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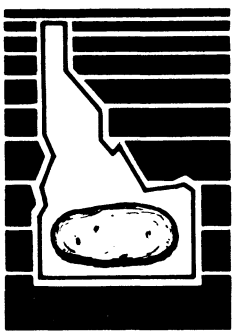
Help in Handling Potato Vines



Lynn F. Johnson

Vines present some of the most difficult problems in potato harvest. When vines are green, they do not readily pass through the machine. When they are wet and tough, they hairpin on all obstructions, wrap around shafts and collect around the side of the digger nose.

Many different approaches have been tried to reduce vine problems. Coulters and discs have been added to the digger to stop the collecting on the nose, but the tough vines resist cutting. Various devices have been drug over the vines when they are dry to break them up. Burning has been tried. But when a dragging or burning method is used, the left-over short pieces of vine fall through the devining chain and have to be picked out by hand. Blowers have been added to harvesters to blow the trash out, but they are not effective on heavy or wet vines.

The override devining chain is used almost universally now on potato harvesting equipment. This system works best if the vines are left intact. However, this leaves the problem of vines catching on the sides of the digger nose when the vines are wet.

Windrowers are used to harvest a large percentage of Idaho's potatoes. When potatoes are windrowed, two rows are lifted and placed between two adjacent rows. When the vines are heavy in the windrow, the harvester's devining chain carries many of the windrowed potatoes over the machine on top of the vines and back to the ground. An extra coulter has been mounted on the windrower that cuts the vines in the furrow where the windrower places the potatoes. The cut vines allow more of the potatoes to fall through the vines as they pass through the harvester.

Vine Discs

Vine discs (Fig. 1), designed to remove the vines from between the devined rows, have been developed and tried at the Aberdeen Research and Extension Center in recent years. The discs are 20 inches in diameter and dished 2 inches. The disc spindles were welded to a 1 x 3 x 25-inch shank so they can be clamped to a 2¼-inch square tool bar. The spindles were welded at an angle so the discs are ¼-inch apart at the closest point and 16½ inches at the widest point (Fig. 2).

Fig. 1. Vine discs in use to clean vines and trash from furrows.

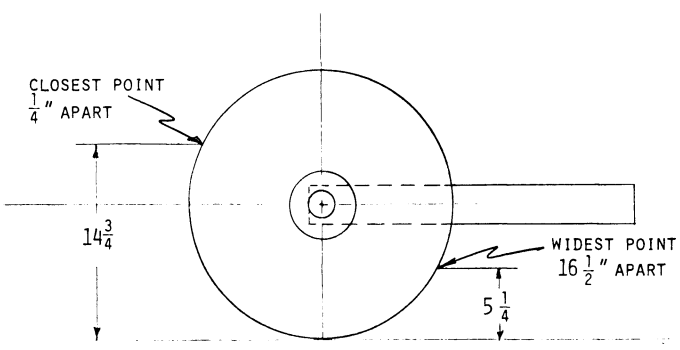


Fig. 2. Dimensions for fabricating vine discs.

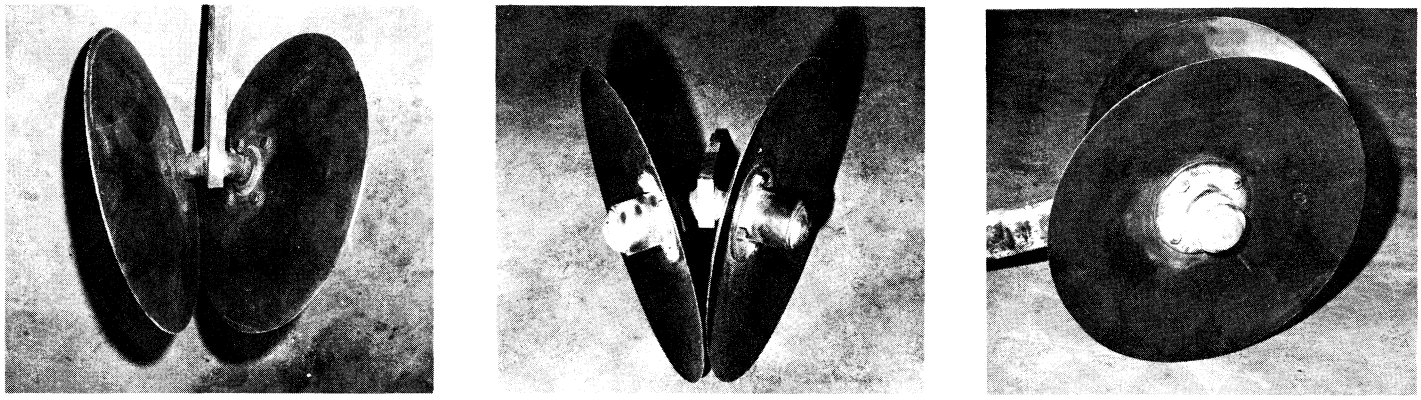


Fig. 3. Vine discs welded to a 1x3x25-inch shank as viewed from the rear (left), the bottom (center) and the side (right).

Operation

As the discs contact the vine, the vine is caught between each disc and the ground. The contact points separate as the discs roll and the resulting action cuts the vines. Even the toughest vines are cut. The vine discs operate similar to hilling discs, clearing vines, trash and clods from the furrows. This operation also deepens the furrow so harvester operation is improved.

One small tractor, with the discs mounted on a tool bar, can easily keep ahead of two or three harvesters. If the potatoes are to be windrowed, the tractor with three vine discs should travel the harvester rows ahead of the windrower.

This will clear the vines and trash from the furrow into which the windrowed potatoes are placed as well as from the furrow where the digger blade sides are located. Using the discs in this manner eliminates the need for coulters on either the harvester or windrower.

Vine disc operation is satisfactory at speeds from 1.5 to 7 mph. A set of discs can be mounted on the windrower to operate in the furrow where the potatoes are placed. The vine discs will form small hard clods if they are operated too far in advance of the harvester.

Conclusion

The use of vine discs will eliminate most of the vine problems experienced with present cultural practices. They will function satisfactorily over a wide range of speeds so they can be mounted on the digging machine or used as a separate operation.

The vine discs have an additional benefit, because they deepen the furrows. Since herbicides have become so widely used to control weeds in potatoes, cultivation is limited and furrows are often shallow. A potato harvester works better when operating in deep furrows. When furrows are shallow, the angle of the primary and secondary chain is steeper, increasing rollback. The harvester does not follow the rows as well either, especially when operating on side slopes.

The Author — Lynn F. Johnson is research professor of agricultural engineering, headquartered at the College of Agriculture Research and Extension Center, Aberdeen.

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