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Simple Solutions: Ergonomics for Farm Workers

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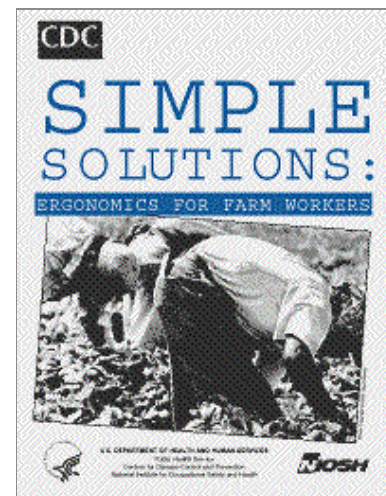
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Stooping or kneeling and crawling to harvest salad greens requires a lot of time and energy. Lifting and moving your harvest container many times as you fill it adds to the work load. An alternative is to build a simple cart, which allows you to sit and roll while you harvest. This is less tiring for the knees, back, hamstrings, and torso. The cart also holds your harvest container, so it rolls along with you.

How Does It Work?

The cart straddles the crop bed or rows, so that the wheels are on the paths between the beds. A seat is mounted low to the ground, between the rear wheels, allowing you to work directly over the bed without stooping.

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The seat swivels so you can harvest all parts of the bed without twisting your body. A sternum pad supports your torso so you can lean forward and ease strain on your lower back. Move the cart forward by pushing the rear wheels with your hands, wheelchair fashion, or scoot along with your feet on the ground. Prop

your harvest container on the front corner of the cart frame, within easy reach. The front wheel swivels for easy steering.

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Harvest Cart

Benefits of Using a Harvest Cart

Less fatigue and discomfort. Prolonged kneeling to harvest, transplant, or weed puts small scale growers in one of the highest risk groups for occupational injuries. Harvesting from a seated position eliminates knee strain and is less tiring for the back, hamstrings, and torso. Kneeling requires at least 25% more energy and stooping requires at least 45% more energy than sitting does.

Harvest Speed and Posture Analysis	Without Cart	With Cart
Avg. harvest speed (mins/3lb crate)	7.8	4.6
% time spent in unacceptable postures	46	0
% time spent in marginal postures	48	93
% time spent in acceptable postures	6	7

This data is based on a case study with the same worker performing the same task. Postural analysis was compiled using the Ovaco Work Analysis System.

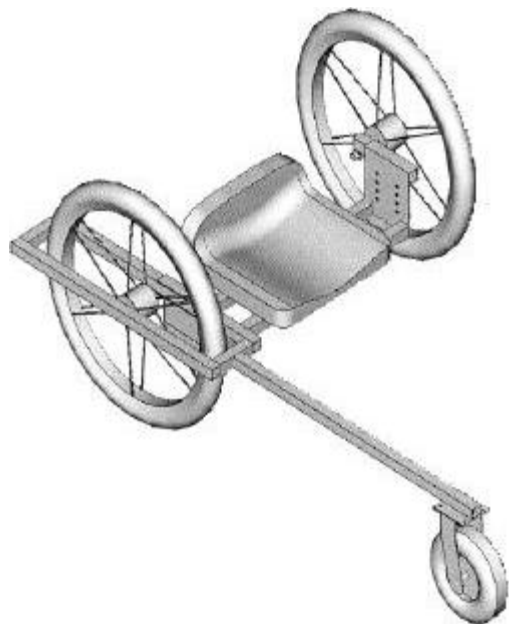
Faster. Using the cart lets you harvest the same amount of greens 40% more quickly. Faster har- Tip Sheet A Specialized Harvest Cart for Greens 15 vesting and quicker time to the cooler maintains high crop quality.

Less soil compaction. Instead of kneeling or walking in the crop row or bed, the cart supports your weight. Your weight, plus the weight of the cart, is transferred through the wheels to the paths between the crops.

Improves profits. Cutting harvest time can save labor costs. A typical scenario might be that your labor costs are \$7.00 per hour, and you harvest four days a week. If you save 30 minutes per harvest day by using the cart, in 11-18 weeks the cart will have paid for itself. If the harvest cart prevents back or knee pain, you might also save money on medical bills.

Where Can I Get a Specialized Harvest Cart?

These carts, designed by Bob Meyer and Hal Bohne of the University of Wisconsin Agricultural Engineering Lab, are not available in stores or catalogs. We can provide plans for you to make your own cart from readily available materials. Some welding is required, which can easily be done by your local welder. Locate a welding shop in the phone book under welding-custom fabrication. Buy the parts at a hardware store or from a tool and equipment catalog such as: Northern Hydraulic, P.O. Box 1499, Burnsville, MN 55337. 800-533-5545. (This reference is provided as a convenience for our readers. It is not an endorsement by the University of Wisconsin.)



How Much Will it Cost?

The parts for this cart cost about \$150. Labor costs, custom welding, or welding shop rental times will vary.

Steel: (1 1/4" square tubing, 1/8" wall thickness. 3/32" flat stock for gussets and supports)	\$ 15
Seat: (small tractor replacement)	\$ 28
Rear Wheels: (26" pneumatic)	\$ 28/ea.
Front Wheel: (10" swivel caster)	\$ 36
Swivel: (boat seat)	\$ 15
Total	\$150

Cart width should be 6"-12" wider than beds so that wheels will roll in the paths. Overall cart length is 42 1/2".

Contact Information:

This material was developed by the Healthy Farmers, Healthy Profits Project, whose goal is to find and share work efficiency tips that maintain farmers' health and safety and also increase profits. For more information, visit our web site at <http://bse.wisc.edu/hfhfp/> or call 608-265-9451.

Healthy Farmers, Healthy Profits Project, Department of Biological Systems Engineering, College of Agricultural and Life Sciences, University of Wisconsin, 460 Henry Hall, Madison, WI 53706.

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