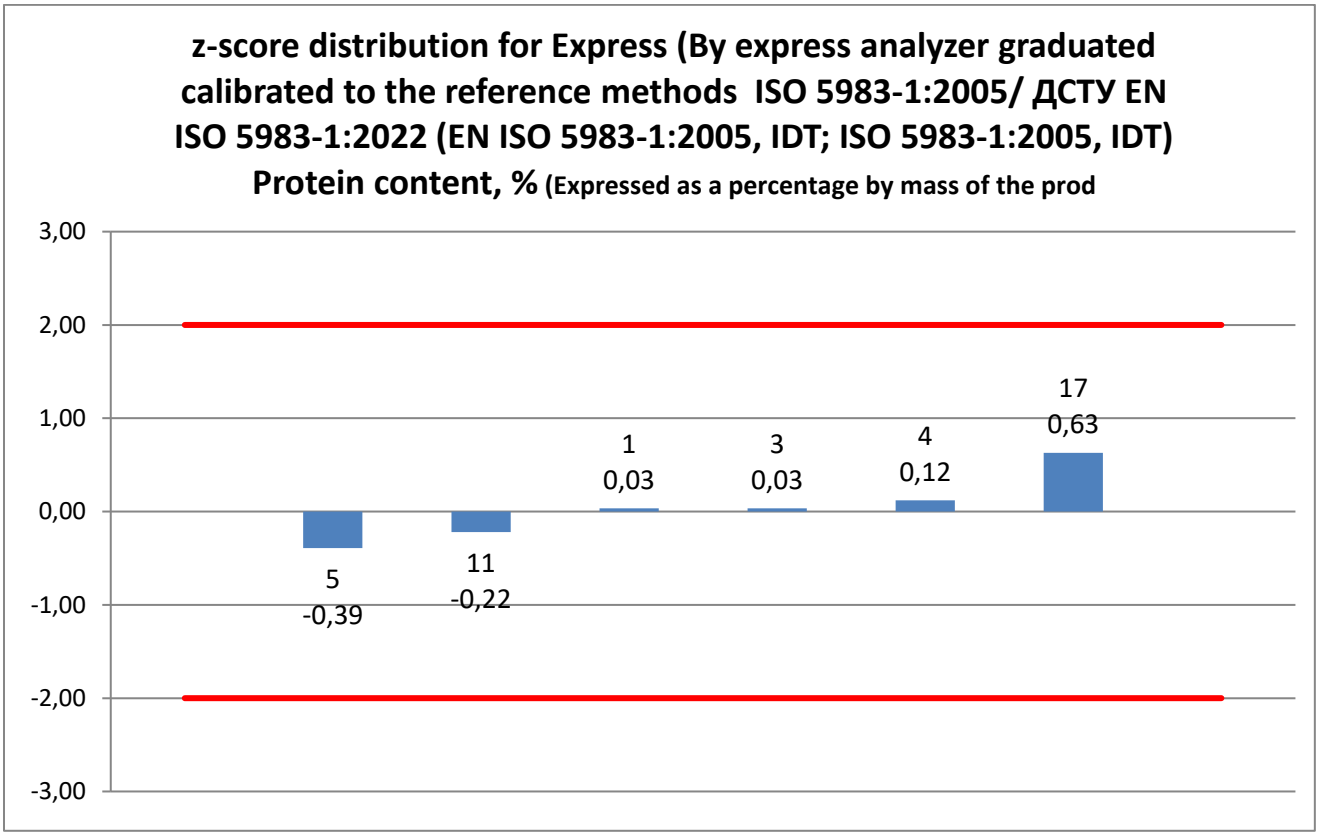
8.19 ДСТУ 7169:2010 Crude protein content, % (Expressed on dry matter, factor for converting nitrogen content to protein content – 5.3), (for expressed on dry matter, use Moisture content, according ДСТУ 4811:2007 p.4)



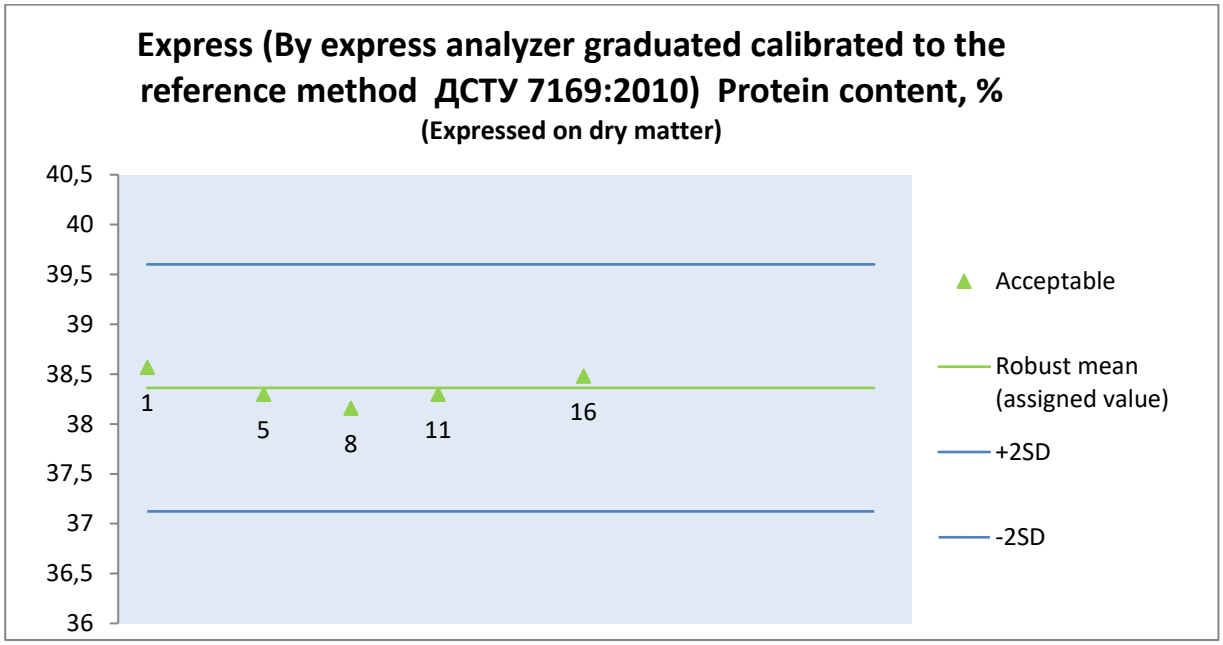


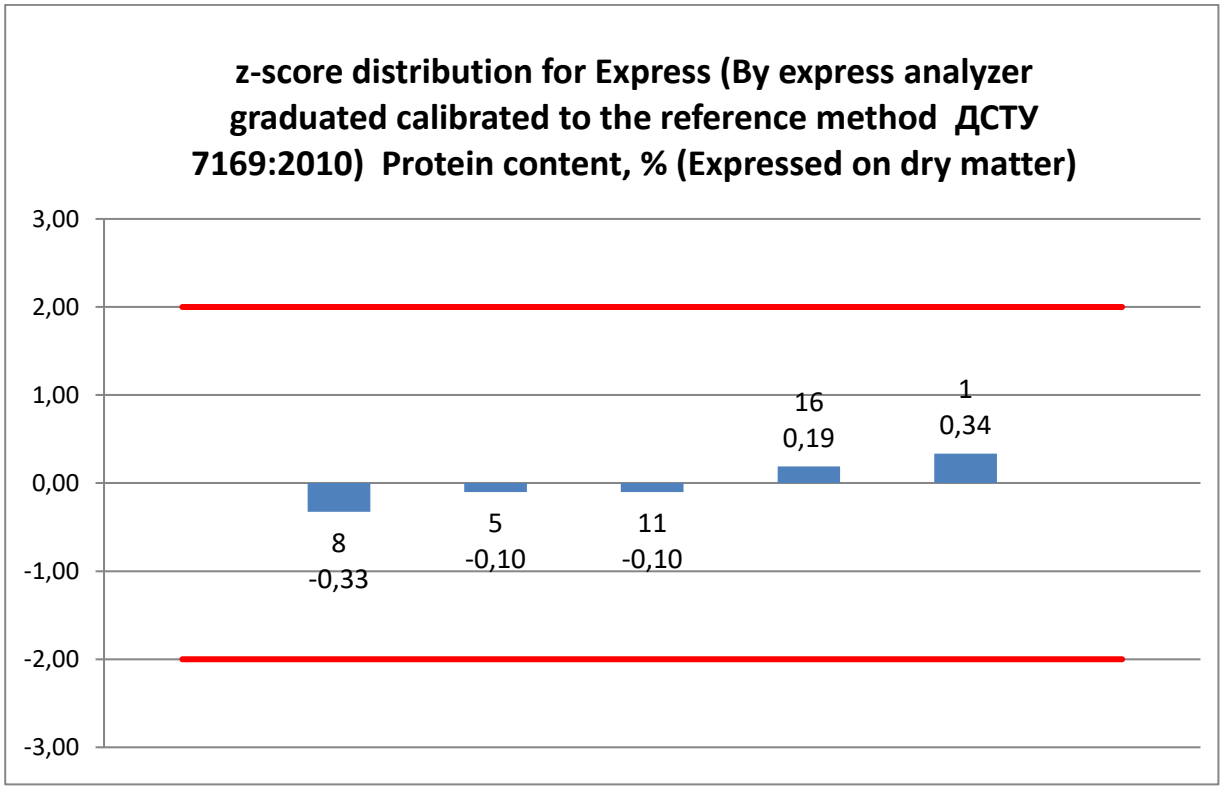
8.20 Express (By express analyzer graduated/ calibrated to the reference methods ISO 5983-1:2005/ ДСТУ EN ISO 5983-1:2022 (EN ISO 5983-1:2005, IDT; ISO 5983-1:2005, IDT) Protein content, % (Expressed as a percentage by mass of the product as received)



