

Malt Analysis

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recommended that the evaluation of the Miag Disc Mill be continued with communication of procedures and samples to the Malt Analysis Committee of EBC.

RECOMMENDATIONS

For the coming year, it is recommended that Subcommittee work on an alternate method for α -amylase be continued. It is also

Evaluation has been started on an alternate α -amylase procedure based on a fixed dextrinization time and measurement of per cent transmission. This procedure is being evaluated against ASBC

TABLE I
Mean, Standard Deviation, and % Coefficient of Variation, Brewers' Malt Analysis (Dry Basis)

Sample		Moisture %	Extract FG %	Fine-Coarse Difference %	Diastatic Power	α -Amylase	Soluble Protein, % N \times 6.25	Malt Total Protein, % N \times 6.25	Color	No. Reporting
A	Mean	4.27	76.50	1.38	154.7	38.56	5.504	13.58	1.933	42
	Std. dev.	0.24	0.46	0.30	7.9	2.47	0.172	0.31	0.182	
	Coeff. var.	5.6	0.6	21.6	5.1	6.4	3.1	2.2	9.43	
B	Mean	4.25	76.39	1.29	154.2	38.29	5.515	13.56	1.941	42
	Std. dev.	0.19	0.41	0.31	6.5	2.45	0.149	0.26	0.185	
	Coeff. var.	4.5	0.5	24.0	4.2	6.4	2.7	1.9	9.54	
C	Mean	4.19	77.28	1.50	142.2	37.98	5.942	13.78	1.884	38
	Std. dev.	0.13	0.35	0.37	6.1	2.70	0.190	0.41	0.149	
	Coeff. var.	3.1	0.5	24.4	4.2	7.1	3.2	2.9	7.88	
D	Mean	4.50	77.44	1.33	133.8	41.60	6.075	14.23	2.120	38
	Std. dev.	0.11	0.36	0.24	6.4	2.68	0.216	0.31	0.194	
	Coeff. var.	2.5	0.5	18.4	4.8	6.5	3.6	2.2	9.13	
E	Mean	4.52	78.17	2.59	102.4	32.67	4.497	12.34	1.257	38
	Std. dev.	0.22	0.35	0.66	6.5	2.58	0.157	0.26	0.120	
	Coeff. var.	4.9	0.4	25.3	6.3	7.9	3.5	2.1	9.53	
F	Mean	4.36	76.83	1.31	158.4	39.92	5.458	13.50	1.552	37
	Std. dev.	0.17	0.28	0.25	7.9	2.10	0.115	0.28	0.226	
	Coeff. var.	3.9	0.4	18.6	5.0	5.3	2.1	2.1	14.58	
G	Mean	4.11	77.31	1.66	146.1	37.77	4.932	12.99	1.576	41
	Std. dev.	0.18	0.27	0.38	7.2	2.29	0.093	0.30	0.151	
	Coeff. var.	4.4	0.3	22.9	4.9	6.1	1.9	2.3	9.58	
H	Mean	4.34	75.92	1.67	164.4	38.76	5.281	13.33	1.610	41
	Std. dev.	0.12	0.27	0.37	6.2	2.53	0.157	0.36	0.138	
	Coeff. var.	2.8	0.4	22.5	3.8	6.5	3.0	2.7	8.59	

TABLE II
Mean, Standard Deviation, and % Coefficient of Variation for
Cereal Adjunct Analysis Data (Dry Basis)

Sample No.				% Moisture	% Extract Malt Method	% Extract Enzyme Method	% Oil
1	9/76	Corn Grits	Mean	10.7	93.0	92.4	0.73
			Std. dev.	0.27	1.03	0.81	0.08
			Coeff. var.	2.5	1.1	0.9	11.0
			No. reporting	10	5	9	10
2	10/76	Corn Grits	Mean	8.5	92.0	92.2	1.02
			Std. dev.	0.37	0.29	1.01	0.06
			Coeff. var.	4.4	0.3	1.1	5.9
			No. reporting	10	5	10	10
3	11/76	Corn Grits	Mean	8.9	90.5	91.2	0.97
			Std. dev.	0.33	1.07	1.70	0.23
			Coeff. var.	3.7	1.2	1.9	23.7
			No. reporting	8	4	8	8
4	12/76	Corn Grits	Mean	13.3	91.1	91.4	0.42
			Std. dev.	0.4	1.05	1.35	0.05
			Coeff. var.	3.0	1.2	1.5	11.9
			No. reporting	7	3	6	7

Methods of Analysis Malt-7 procedure (1). An evaluation is also being made of the Miag Disc Mill for malt grinding.

PROCEDURE AND DISCUSSION

- Five modifications of the procedure of Bawden and Artis (2) for α -amylase determination were evaluated by the Subcommittee. These are procedures in current use in the industry but they differ in detail in dextrinization time, wavelength, and method of standardization.
- The procedure which has been prepared is based on the Subcommittee evaluation of the existing modifications and the necessary additional information to permit operators to adapt the procedure to the equipment available. The procedure was reviewed by Subcommittee members prior to collaborative testing now in progress. The alternate procedure follows the Malt-7 procedure with the exception that α -amylase is determined on the basis of the color developed with iodine after a fixed time of dextrinization of the limit dextrin, whereas the Malt-7 procedure determines the reaction time necessary to reach a specific end point. The alternate procedure has particular utility where many samples of widely ranging α -amylase levels are being run. At this time, ten laboratories have indicated that they will participate in the collaboration.

- An evaluation of the Miag Disc Mill is being made by two laboratories. This is a new mill designed to be used both for fine and coarse grind. It can readily be set for either grind without restandardization. It is understood that this mill has been designated the standard mill by the Analysis Committee of the Institute of Brewing.

CONTINUING PROGRAMS

Regular samples were distributed to participants in the Malt and also the Cereal Adjunct Check Services. Tables I and II give averaged data, means, standard deviation, and coefficient of variation for the samples distributed. These distributions give participating laboratories the ability to correlate their data with others in the industry; the means provide a standard value for the various determinations.

Literature Cited

- AMERICAN SOCIETY OF BREWING CHEMISTS. *Methods of analysis* (6th ed.), Malt-7. The Society: St. Paul, Minn. (1958).
- BAWDEN, R. F., and ARTIS, W. G. *Amer. Soc. Brew. Chem., Proc.* 1951, p. 41.