

A photograph of a forest landscape. In the foreground, there is a large, light-colored log lying horizontally across the ground, surrounded by smaller branches and debris. In the background, a person wearing a light-colored jacket and a hat is visible, standing in a field of tall, thin evergreen trees. The sky is blue with some light clouds.

MSI PREVENTION TREE PLANTING

BLUE COLLAR SILVICULTURE LTD.

OVERVIEW

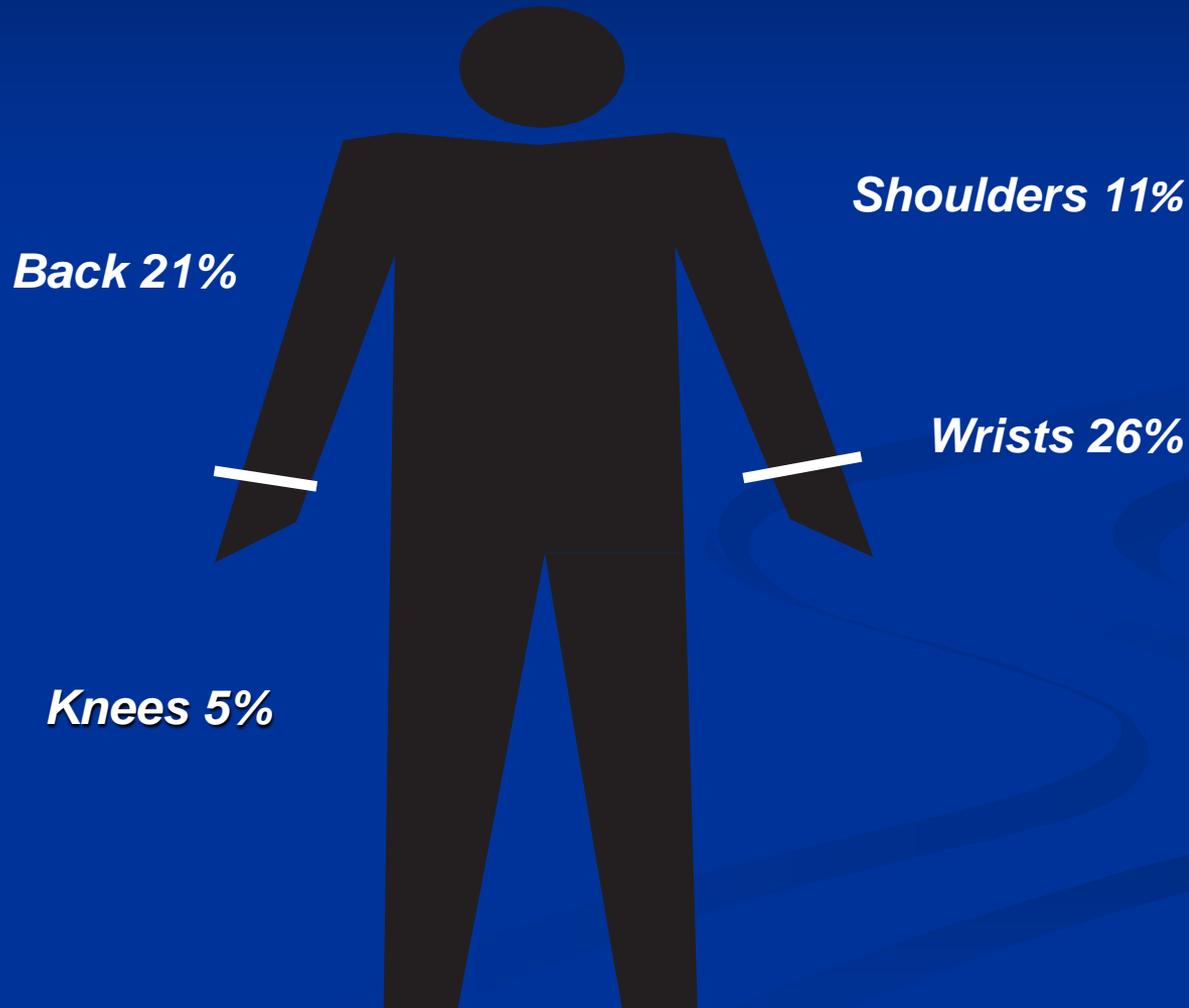
- Why is tree planting strenuous?
- What are the injuries suffered by tree planters?
- Injury prevention
- Choosing an appropriate shovel
- Recognizing early signs and symptoms
- Signs and symptoms of injury
- Minimizing injury
- Good planting techniques
- MSI issues and risk control measures
- MSI prevention tips

WHY IS TREE PLANTING SO STRENUOUS?