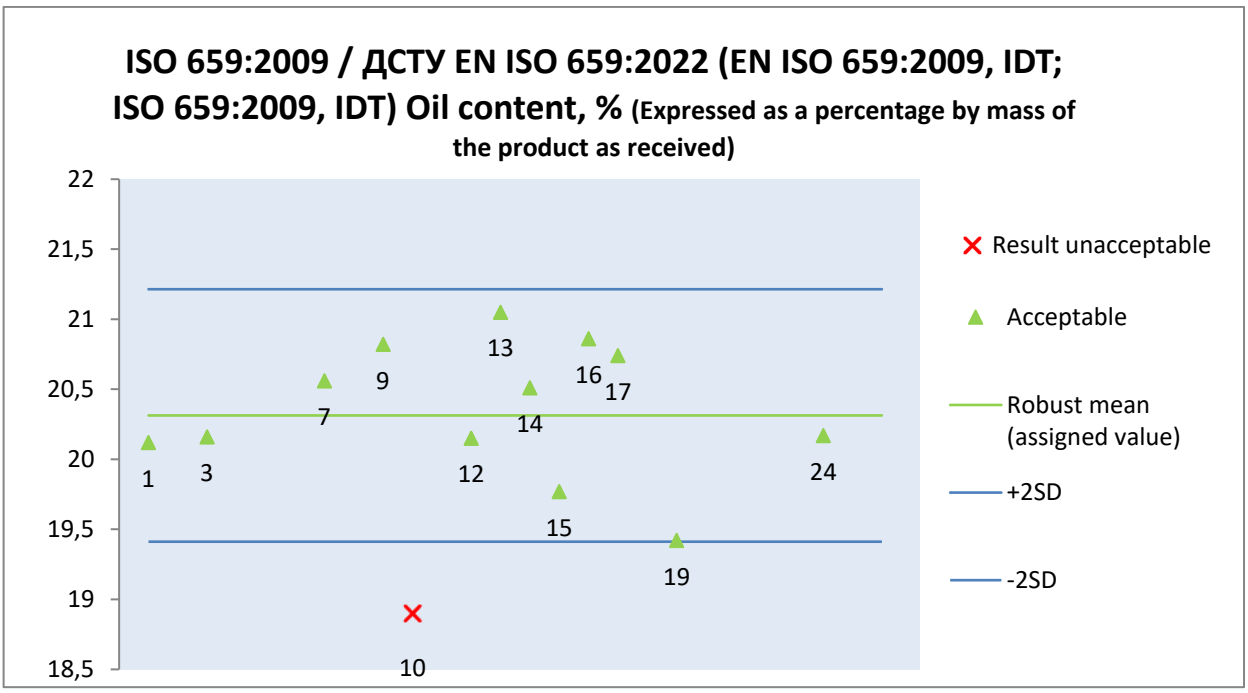


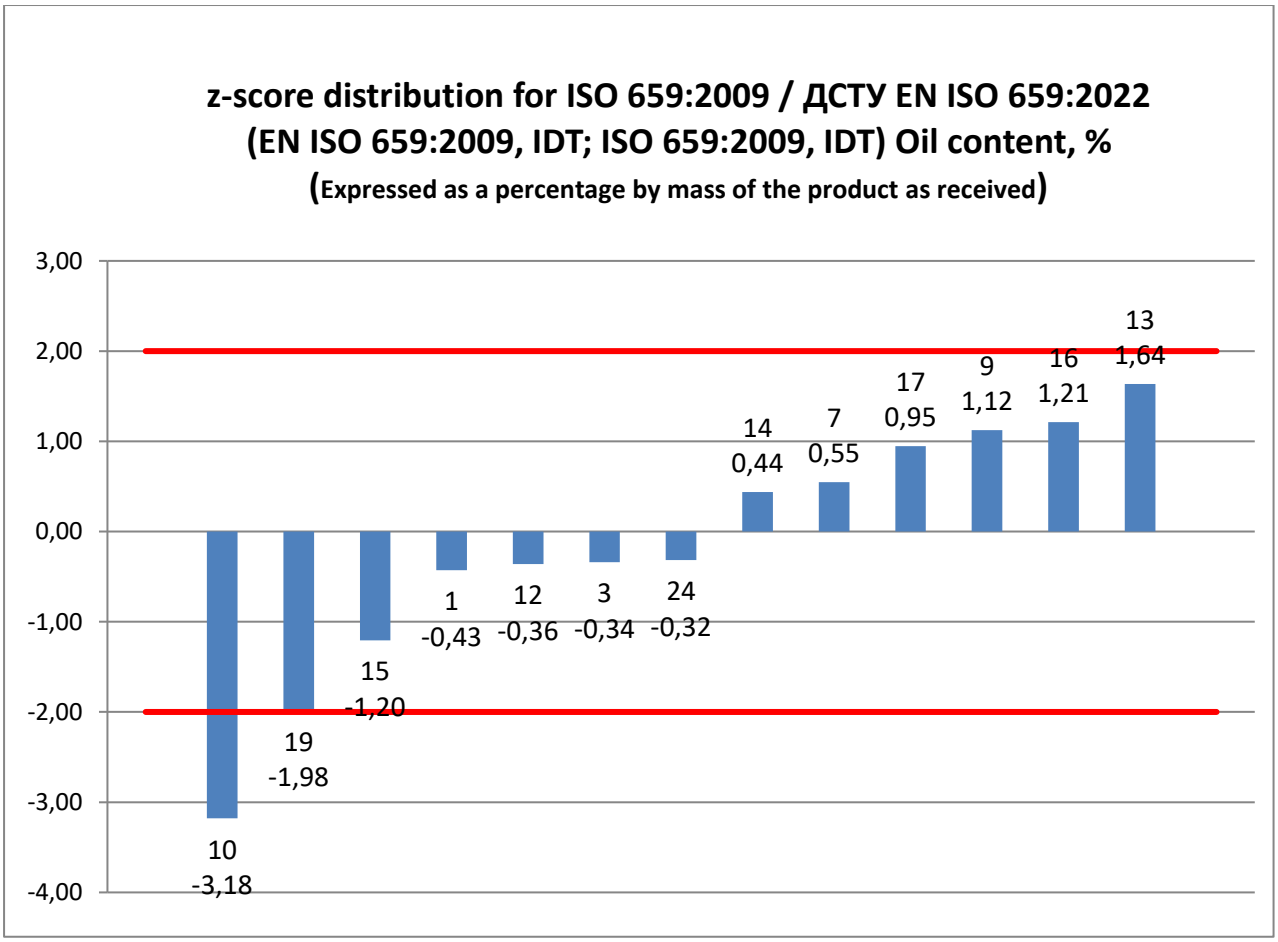
8.21 Express (By express analyzer graduated calibrated to the reference method ДСТУ 7169:2010) Protein content, % (Expressed on dry matter)



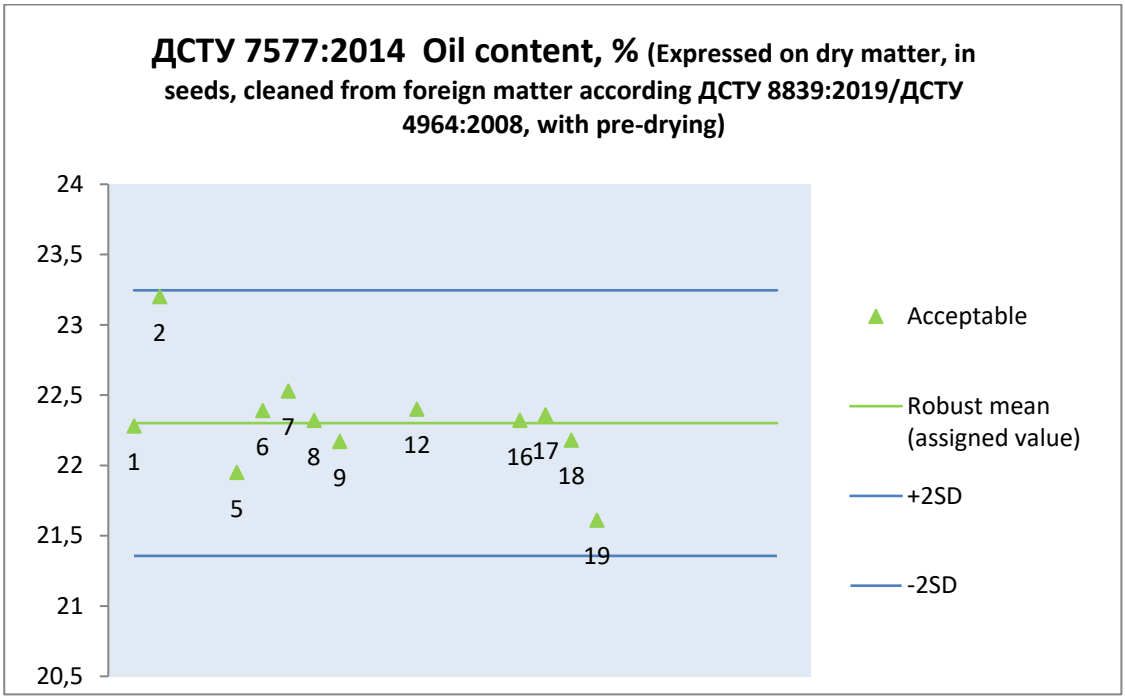


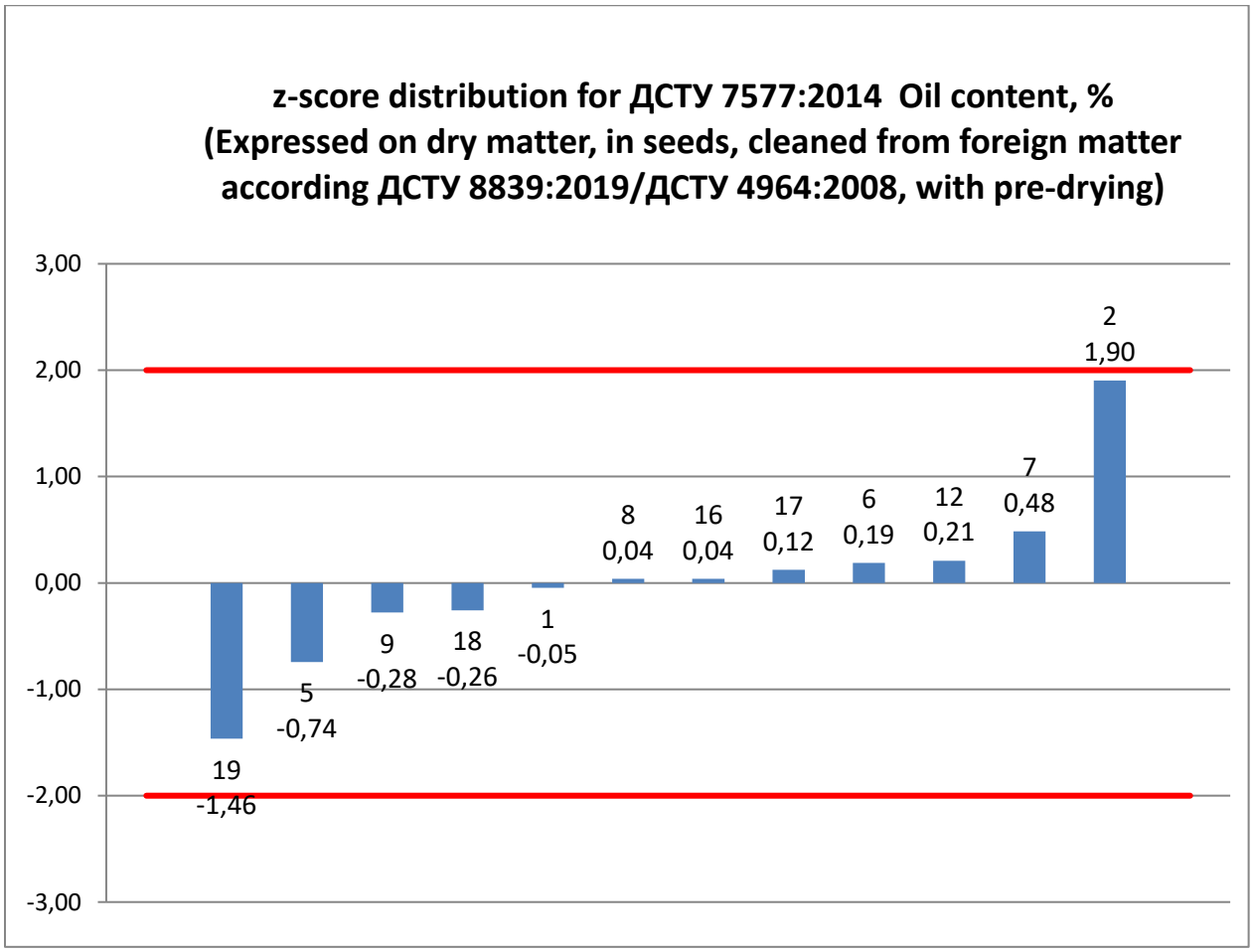
8.22 ISO 659:2009 / ДСТУ EN ISO 659:2022 (EN ISO 659:2009, IDT; ISO 659:2009, IDT) Oil content, % (Expressed as a percentage by mass of the product as received)



