AIR VELOCITY PROFILE IN A CONTINUOUS FLOWING BLOWER WITH VERTICAL AIR STREAM

Source: Chapter 1 of the dissertation:

USE OF CONTINUOUS FLOWING BLOWER WITH VERTICAL AIR STREAM IN BARLEY, WHEAT AND CRIMSON CLOVER SEEDS

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ABSTRACT – Seed and undesirable material separation during conditioning is done according to the difference in aerodynamical properties, it allow choosing the correct machinery to accomplish the appropriate cleaning. Among this properties terminal velocity is one of most important. Pneumatic separators and aspirators are used to achieve a very specific separation by terminal velocity allowing seed grading by density. The aim of this study was to evaluate the constancy of terminal velocity and the air velocity behavior measured in different horizontals distance in the plastic tube. The machine used on the study was the Continuous Seed Blower (Mater Seed Equipment™) and two studies were undertaken. In the first study was used the rotary anemometer Turbo Meter (Davis Instrument™) to measure the air velocity in different sets of fan velocity and motor frequency. In the second study was used a hot-wire anemometer Testo 425 (Testo™) to measure the air velocity in three different horizontals distances in relation to tube entrance as follow: 0.022 m, 0.038 m and 0.054 m and the blower set according to study 1. It was conclude that: 1 - voltage affects the air velocity when the blower is set to low air velocity; 2 - there is a horizontal gradient in the air velocity on the plastic tube.

Keywords: terminal velocity, horizontal gradient