

FE 483 FOOD OPERATIONS LABORATORY DRY MILLING OF WHEAT

Dr. Şenol İBANOĞLU

Purpose: To investigate the effect of wheat type and tempering on the milling characteristics of wheat.

Materials: Two different type of whole wheat will be used. Each type of wheat has different shape, density and hardness.

A two roller laboratory mill will be used for milling the wheat.

Moisture and ash content of the wheat and the resulting flour fractions are important for the technological properties of the products. Generally the higher the ash content the lower the quality of the flour.

Procedure outline: Two different wheat type will be milled before and after conditioning (tempering). The moisture and ash content of the raw wheat (before and after conditioning) will be measured. After milling the conditioned and unconditioned wheat samples, the moisture and ash content of the resulting three fractions will be measured. Three resulting fractions will be weighted and percent yield of the three fractions will be calculated based on the total weight of the wheat milled.

Tempering: The purpose of tempering is to increase the moisture content of the wheat before milling to facilitate the ease of grinding and to increase the yield of the flour. The moisture content of the wheat will be increased by 2 % by addition of water and leaving for equilibration for 24 hour before milling.

The weight of 1000 wheat kernels will be measured using a balance.

Moisture content will be calculated on as is basis (wet basis). Ash content will be calculated on dry basis. Percent yields will be calculated on the basis of wheat milled (wet basis).

Screening and particle size distribution curve:

Tempered and non-tempered wheats will be sifted using a series of screens by means of a laboratory sifting machine. The cumulative particle size distribution curve will be prepared and the percent coefficient of variation (CV) will be calculated at 5 % confidence interval for both samples.

Data collection

Wheat type :

Moisture content of whole wheat (% , wet basis) :

Ash content of whole wheat (% , dry basis) :

Weight of 1000 kernels (g) :

Amount of wheat milled (g) :

Yields (% , of wheat milled) and ash contents (% , dry basis) of

 Fraction A (top fraction) :

 Fraction B (middle fraction) :

 Fraction C (bottom fraction) :

Cumulative distribution curve:

% CV:

Discussion: The results will be discussed in terms of the effect of wheat type and tempering on the quality and yield of the flour fractions. Sifting properties will be discussed with respect to hardness of samples.

Materials to be supplied by the students before experiment:

1 kg hard wheat suitable for breadmaking

1 kg soft wheat (döğme)