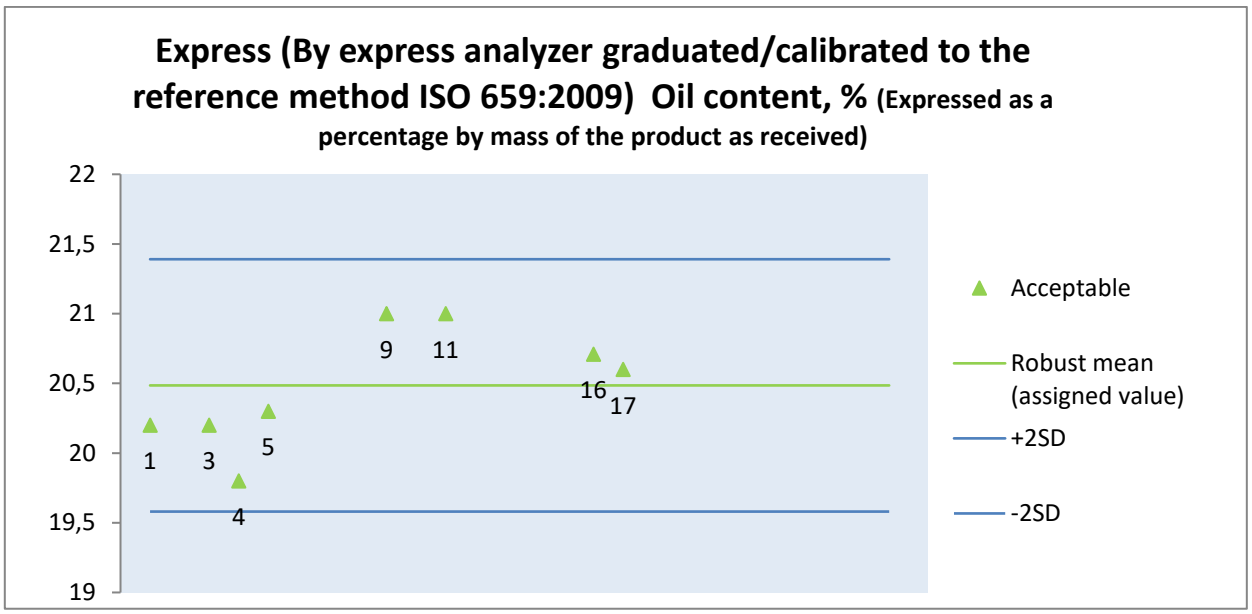


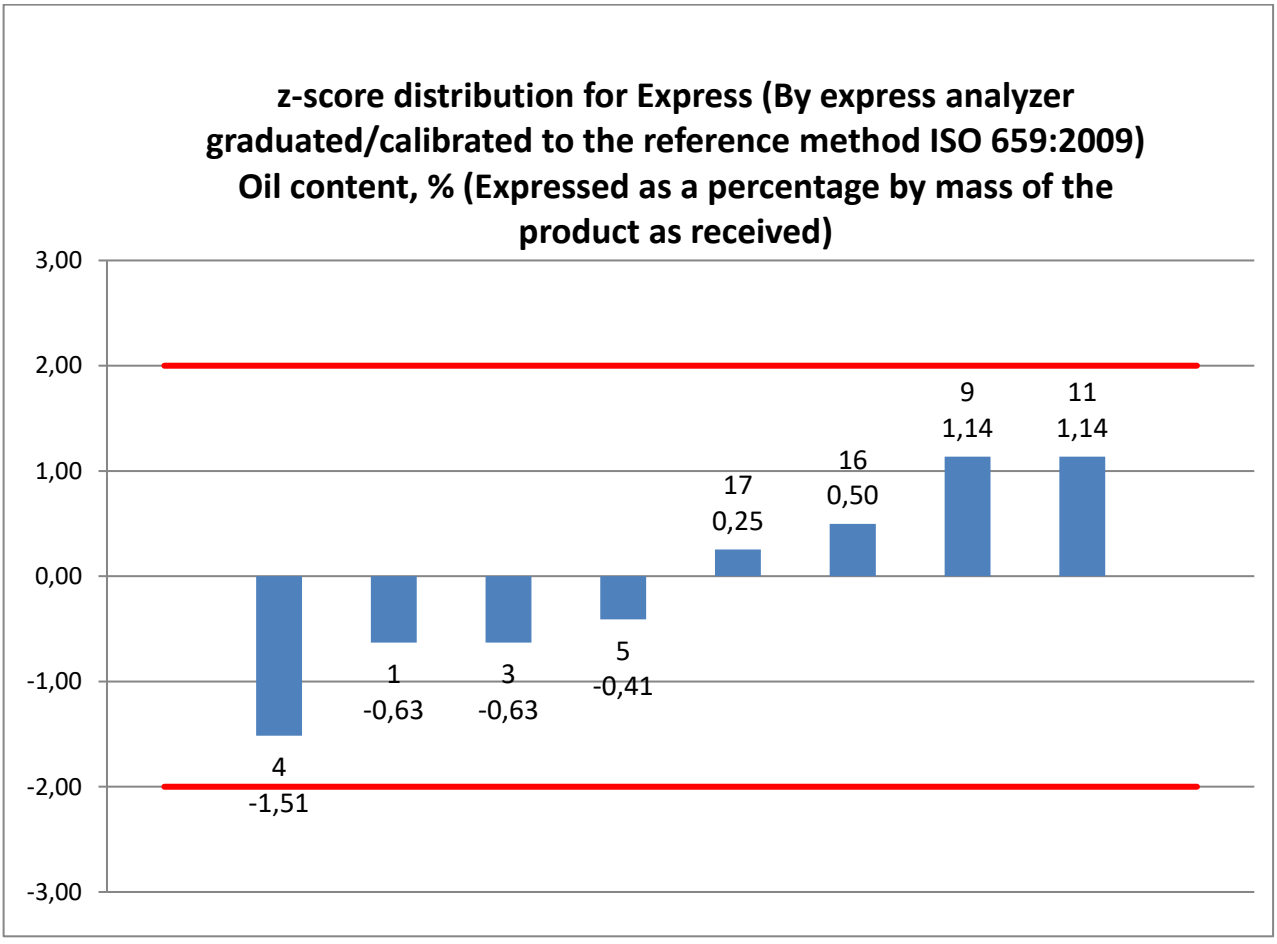
8.23 ДСТУ 7577:2014 Oil content, % (Expressed on dry matter, in seeds, cleaned from foreign matter according ДСТУ 8839:2019/ ДСТУ 4964:2008, with pre-drying)



