

SMALLER PICKING TUB FOR HAND HARVEST OF WINEGRAPES

PROBLEM:

In hand harvest of winegrapes, the tubs used are heavy when full, and thus can contribute to back and knee injuries



ONE SOLUTION:

Use a smaller tub (on the right) that has add-on grips and weighs an average 46 pounds when full.



- Workers cut grapes directly into plastic tubs and then carry the tubs to trailer-mounted gondolas. When full, the tubs weigh an average of 57 pounds.
- Workers must stoop, grip, lift, carry, and dump up to 20 times per hour, not including the stooping, gripping, and relocating the tub while moving down the vine row.
- A side-sweeping motion of the leg is often used to move the tub along the vine until about half full, at which point the tub is lifted.
- For dumping into the trailer gondola, the full tub is often lifted above head.
- The lower weight is easier on the back, knees, and arms. The narrower width positions the tub's center of gravity closer to the worker, which reduces stress on the back.
- Better grips reduce pressure points on the fingers.
- Lighter weight and smoother bottom surface reduce the sideways forces on the knees when pushing the tub down the row.
- Can have small negative impact on production but has gained approval of piece-rate workers.

HOW MUCH DIFFERENCE DOES THE SMALLER TUB MAKE?

The tub was tested at several cooperating vineyards in a NIOSH-funded ergonomics study in California's Napa and Sonoma counties.

After the harvest season, workers reported pain and symptoms of injury that were only one-fifth of what they were with the large tub. Reduction in pain symptoms indicates a lower risk for future chronic injury or cumulative trauma disorder such as nagging back or joint pain.

HOW DOES THE SMALLER TUB AFFECT PRODUCTIVITY?

Only negligibly. In a three-year field trial, the smaller tub resulted in a about a 2% reduction in pounds of grapes delivered to the gondola per day. This might translate into 15 minutes of extra work for a typical harvest day. Neither workers nor managers perceived the reduction in the field.

Despite making more carries, workers using the small tub used less energy and had lower heart rates. They liked the smaller tubs better, reporting that they were less tired at day's end.

Most important, though, may be the widespread adoption of the smaller tub by workers who work on a piece-rate basis.

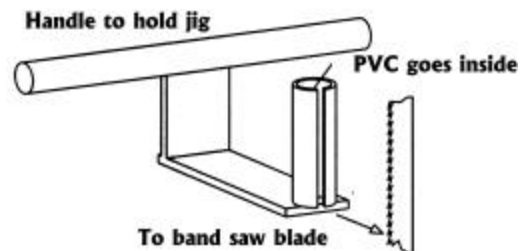
WHERE TO GET A SMALLER TUB?

The tub used in the study was a LEWISystems SN2414-8 stack/nest tub by Menasha Corporation of Watertown, Wisconsin (1-800-558-9563). Cost was about \$13 each.

The SN2414-8 is two inches narrower, and over two pounds lighter than the old larger tub. Ask your existing supplier if they have a smaller tub that is similar to the one used in the study; you may find good alternatives.

HOW DO I MAKE THE ADD-ON GRIPS?

The add-on grips are simple to make using PVC pipe (Schedule 40 1/2"), a saw (preferably a band saw), and a jig such as is suggested in the diagram below.



Cut the PVC pipe to 5" lengths and cut an approximately 1/32" wide slit lengthwise in the PVC using the jig. Use a slotted screwdriver to help slide the PVC over the edge of the tub's existing grip.