

Preventing Injuries through the Use of Smart Tools

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Maximize productivity

Decrease injuries

Strains and Sprains
Musculoskeletal Injuries

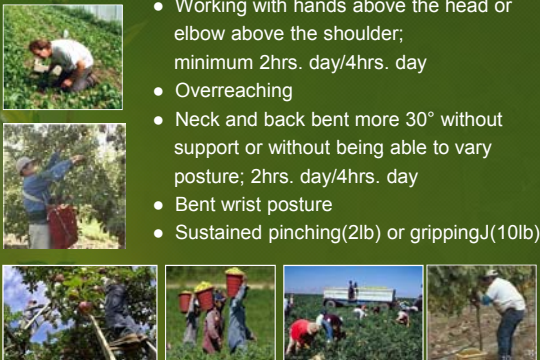
- Repetitive Motion Injuries
- Cumulative Trauma Syndrome
- Carpal Tunnel Syndrome
- Tendonitis
- Trigger Finger
- Thoracic Outlet Syndrome (shoulder)
- Rotator Cuff Injury
- Low Back Injury
- Muscle Damage/ Joint Damage

Risks

- Awkward Postures
- Highly Repetitive Motions
- Frequent Lifting
- Frequent Use of Force
- Vibration

Awkward Postures

- Working with hands above the head or elbow above the shoulder; minimum 2hrs. day/4hrs. day
- Overreaching
- Neck and back bent more 30° without support or without being able to vary posture; 2hrs. day/4hrs. day
- Bent wrist posture
- Sustained pinching(2lb) or grippingJ(10lb)




Highly Repetitive Motions

- Repeating the same motion with neck, shoulder, elbow, wrists, hands; every few seconds more 2 hrs. day/6hrs.
- Repeated forward and lateral bending with or without twisting



Frequent Lifting

- Lifting 10lbs. 2Xmin. more 2hrs.day
- Lifting 25lbs. above shoulder or below knees or arm length more 25X a day
- Lifting and twisting
- Lifting box between knees/waist 4Xmin more than 2hrs. day



Frequent Use of Force

- Static gripping/pinching
- Weeding, pulling, pruning, pushing

Vibration



Ergonomic Rules to Follow

- **FIT HANDS**
 - Large Handle – fit the "circle"
 - Non-slip Grip
 - Cushioned Grip
 - Curved to fit contour of hand
 - Fit for fingers/thumb
- **SUPPORT NEUTRAL WRIST POSITION**
 - Pistol Grip
 - Thumb Support
 - Bent Handle

IMPORTANT TO REMEMBER

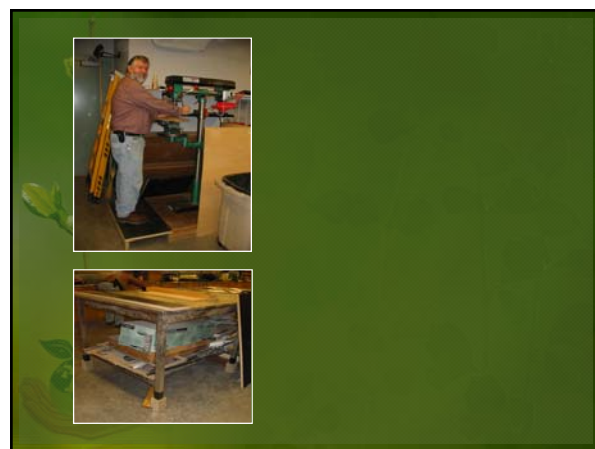
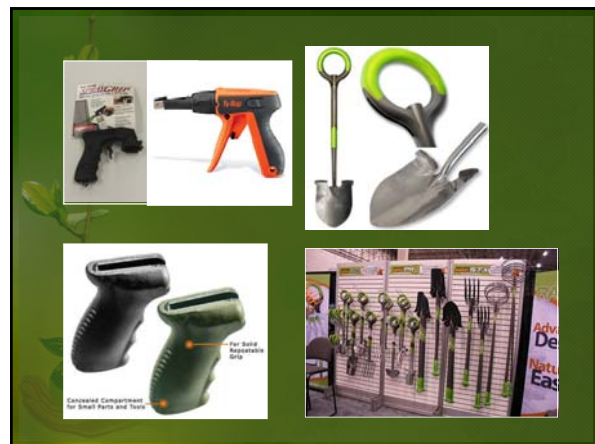
It is the day-by-day effect