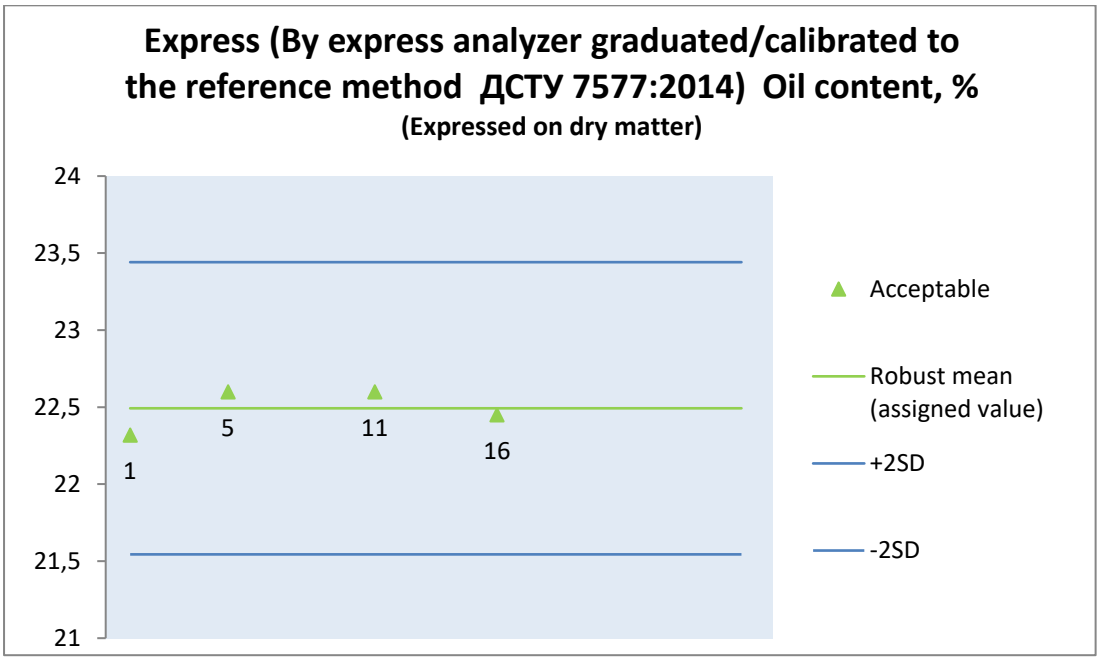


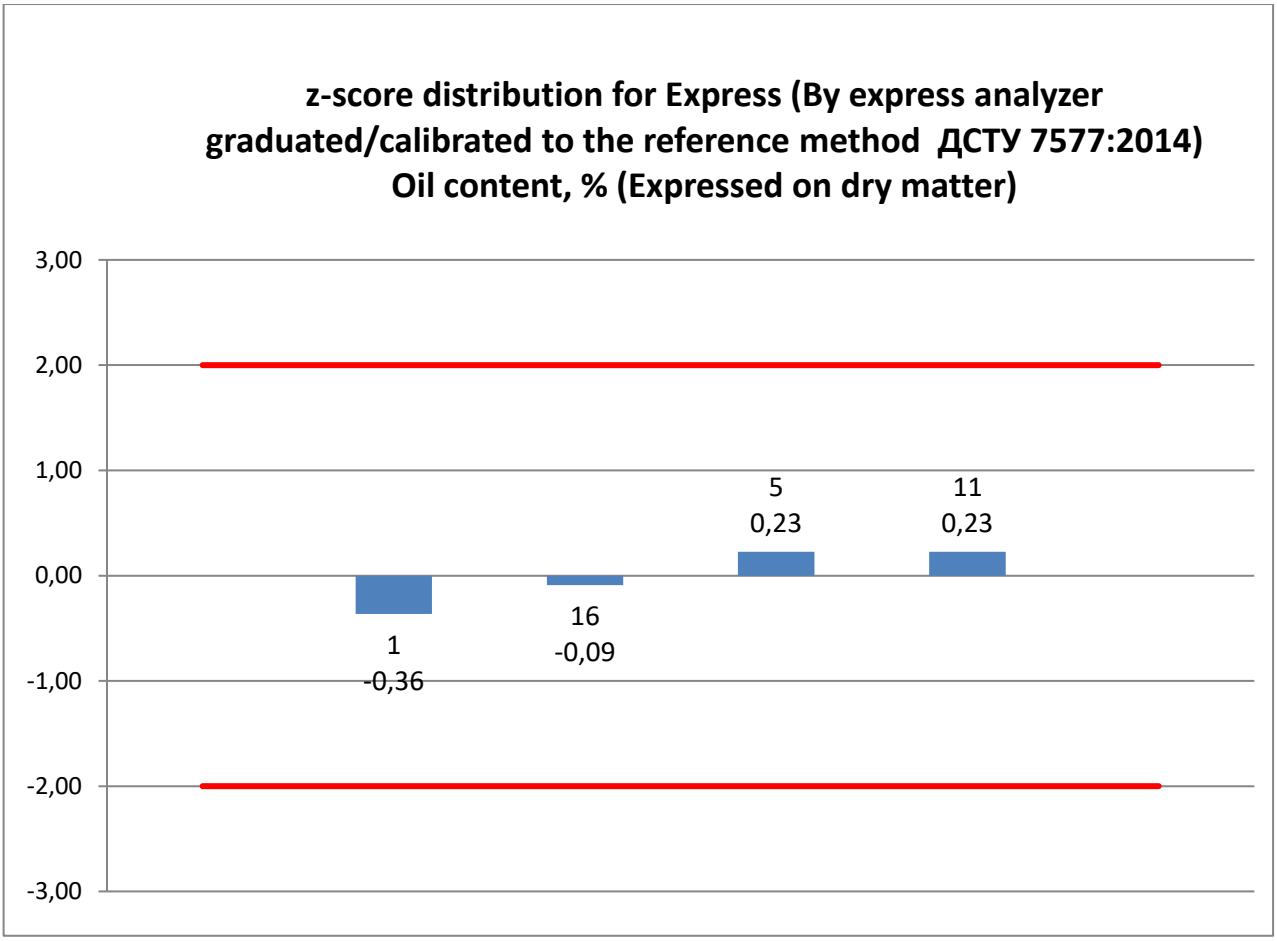
8.24 Express (By express analyzer graduated/calibrated to the reference method ISO 659:2009) Oil content, % (Expressed as a percentage by mass of the product as received)



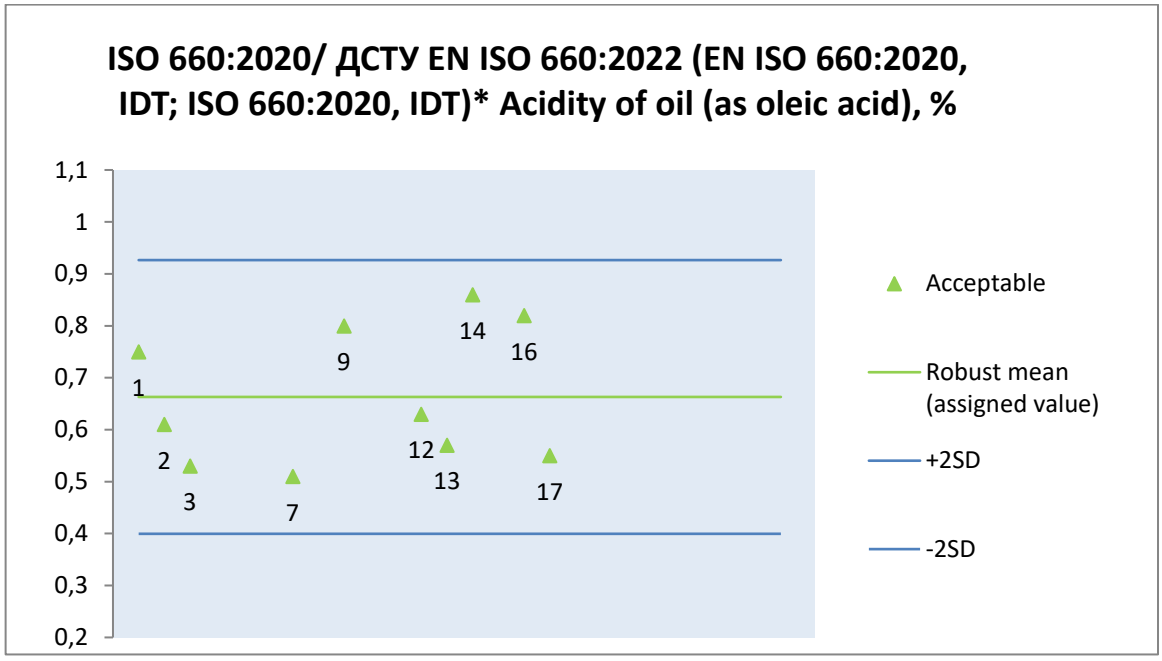


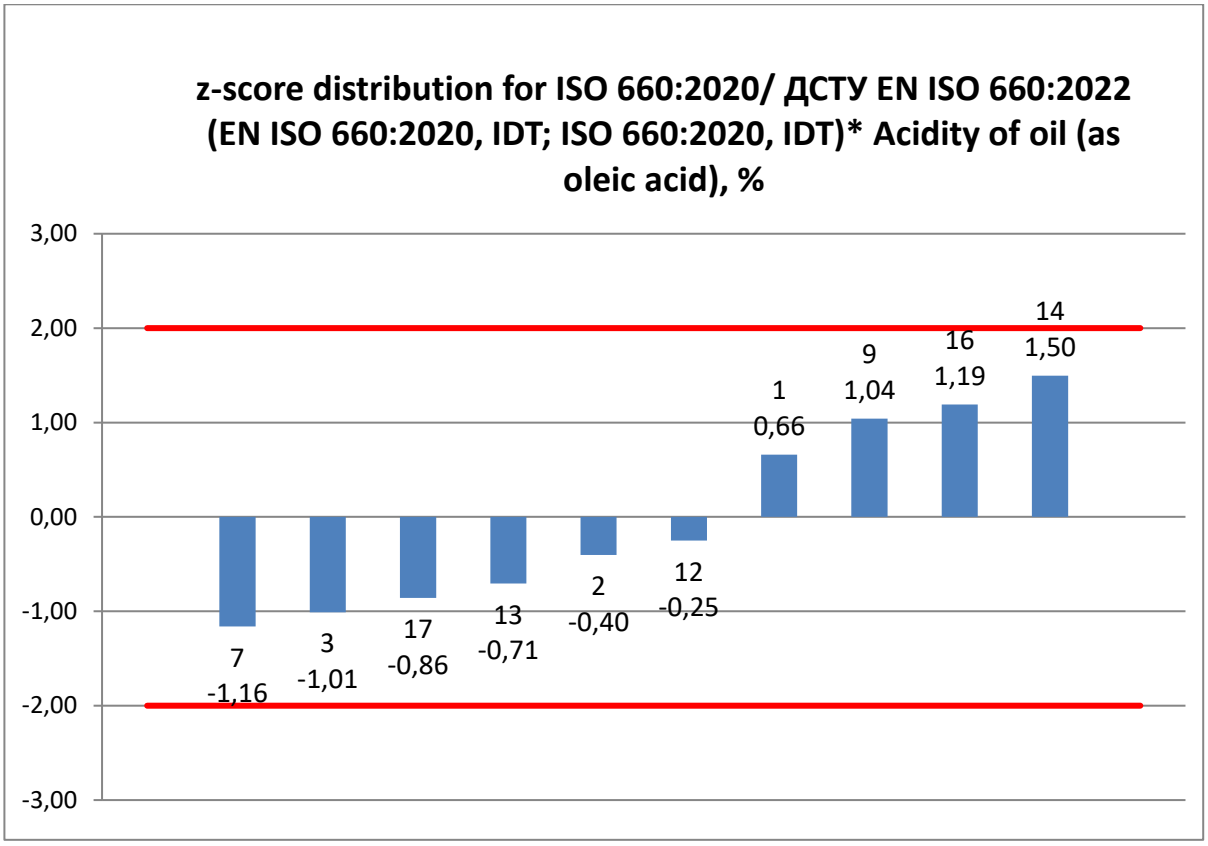
8.25 Express (By express analyzer graduated/calibrated to the reference method ДСТУ 7577:2014) Oil content,% (Expressed as a percentage by mass of the product as received)





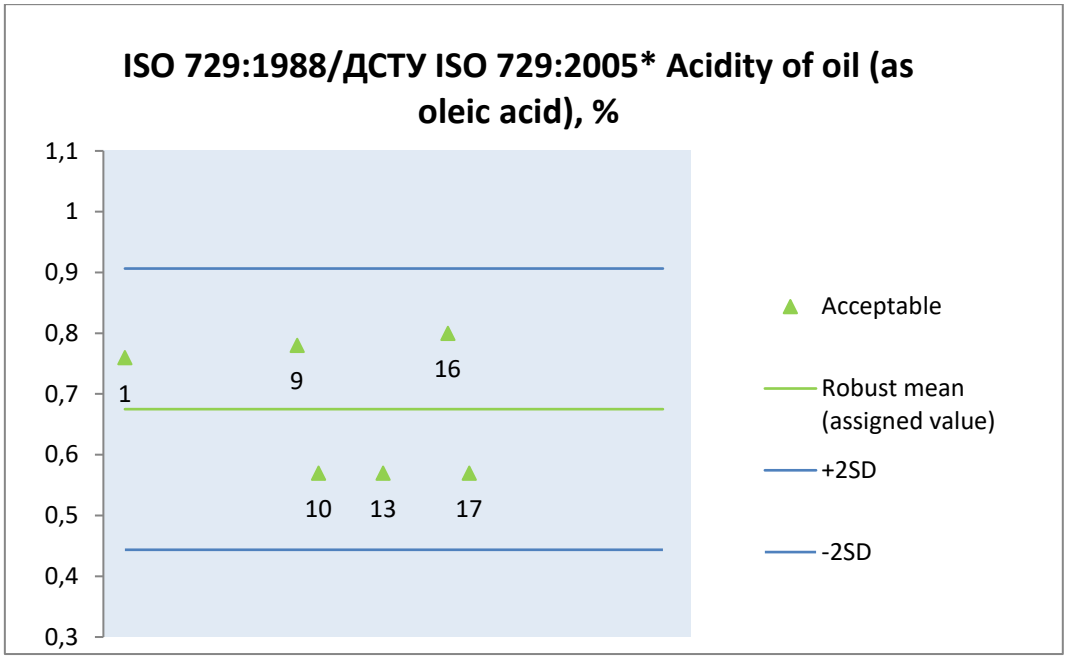
8.26 ISO 660:2020/ ДСТУ EN ISO 660:2022 (EN ISO 660:2020, IDT; ISO 660:2020, IDT) * Acidity of oil (as oleic acid), %

