Oil in corn germ method adopted

The following column was prepared by AOCS Technical Director David Berner.

Oil in corn germ method

A collaborative study to validate a new method for the determination of oil in corn germ was carried out by the Corn Refiners Association (CRA) in 1988. The results of this study are shown in Table 1. The purpose of the study was to develop a method which would replace the existing method requiring the use of carbon tetrachloride as the extraction solvent. The new method uses hexane as the extraction solvent. After the corn sample is ground, the extraction is carried out in the grinding cup of a Spex mill. The method is applicable to whole kernel corn or its milled component parts.

The AOCS Uniform Methods Committee (UMC) has adopted the CRA method for oil in corn as an official method. This method will appear in the 4th edition of the AOCS methods book, scheduled to be available Dec. 15, 1989.

Collaborative studies

Several collaborative studies have been completed and are undergoing statistical evaluation. One study involved the validation of a new method—developed by David Brooks of Oil-Dri Corp.—for determining peroxide value. The new method uses isooctane as a replacement for chloroform. Brooks also was the coordinator of the study.

Another study compared the Kjel-Foss automatic method for determining protein nitrogen with the classical method using mercuric oxide. Richard Copple of Foss Food Technology was the coordinator of the study. A second Kjel-Foss study will be attempted; for this, copper sulfate will be evaluated as the digestion agent. Results of these studies will be published in a future methodology column.

Smalley reference samples

All Smalley Program participants, totaling 465 persons, have been contacted to determine the extent of interest in purchasing Smalley samples for use as QA/QC reference samples. For the past years, reference samples which could be purchased were limited to only a few oilseed meal samples. If interest warrants, the list of available reference samples will be expanded to include as many of the Smalley samples as practical, taking stability, storage space and demand into consideration.

The initial responses to the Smalley survey indicate much stronger interest than anticipated. As of July 15, a total of 87 participants out of 120 responding expected to purchase samples. On average, each participant said he or she would purchase 10 samples. Results will be tabulated to determine what additional samples should be included in the expanded sample offering. The additional samples should be available for purchase later in 1989 or early in 1990. Additional information will appear in a future column and a promotional mailing will be made.

TABLE 1

Oil in corn germ collaborative study results[a]

Sample	Gluten	Fiber	Oil Content			
			Corn	Germ #1	Germ #2	Germ #3
1	2.630	2.910	3.450	46.300	44.080	38.550
2	3.050	2.930	3.360	46.950	44.980	39.090
3	2.580	2.920	3.450	46.940	44.730	39.220
4	2.500	3.150	3.810	46.370	43.610	38.640
5	3.210	3.030	3.710	46.280	43.970	38.000
6	3.030	3.210	3.560	46.720	45.130	38.210
7	2.800	2.900	3.500	46.700	44.500	38.900
8	2.800	3.000	3.400	46.600	44.500	39.000
9	3.040	3.020	3.330	46.920	44.160	39.510
10	2.522	3.090	3.420	46.570	44.740	38.700
11	2.550	2.890	3.450	46.840	44.620	38.760
12	2.830	3.030	3.340	46.410	44.200	37.820
13	2.620	2.660	3.330	46.170	45.080	38.210
14	2.760	3.080	3.420	47.020	44.100	38.690
15	2.780	3.160	3.780	46.450	44.670	38.460
Mean			3.490	46.63	44.47	38.65
S.D.			0.159	0.300	0.441	0.463
R (S.D. × 2.8)			0.440	0.840	1.230	1.300

[a]Single analysis per laboratory portion; only 1 lab portion analyzer per collaborator.