It is CUMULATIVE

- Force + repetition + posture + no rest for recovery
- The higher the load the quicker the fatigue
- MAX = 51 lbs.
- Smoother the lift the less the tendon pulls, etc.
- Spine: as object/task is farther away from spine it increases fatigue
- Overhead reach: blood pools, blood flow decreased and nerve compression occurs
- Posture: more musculoskeletal force needed to maintain an awkward posture
- Fixed posture: fatigues quicker; arm out straight for 5 minutes!

More Rules

- Two hands are better than one
- Distribute the weight
- Use "good lifting"
- Turn with feet – DON'T TWIST



Tip Sheets for Berries

- Hoophouses
- Long handled diamond hoe
- Motorized lay-down work carts
- Narrow pallet system
- Narrow aisle platform truck
- Specialized harvest cart
- Specialized harvest cart plans
- Strap-on stool
- Streamlined sales area

Tip Sheets for Vegetables

- Hands-free washer
- Hoophouses
- Long handled diamond hoe
- Mesh produce bags
- Motorized lay-down work carts
- Narrow pallet system
- Narrow aisle platform truck
- Narrow aisle platform truck
- Packing shed layout
- Postharvest handling
- Rolling dibble marker
- Standard containers
- Strap-on stool
- Specialized harvest cart
- Specialized harvest cart plans
- Streamlined sales area

Tip Sheets for Nursery

- Container stabilization
- Electronic pruners
- Long handled hoe
- No-climb truck tarping
- One-person hitch
- Pot-filling machine
- Strap-on stool
- Tree guard zipper

This overview of a container-growing nursery shows the multiplicity of ornamental plants grown in plastic pots or "cans."

A canning line improvement, with worker on trailer loading cans by hand from conveyor to trailer. Note the bed of trailer is the same height as the conveyor belt, which reduces the risk of ergonomic injury.

A typical "handle" developed for moving cans without requiring fingers pinch grip or stooped

Figure 8: Larger tub (left) and smaller tub with add-on grip enhancements (right)

Figure 9: PVC grip on smaller tub

Figure 10: Latest model tub cart

Figure 11: Assessment of alternative knife handles

HARVESTING AIDS FOR REDUCING ERGONOMICS RISK FACTORS IN WINE GRAPE HAND HARVESTING
By V Duraj, JA Miles, JM Meyers, JA Faucett, IL Janowitz, ME Tarter, DG Tejada, RH Smith, EA Weber
Testing New Ways to Prevent Injuries in Nursery Work
By Vivian Auslander
University of California Agricultural Ergonomics Research Center
<http://ag-ergo.ucdavis.edu>

Blueberry Production Safety
A Report to the Atlantic Provinces Agricultural Safety and Health Council (APASH)
Draft presented to APASH Council: Friday March 31, 2006
Revised: June 2006
Katriona MacNeil, B.Sc. (Agr.) & Judy Guernsey, Ph.D.

Musculoskeletal Risks in Washington State Apple Packing Companies.
Nancy Simcox, Mary Ellen Flanagan, Janice Camp, Peregrin Spielholz & Karen Snyder.
Field Research and Consultation Group, University of Washington
Department of Environmental Health, Seattle, WA 98195. (2001)



Healthy Farmers, Healthy Profits Project
University of Wisconsin-Madison
<http://bse.wisc.edu/>

Simple Solutions: Ergonomics for Farm Workers
NIOSH
<http://www.cdc.gov/niosh/>

Missouri AgrAbility Project
University of Missouri
<http://www.fsb.missouri.edu/agrability>

National AgrAbility Project(prior)
University of Wisconsin-Madison
<http://www.agrabilityproject.org/>

National AgrAbility Project
Purdue University
<http://www.agrability.org>

