

stance, improved extraction processes may in themselves so improve the quality of the crude oil as to greatly lessen the extent and severity of the treatment during refining, bleaching, and deodorizing, and consequently decrease the possibilities for losses and some of the expense involved in these operations. In connection with refining losses, Mr. Guy S. Meloy's remarks in his paper presented at this meeting on his tentative theories concerning the production of free fatty acids in cottonseed oil during the development of the seed may bring about a general improvement in the quality of cottonseed oil. It is certainly uneconomic to market cottonseed with a high free fatty acid content.

It is obvious, of course, that much of the program that I have been discussing with reference to cottonseed oil applies also to peanut oil, and it is expected that the protein and oil problems of these two crops will be studied simultan-

ously. There will be other projects, which, naturally, will be of less interest to this group, as for example, those on carbohydrates for increasing the industrial utilization of sweetpotato starch.

I have mentioned previously the purpose of research in these Regional Laboratories and I should like to state it again. The ultimate objective of the work of the laboratories *must* be and *will* be the increased *industrial use of the products of agriculture*. Every effort will, therefore, be made to have the scientific and engineering projects at the Regional Laboratories so organized as to be promptly adaptable to industries' use. As soon as any project matures to the point that industrial development is justified, every facility of the laboratories will be afforded to those interested so that they may put into practice the experimental findings at the earliest practicable date. The fact that industrial research laboratories have been very

generous in cooperation during the Survey indicates that continued cooperation can be expected.

The Southern Laboratory is off to a good start in that we are getting splendid cooperation from the agriculture colleges, experiment stations and private laboratories and industries in this Region. That's exactly what we want. We want all the educational institutions, agricultural organizations and interested industries in the States that comprise the Southern Region to realize that the amount of help rendered by this Laboratory will depend, to a very great extent, on the cooperation it can develop.

In conclusion I want to say that we expect to put our best efforts into the Southern Laboratory. We plan to work for something worthwhile instead of something spectacular. In short, we plan to do our best to help the farmers of the South find new and more profitable outlets for their crops.

# Report of the Refining Committee 1938-9

## Expeller and Hydraulic Soybean Oils

It will be recalled that the tentative refining methods for expeller and hydraulic soybean oils, adopted after the Committee activities of 1936-37, were changed slightly after last year's cooperative study and were continued as tentative. The cooperative examination of these methods has been carried on again this year. Four check samples were sent to the Committee and the detailed results on individual samples are given on the attached tabulations covering samples numbered 1, 2, 5, and 6. Another tabulation ("Percentage Accuracy") shows the percentage of results both as to losses and color readings falling within the several tolerance limits up to within 0.5% of the average and over 0.5%. For ready reference, the following condensed tabulation will give the degree of accuracy based on the percentage of refining results falling within 0.3% of the average, within 0.5% of the average, and over 0.5%:

### Expeller Oil

	Maximum Lye	2/3 Maximum Lye
No. 1 Results within 0.3%	75.0%	33.3%
Results within 0.5%	8.3%	16.7%
Results over 0.5%	16.7%	50.0%
No. 2 Results within 0.3%	75.0%	81.2%
Results within 0.5%	12.5%	
Results over 0.5%	12.5%	18.8%
No. 5 Results within 0.3%	80.0%	73.3%
Results within 0.5%	6.7%	13.3%
Results over 0.5%	13.3%	13.4%
No. 6 Results within 0.3%	75.0%	53.3%
Results within 0.5%	12.5%	33.3%
Results over 0.5%	12.5%	13.4%
Grand Average:		
Results within 0.3%	76.3%	60.3%
Results within 0.5%	10.0%	15.8%
Results over 0.5%	13.7%	23.9%

It will be noted that with maximum lye, 86.3% of the reported refining losses were within 0.5% of the average, and that 76.1% were within 0.5% of the average with the 2/3 maximum lye. The Chairman considers this an excellent showing, particularly in view of the lack of experience of a number of members of the Committee with this type of analytical method.

### Extracted Oil

The Committee last year recommended the tentative adoption of a method for refining extracted soybean oil which appeared to give satisfactory results. The study of this method was continued this year through four cooperative samples numbered 3, 4, 7, and 8. The results reported on these samples are given on the attached tabulations. The percentage of results falling within the several tolerance limits are covered in the tabulation on "Percentage Accuracy." As in the case of the expeller and hydraulic oils, a condensed tabulation follows, giving the percentage of refining results falling within 0.3% of the average, within 0.5% of the average, and over 0.5%:

	7/8 Maximum Lye (14 Be')	2/3 Maximum Lye (14 Be')
No. 3 Results within 0.3%	35.7%	71.4%
Results within 0.5%	35.7%	
Results over 0.5%	28.6%	28.6%
No. 4 Results within 0.3%	73.3%	46.7%
Results within 0.5%	20.0%	33.3%
Results over 0.5%	6.7%	20.0%
No. 7 Results within 0.3%	18.8%	46.7%
Results within 0.5%	12.5%	26.7%
Results over 0.5%	68.7%	26.6%
No. 8 Results within 0.3%	38.5%	40.0%
Results within 0.5%	7.7%	13.3%
Results over 0.5%	53.9%	46.7%

Grand Average:			
Results within 0.3%	41.6%	51.2%	
Results within 0.5%	18.9%	18.3%	
Results over 0.5%	39.5%	30.5%	

Using 7/8 maximum lye (14 Bé) on extracted oil, 60.5% of the reported results were within 0.5% of the average, and with 2/3 maximum lye (14 Bé), 69.5% were within 0.5% of the average.

The consensus of the Committee and observations made in the Swift Laboratories indicate that 12 Bé lye is not suitable primarily because of lye water separation.

The results obtained on the cooperative extracted oil samples No. 3 and No. 4 can be considered satisfactory. The findings reported, however, on samples No. 7 and No. 8 lowered the grand average appreciably. There was considerable variation even in the

F.F.A. determination on these two samples. The Chairman suspects that there was something abnormal about these oils.

**Recommendation**

The Refining Committee recommends, as a result of this season's work, that the tentative refining methods for expeller and hydraulic soybean oils, as changed and augmented last year and followed in this year's cooperative program, be adopted as official methods of the A.O.C.S.

The Committee recommends that the tentative method for extracted oil, as adopted last year, be studied further next year.

Yours respectfully,  
H. S. Mitchell, Chairman

— A.O.C.S. REFINING COMMITTEE COOPERATIVE TESTS — 1938-39 — SOYBEAN OIL SAMPLE No. 1 — EXPELLER TYPE —

Committee Member	F.F.A. as Oleic	Maximum 12° Be' Lye	Loss	Color Refined Oil		Color Ref. Oil Using Matched Yellow		Color Bleached Oil		2/3 Max. 12° Be' Lye	Loss	Color Refined Oil Using 70 Yellow		Color Ref. Oil Using Matched Yellow		Color Bleached Oil Using Standard Yellow		Color Bleached Oil Using Matched Yellow			
				Yel. Red	Yel. Red	Yel. Red	Yel. Red	Yel. Red	Yel. Red			Yel. Red	Yel. Red	Yel. Red	Yel. Red	Yel. Red					
C. B. Cluff	0.50	8.0	4.5	70	6.8	—	—	20	2.0	—	—	5.3	4.8	70	7.2	—	—	22	2.2	—	—
R. H. Fash	0.70	8.4	4.4	70	6.5	—	—	20	1.9	—	—	5.6	5.1	70	7.2	—	—	20	2.1	—	—
E. R. Barrow	0.60	8.2	4.8	70	7.1	—	—	22	2.2	—	—	5.5	5.0	70	8.4	—	—	24	2.4	—	—
A. R. Gudheim	0.60	8.2	4.1	70	7.0	50	7.0	30	2.7	—	—	5.5	4.7	70	7.2	50	7.4	30	2.8	—	—
W. D. Hutchins				Not Reported																	
A. D. Rich	0.60	8.2	4.3	70	7.8	30	7.3	—	—	—	—	5.45	4.2	70	8.0	30	7.8	20	4.6	—	—
A. C. Coffey	0.50	7.9	5.0	70	7.2	—	—	35	1.9	—	—	5.3	5.9	70	8.0	—	—	35	1.9	—	—
T. C. Law	0.70	8.5	4.4	70	7.0	—	—	20	2.0	—	—	5.6	5.0	70	7.4	—	—	20	2.0	—	—
L. A. Spielman	0.50	8.1	3.8	70	7.6	45	7.4	21	2.1	35	2.1	5.3	4.5	70	8.8	45	8.5	21	2.1	35	2.1
M. M. Durkee	0.50	7.8	4.3	70	8.2	35	7.8	15	2.1	—	—	5.2	4.7	70	9.0	35	8.5	15	2.3	—	—
N. F. True*	0.60	—	13.1	—	—	—	—	—	—	—	—	11.6	—	—	—	—	—	—	—	—	—
H. E. Moore	0.60	—	4.4	70	6.4	50	6.5	20	1.9	—	—	4.8	—	70	7.7	50	7.7	30	1.8	—	—
Lamar Kishlar**	0.50	6.0 (14° Be')	5.4	55	8.0	35	7.8	25	2.5	20	2.6	4.6 (14° Be')	5.0	55	8.3	35	8.4	26	2.7	20	2.8
W. L. Taylor	0.60	8.1	4.4	70	7.7	35	7.9	20	2.5	30	1.8	5.4	5.3	70	8.2	35	8.4	20	2.4	30	1.7
N. F. Kruse				Not Reported																	
K. S. Markley***	0.50	—	4.1	70	8.7	—	—	10	0.92	—	—	—	4.6	70	9.1	—	—	10	0.9	—	—
H. S. Mitchell	0.50	7.9	4.6	70	7.4	—	—	25	2.1	—	—	5.3	4.9	70	8.4	—	—	25	2.4	—	—
Average	0.56		4.4		7.3		7.3		2.2			5.3		8.0		8.0		2.4			1.9
High	0.70		5.0		8.2		7.9		2.7			5.9		9.0		8.5		4.6			2.1
Low	0.50		3.8		6.4		6.5		1.9			4.2		7.2		7.4		1.8			1.7

