THESIS TITLE : A STUDY ON HARVESTING OF FORAGE SEEDS BY AIR SUCTION METHOD

AUTHOR : MR. SURIN PONGSKUL

THESIS ADVISORY COMMITTEE :

Chairperson

(Associate Professor Thavachai Thivavarnvongs, Ph.D.)

Member

(Associate Professor Winit Chinsuwan, Ph.D)

Member

(Assistant Professor Somnuk Chucilp)

Abstract

The objective of this study was to investigate the possibility of using air suction as a method for harvesting forage seeds. The study was divided into 3 parts, namely a preliminary study, designing and building sucking heads , and testing and evaluating those heads . The parameter (indicators) tested were seed suction rate, percentage seed suctioned , percentage matured seed and percentage suction loss. The study revealed that in the preliminary study the vacuum cleaners with air velocities of 12.0 and 17.8 m/s were possible to be used for harvesting forage seeds as they gave the suction rates of 1.606 and 1.548 g/min respectively and the percentage seed suctioned of 27.11 % and 27.49 % respectively. Additionally it was found that the vacuum cleaner sweeper was not appropriate to be used for seed harvesting purpose. In the second part of this study 3 types of sucking heads were designed and built:

- Rectangular opening with 5-cm diameter duct , 8-cm length ;1x8 cm^2 dimension of sucking tip with 8 cm^2 sucking area.

- Eclipse opening with 5-cm diameter duct, 8-cm length; 1.5x8 cm^2 dimension of sucking tip with 9.42 cm^2 sucking area.

- Oblique rectangular opening with 5-cm diameter duct, 8-cm length; 1x8 cm^2 dimension of sucking tip with 7.5 cm^2 sucking area.

In the final part of this study three types of sucking heads were tested on Ruzi grass at Tambol Nuer, Aumpur Muang , Kalasin Province. All sucking heads were evaluated at 3 different air velocities , 8 ,10 and 12 m/s.The results showed that the rectangular opening with an air velocity of 12 m/s was the most appropriate condition for harvesting Ruzi grass seeds . It produced 9.98 g/min seed suction rate , 86.26 % seed suctioned , 60.06 % matured seed and 7.45 % suction loss .