A SEED HULLER FOR SMALL LOTS

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A SEED huller designed and constructed by the Department of Agricultural Engineering, University of Arizona, is presently being used by the Department of Agronomy in research with bermudagrass (*Cynodon dactylon*) (Figure 1). Before this machine was developed, small experimental seed lots were hulled by hand using a rub-board. Thoroughly hulling and cleaning an 8-ounce sample of bermudagrass seed with a rub-board requires 3 to 4 hours. Satisfactory hulling can be done with the machine in less than one hour with samples up to a pound or more. Since the machine is self-feeding and the hulling process can be organized on a flow basis, the operator is able to conduct other activities while seed is being processed, thus, providing an additional saving in time.

Seed is hulled in the machine by the rubbing action of two endless nylon belts pressing against each other as they pass over 4 rollers (Figure 2). The relatively gentle rubbing and squeezing action of the belts removes lemmas and paleas with no visible injury to the caryopses. Hand rubbing always cracks or damages some seed.

The seed is fed into the belt system of the huller by gravity from a hopper. Feeding is through three circular openings in the hopper bottom and is controlled by vibrating rods in the openings. Approximately 20% of the seed is hulled with each pass through the machine. Up to four passes through can be made before the loose hulls interfere with further hulling action. Most efficient operation of the machine requires cleaning of the seed as it comes from the machine, returning only that seed which has not been hulled. With lots of ounces this is best done with a blower, screening through a small fanning mill. A considerable amount of loose chaff can be removed from the seed by a small fan blowing across the flow as it leaves the huller.

Although this machine was designed to solve a problem with bermudagrass, it should be adaptable to many other seed hulling problems requiring positive yet gentle action on small lots.