\* Loss out of line — Not figured for average.  
\*\* Used 14 Be' instead of 12 Be' Lye — Not figured for average.  
\*\*\* Used agitation of 1 hour instead of 90 minutes. Not figured for average.

Results on Avg.	13	4			1				1		2		3
Results Within 0.1% of Avg.	2	3	2	1	3	1						2	
Results Within 0.2% of Avg.	1				2		1		1		1	1	1
Results Within 0.3% of Avg.	1	3	2	4	2				2	1	1	2	2
Results Within 0.4% of Avg.	1	2			1				1	2	1	1	1
Results Within 0.5% of Avg.	2	3	2	1	1				1	1	2	1	1
Results more than 0.5% of Avg.									6	6	1	2	2

A.O.C.S. REFINING COMMITTEE COOPERATIVE TESTS — 1938-39 — SOYBEAN OIL SAMPLE NO. 2 — EXPELLER TYPE

Committee Member	F.F.A. as Oleic	Maximum 12° Be' Lye	Loss	Color Refined Oil		Color Ref. Oil Using Matched Yellow		Color Bleached Oil Standard Yellow		Color Bleached Oil Matched Yellow		2/3 Max. 12° Be' Lye	Loss	Color Refined Oil Using 70 Yellow		Color Refined Oil Using Matched Yellow		Color Bleached Oil Using Standard Yellow		Color Bleached Oil Using Matched Yellow	
				Yel. Red	Yel. Red	Yel. Red	Yel. Red	Yel. Red	Yel. Red	Yel. Red	Yel. Red			Yel. Red	Yel. Red	Yel. Red					
C. B. Cluff	0.6	8.2	4.7	70	6.8	—	—	21	2.1	—	—	5.5	4.8	70	7.2	—	—	23	2.3	—	—
R. H. Fash	0.7	8.4	4.9	—	—	50	7.1	—	—	—	—	5.6	5.3	—	—	50	7.8	—	—	20	2.2
E. R. Barrow	0.7	8.4	5.2	70	7.5	—	—	22	2.2	—	—	5.1	5.1	70	8.2	—	—	23	2.3	—	—
A. R. Gudheim	0.7	8.4	4.6	70	7.5	—	—	30	3.0	—	—	5.6	5.3	70	7.6	—	—	30	2.9	—	—
W. D. Hutchins	0.7	8.4	5.1	70	7.2	—	—	20	2.1	—	—	5.6	4.9	70	7.6	—	—	20	2.2	—	—
A. D. Rich	0.7	8.45	4.7	70	7.6	35	7.5	—	—	—	—	5.65	4.4	70	7.8	35	7.8	20	2.4	—	—
A. C. Coffey	0.7	8.46	5.2	70	7.6	—	—	20	1.5	—	—	5.64	5.4	70	7.3	—	—	20	1.5	—	—
T. C. Law	0.7	8.3	5.0	70	7.4	—	—	—	—	—	—	5.6	4.8	—	—	—	—	—	—	—	—
L. A. Spielman	0.65	8.37	5.1	70	6.7	45	6.5	20	1.8	26	1.8	5.57	4.8	70	7.6	45	7.0	20	2.0	26	2.0
M. M. Durkee	0.68	8.38	5.1	70	8.2	40	7.6	—	—	15	2.1	5.59	5.0	70	8.8	40	8.3	—	—	15	2.3
N. F. True																					
H. E. Moore	0.7	—	4.6	—	—	50	7.9	20	2.1	—	—	—	4.9	—	—	50	8.9	20	2.2	—	—
Lamar Kishlar*	0.44	8.28	5.9	70	7.9	55	7.8	20	2.3	25	2.5	5.52	5.2	70	8.2	55	8.3	20	2.5	25	2.7
W. L. Taylor	0.74	8.5	4.9	70	8.2	—	—	20	2.2	—	—	5.7	5.1	70	8.6	—	—	20	2.5	—	—
N. F. Kruse	0.8	8.68	4.8	—	—	20	7.2	20	2.0	—	—	5.8	4.4	—	—	35	8.0	20	2.1	—	—
K. S. Markley	0.60	8.4	5.1	70	7.6	—	—	35	3.0	—	—	5.6	5.1	70	8.0	—	—	35	2.6	—	—
H. S. Mitchell	0.7	8.4	5.2	70	8.0	50	7.4	30	1.9	—	—	5.6	4.8	70	8.3	50	7.4	30	3.1	—	—

(\*Too much Lye for 0.44 F.F.A.)

Average	0.68	5.0	70	7.5	42	7.4	23	2.2	22	2.1	5.0	70	8.0	45	7.9	23	2.3	22	2.3
High	0.80	5.9	70	8.2	55	7.9	35	3.0	26	2.5	5.4	70	8.8	55	8.9	35	3.1	26	2.7
Low	0.44	4.6	70	6.7	20	7.1	20	1.5	15	1.8	4.4	70	7.2	35	7.0	20	1.5	15	2.0
Results on Average	1	1		2		1		2		1	1		1		2		2		1
Results within																			
0.1% of Avg.	13	6		4		1		4			5			3		4			
0.2% of Avg.	1	3				2		2			5		3			3			
0.3% of Avg.	1	2		1		1		1		1	2		3			2			1
Results within 0.4% of Avg.		2		1		1		1		1			3		2				1
Results within 0.5% of Avg.				1		1		1							2				
Results more than 0.5% of Avg.		2		4		1		3			3		3		2		3		