Based on planting 1,600 trees per day, a tree planter:

- Lifts a cumulative weight of over 1,000 kilograms
- Bends more than 200 times per hour
- Drives the shovel into the ground more than 200 times per hour
- Travels about 16 kilometers on foot while carrying heavy loads

WHAT ARE THE INJURIES SUFFERED BY TREE PLANTERS?



TREE PLANTING INJURIES

Other injuries are diseases such as:

- Tendonitis — a painful swelling of the tendons
- Carpal tunnel syndrome — injury to a nerve in the wrist

Injuries to the wrists and back combined make up almost half (47%) of all reported injuries.

HOW CAN THESE INJURIES BE PREVENTED?

- Precondition your body and pace yourself during a phase-in period.
- Choose the appropriate shovel.
- Recognize early signs and symptoms of injury and report to first aid.
- Use good planting techniques.
- Use proper techniques with neutral posture.
- Read the ground to find the best spot to plant the tree (soft soil, no rock, etc).

HOW CAN THESE INJURIES BE PREVENTED?

- Change hands (plant ambidextrously)
- Use well-fitting and well-maintained equipment
- Wear warm, layered clothing and hand warmers in cold weather
- Use shock/vibration-absorbing gloves or wraps on equipment
- Practice good nutrition and hydration pacing throughout the day and evening
- Follow a good sleep and recovery schedule

CHOOSING AN APPROPRIATE SHOVEL

- A straight-handled shovel is preferable because it keeps your wrists straight and positioned to get the most power.
- A D-handled shovel may sometimes be lighter in weight, making it easier to carry, but using one can result in more bending of the wrist. This is especially true when using the shovel to make the hole.



CHOOSING AN APPROPRIATE SHOVEL

- Keeping your wrists straight helps reduce the risk of injury to your wrists and arms.
- Some planters keep a number of different shovels on hand to accommodate different planting conditions.

RECOGNIZE EARLY SIGNS AND SYMPTOMS

**Possible signs and symptoms of injury
are:**

- Numbness
- Tingling
- Swelling
- Redness
- Pain in the wrists, shoulders or back

DO:

- Report the symptoms to your supervisor and get first aid.
- First Aid treatment early on will lend to faster recovery back to normal!
- Give your muscles and tendons a break — take a day or two off and do chores around camp or work a shortened day.

DON'T:

- Don't take painkillers without the consent of a physician — they may make you drowsy and may only numb the pain temporarily.
- Don't continue planting — this will only worsen your condition.
- Don't tape your wrist and continue to work — this may worsen the injury.

MINIMIZING INJURY

- Move to softer ground, *if possible*, rather than pounding too hard to start a hole
- Change hands regularly, *if possible*, to avoid overusing them
- Use your foot and leg to drive the shovel in and open the hole, not just your arms and back

MINIMIZING INJURY

- Keep your wrists straight as much as possible
- Loosen your grip on the shovel and the tree
- Check your technique routinely to ensure you are using proper posture and keeping your wrists straight
- Bend your knees when bending over

GOOD PLANTING TECHNIQUES

Planting a tree can be broken down into five steps:

1. Looking for a spot:

- Tap your shovel lightly on the ground until you find suitable ground.
- Avoid thrusting the shovel forcefully.



GOOD PLANTING TECHNIQUES

2. Screening:

- If the layer of duff is thick, screef with your shovel – use frequent shallow scoops in a front to back motion.
- If the duff is thin, you can boot screef safely by bending the knee in a forward backward direction.



GOOD PLANTING TECHNIQUES

3. Making the hole:

- Keep your arms and wrists loose on the handle of the shovel when impact occurs
- Use your arm muscles and keep your wrist as straight as possible – try not to let it bend as the shovel hits the ground
- In very hard ground put your foot on the blade to make the hole



GOOD PLANTING TECHNIQUES

4. Placing the tree in the ground:

- Grip the seedling loosely and bend slightly at the knees
- Guide the roots of the seedling along the shovel blade to the bottom of the hole.
- Keep your wrist straight as much as possible



GOOD PLANTING TECHNIQUES

5. Closing the hole:

Kicking:

- After the tree is placed in the ground, pull your shovel out and kick down on the dirt with your heel near the base of the tree.

