

Adapting Grain Crop Cleaning Equipment for Sesame and Other Emerging Spice Crops

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Abstract : Threshing and cleaning are crucial post-harvest procedures that are carried out to separate the grain or seed from the harvested plant and eliminate any potential contaminants or foreign debris. After harvesting, threshing and cleaning are necessary for the clean seeds to guarantee high quality and acceptable for consumption or further processing. For mechanised production, threshing can be conducted in a thresher. Afterwards, the seeds are to be cleaned in dedicated seed-cleaning facilities. This research investigates the effectiveness of Kimseed cleaning equipment MK3, designed for grain crops for processing new crops such as sesame, fennel and kalonji. Subsequently, systematic trials were conducted to adapt the equipment to the applications in sesame and spice crops. It was done to develop methods for mechanising harvest and post-harvest operations. For sesame, it is recommended to have a two-step process in the cleaning machine to remove large and small contaminants. The first step is to remove the large contaminants, and the second is to remove the smaller ones. The optimal parameters for cleaning fennel are a shaker frequency of 6.0 to 6.5 Hz and an airflow of 1.0 to 1.5 m/s. The optimal parameters for cleaning kalonji are a shaker frequency of 5.5Hz to 6.0 Hz and airflow of 1.0 to under 1.5m/s.

Keywords : sustainable mechanisation, seed cleaning process, optimal setting, shaker frequency

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