DEVELOPMENT OF A SOYBEAN PLOT THRESHER

CONVENTIONAL threshers and plot threshers designed for cereal crops are not suitable for field threshing of soybeans. The possibility of using a portable thresher was investigated and in 1945 the Dominion Experimental Station at Harrow, Ontario, obtained a 4-row soybean thresher from the Hunter Lumber Co., Urbana, Ill. This machine was designed by the United States Department of Agriculture and consisted of a single 16-inch overshot, peg tooth cylinder that delivered the threshed material into a wire bottomed seed box. The straw was separated from the sample by a coarse screen and the chaff was removed by using a table model clipper cleaner.

Improvement in 1946 after a discussion with Dr. A. H. Probst of Purdue University resulted in the addition of a gasoline power unit. This motor powered the cylinder and also a Torrington fan to supply an air blast at the side of the machine through an 8-inch stove pipe. A metal tub was substituted for the seed box and cleaning was accomplished by lifting the straw from the tub by hand and dumping the remaining chaff and beans into a screen-bottomed tray. The tray was then moved back and forth over the air blast and the chaff removed in this manner.

As the cylinder should be stopped between each plot to allow any seeds to drop out, a mercury clutch was installed to drive the cylinder and permit the fan to operate continuously. This was not entirely satisfactory because the low speed at which the engine was disengaged provided insufficient fan speed and air blast to clean the sample. As a result cleaning had to be restricted to the intervals when the engine was at full speed.

The unit was mounted on a two wheeled trailer for ease in transportation.

Further improvements in 1949 as a result of suggestions made by L. C. Saboe of Ohio State University consisted of an improved cleaning device. An 18-inch Torrington fan, enclosed in a guard with a wire mesh top, was mounted on an angle iron frame and a jackshaft driven directly from the engine provided constant power. The cylinder was driven through an idler-pulley clutch having a foot pedal release and an automatic brake thus allowing the operator full use of his hands. The sample of chaff and seed was placed over the fan, in a wire-bottomed pan, and cleaned in a few seconds since the air blast was applied evenly through the whole sample.

In 1950 a similar type of machine was built at the Central Experimental Farm, Ottawa, for the Forage Division, using an angle iron frame and sheet steel construction in place of the former wood frame but embodying the same style of cylinder and cleaning system. To facilitate inspection of the cylinder, however, the concave in the steel framed unit was mounted on a movable cover that could be lifted (see figure 3). An engine with a built-in clutch for the cylinder drive was substituted for the mercury clutch and the power for the fan taken from the opposite end of the engine shaft to operate the fan.