A.O.C.S. REFINING TESTS — 1938 — SOYBEAN OIL SAMPLE NO. 3 — EXTRACTED TYPE

Committee Member	FFA	7/8 Max. 14°Be' Lye		Loss	Color Ref'd Oil Using 70 Yel.		Color Ref'd Oil Using Matched Yellow		Color Bleached Standard Yellow		Color Bl. Oil Matched Yellow		2/3 Max. 14°Be' Lye		Loss	Color Ref. Oil Using 70 Yel.		Color Ref. Oil Using Matched Yellow		Color Bl. Oil Standard Yellow		Color Bl. Oil Matched Yellow		2/3 Max. 12°Be' Lye	
		Red	Yel. Red		Red	Yel. Red	Red	Yel. Red	Red	Yel. Red	Red	Yel. Red	Red	Yel. Red		Red	Yel. Red	Red	Yel. Red	Red	Yel. Red	Red	Yel. Red	Red	Yel. Red
		C. B. Cluff	1.7		7.8	7.3	8.2	30	8.0	22	2.2	—	—	6.0		5.5	8.3	70	8.3	23	2.3	—	—	—	—
R. H. Fash	1.8	8.2	8.0	8.1	—	—	20	1.9	—	—	6.2	6.1	8.3	—	—	20	1.8	—	—	—	—	—	—	7.4	
E. R. Barrow	1.8	8.2	7.8	8.4	—	—	21	2.1	—	—	6.2	6.3	8.6	—	—	21	2.1	—	—	—	—	—	—	7.4	
A. R. Gudheim	1.75	8.1	7.8	8.9	—	—	—	—	35	2.4	6.2	6.1	9.2	—	—	—	—	—	—	—	—	35	2.4	7.3	
W. D. Hutchins	1.7	8.0	8.3	8.5	—	—	20	2.1	—	—	6.0	6.4	8.3	—	—	20	2.2	—	—	—	—	—	—	7.2	
A. D. Rich**	1.8	7.4	6.9	9.4	40	9.1	—	—	—	—	5.6	4.7	9.5	40	9.2	—	—	—	—	—	—	—	—	7.4	
C. A. Coffey	1.69	8.0	5.2	8.1	—	—	—	—	25	1.7	6.1	4.2	8.2	—	—	—	—	—	—	—	—	25	1.8	7.2	
T. C. Law	1.8	8.2	8.0	8.1	—	—	—	—	—	—	6.3	7.4	8.1	—	—	—	—	—	—	—	—	—	—	7.4	
L. A. Spielman	1.72	8.2	7.3	—	35	9.0	—	—	35	1.6	6.2	6.1	—	35	9.1	—	—	—	—	—	—	35	1.6	7.4	
M. M. Durkee	1.8	8.0	7.7	—	20	8.6	20	1.9	—	—	6.1	7.4	—	20	8.8	20	1.9	—	—	—	—	—	—	7.38	
H. E. Moore	1.75	—	7.5	—	50	7.6	20	1.6	—	—	—	6.1	—	50	7.6	20	1.6	—	—	—	—	—	—	—	
L. Kishlar	1.64	7.87	6.7	8.8	55	8.3	20	2.3	25	2.0	6.0	5.9	8.7	55	8.6	20	2.2	25	2.0	25	2.0	25	2.0	7.2	
W. L. Taylor	1.7	8.0	7.5	8.2	35	8.5	20	1.8	30	1.3	6.1	6.4	8.9	35	9.1	20	1.7	30	1.3	20	1.7	30	1.3	7.2	
N. F. Kruse*	1.6	9.3	7.2	—	20	8.4	20	2.3	—	—	7.0	6.4	—	20	8.4	—	—	20	2.5	—	—	20	2.5	5.9	
K. S. Markley	1.65	7.9	7.0	9.1	—	—	—	—	35	2.1	6.0	6.0	9.6	—	—	—	—	—	—	—	—	35	2.1	7.3	
H. S. Mitchell	1.6	7.8	7.9	8.7	35	8.4	20	2.0	—	—	5.9	5.9	8.8	35	8.4	20	2.1	—	—	—	—	—	—	7.1	
Average	1.7	—	7.4	8.5	37	8.3	20	2.0	31	1.9	—	—	6.1	8.6	43	8.6	20	2.0	31	1.9	—	—	—	—	
High	1.8	—	8.3	9.1	55	9.0	22	2.3	35	2.4	—	—	7.4	9.6	70	9.1	23	2.3	35	2.4	—	—	—	—	
Low	1.6	—	5.2	8.1	20	7.6	20	1.6	25	1.3	—	—	4.2	8.1	20	7.6	21	1.6	25	1.3	—	—	—	—	
Results on Avg.	5	—	—	1	1	—	1	—	—	—	4	1	—	1	—	—	—	—	—	—	—	—	—	—	
Results within																									
0.1% of Avg.	11	—	4	1	1	—	4	1	—	—	2	1	2	3	2	—	—	—	—	—	—	—	—	—	
Within 0.2%	—	—	—	1	1	—	2	2	—	—	2	1	1	3	1	—	—	—	—	—	—	—	—	—	
Within 0.3%	—	—	1	3	2	—	1	1	—	—	2	4	—	2	1	—	—	—	—	—	—	—	—	—	
Within 0.4%	—	—	3	4	—	—	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	
Within 0.5%	—	—	2	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	
Results More Than 0.5% of Avg.	—	—	4	1	2	—	—	1	—	—	4	2	1	—	—	—	—	—	—	—	—	—	—	—	

\*\* Too much 14 Be' lye used; not counted in on average. 12 Be' O.K. — counted in.  
 \* Too much 14 Be' lye used and not enough 12 Be'; not counted in on average.

Sample No. 3 — Continued

Loss	Color Ref. Oil Using 70 Yel.		Color Ref. Oil Using Matched Yellow		Color Bl. Oil Standard Yellow		Color Bleached Oil Matched Yellow		1/2 Max. 12°Be' Lye	Loss	Color Ref'd Oil Using 70 Yel.		Color Ref'd Oil Using Matched Yellow		Color Bleached Oil Standard Yellow		Color Bleached Oil Matched Yellow		1/3 Max. 12°Be' Lye	Loss	Color Ref'd Oil Using 70 Yel.		Color Ref'd Oil Using Matched Yellow		Color Bleached Oil Standard Yellow		Color Bleached Oil Matched Yellow			
	Red	Yel. Red	Red	Yel. Red	Red	Yel. Red	Red	Yel. Red			Red	Yel. Red	Red	Yel. Red	Red	Yel. Red	Red	Yel. Red			Red	Yel. Red	Red	Yel. Red	Red	Yel. Red	Red	Yel. Red	Red	Yel. Red
6.5	8.0	70	8.0	22	2.2	—	—	5.3	4.3	8.0	70	7.9	23	2.3	—	—	3.5	3.8	7.9	70	7.9	25	2.5	—	—	—	—	—		
7.9	7.6	—	—	20	1.6	—	—	5.5	5.5	7.9	—	—	20	1.8	—	—	3.7	2.8	7.8	—	—	20	2.0	—	—	—	—	—		
7.0	8.3	—	—	21	2.1	—	—	5.6	4.5	8.4	—	—	21	2.1	—	—	3.7	2.9	8.1	—	—	22	2.2	—	—	—	—	—		
8.2	9.0	—	—	—	—	35	2.7	5.5	4.2	8.8	—	—	—	—	35	2.7	3.7	4.1	8.5	—	—	—	—	—	35	2.4	—	—		
6.7	8.3	—	—	20	2.1	—	—	5.4	4.4	8.4	—	—	20	2.1	—	—	3.6	4.0	8.3	—	—	20	2.1	—	—	—	—	—		
6.7	8.4	35	8.2	—	—	—	—	5.5	4.1	8.3	35	8.2	—	—	—	—	3.7	3.0	8.3	35	8.2	—	—	—	—	—	—	—	—	
6.9	8.0	—	—	—	—	25	1.7	5.4	4.9	8.2	—	—	—	—	25	1.6	3.6	4.2	8.0	—	—	—	—	—	25	1.7	—	—		
6.3	8.0	—	—	—	—	—	—	5.6	4.6	8.0	—	—	—	—	—	—	3.7	3.8	8.1	—	—	—	—	—	—	—	—	—	—	
5.2	—	35	8.5	—	—	35	2.0	5.5	3.9	—	35	8.5	—	—	35	2.0	3.7	3.8	—	—	40	8.4	—	—	35	2.0	—	—	—	
6.4	—	20	8.6	20	1.8	—	—	5.4	4.6	—	20	8.5	20	1.9	—	—	3.7	3.2	—	—	30	8.3	20	2.0	—	—	—	—	—	
9.2	—	50	7.4	20	1.5	—	—	—	4.7	—	50	7.4	20	1.5	—	—	—	3.8	—	—	50	7.6	20	1.6	—	—	—	—	—	
6.9	8.4	55	8.3	20	2.2	25	2.1	5.4	5.0	8.7	55	8.3	20	2.4	30	2.2	3.6	4.0	8.4	55	8.1	20	2.3	30	2.4	—	—	—	—	
5.4	8.8	35	8.5	20	2.0	30	1.5	5.4	4.7	8.5	35	8.4	20	2.2	30	1.3	3.6	4.5	9.0	35	9.0	20	2.0	30	1.6	—	—	—	—	
4.5	—	20	8.2	—	—	20	2.5	4.5	—	—	20	8.1	—	—	—	—	3.5	3.0	3.0	—	—	20	8.5	—	—	70	4.4	—	—	
7.2	9.1	—	—	—	—	70	1.6	5.5	4.7	9.1	—	—	—	—	35	1.9	3.7	4.1	8.8	—	—	—	—	—	35	2.1	—	—	—	
6.9	8.7	35	8.3	20	2.2	—	—	5.3	4.8	8.7	35	8.3	20	2.0	—	—	3.5	3.7	8.7	35	8.4	—	—	—	—	20	2.6	—	—	—
6.9	8.4	42	8.2	20	2.0	35	1.9	—	4.6	8.4																				

