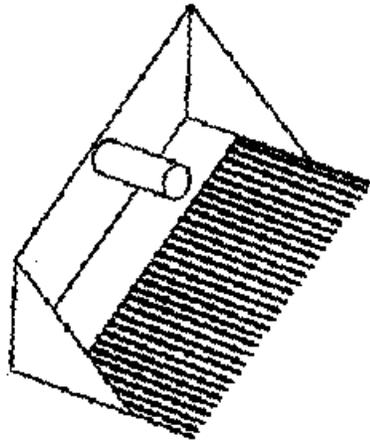


# New Rakes for Harvesting Berries

## Problem:

Harvesting blueberries with a traditional rake is hard on the body.

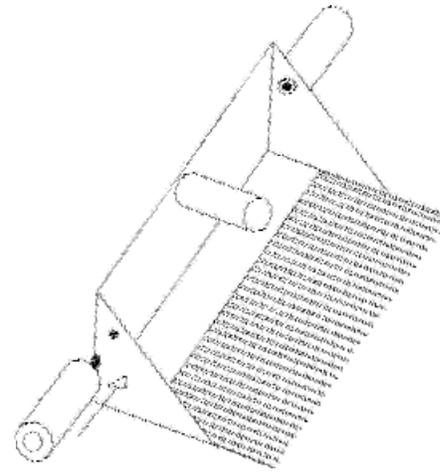


- Stooped position hurts the back.
- Thin handle is hard to grip comfortably.
- Rake design causes worker to flex wrists and to use pinch grip with fingers, risking tendinitis in wrists and hands.
- Steel rake is heavy, up to four pounds.

## Two Solutions:

### 1. Modify existing rake.

- Add electrical tape or pipe foam to make the handle diameter right for the worker.

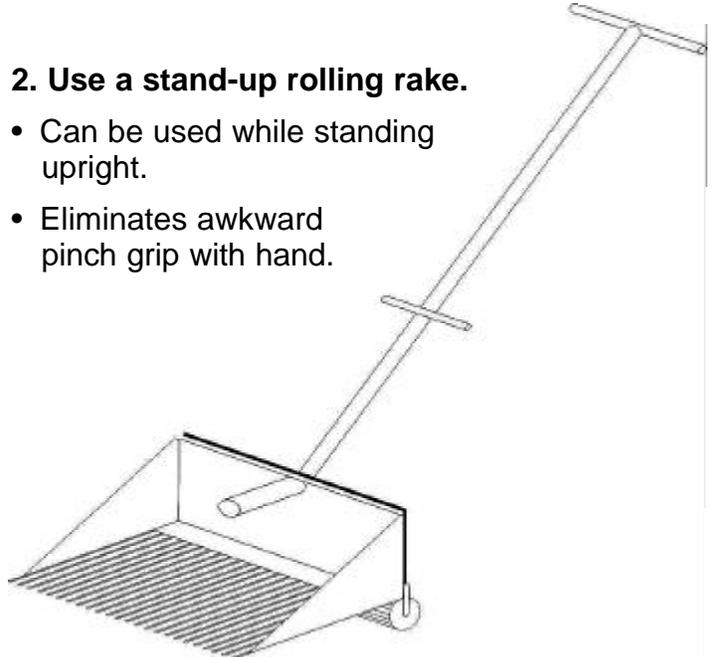


- Add a handle on each side of the rake, so it can be held with both hands.

- Use an aluminum rake rather than steel.

### 2. Use a stand-up rolling rake.

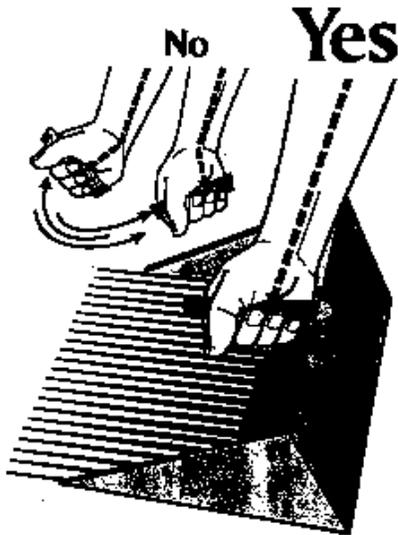
- Can be used while standing upright.
- Eliminates awkward pinch grip with hand.



## Blueberry Rake

### Why Not Use a Traditional Rake?

Because wild blueberries grow only about eight inches from the ground, harvest workers rake in a very stooped position. Their short-handled steel or aluminum rake, costing about \$60, causes the wrist to flex as the rake is dragged through the berries. To help guide the rake, most workers hold on to its side, using a pinch grip, which can cause tendinitis in the hands. The rake handle is too thin, at 1¼ inches in diameter, for most people to use comfortably.



*Encourage workers to keep their wrists straight while working.*

### How Can I Improve a Traditional Rake?

1. Add electrical tape or foam pipe insulation, available in hardware stores, to enlarge the diameter of the center handle. The best size is 1-3/8" for small hands, up to 2-1/8" for large hands, with an average of 1-3/4". When gripping, the finger and thumb should overlap slightly.
2. Attach a handle on each side of the rake, which workers can grab without using a pinch grip. The idea is to have one hand on the center handle and the other hand on one of the side handles. Holding the rake by two hands will stabilize it and decrease its tendency to swivel when raked through the plants. Also, having a handle on either side will allow the worker to switch the main raking hand.

Use handles that have a rubber or plastic coating and that are 1-3/8" to 2-1/8" in diameter, depending on the hand size of the worker who will be using the rake. Drill a hole in each side of the rake. Put the bolt of the handle through the hole and connect with a washer and nut on the inside of the rake (see drawing on page 19).

3. Encourage workers to keep wrists straight while raking (see illustration, left). They should let the larger muscles of the shoulder and elbow do the work, and switch hands often.
4. Encourage workers not to fill their rakes or buckets too full. Tell them to stop if they feel pain, and to put something cold on the sore spot. Encourage stretch breaks.

### Where Can I Get a Long-Handled Rake?

Acadian Machine Works Ltd.  
Tignish, Prince Edward Island C0B 2B0 Canada  
902-882-2349  
Cost: \$550 Canadian or about \$300 U.S., plus shipping

This rake rolls on two wheels, making it easy to push through the bushes.

Some workers have also made homemade stand-up rakes, by attaching a long handle to a traditional rake, via a frame around the back and a cylindrical roller (like a rolling pin) attached to the bottom. Such homemade roller rakes are heavy, but still easier on the back than the traditional rake.

### Cost Analysis

At a cost of \$300, it would take 17 to 30 hours for a blueberry harvester to pay for a manufactured stand-up rake. The rake should be sturdy enough to last for many seasons.

### Contact Information

This Tip Sheet was produced by NIOSH.

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