Back Cutting:

- After the tree is placed into the ground, pull your shovel out and insert it behind the tree. Pull the handle of the shovel away from the tree to close the hole. Then pull your shovel out and give the ground near the base of the tree a light tap with the heel of your boot.

MSI RISK: SHOVEL

The Treeplanter

- Continually grips shovel as it is carried over terrain.
- Grips too tightly when hands are cold.
- Grips too tightly when using a smooth staff handle.
- Cannot get a good grip of the handle, diameter is too large for the hand. (The thumb and finger should be able to overlap into the knuckle of the thumb).

RISK CONTROL MEASURES

- Keep grip loose on the shovel handle.
- Probe the ground first. Use foot and body weight to drive shovel into the ground.
- Take regular pauses from constantly gripping the shovel.
- Stretch the hand and forearm muscles frequently to minimize tightening of the muscles.
- Keep hands warm; wear an extra pair of dry gloves, or take a break in a heated vehicle.
- Wrap a smooth, compressible gripping surface, such as athletic tape or foam over the area.
- Shave down the gripping surface of the handle.

MSI ISSUE: CARRYING PLANTING BAGS

The planter carries tree bags weighing up to 23kg over long distances:

- The weight of the bags may not be distributed evenly.
- The bags may ride on the shoulders instead of the hips.

The planter spends most of the day bent forward when planting:

- This awkward posture creates unequal stresses on the disks in the spine, stretches the ligaments, and may contribute to back pain.

RISK CONTROL MEASURES

- Adjust straps so most weight is supported on hips.
- Load and unload bags so weight is evenly distributed.
- Use shovel as support to bend and stand.
- Keep the arm in close to the body if using the shovel to rise up from a bent position.
- Have the tree ready to insert in the ground before bending down.
- Bend from the hips and keep the knees bent.
- Consider cutting down the shaft of your shovel to about elbow height.

MSI ISSUE: REACHING INTO PLANTING BAG

- The neck twists and bends forward while the arm works behind the body when the planter reaches into the rear of the bag.

RISK CONTROL MEASURES

- Always take trees from the front of the pouch.
- Take some time to keep trees pushed toward the front of the pouch.

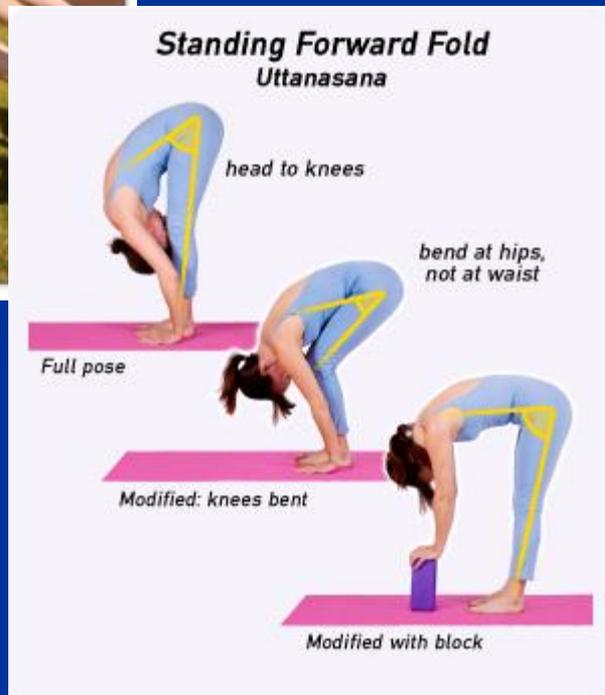
MSI ISSUE: PACE OF WORK

- Planters are paid on a piece rate system and may work without taking breaks for rest or recovery in order to plant more trees.

RISK CONTROL MEASURES

- Set realistic goals - new workers should not attempt to keep up with experienced planters.
- Take regular breaks before fatigue is noticed.
- Implement a schedule such as four days of work followed by one day of rest to prevent fatigue accumulation. Or 3:1.

Tip #1 Bend from the hips/hamstring stretch – to maintain the normal curve in your lower back



Stretching your hamstring muscles helps you bend through the hips:

- Place heel on sturdy surface.
- Keep hips in line and knee facing straight up
- Bend forward through the hips; sliding hands down thigh towards the knee.
- Hold for 10-15 seconds and repeat three times for each leg.