A.O.C.S. REFINING TESTS — 1938 — SOYBEAN OIL SAMPLE NO. 4 — EXTRACTED TYPE

Committee Member	FFA	2/3 Max. 14° Be' Lye	Loss	Color Ref'd Oil Using 70 Yel.		Color Ref'd Oil Using Matched Yellow		Color Bleached Standard Yellow		Color Bl. Oil Matched Yellow		2/3 Max. 14° Be' Lye	Loss	Color Ref'd Oil Using 70 Yel.		Color Ref'd Oil Using Matched Yellow	
				Red	Yel.	Yel.	Red	Yel.	Red	Yel.	Yel.			Red	Red	Yel.	Red
C. B. Cluff	0.4	5.7	3.1	—	35	7.1	—	19	1.9	—	—	4.3	3.1	—	35	7.1	
R. H. Fash	0.5	5.9	3.2	6.5	—	—	—	20	1.1	—	—	4.5	3.1	6.6	—	—	
E. R. Barrow	0.5	5.9	3.0	7.8	—	—	—	15	1.5	—	—	4.5	3.0	7.8	—	—	
A. R. Gudheim	0.4	5.7	3.8	6.9	—	—	—	20	1.8	—	—	4.3	4.1	7.0	—	—	
W. D. Hutchins	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
A. D. Rich	0.6	5.9	4.3	7.5	25	7.1	—	—	—	—	—	4.6	4.2	7.7	25	7.3	
C. A. Coffey	—	—	3.4	7.2	—	—	—	20	1.3	—	—	—	2.9	7.1	—	—	
T. C. Law	0.5	5.9	3.6	7.2	—	—	—	—	—	—	—	4.5	3.7	7.4	—	—	
L. A. Spielman	0.39	5.76	3.1	—	55	8.3	—	25	1.3	—	—	4.38	3.2	—	55	8.2	
M. M. Durkee	0.35	5.52	3.4	—	20	7.4	—	15	1.5	—	—	4.20	3.0	—	20	7.5	
N. F. True	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
H. E. Moore	0.40	—	3.0	7.6	50	7.4	—	20	1.2	—	—	—	2.9	7.5	50	7.4	
L. Kishlar (ck.)	0.36	5.63	3.2	8.0	50	7.8	—	20	1.7	25	1.5	4.3	3.3	8.2	45	7.9	
W. L. Taylor	0.40	5.7	3.4	7.9	35	8.0	—	20	1.6	20	1.6	4.4	3.7	8.0	35	8.2	
N. F. Kruse (ck.)	0.50	5.9	3.6	6.7	—	—	—	—	1.8	—	—	4.5	3.9	7.1	—	—	
K. S. Markley	0.34	5.6	3.2	8.4	70	8.3	—	20	1.8	20	1.5	4.3	2.9	8.3	70	8.4	
H. S. Mitchell	0.45	5.8	3.4	7.6	35	7.2	—	20	1.0	—	—	4.4	3.0	7.0	35	7.7	
Average	0.44	5.76	3.4	7.4	42	7.6	—	20	1.5	22	1.5	4.39	3.3	7.5	41	7.7	
High	0.60	5.90	4.3	8.4	70	8.3	—	25	1.9	25	1.6	4.60	4.2	8.3	70	8.4	
Low	0.34	5.52	3.0	6.5	20	7.1	—	15	1.0	20	1.5	4.20	2.9	6.6	20	7.1	
Results on Average	—	1	4	—	—	—	—	2	—	2	—	—	1	1	—	1	
Results within 0.1% of Avg.	13	4	—	1	—	—	—	1	—	1	—	8	1	1	—	—	
Within 0.2%	1	7	5	4	3	—	—	3	—	5	—	2	1	—	2	—	
Within 0.3%	—	1	2	—	1	—	—	4	—	3	—	3	1	—	1	—	
Within 0.4%	—	—	3	1	2	—	—	2	—	5	—	2	—	1	—	—	
Within 0.5%	—	—	2	—	2	—	—	1	—	3	—	—	—	3	—	—	
Results more than 0.5% of Avg.	—	—	1	4	1	—	—	—	—	3	—	3	—	1	—	—	

Sample No. 4 — Continued

Color Bleached Standard Yellow		Color Bl. Oil Matched Yellow		2/3 Max. 12° Be' Lye	Loss	Color Ref'd Oil Using 70 Yel.		Color Ref'd Oil Using Matched Yellow		Color Bleached Standard Yellow		Color Bl. Oil Matched Yellow		1/2 Max. 12° Be' Lye	Loss	Color Ref'd Oil Using 70 Yel.		Color Ref'd Oil Using Matched Yellow			
Yel. Red	Yel. Red	Yel. Red	Yel. Red			Red	Yel.	Yel.	Red	Yel.	Red	Yel.	Yel.			Red	Yel.	Red	Yel.	Red	Yel.
20	2.0	—	—	5.1	2.9	—	35	7.0	—	20	2.0	—	—	3.9	3.0	—	35	7.1	—	—	
20	1.2	—	—	5.3	2.8	6.5	—	—	—	20	1.1	—	—	4.0	2.8	6.7	—	—	20	1.2	
—	—	15	1.5	5.3	3.2	7.8	—	—	—	15	1.5	—	—	4.0	3.0	7.8	—	—	15	1.5	
20	2.0	—	—	5.1	3.7	6.8	—	—	—	20	1.8	—	—	5.9	3.4	6.9	—	—	20	1.8	
20	1.5	—	—	5.5	2.3	8.0	25	7.7	—	20	1.6	—	—	4.1	1.7	8.0	25	7.7	—	—	
20	1.2	—	—	—	3.3	7.2	—	—	—	20	1.3	—	—	—	2.8	7.1	—	—	20	1.3	
—	—	—	—	5.3	3.6	7.3	—	—	—	—	—	—	—	4.0	3.7	7.5	—	—	—	—	
25	1.4	—	—	5.21	3.5	—	55	7.5	—	25	1.3	—	—	3.91	3.5	—	55	8.6	25	1.3	
—	—	15	1.4	5.0	3.2	—	20	7.3	—	15	1.6	—	—	3.76	3.1	—	20	7.9	15	1.6	
20	1.4	—	—	—	2.9	7.7	50	7.9	—	20	1.5	—	—	—	2.8	8.7	50	8.2	20	1.5	
20	1.7	25	1.4	5.05	3.6	8.2	45	8.0	—	20	1.7	—	—	3.79	3.2	8.5	45	8.2	20	1.5	
20	1.5	20	1.5	5.2	3.3	7.9	35	8.2	—	20	1.5	—	—	3.9	3.0	8.0	35	8.0	20	1.7	
—	2.0	—	—	5.33	3.3	7.5	—	—	—	—	2.0	—	—	4.0	4.0	7.2	—	—	—	1.9	
20	1.8	20	1.6	5.2	3.1	8.3	70	8.4	—	20	1.8	35	1.3	4.0	2.8	8.4	70	8.4	20	1.8	
20	1.0	—	—	5.2	3.2	7.8	35	7.7	—	20	1.0	—	—	3.9	2.9	7.8	35	7.6	20	1.0	
20	1.5	19	1.5	5.21	3.2	7.6	41	7.7	—	20	1.6	27	1.3	3.94	3.0	7.7	41	7.9	20	1.5	
25	2.0	25	1.6	5.33	3.7	8.3	70	8.4	—	25	2.0	35	1.5	4.1	4.0	8.7	70	8.6	25	2.0	
20	1.0	15	1.4	5.0	2.3	6.5	20	7.0	—	15	1.0	20	1.2	3.76	1.7	6.7	20	7.1	15	1.0	
1	—	2	—	—	3	—	2	—	—	2	—	1	—	—	3	—	1	—	3	—	
2	—	3	—	5	4	2	—	—	—	4	—	1	—	10	2	2	—	—	1	—	3
2	—	—	4	—	2	2	—	—	—	2	—	1	—	3	5	1	—	—	1	—	3
3	—	—	3	—	4	2	—	—	—	2	—	—	—	2	—	2	—	—	3	—	3
—	—	—	—	—	2	2	—	—	—	1	—	—	—	—	1	—	—	—	—	—	1
4	—	—	—	1	—	—	—	—	—	1	—	—	—	—	1	—	—	—	1	—	2
—	—	—	—	1	4	2	—	—	—	1	—	—	—	3	6	2	—	—	—	—	—