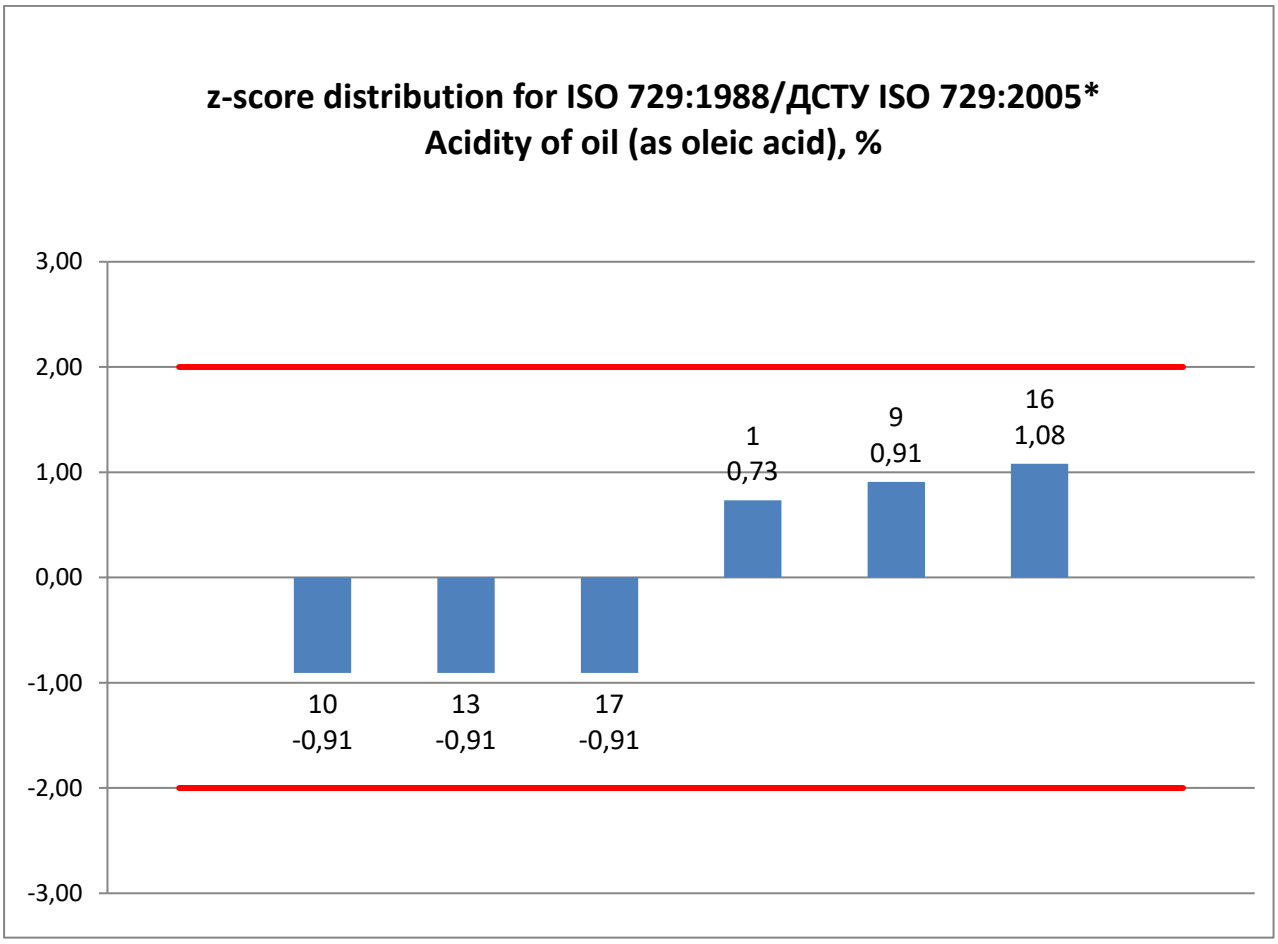




*(Oil extraction - according to ISO 659:2009/ ДСТУ ISO 659:2007 in seeds separated from the total impurity according to ISO 658:2002/ ДСТУ ISO 658:2006).

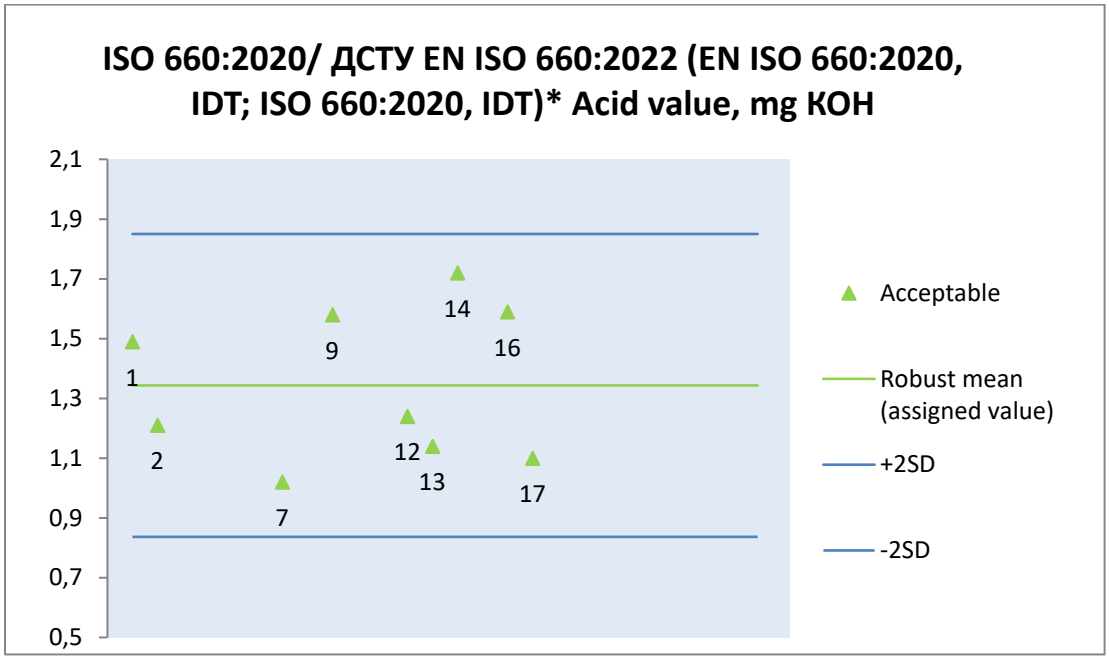
8.27 ISO 729:1988/ДСТУ ISO 729:2005* Acidity of oil (as oleic acid), %

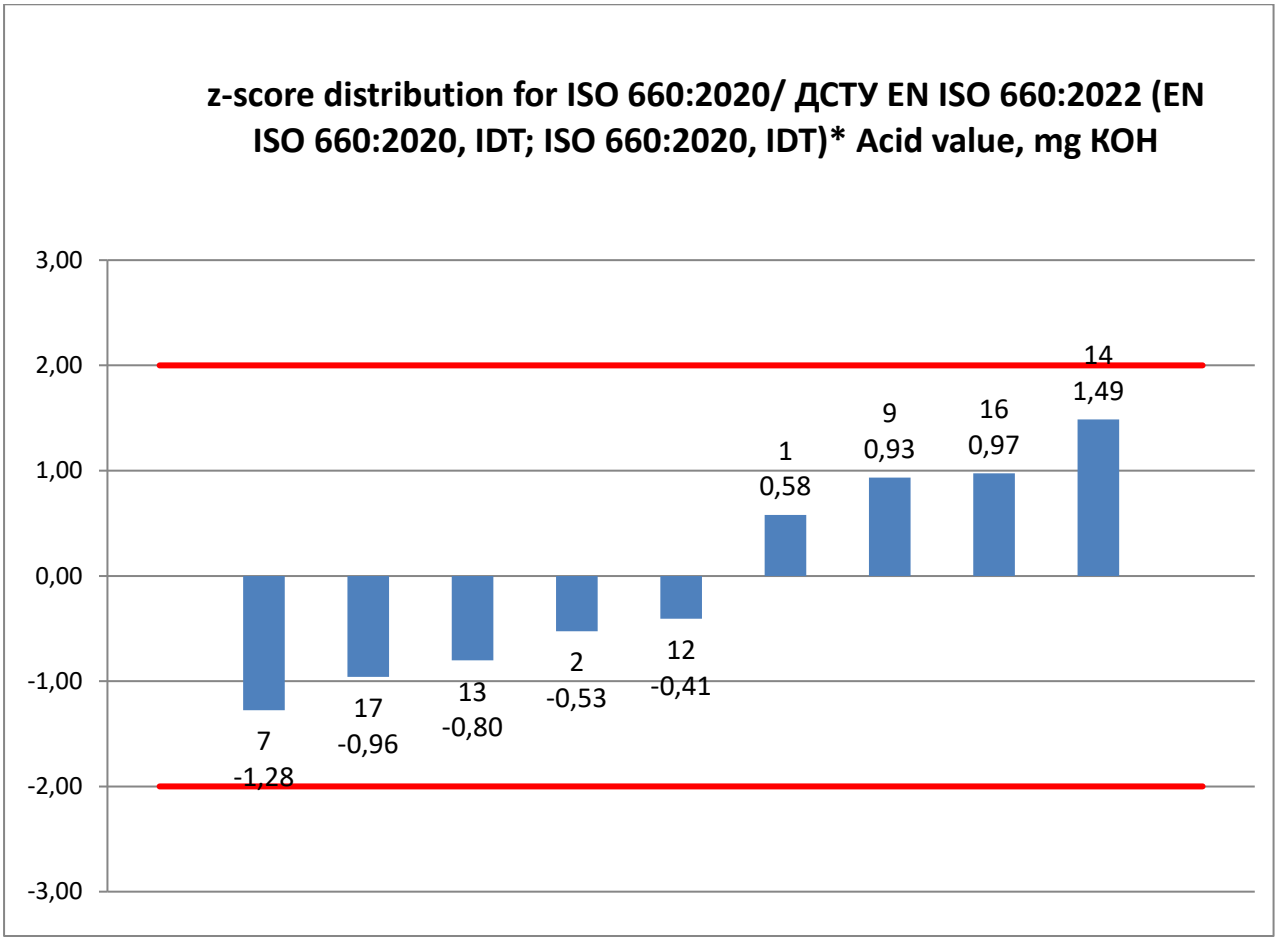




*(Oil extraction - according to ISO 659:2009/ ДСТУ ISO 659:2007 in seeds separated from the total impurity according to ISO 658:2002/ ДСТУ ISO 658:2006).

