

# Attachments to Scott-Urschel Sugar Beet Combine to Improve Dirt and Trash Removal

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The objective of all sugar beet harvesters is to deliver beets to the receiving station which are properly topped and are free from dirt, trash and foreign matter. The elimination of excessive dirt is especially to be desired in the eastern sugar beet growing area. More than 90 percent of the beets are delivered direct from the field to the factory, the average truck haul being approximately 15 miles. However, in many instances the haul exceeds 30 miles.

This paper will describe and discuss the results secured with several units operated in conjunction with the Scott-Urschel sugar beet combine in an attempt to keep the dirt and trash at a minimum.

Figures 1 and 2 show the potato chain assembly built by Talladay & Sons, Milan, Michigan. This unit gave encouraging results as indicated by the following data: Check harvester (regular stub bar), 995 pounds haul back dirt. Regular stub bar equipped with potato chain assembly, 275 pounds haul back dirt. On 25 tons of beets harvested with the potato chain assembly there was a haul back of 3,200 pounds of dirt, or about 125 pounds per ton of beets, compared to an estimated haul back of more than 10,000 pounds of dirt on 25 tons of beets from the standard Scott Urschel harvester.

The potato chain assembly was constructed as follows: The lower 5 feet of the regular Scott-Urschel elevator were used. To the top of this were bolted 5 feet of potato chain from a Marbeet Jr. elevator. This chain was in the same plane as the rods in the original elevator and traveled at the same speed. Directly above this potato chain was another frame work with the same type of chain floating from a steel framework. This chain traveled in the same direction but at twice the speed of the lower elevator. This difference in speed caused a rubbing action on the beets which contributed materially to the effectiveness of the unit in eliminating dirt and trash. Additional units are being built by the agricultural engineering department of Michigan State College for further testing this fall.

Figure 3 shows a series of "squirrel cages" installed in the bottom of the beet elevator. This unit was built by the Scott Viner company near the end of the 1949 harvesting campaign. It shows considerable promise. Construction details can be secured by writing to Scott Viner Company, 540 West Poplar Avenue, Columbus, Ohio.

Figure 4 shows how Harold Gremel, a farmer near Sebewaing, Michigan, mounted the Reinks screens from an International sugar beet combine on his Scott-Urschel harvester. Gremel secured very satisfactory results with

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Figure 1. Front view of the potato chain assembly built by Talladay & Sons, Milan, Mich. This unit gave encouraging results. Additional units are being built by Michigan State College for further testing this fall.

Figure 2. The potato chain assembly built by Talladay & Sons in operation in the field.

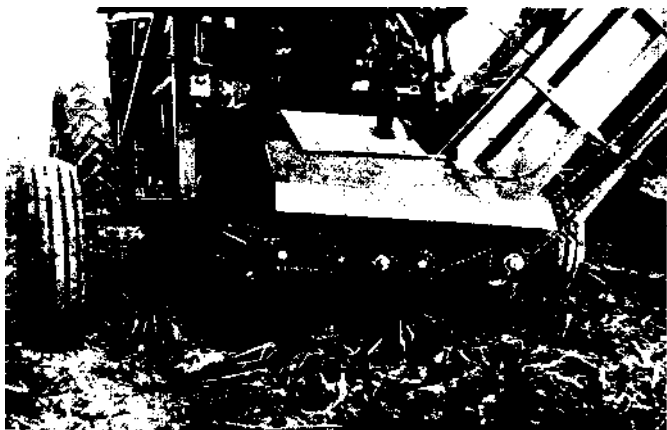


Figure 3. A series of "squirrel cages" installed in the bottom of the beet elevator. This unit, built by Scott Viner, shows considerable promise.