A.O.C.S. REFINING COMMITTEE COOPERATIVE TESTS — 1938-39 — SOYBEAN OIL SAMPLE NO. 5 — EXPPELLER TYPE

Committee Member	F.F.A. as Oleic	Maximum 12° Be' Lye	Loss	Color Refined Oil Standard Yellow		Color Refined Oil Using Matched Yellow		Color Bleached Oil Standard Yellow		Color Bleached Oil Matched Yellow		2/3 Maximum 12° Be' Lye	Loss	Color Refined Oil Using Standard Yellow		Color Refined Oil Using Matched Yellow		Color Bleached Oil Using Standard Yellow		Color Bleached Oil Using Matched Yellow			
				Red	Yel.	Red	Yel.	Red	Yel.	Red	Yel.			Red	Yel.	Red	Yel.	Red	Yel.	Red	Yel.	Red	Yel.
C. B. Cluff	0.80	8.6	7.9	—	50	8.3	—	—	35	2.1	5.7	7.5	—	50	8.4	—	—	—	—	35	2.3		
R. H. Fash	1.00	9.1	7.7	7.8	—	—	20	2.0	—	—	6.1	6.6	8.0	—	—	20	2.0	—	—	—	—		
E. R. Barrow	0.90	8.9	7.8	7.9	—	—	20	2.2	—	—	5.9	7.3	8.1	—	—	20	2.3	—	—	—	—		
A. R. Gudheim	0.70	8.4	7.9	7.5	—	—	18	1.8	—	—	5.6	7.0	7.8	—	—	18	1.8	—	—	—	—		
W. D. Hutchins	0.90	8.8	7.6	7.2	—	—	20	2.2	—	—	5.8	7.5	7.8	—	—	20	2.4	—	—	—	—		
A. D. Rich	0.90	8.9	7.9	7.8	40	7.6	20	2.0	15	2.0	5.9	7.5	7.9	50	7.8	20	2.2	15	2.2	—	—		
C. A. Coffey	0.86	—	7.9	7.2	—	—	20	1.8	—	—	—	7.4	7.3	—	—	20	1.9	—	—	—	—		
T. C. Law	1.00	9.1	7.5	7.4	—	—	20	2.4	—	—	6.0	7.1	7.8	—	—	20	2.7	—	—	—	—		
L. A. Spielman	0.70	8.5	8.2	—	45	7.3	—	—	30	2.0	5.7	7.3	—	50	7.9	—	—	—	—	30	2.2		
M. M. Durkee	0.90	8.8	8.1	—	35	8.3	—	—	15	1.9	5.8	7.6	—	35	8.6	—	—	—	—	15	2.1		
N. F. True	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
H. E. Moore	0.90	—	7.2	7.8	50	7.7	20	1.7	—	—	—	7.3	8.3	50	7.9	20	1.8	—	—	—	—		
Lamar Kishlar	0.80	8.8	7.9	8.0	55	8.2	20	2.0	20	2.0	5.7	7.0	8.5	50	8.7	20	2.0	—	—	30	2.1		
W. L. Taylor	0.90	8.9	7.8	8.0	35	8.1	20	2.0	30	1.7	5.9	7.6	8.4	35	8.2	20	2.3	—	—	30	1.7		
N. F. Kruse	0.70	8.4	8.8	7.8	35	8.1	20	2.2	—	—	5.6	8.0	8.1	35	8.4	20	2.3	—	—	—	—		
K. S. Markley*	0.79	8.9	3.4	8.0	70	8.0	35	2.8	70	2.4	5.9	3.8	8.1	70	8.1	35	3.0	—	—	70	2.6		
H. S. Mitchell	0.80	8.7	8.1	7.0	50	7.2	20	2.0	—	—	5.8	7.5	7.6	50	7.6	20	2.1	—	—	—	—		
Average	0.84	8.8	7.9	7.6	47	7.9	21	2.1	31	2.0	5.8	7.4	8.0	48	8.2	21	2.2	32	2.2	—	—		
High	1.00	9.1	8.8	8.0	70	8.3	35	2.8	70	2.4	6.1	8.0	8.5	70	8.7	35	3.0	70	2.6	—	—		
Low	0.70	8.4	7.2	7.0	35	7.2	18	1.7	15	1.7	5.6	6.6	7.3	35	7.6	18	1.8	15	1.7	—	—		
Results on Avg.	—	3	5	—	—	—	—	—	3	—	3	1	1	1	—	1	—	2	—	—	—		
Results within	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
0.1% of Avg.	11	4	2	1	1	—	8	—	2	7	7	4	1	4	—	3	—	—	—	—	—		
Within 0.2%	5	2	2	1	2	—	3	—	1	3	2	3	2	3	—	3	—	—	—	—	—		
Within 0.3%	—	3	3	1	2	—	3	—	1	1	1	1	2	1	—	1	—	—	—	—	—		
Within 0.4%	—	2	1	1	2	—	1	—	1	—	2	2	2	2	—	2	—	—	—	—	—		
Within 0.5%	—	—	—	—	—	—	—	—	—	—	1	1	1	1	—	1	—	—	—	—	—		
Results More than	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
0.5% of Avg.	—	—	2	1	2	—	1	—	—	—	2	1	1	1	—	1	—	—	—	—	—		

\*Losses not counted in on average.

A.O.C.S. REFINING COMMITTEE COOPERATIVE TESTS — 1938-39 — SOYBEAN OIL SAMPLE NO. 6 — EXPPELLER TYPE

Committee Member	F.F.A. as Oleic	Maximum 12° Be' Lye	Loss	Color Refined Oil Standard Yellow		Color Refined Oil Using Matched Yellow		Color Bleached Oil Standard Yellow		Color Bleached Oil Matched Yellow		2/3 Maximum 12° Be' Lye	Loss	Color Refined Oil Standard Yellow		Color Refined Oil Using Matched Yellow		Color Bleached Oil Using Standard Yellow		Color Bleached Oil Using Matched Yellow	
				Red	Yel.	Red	Yel.	Red	Yel.	Red	Yel.			Red	Yel.	Red	Yel.	Red	Yel.	Red	Yel.
C. B. Cluff	0.50	8.0	4.7	—	50	9.1	—	—	35	2.8	5.3	4.6	—	50	9.3	—	—	—	—	35	2.7
R. H. Fash	0.60	8.2	4.9	8.1	—	—	20	2.3	—	—	5.5	5.4	8.6	—	—	20	2.4	—	—	—	—
E. R. Barrow	0.60	8.2	4.5	8.8	—	—	20	2.5	—	—	5.5	5.0	9.5	—	—	20	2.6	—	—	—	—
A. R. Gudheim	0.40	7.7	4.3	8.7	—	—	25	2.6	—	—	5.2	4.5	8.9	—	—	25	2.7	—	—	—	—
W. D. Hutchins	0.50	8.0	5.0	8.3	—	—	20	2.6	—	—	5.7	5.3	8.5	—	—	20	2.8	—	—	—	—
A. D. Rich	0.50	8.0	5.3	8.4	40	8.3	20	2.3	15	2.3	5.3	4.6	8.3	40	8.3	20	2.3	15	2.3	—	—
C. A. Coffey	0.45	—	4.6	8.3	—	—	20	2.3	—	—	—	5.3	8.4	—	—	20	2.4	—	—	—	—
T. C. Law	0.60	8.2	4.7	8.0	—	—	20	2.4	—	—	5.5	**3.9	8.5	—	—	20	2.6	—	—	—	—
L. A. Spielman	0.50	8.2	4.7	—	45	9.0	—	—	30	2.1	5.4	5.1	—	50	9.6	—	—	—	—	30	2.5
M. M. Durkee	0.45	7.8	4.8	—	20	9.0	—	—	15	2.3	5.2	4.7	—	25	9.2	—	—	—	—	15	2.5
N. F. True	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
H. E. Moore	0.60	—	5.0	8.6	50	8.5	20	2.2	—	—	—	5.2	8.8	50	8.9	20	2.3	—	—	—	—
Lamar Kishlar	0.40	7.6	5.7	8.8	45	8.9	20	2.2	20	2.2	5.1	5.5	9.0	55	9.2	20	2.4	23	2.5	—	—
W. L. Taylor	0.52	8.0	4.7	8.7	35	8.9	20	2.6	30	2.2	5.3	5.9	9.6	35	9.6	20	2.7	30	2.1	—	—
N. F. Kruse	0.60	8.2	5.0	8.0	20	9.0	20	2.2	—	—	5.5	5.6	8.5	20	8.8	20	2.7	—	—	—	—
K. S. Markley*	0.80	8.9	5.2	9.7	70	9.7	20	2.0	35	1.8	5.9	5.2	9.9	35	9.9	35	3.2	70	2.9	—	—
H. S. Mitchell	0.50	8.0	4.9	8.0	50	7.6	—	—	25	2.0	5.3	5.1	9.0	50	8.5	25	2.3	—	—	—	—
Average	0.55	8.1	4.9	8.5	43	8.8	20	2.4	26	2.2	5.4	5.1	8.9	41	9.1	22	2.6	31	2.5	—	—
High	0.60	8.9	5.7	9.7	70	9.7	25	2.6	35	2.8	5.9	5.9	9.9	55	9.9	35	3.2	70	2.9	—	—
Low	0.40	7.6	4.3	8.0	20	7.6	20	2.0	15	1.8	5.1	4.5	8.3	20	8.3	20	2.3	15	2.1	—	—
Results on Avg.	—	—	2	—	—	—	1	—	2	—	1	2	1	2	—	2	—	3	—	—	—
Results within	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.1% of Avg.	12	10	4	2	2	—	4	—	2	8	3	3	2	3	—	3	—	—	—	—	—
Within 0.2%	2	—	4	4	3	—	6	—	1	2	2	2	2	4	—	4	—	—	—	—	—
Within 0.3%	—	1	2	2	2	—	—	—	—	2	1	1	1	3	—	3	—	—	—	—	—
Within 0.4%	—	1	2	1	1	—	1	—	1	—	2	3	1	—	—	—	—	—	—	—	—
Within 0.5%	—	1	—	3	1	—	—	—	1	1	3	1	2	—	—	—	—	—	—	—	—
Results More Than	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.5% of Avg.	—	1	2	1	2	—	—	—	1	—	2	4	2	2	—	1	—	—	—	—	—