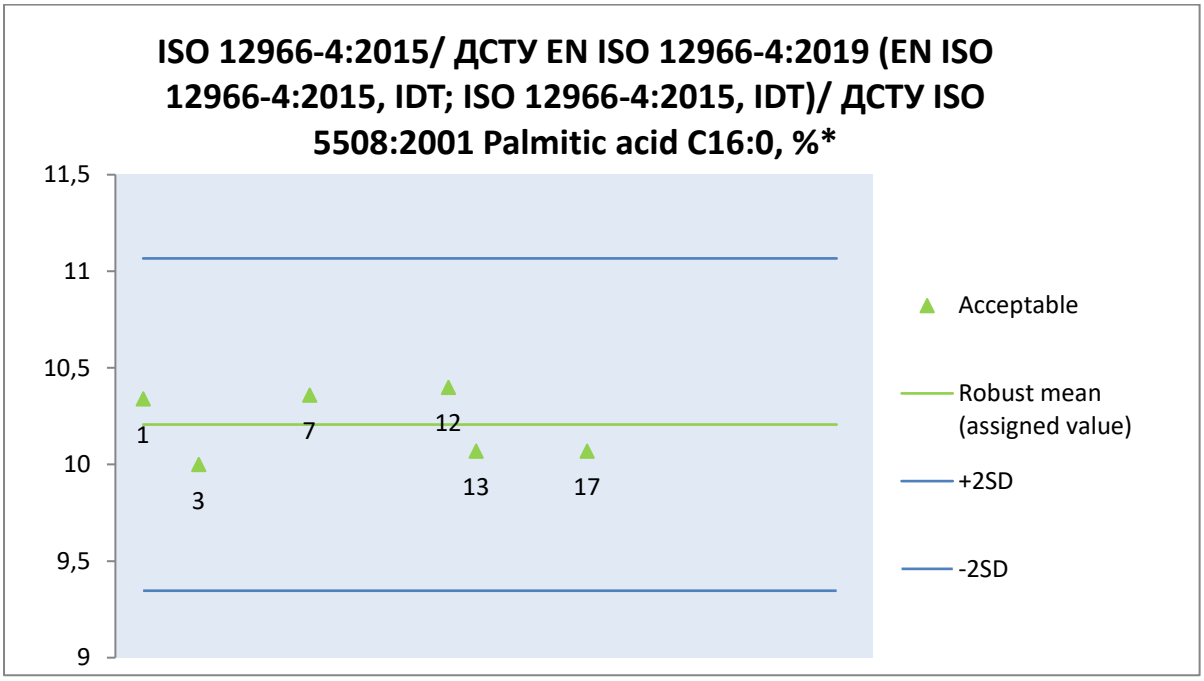
8.28 ISO 660:2020/ ДСТУ EN ISO 660:2022 (EN ISO 660:2020, IDT; ISO 660:2020, IDT)* Acid value, mg KOH

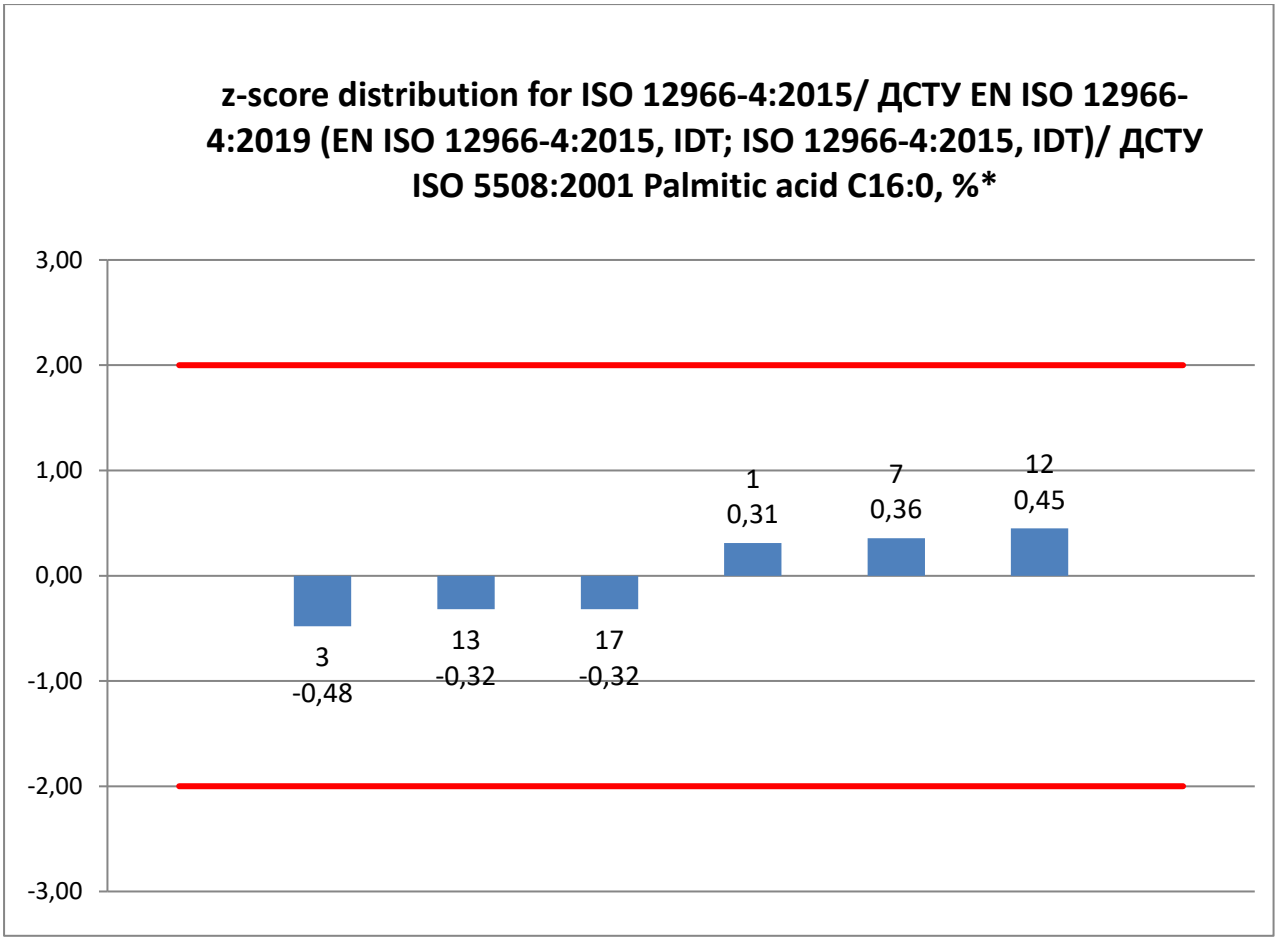




*(Oil extraction - according to ISO 659:2009/ ДСТУ ISO 659:2007 in seeds separated from the total impurity according to ISO 658:2002/ ДСТУ ISO 658:2006).

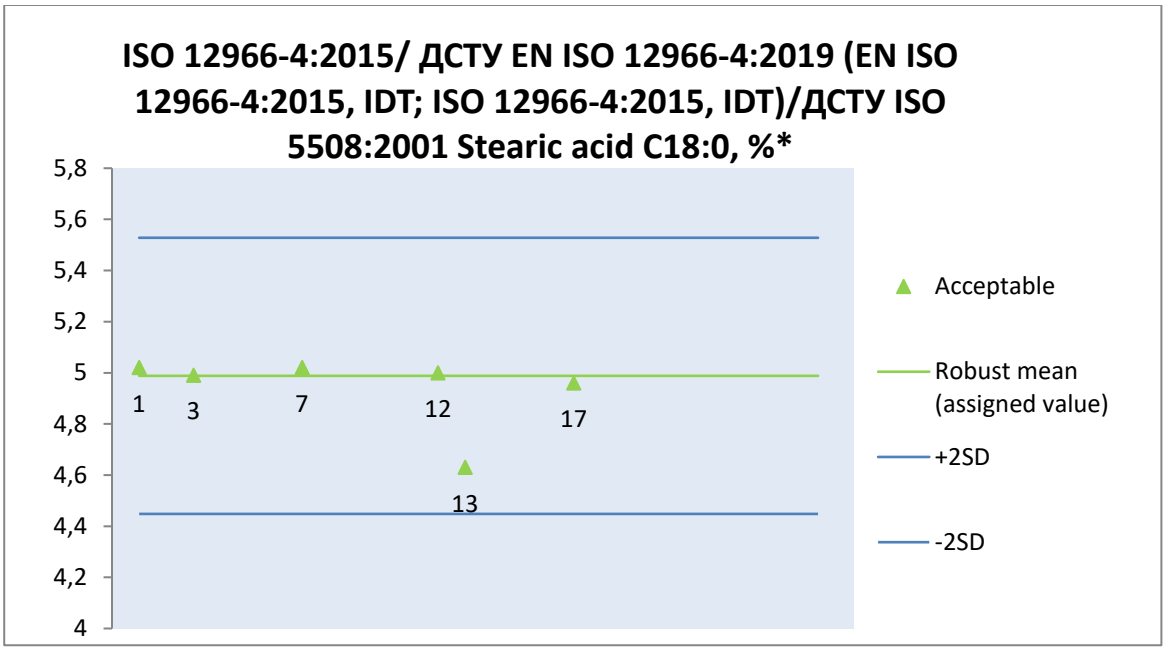
8.29 ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ДСТУ ISO 5508:2001 Palmitic acid C16:0, %*

