

DEVELOPMENT OF THE ENHANCED HALSEY MODEL TO PREDICT EQUILIBRIUM MOISTURE CONTENT (EMC) OF SUNFLOWER SEEDS WITH DIFFERENT OIL CONTENTS

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ABSTRACT.

Using the right EMC relationship is critical for implementing successful aeration strategies and for determining the safe storage moisture content of grains and oilseeds. The oil content of sunflower seeds substantially affects the moisture equilibrium relationship, implying that a specific set of model parameters for each oil content range should be obtained. To overcome this practical limitation, the Enhanced Halsey Model was developed incorporating a new parameter (D) to characterize the effect of oil content on the original Modified Halsey Model. The constant A, B, C and D of the model were obtained for a wide range of temperature, moisture and oil contents. The simplicity of the Enhanced Halsey Model and the possibility of adapting the EMC as function of the oil content make the Enhanced Halsey Model valuable for engineering applications (e.g. aeration controllers) and for predicting the safe storage moisture content of seeds with different oil contents, such as sunflower

Keywords

Composition; Grain; Isotherms; Oilseed; Relative humidity; Sorption; Storage quality