\*F.F.A. Not Counted in Average

\*\*2/3 Max. Loss Not Counted In.

— A. O. C. S. REFINING TESTS — 1938-39 — SOYBEAN OIL SAMPLE NO. 7 — EXTRACTED TYPE —

Committee Member	FFA	2/3 Max. 14° Be' Lye	Loss	Color Refined Oil Using 70 Yel.		Color Ref'd Oil Using Matched Yellow		Color Bleached Oil Standard Yellow		Color Bleached Oil Matched Yellow		2/3 Max. 14° Be' Lye	Loss	Color Refined Oil Using 70 Yel.		Color Ref'd Oil Using Matched Yellow		Color Bleached Oil Standard Yellow		Color Bleached Oil Matched Yellow	
				Red	Yel.	Red	Yel.	Red	Yel.	Red	Yel.			Red	Yel.	Red	Yel.	Red	Yel.	Red	Yel.
C. B. Cluff	0.3	5.5	8.3	7.9	35	7.9	20	2.0	20	2.0	4.2	6.4	7.9	35	8.0	20	2.0	20	2.0	22	2.0
R. H. Fash	0.45	5.8	8.4	8.1	—	—	—	20	1.7	21	1.9	4.4	6.7	8.1	—	—	20	1.7	20	—	—
E. R. Barrow	0.3	5.5	7.6	8.6	—	—	—	20	1.9	—	—	4.4	6.6	8.8	—	—	20	1.9	—	—	—
A. R. Gudheim	0.4	5.8	8.0	8.6	—	—	—	20	1.9	—	—	4.4	6.5	8.8	—	—	20	2.0	—	—	—
W. D. Hutchins	0.3	5.4	6.3	8.4	—	—	—	20	2.0	—	—	4.4	6.1	8.5	—	—	20	2.0	—	—	—
A. D. Rich	0.3	5.5	6.6	7.8	30	7.8	20	2.2	20	2.2	4.2	5.7	7.9	30	7.9	20	2.2	20	2.2	—	—
C. A. Coffey	0.25	—	6.6	7.5	—	—	—	20	1.5	—	—	4.3	5.0	7.4	—	—	20	1.5	—	—	—
T. C. Law	0.3	5.5	6.8	7.9	—	—	—	20	1.7	—	—	4.3	5.4	8.0	—	—	20	1.7	—	—	—
L. A. Spielman	0.4	5.8	5.9	—	35	8.8	20	1.7	—	—	—	4.4	6.4	—	35	9.0	20	1.7	—	—	—
M. M. Durkee	0.22	5.2	7.2	—	20	8.2	—	—	—	15	1.8	4.0	5.9	—	20	8.3	—	—	15	1.8	—
N. F. True	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
H. E. Moore	0.35	—	8.2	8.5	50	8.3	20	2.0	—	—	—	6.7	8.9	50	8.8	20	2.2	—	—	—	—
L. Kishlar	0.25	5.3	8.1	8.4	45	8.3	20	2.2	23	2.4	4.0	6.1	8.2	35	8.3	20	2.3	25	2.4	—	—
W. L. Taylor	0.25	5.5	8.5	8.4	35	8.6	20	1.7	20	1.7	4.2	6.7	8.5	35	8.6	20	1.7	20	1.7	20	1.7
N. F. Kruse	0.4	5.7	6.7	—	20	8.4	20	1.8	—	—	4.3	6.4	—	20	8.2	20	1.8	—	—	—	—
K. S. Markley	0.17	5.3	8.5	8.9	—	—	—	20	1.4	—	—	4.0	7.6	8.7	—	—	20	1.3	—	—	—
H. S. Mitchell	0.3	5.5	5.5	9.6	35	8.7	20	1.1	—	—	4.2	*3.7	9.6	40	8.7	20	1.0	—	—	—	—
Average	0.31	5.5	7.8	8.4	34	8.0	20	1.8	20	1.9	4.2	6.3	8.4	33	8.4	20	1.8	21	2.0	—	—
High	0.45	5.8	8.5	9.6	50	8.8	20	2.2	23	2.4	4.4	7.6	9.6	50	9.0	20	2.3	25	2.4	—	—
Low	0.17	5.2	5.5	7.5	20	7.8	20	1.1	15	1.7	4.0	5.0	7.4	20	7.9	20	1.0	15	1.7	—	—
Results on Average	6	—	3	—	—	—	—	1	—	—	7	1	—	—	—	—	1	—	—	—	—
Results Within 0.1% of Avg.	13	1	—	1	—	1	—	6	—	1	—	3	2	—	2	—	5	—	—	—	—
Within 0.2%	3	3	2	2	—	2	—	3	—	1	—	6	2	1	2	—	3	—	—	—	—
Within 0.3%	—	4	1	1	—	2	—	1	—	—	—	1	2	—	1	—	1	—	—	—	—
Within 0.4%	—	—	1	—	—	1	—	3	—	—	—	4	3	—	2	—	2	—	—	—	—
Within 0.5%	—	—	1	3	—	—	—	—	—	1	—	—	3	—	1	—	2	—	—	—	—
Results More Than 0.5% of Avg.	—	—	11	3	—	3	—	1	—	—	—	4	2	—	1	—	1	—	—	—	—

\* Loss not counted in on average.

Sample No. 7 — Continued

2/3 Max. 12° Be' Lye	Loss	Color Refined Oil Using 70 Yel.		Color Ref'd Oil Using Matched Yellow		Color Bleached Oil Standard Yellow		Color Bleached Oil Matched Yellow		1/2 Max. 12° Be' Lye	Loss	Color Refined Oil Using 70 Yel.		Color Ref'd Oil Using Matched Yellow		Color Bleached Oil Standard Yellow		Color Bleached Oil Matched Yellow		
		Red	Yel.	Red	Yel.	Red	Yel.	Red	Yel.			Red	Yel.	Red	Yel.	Red	Yel.	Red	Yel.	
5.0	7.0	8.0	35	8.1	20	2.0	26	2.0	3.8	4.8	8.0	35	8.0	19	1.9	28	1.9	—	—	
5.2	*7.7	8.3	—	—	20	1.8	—	—	3.9	6.1	8.3	—	—	20	1.8	—	—	—	—	
5.0	5.9	9.0	—	—	20	2.0	—	—	3.7	4.8	9.0	—	—	20	2.0	—	—	—	—	
5.2	6.6	8.9	—	—	20	1.8	—	—	3.9	—	8.9	—	—	20	2.0	—	—	—	—	
5.0	5.7	8.5	—	—	20	2.0	—	—	3.6	4.2	8.6	—	—	20	2.0	—	—	—	—	
5.0	5.6	8.1	30	8.2	20	2.3	—	—	3.7	4.7	8.1	30	8.2	20	2.2	—	—	—	—	
—	5.6	7.5	—	—	20	1.6	—	—	—	4.8	7.6	—	—	20	1.7	—	—	—	—	
5.0	5.4	8.0	—	—	20	1.7	—	—	3.7	4.6	8.0	—	—	20	1.7	—	—	—	—	
4.8	6.5	—	35	9.0	20	1.7	—	—	3.9	*7.6	—	35	9.2	20	1.7	—	—	—	—	
4.8	6.2	—	20	8.4	—	—	15	1.9	3.6	4.7	—	20	8.4	—	—	15	2.0	—	—	
—	7.0	8.9	50	8.7	20	2.0	—	—	—	5.7	9.2	50	9.0	20	2.3	—	—	—	—	
4.8	7.0	8.6	35	8.3	20	2.3	25	2.5	3.6	5.0	8.8	40	8.6	20	2.1	23	2.4	—	—	
4.9	7.3	8.7	35	8.9	20	1.8	25	1.5	3.7	5.4	8.9	35	9.1	20	1.6	25	1.3	—	—	
5.1	5.4	—	20	8.4	—	2.0	—	—	3.9	6.5	—	20	8.4	20	2.1	—	—	—	—	
4.9	5.9	9.1	—	—	—	—	20	1.3	3.6	6.6	9.1	—	—	20	1.5	—	—	—	—	
5.0	5.3	9.8	35	8.7	20	1.1	—	—	3.7	4.2	9.8	35	8.8	20	1.0	—	—	—	—	
5.0	6.2	8.6	33	8.5	20	1.9	22	1.8	3.7	5.2	8.6	33	8.6	20	1.8	23	1.9	—	—	
5.2	7.3	9.8	50	9.0	20	2.3	26	2.5	3.9	6.6	9.8	50	9.2	20	2.3	28	2.4	—	—	
4.8	5.3	7.5	20	8.1	20	1.1	15	1.3	3.6	4.2	8.0	20	8.0	19	1.0	15	1.3	—	—	
6	1	1	—	—	—	—	—	—	—	5	—	1	—	—	—	—	—	—	—	—
3	—	2	—	2	—	8	—	1	—	—	—	—	—	—	4	—	—	—	—	—
5	3	—	3	—	2	—	—	1	—	4	2	1	—	3	—	4	—	—	—	—
—	—	3	—	1	—	1	—	—	—	—	—	—	—	3	—	3	—	—	—	—
—	—	1	—	2	—	2	—	—	—	—	—	—	—	2	—	1	—	—	—	—
—	—	1	—	1	—	—	—	1	—	—	—	—	—	1	—	1	—	—	—	—
—	—	10	—	4	—	1	—	1	—	6	—	5	—	2	—	1	—	—	—	—