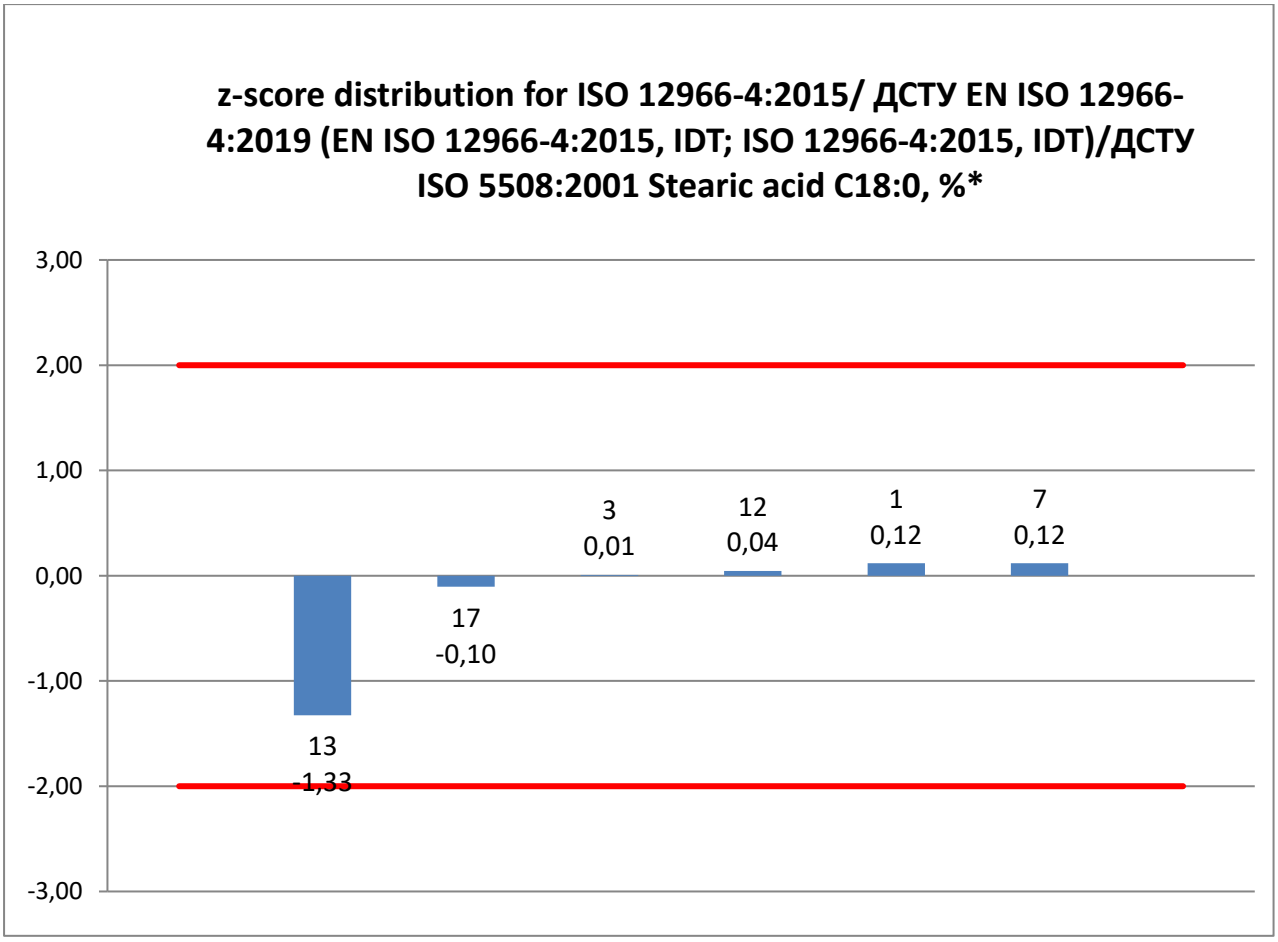




* Calculate the area fraction of the individual fatty acid methyl esters, expressed as a percentage by sum of areas under all peaks of all individual fatty acid methyl ester, without correction factors

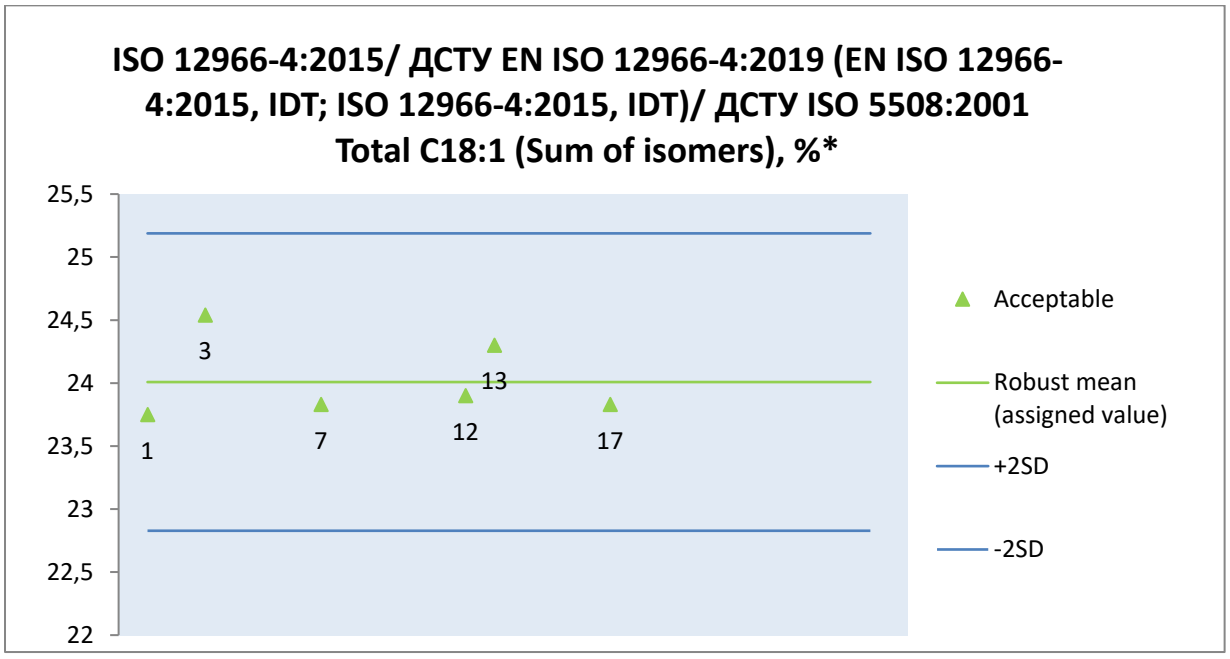
8.30 ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ДСТУ ISO 5508:2001 Stearic acid C18:0, %*

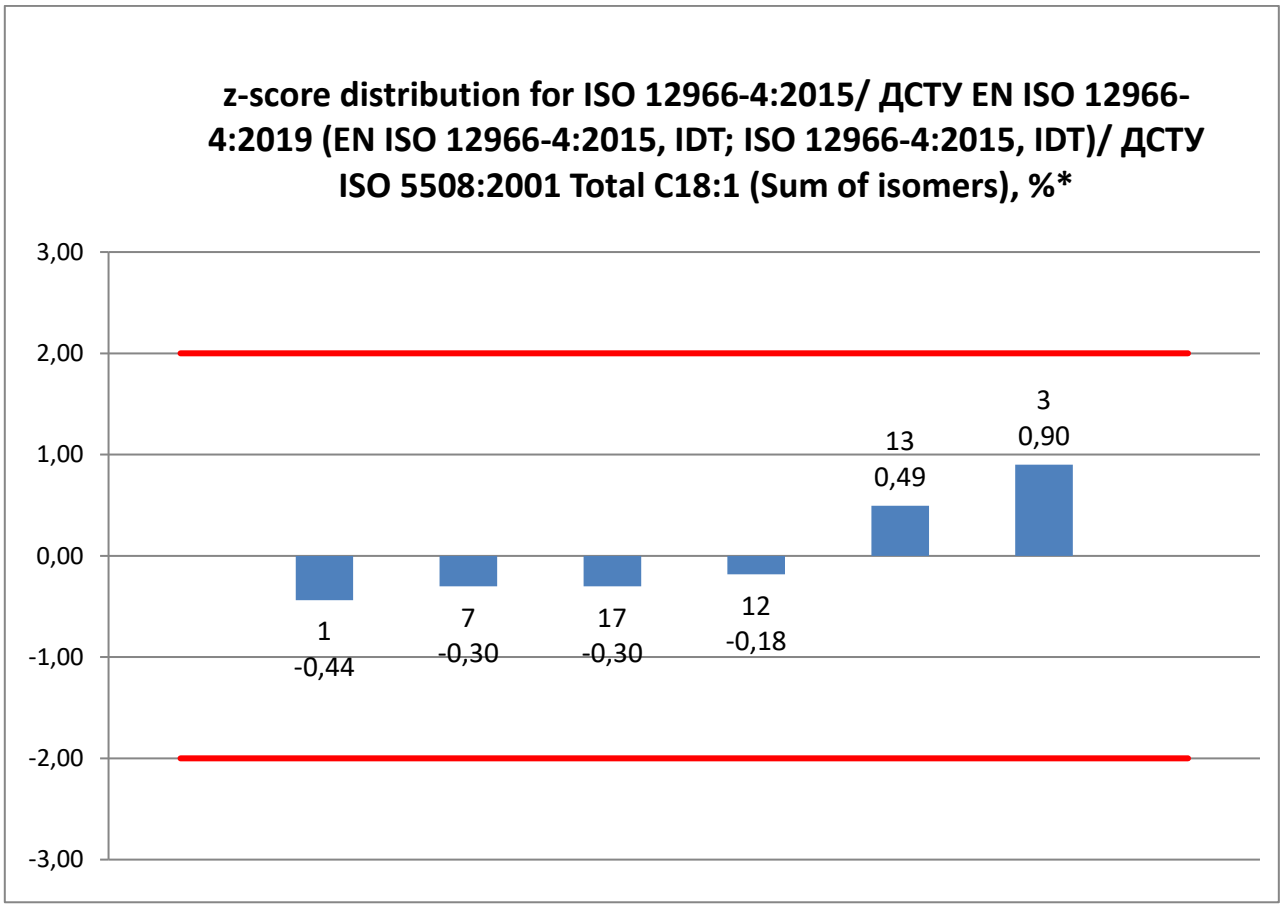




*Calculate the area fraction of the individual fatty acid methyl esters, expressed as a percentage by sum of areas under all peaks of all individual fatty acid methyl ester, without correction factors

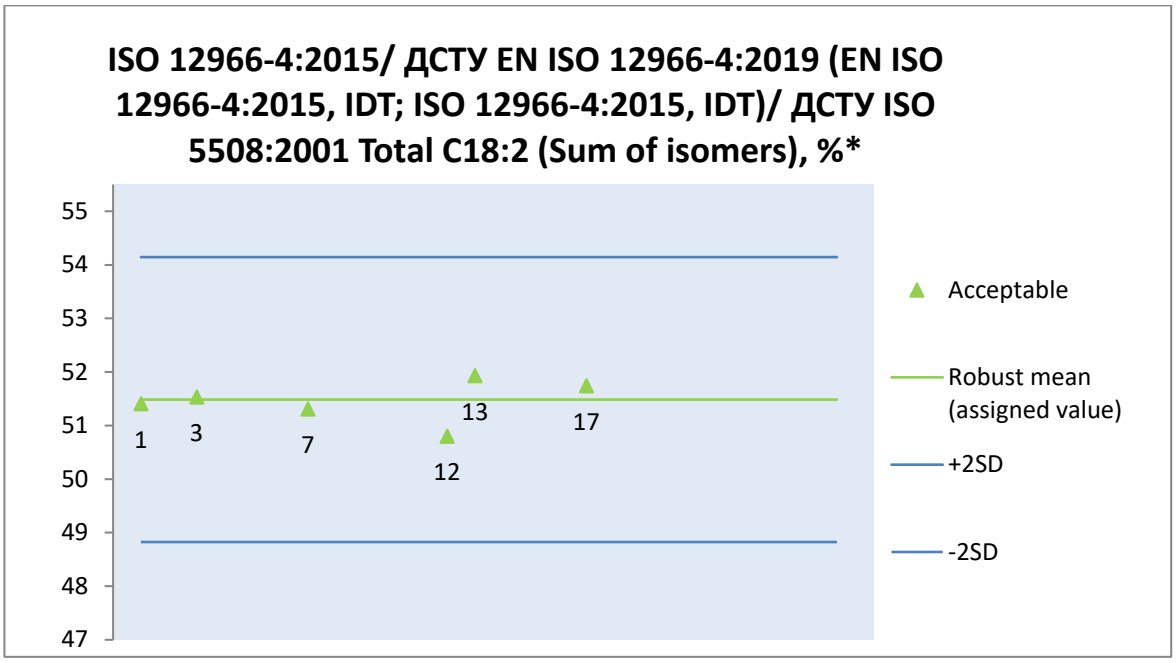
8.31 ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ДСТУ ISO 5508:2001 Total C18:1 (Sum of isomers), % *

