Title Fractionation of Grain Sorghum using Abrasive Decortication

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Citation Journal of Agricultural Engineering Research, Volume 77, Issue 2, October 2000, Pages 203-208

Keywords sorghum; abrasive decortication

Abstract

In an effort to concentrate the source of wax, abrasive decortication of grain sorghum was used to separate whole kernels into bran and abraded kernel fractions. Abrasive decortication was accomplished using a tangential abrasive dehulling device (TADD). The variables studied were moisture addition with tempering time and abrasion time. The constituents of dry matter, starch, protein, ash and wax were measured for whole sorghum kernels. Mass of fractions of abraded kernels and bran were also measured subsequent to decortication. Chemical analysis was then performed to determine the amount of each constituent recovered in each fraction. The total matter recovered was determined using a summation of the amounts recovered in each fraction. The TADD method of this study recovered an average of over 94% of the total dry matter, total starch, total protein and total ash between the two fractions, while less than 85% of the total wax was recovered from any one sample. As longer abrasion times were used to remove the bran from the kernel, more starch was removed as well. The greatest wax concentration, 66·9±5·6%, in the bran fraction with a starch content of 5·5±0·8% occurred after abrading kernels at 10·4% moisture content for 80 s. In conclusion, using the TADD to concentrate wax to high levels with minimal starch contamination was not achieved.