— A.O.C.S. REFINING TESTS — 1938-39 — SOYBEAN OIL SAMPLE NO. 8 — EXTRACTED TYPE —

Committee Member	FFA	7/8 Max. 14°Be' Lye	Loss	Color Ref'd Oil Using 70 Yel.		Color Ref'd Oil Using Matched Yellow		Color Bleached Oil Standard Yellow		Color Bleached Oil Matched Yellow		2/3 Max. 14°Be' Lye	Loss	Color Ref'd Oil Using 70 Yel.		Color Ref'd Oil Using Matched Yellow	
				Red	Yel. Red	Yel. Red	Yel. Red	Yel. Red	Yel. Red	Red	Yel. Red			Red	Yel. Red		
C. B. Cluff	0.5	5.9	5.0	7.9	35	7.9	21	2.1	23	2.0	4.5	3.4	7.9	35	8.0		
R. H. Fash	0.7	6.2	*5.7	7.9	—	—	20	1.5	—	—	4.7	4.8	7.9	—	—		
E. R. Barrow	0.6	6.0	4.5	8.2	—	—	20	2.0	—	—	4.6	3.9	8.3	—	—		
A. R. Gudheim	0.6	6.0	—	8.0	—	—	20	1.8	—	—	4.6	5.2	8.0	—	—		
W. D. Hutchins	0.5	5.8	5.1	8.0	—	—	20	2.0	—	—	4.4	4.2	8.3	—	—		
A. D. Rich	0.6	6.0	5.0	7.7	30	7.7	20	2.0	—	—	4.6	5.1	7.8	30	7.8		
C. A. Coffey	0.52	—	*2.6	7.5	—	—	20	1.7	—	—	4.6	*3.0	7.6	—	—		
T. C. Law	0.6	6.0	4.7	7.7	—	—	20	1.7	—	—	4.6	4.1	7.7	—	—		
L. A. Spielman	0.6	6.1	4.0	—	35	8.1	20	1.5	—	—	4.7	3.3	—	35	8.0		
M. M. Durkee	0.53	5.8	4.3	—	20	8.2	—	—	15	1.9	4.4	4.0	—	20	8.3		
N. F. True	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
H. E. Moore	0.65	—	3.5	8.2	50	8.0	20	1.8	—	—	—	3.4	8.3	50	8.1		
L. Kishlar	0.50	5.7	4.5	8.5	45	8.1	20	2.2	25	2.0	4.4	4.0	8.7	45	8.6		
W. L. Taylor	0.52	5.9	4.4	8.7	35	8.5	20	1.6	20	1.6	4.5	4.0	8.7	35	8.8		
N. F. Kruse	0.70	6.2	3.5	—	20	8.3	20	2.5	—	—	4.7	3.3	—	20	8.1		
K. S. Markley	0.35	5.6	3.6	8.8	—	—	20	1.2	—	—	4.3	3.7	8.9	—	—		
H. S. Mitchell	0.6	6.1	5.2	8.9	50	8.0	20	0.9	—	—	4.6	4.5	9.0	40	8.0		
Average	0.57	6.0	4.4	8.1	36	8.1	20	1.8	21	1.9	4.5	4.1	8.2	34	8.2		
High	0.70	6.2	5.2	8.9	50	8.5	21	2.5	25	2.0	4.7	5.2	9.0	50	8.8		
Low	0.35	5.6	3.5	7.5	20	7.7	20	0.9	15	1.6	4.3	3.3	7.6	20	7.8		
Results on Avg.		4	1		2		2		1		2	1					
Results Within																	
0.1% of Avg.	13	4	3	4	3	2	2	2	8	4	3	3					
Within 0.2%	3	4		2	2	4			4	1	1	3					
Within 0.3%		1	1			3	1				2						
Within 0.4%		1	1	3	2	1					2	1	2				
Within 0.5%											3						
Results More than 0.5% of Avg.			7	4		3					7	3	1				

\* Losses not counted in on average.

Sample No. 8 — Continued

Color Bleached Oil Standard Yellow		Color Bleached Oil Matched Yellow		2/3 Max. 12°Be' Lye	Loss	Color Ref'd Oil Using 70 Yel.		Color Ref'd Oil Using Matched Yellow		Color Bleached Oil Standard Yellow		Color Bleached Oil Matched Yellow		1/2 Max. 12°Be' Lye	Loss	Color Ref'd Oil Using 70 Yellow		Color Ref'd Oil Using Matched Yellow		Color Bleached Oil Standard Yellow		Color Bleached Oil Matched Yellow	
Yel. Red	Yel. Red	Yel. Red	Yel. Red			Red	Yel. Red	Yel. Red	Yel. Red	Yel. Red	Yel. Red	Yel. Red	Yel. Red			Yel. Red	Red	Yel. Red	Red	Yel. Red	Red	Yel. Red	Yel. Red
20	2.0	25	2.0	5.3	3.1	7.9	35	8.0	21	2.1	25	2.0	4.0	2.6	7.9	30	8.1	20	2.0	25	2.0		
20	1.5	—	—	5.6	4.0	8.1	—	—	20	1.5	—	—	4.2	3.1	8.1	—	—	20	1.5	—	—		
20	2.0	—	—	5.5	2.6	8.1	—	—	20	2.0	—	—	4.1	2.4	8.2	—	—	20	2.0	—	—		
20	1.9	—	—	5.5	—	8.5	—	—	20	2.0	—	—	4.2	—	8.5	—	—	20	2.0	—	—		
20	2.0	—	—	5.2	2.9	8.1	—	—	20	2.2	—	—	4.0	2.8	8.4	—	—	20	2.0	—	—		
20	2.0	—	—	5.5	3.3	7.8	30	7.8	20	2.0	—	—	4.1	3.2	7.8	30	7.9	20	2.0	—	—		
20	1.7	—	—	—	2.2	7.6	—	—	20	1.6	—	—	—	2.6	7.6	—	—	20	1.6	—	—		
20	1.8	—	—	5.5	3.4	7.8	—	—	20	1.7	—	—	4.1	3.2	7.8	—	—	20	1.8	—	—		
20	1.8	—	—	5.6	2.4	—	35	8.2	20	1.5	—	—	4.2	2.7	—	35	8.3	20	1.5	—	—		
—	—	15	1.9	5.3	*1.2	—	20	8.3	—	—	15	1.9	3.9	3.1	—	20	8.4	—	—	15	1.9		
20	1.9	—	—	—	2.3	8.5	50	8.4	20	1.9	—	—	—	2.2	8.9	50	8.8	20	2.0	—	—		
20	2.0	22	2.0	5.1	2.8	8.5	45	8.4	20	2.1	23	2.0	3.4	2.4	8.5	45	8.3	20	2.0	25	2.0		
20	1.7	25	1.4	5.4	2.8	8.4	35	8.4	20	1.5	20	1.5	4.0	2.4	8.2	35	8.4	20	1.7	25	1.3		
20	2.0	—	—	5.6	3.7	—	20	8.0	20	2.1	—	—	4.2	3.3	—	20	8.0	20	2.1	—	—		
20	1.5	—	—	5.2	2.4	8.7	—	—	20	1.5	—	—	3.9	2.9	8.8	—	—	20	1.7	—	—		
20	1.0	—	—	5.5	3.0	9.1	50	8.5	20	1.1	—	—	4.1	3.0	9.3	50	8.5	20	1.2	—	—		
20	1.8	22	1.8	5.5	2.9	8.2	36	8.2	20	1.8	21	1.9	4.0	2.8	8.3	35	8.3	20	1.8	23	1.8		
20	2.0	25	2.0	5.6	4.0	9.1	50	8.5	20	2.2	25	2.0	4.2	3.3	9.3	50	8.8	20	2.0	25	2.0		
20	1.0	15	1.4	5.1	2.2	7.6	20	7.8	20	1.1	15	1.5	3.9	2.2	7.6	20	7.9	20	1.5	15	1.3		
2				5	1		1		1		3	1				2		1					
4	1			4	4	2	1	2	2	6	2	3	2	2	3	2	2	2	2	1			
6	2			2	1	1	5	4	4	4	3	3	2	8	2	8	2						
2	1			2	1	4	1	7	2				1	3									
				1	1	2	1	1	1	5	1	1											
				3	1					1	3	1	1										
1				3	2		1		1	1	3								1				