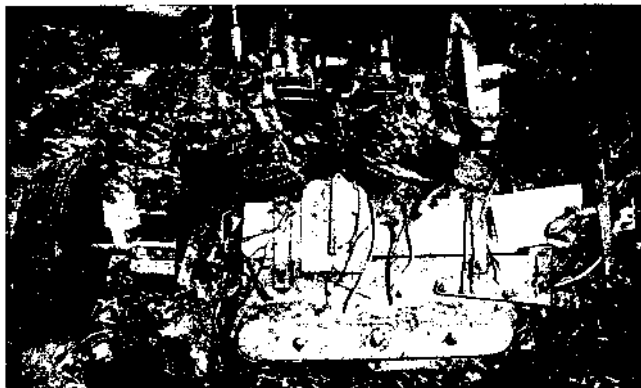


Figure 4. Harold Gremel, a farmer near Sebewaing, Michigan, mounted the Reinks screens from an International sugar beet combine on his Scott-Urschel harvester in this manner.

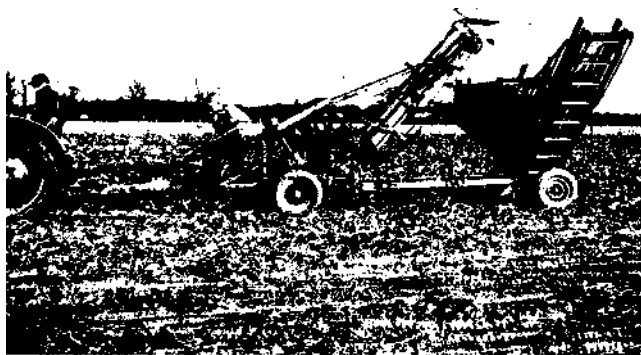


Figure 5. A self-unloading cart being operated in conjunction with the Scott-Urschel harvester.



Figure 6. A spiral conveyor built by Talladay & Sons. This unit did not prove satisfactory as a means of eliminating dirt and trash.

this arrangement. Several others in the eastern area have installed Reinks rolls of one type or another on their Scott-Urschels with varying degrees of success.

Figure 5 shows a self-unloading cart being operated in conjunction with the Scott-Urschel. This type of cart as well as the small size dump carts has proved effective in eliminating dirt and trash from beets being delivered to the factory. Several commercial makes are available.

Figure 6 shows a spiral conveyor built by Talladay and Sons, Milan, Michigan. The conveyor was 24" in diameter, 12' long. The screw was a normal pitch (each revolution of the scroll would move a beet 24" up the scroll or elevator). The scroll operated at 25 RPM, and was constructed of 5/16" cold rolled rod. The cage was constructed from 3/8" cold rolled rod, the counter shaft was 2" tubing. This unit did not prove satisfactory as a means of eliminating dirt and trash.

Wire and fibre brushes of various types were tested in cooperation with Clarence Hansen of the engineering department, Michigan State College, as a possible means of eliminating dirt and trash when attached to the Scott-Urschel harvester. The following are construction details of one of the units:

The wire brush assembly consisted of 24 brushes 12" in diameter mounted on 6 shafts which gave 4 brushes to a shaft with 4" between each

brush on the shaft. The shafts with the brushes revolved at 200 RPM. Brushes were so mounted in the unit that there were 10" between each row of brushes. To fill this gap a series of curved rods was welded to a framework. The top row of brushes rested on these rods. This was the bottleneck as the brushes were not stiff enough to push the beets across the stationary surface and operation in general was not satisfactory.

Figure 7 shows a combination Reinks roll-potato chain unit built by



Figure 7. A combination Reinks roll-potato chain built by Talladay and Sons. This unit gave fairly good dirt and trash removal.

Talladay and Sons, Milan, Michigan. In this unit the regular elevator was placed in front of the wheel and the small potato chain carried the beets from the Reinks rolls to the regular elevator. This unit gave fairly good dirt and trash removal, but it was felt that it required too much additional mechanism to be practical.

Figure 8 shows another experimental brush unit.

Further field testing is still needed to determine the practical value of these units for removing dirt and trash from harvested beets prior to delivery to the factory or storage piles.



Figure 8. Another experimental brush unit. Further field testing is needed to determine the practical value of such equipment for removing dirt and trash.