TIP #2 Reverse Back Stretch – to prevent back stiffness and ligament strain

- Stand with feet shoulder width apart.
- Look straight ahead.
- Clasp hands behind back with palms together, keeping shoulders back.
- Do not let shoulders roll forward.
- Lean backwards without moving hips.
- Work towards being able to gently pull hands away from body while keeping shoulders back.
- Hold for 10-15 seconds; repeat three times.



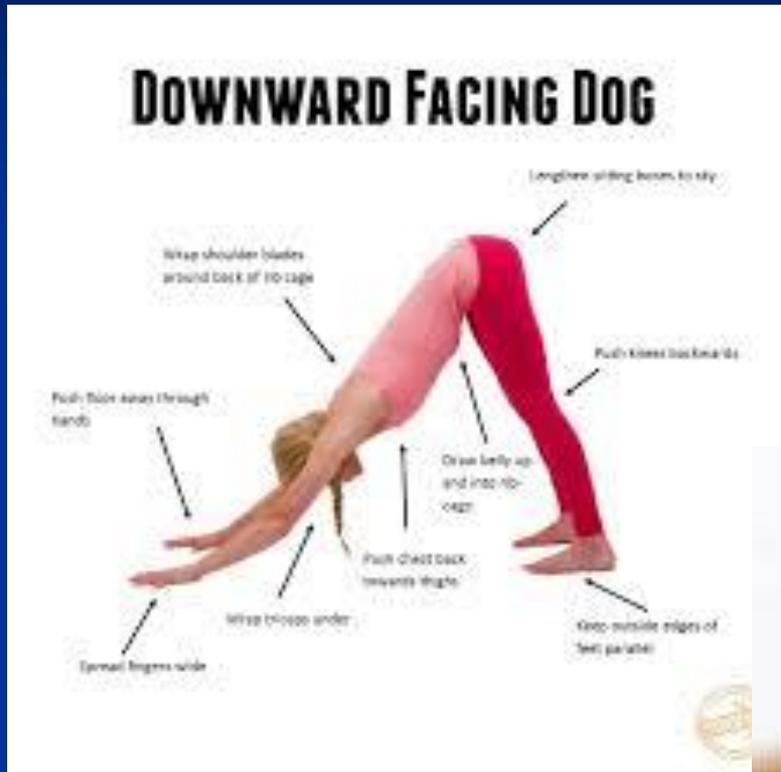
TIP #3 Shoulder Blade Squeeze

– to maintain stability in the mid-back

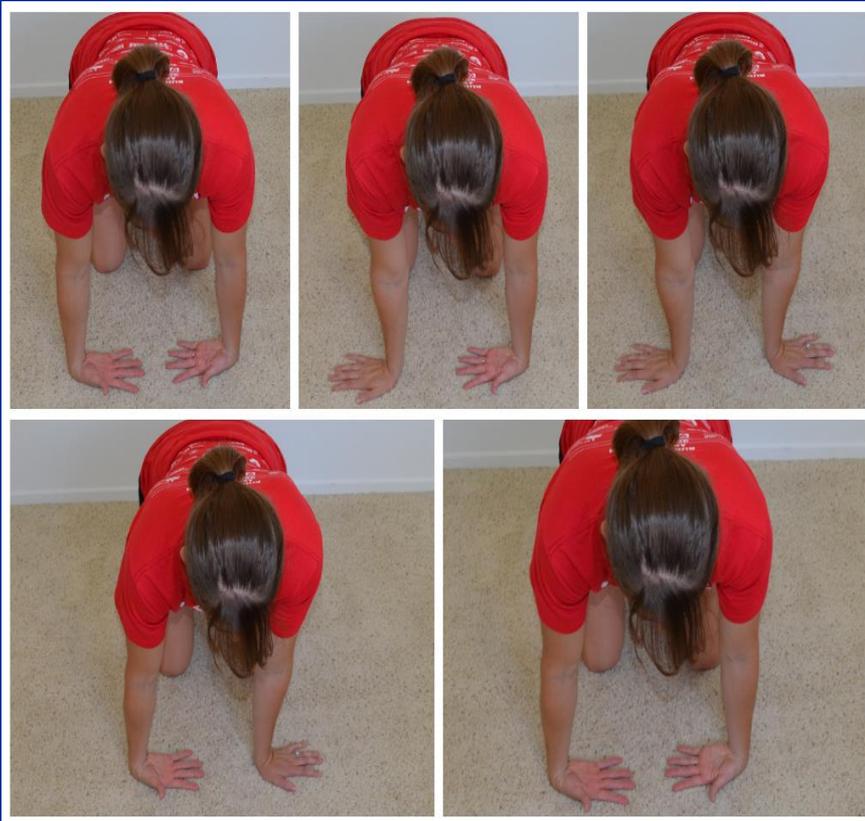


- Lie face down with a rolled up towel under the stomach and forehead.
- Bring one arm overhead keeping the elbow bent and thumb pointed up.
- Squeeze shoulder blade down and in, to un-weight the arm.
- Raise arm slightly off the mat.
- Hold 3-5 seconds and repeat 5 times.