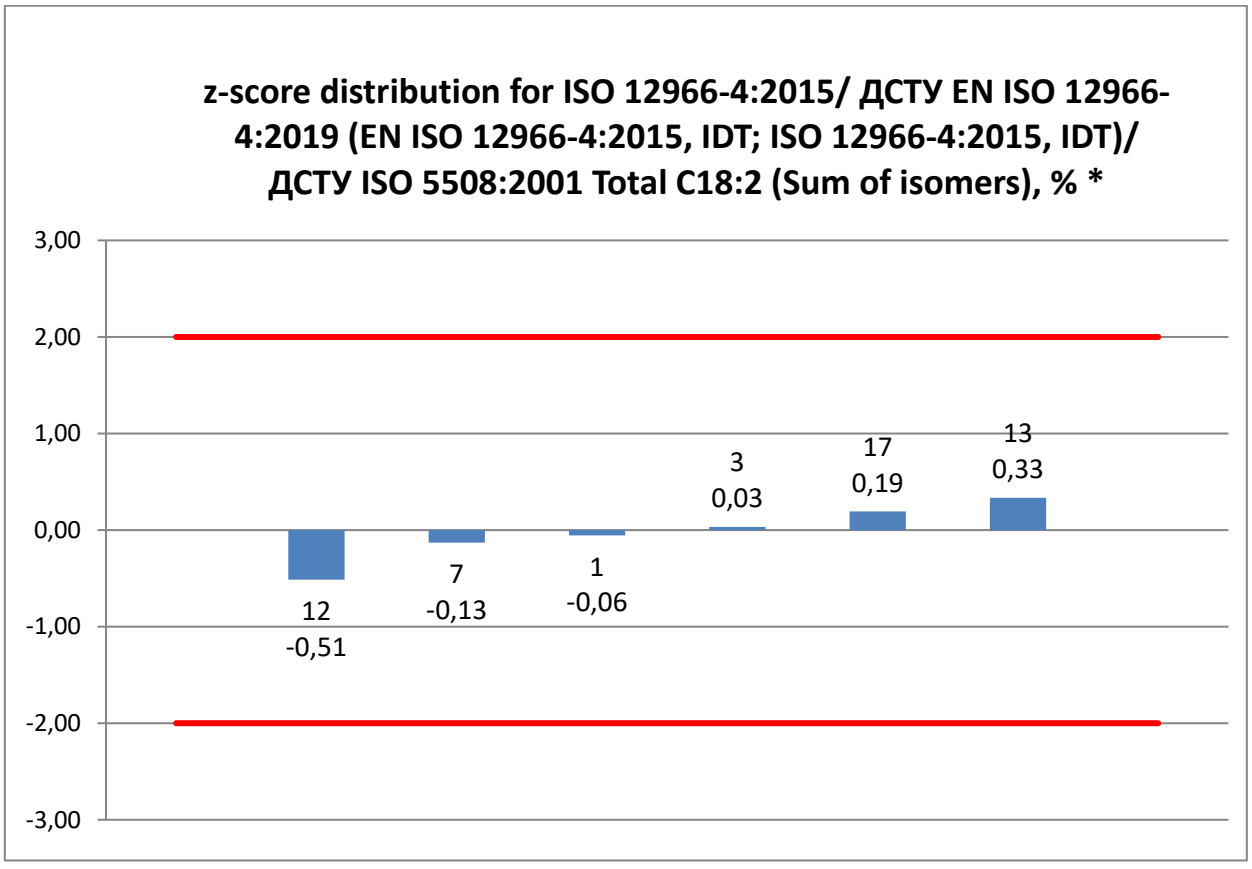




* Calculate the area fraction of the individual fatty acid methyl esters, expressed as a percentage by sum of areas under all peaks of all individual fatty acid methyl ester, without correction factors

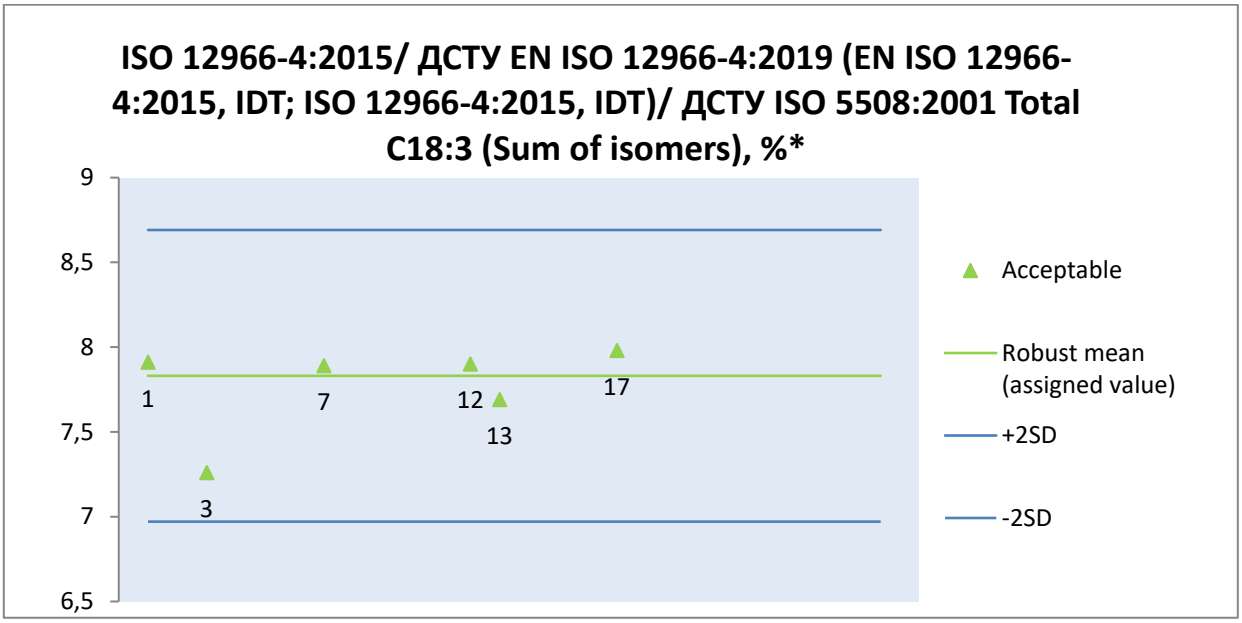
8.32 ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ДСТУ ISO 5508:2001 Total C18:2 (Sum of isomers), % *

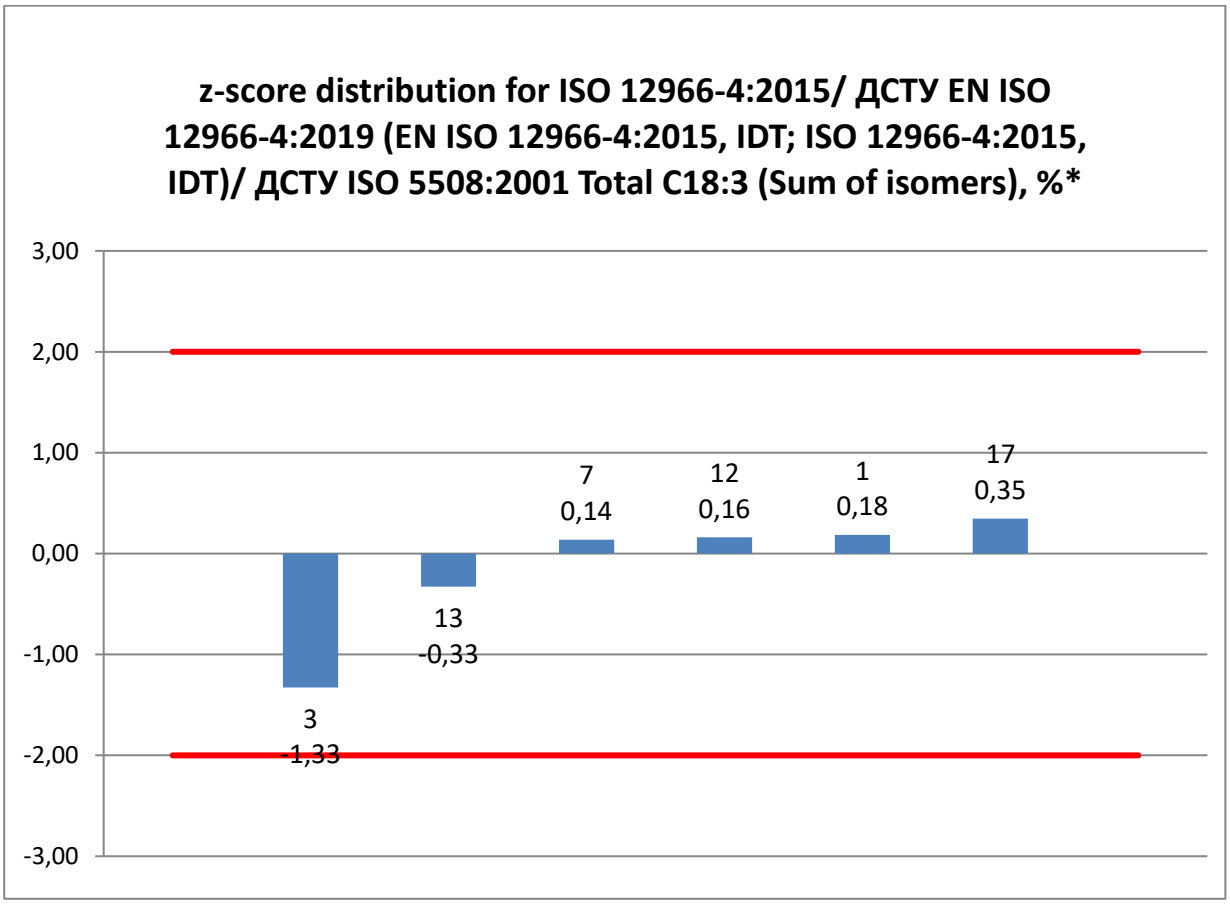




* *Calculate the area fraction of the individual fatty acid methyl esters, expressed as a percentage by sum of areas under all peaks of all individual fatty acid methyl ester, without correction factors

8.33 ISO 12966-4:2015/ ДСТУ EN ISO 12966-4:2019 (EN ISO 12966-4:2015, IDT; ISO 12966-4:2015, IDT)/ДСТУ ISO 5508:2001 Total C18:3 (Sum of isomers), % *





* *Calculate the area fraction of the individual fatty acid methyl esters, expressed as a percentage by sum of areas under all peaks of all individual fatty acid methyl ester, without correction factors

9. NORMATIVE REFERENCE

1. ISO/IEC 17043:2023 Conformity assessment – General requirements for the competence of proficiency testing providers.

2. Analytical Methods Committee, Robust Statistics – How not to reject outliers Part 1. Basic Concepts, Analyst, 1989, 114, 1693-1697.

3. Fearn, T. and Thompson, M, A new test for ‘sufficient homogeneity’, Analyst, 2001, 126, 1414-1417.

4. ISO 13528:2022 Statistical methods for use in proficiency testing by interlaboratory comparison.

5. ISO 33405:2024 Reference materials — Approaches for characterization and assessment of homogeneity and stability.

6. ILAC Discussion Paper on Homogeneity and Stability Testing, April 2008.