

Smaller Picking Tub

Problem:

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



- 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.
- Worker must stoop, grip, lift, carry, and dump up to 20 times per hour, not including the stooping, gripping, and relocating of the tub as the worker moves down the row of vines.
- A side-sweeping motion of the leg is often used to move the tub along the vine until it is about half full, at which point the tub is lifted.
- For dumping into the gondola, the full tub is often lifted above the head.

One Solution:

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



- 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.
- Lighter weight and smoother bottom surface reduce the sideways forces on the knees when pushing the tub down the row.
- Better handles reduce pressure points on the fingers.
- Can have minor negative impact on production, but has gained approval of piece-rate workers.

Picking Tub

How Much Difference Does the Smaller Tub Make?

The smaller tub was tested at several 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 of 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 2% reduction in pounds of grapes delivered to the gondola per day. Neither managers nor workers perceived the reduction in the field.

The reduction in productivity was not as much as might be expected, given that the two tubs are significantly different in size. This was apparently because workers using the small tub were less tired throughout the day and made 20 more carries per shift.

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

Here is the best "proof" that the smaller tub is better for workers: Workers on piece rate, who usually are eager for maximum productivity, preferred the smaller tub.

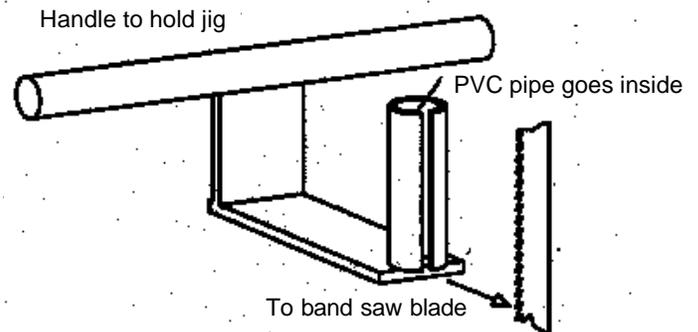
Where Can I Get a Smaller Tub?

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

The SN2414-8 is two inches narrower and over two pounds lighter than the old tub. Ask your existing supplier for 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 1/2" PVC pipe (Schedule 40), a saw (preferably a band saw), and a jig such as suggested in the diagram below. The jig will cost about \$75 to have made.



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.

Contact Information:

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