PERCENTAGE ACCURACY

— Extracted Type Oil —

Cooperative Sample Number	7/8 Max. 14° Be'							2/3 Max. 14° Be'			
	% on Avg.	% Within 0.1 of Avg.	% Within 0.2 of Avg.	% Within 0.3 of Avg.	% Within 0.4 of Avg.	% Within 0.5 of Avg.	% Over 0.5 of Avg.	% on Avg.	% Within 0.1 of Avg.	% Within 0.2 of Avg.	% Within 0.3 of Avg.
No. 3 Loss .....	—	28.57	—	7.14	21.43	14.28	28.57	28.57	14.28	14.28	14.28
Color Refined Oil .....	9.09	9.09	9.09	27.27	36.36	—	9.09	9.09	9.09	9.09	36.36
Color Bleached Oil .....	11.11	44.44	22.22	11.11	11.11	—	—	33.33	33.33	22.22	—
No. 4 Loss .....	26.66	—	33.33	13.33	20.00	—	6.66	6.66	6.66	13.33	20.00
Color Refined Oil .....	—	8.33	33.33	—	8.33	16.66	33.33	8.33	8.33	8.33	8.33
Color Bleached Oil .....	15.38	7.70	23.08	30.77	15.38	7.70	—	8.33	16.66	16.66	25.00
No. 7 Loss .....	—	—	12.50	6.25	6.25	6.25	68.75	6.66	20.00	13.33	6.66
Color Refined Oil .....	23.08	7.70	15.38	7.70	—	23.08	23.08	—	15.38	7.70	15.38
Color Bleached Oil .....	6.66	40.00	20.00	6.66	20.00	—	6.66	6.66	33.33	20.00	6.66
No. 8 Loss .....	7.70	23.08	—	7.70	7.70	—	53.85	6.66	26.66	6.66	—
Color Refined Oil .....	—	30.77	15.38	—	23.08	—	30.77	—	23.08	7.70	15.38
Color Bleached Oil .....	13.33	13.33	26.66	20.00	6.66	—	20.00	13.33	26.66	40.00	13.33

— Continued from above tabulation —

2/3 Max. 12° Be'										1/2 Max. 12° Be'						
% Within 0.4 of Avg.	% Within 0.5 of Avg.	% Over 0.5 of Avg.	% on Avg.	% Within 0.1 of Avg.	% Within 0.2 of Avg.	% Within 0.3 of Avg.	% Within 0.4 of Avg.	% Within 0.5 of Avg.	% Over 0.5 of Avg.	% on Avg.	% Within 0.1 of Avg.	% Within 0.2 of Avg.	% Within 0.3 of Avg.	% Within 0.4 of Avg.	% Within 0.5 of Avg.	% Over 0.5 of Avg.
—	—	28.57	20.00	6.66	13.33	20.00	—	13.33	26.67	13.33	33.33	13.33	13.33	13.33	6.66	6.66
9.09	9.09	18.18	16.66	16.66	—	8.33	33.33	—	25.00	16.66	16.66	8.33	16.66	25.00	8.33	8.33
11.11	—	—	22.22	22.22	22.22	—	22.22	—	11.11	11.11	33.33	22.22	11.11	11.11	11.11	—
33.33	—	20.00	20.00	26.66	—	26.66	13.33	6.66	6.66	20.00	13.33	33.33	—	6.66	6.66	20.00
16.66	25.00	25.00	—	16.66	16.66	16.66	16.66	—	33.33	—	16.66	8.33	16.66	—	8.33	50.00
—	33.33	—	14.28	28.57	14.28	14.28	14.28	7.14	7.14	23.08	7.70	23.08	23.08	7.70	15.38	—
26.66	—	26.66	6.66	—	20.00	—	—	6.66	66.66	—	—	14.28	—	21.43	21.43	42.86
23.08	23.08	15.38	7.70	15.38	—	23.08	7.70	15.38	30.77	7.70	7.70	23.08	7.70	15.38	38.46	—
13.33	13.33	6.66	—	57.14	14.28	7.14	14.28	—	7.14	6.66	26.66	26.66	20.00	6.66	6.66	6.66
13.33	—	46.66	7.14	28.57	7.14	7.14	7.14	21.43	21.43	6.66	13.33	20.00	13.33	33.33	6.66	6.66
7.70	23.08	23.08	—	16.66	8.33	33.33	16.66	8.33	16.66	—	23.08	23.08	—	7.70	23.08	23.08
—	—	6.66	—	13.33	26.66	46.66	6.66	—	6.66	6.66	13.33	53.33	20.00	—	—	6.66

PERCENTAGE ACCURACY

— Expeller Type Oil —

Coop. Sample Number	Maximum Lye							2/3 Maximum Lye						
	% On Avg.	% Within 0.1 of Avg.	% Within 0.2 of Avg.	% Within 0.3 of Avg.	% Within 0.4 of Avg.	% Within 0.5 of Avg.	% Over 0.5 of Avg.	% On Avg.	% Within 0.1 of Avg.	% Within 0.2 of Avg.	% Within 0.3 of Avg.	% Within 0.4 of Avg.	% Within 0.5 of Avg.	% Over 0.5 of Avg.
No. 1—Loss .....	33.33	25.00	8.33	8.33	8.33	—	16.67	8.33	—	8.33	16.67	8.33	8.33	50.00
Color Ref. Oil .....	—	16.67	—	25.00	16.67	—	16.67	16.67	—	8.33	16.67	8.33	16.67	50.00
Color Bl. Oil .....	9.09	27.27	18.18	36.36	—	—	9.09	25.00	16.67	8.33	16.67	8.33	8.33	16.67
No. 2—Loss .....	6.25	37.50	18.75	12.50	12.50	—	12.50	6.25	31.25	31.25	12.50	—	—	18.75
Color Ref. Oil .....	15.37	30.77	—	7.70	7.70	—	30.77	8.33	—	25.00	16.67	25.00	—	25.00
Color Bl. Oil .....	15.37	30.77	15.37	7.70	7.70	—	23.08	14.29	28.57	21.43	14.28	—	—	21.43
No. 5—Loss .....	33.33	13.33	13.33	20.00	6.66	—	13.33	6.66	46.67	13.33	6.66	13.33	—	13.33
Color Ref. Oil .....	—	7.70	38.46	7.70	38.46	—	7.70	7.70	30.77	23.08	7.70	15.38	7.70	7.70
Color Bl. Oil .....	—	61.54	—	23.08	7.70	—	7.70	7.70	30.77	23.08	7.70	15.38	7.70	7.70
No. 6—Loss .....	12.50	25.00	25.00	12.50	12.50	—	12.50	13.33	20.00	13.33	6.66	13.33	20.00	13.33
Color Ref. Oil .....	—	15.38	30.77	15.38	7.70	—	23.08	7.70	23.08	—	7.70	23.08	7.70	30.77
Color Bl. Oil .....	8.33	33.33	50.00	—	8.33	—	—	15.38	23.08	30.77	23.08	—	—	7.70