Alternatively...



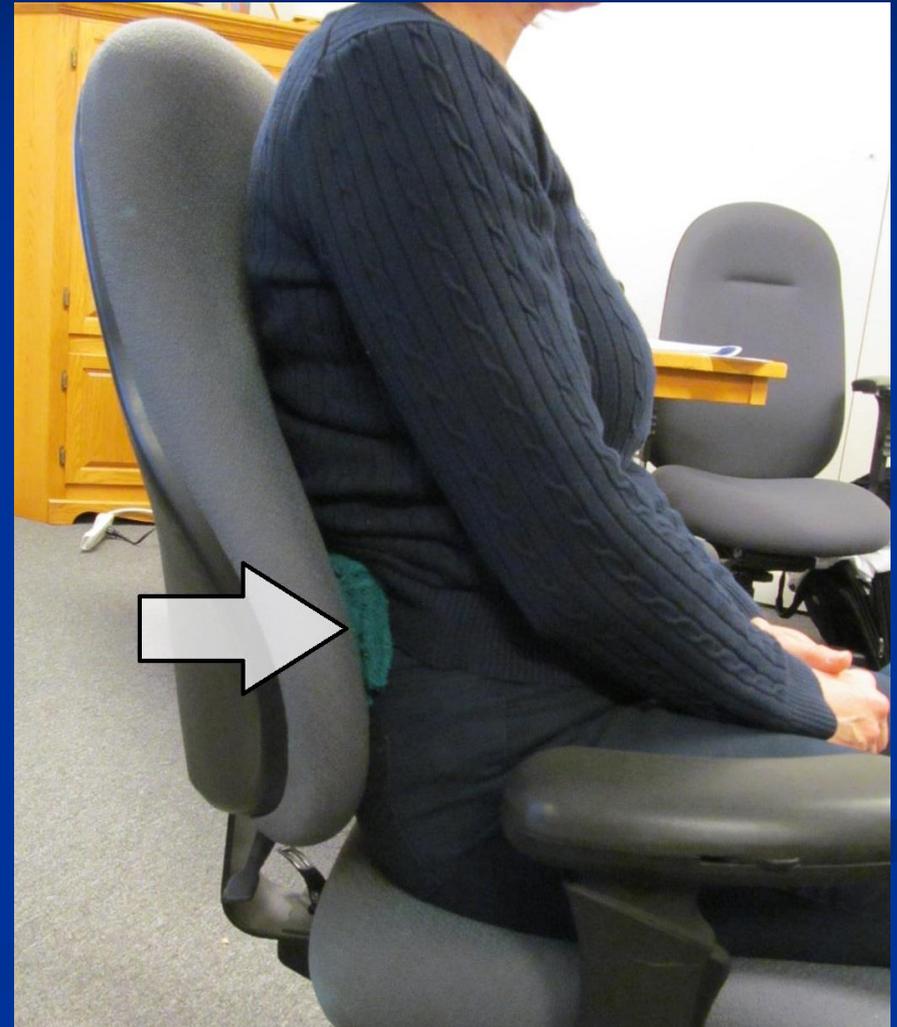
TIP #4 Wrist Stretch – to maintain flexibility on the undersides of the wrists and forearms



- Press palms onto a flat surface, with hands shoulder width apart (#1).
- Spread fingers and thumb apart. Lean forward over hands (#2).
- Try reversing arm position for a deeper stretch (#3).
- Hold 10 -15 seconds and repeat 3 times.

TIP #5 Support Your Curves...

- Place a rolled-up towel or sweater in the hollow of your lower back to maintain the normal curve in your lower back when driving back from work.



FOR MORE INFORMATION

- The information and guidelines supplied in this document were obtained from WorkSafe BC.
- For more information on tree planting and injury prevention you can visit the following websites:
 - www.worksafebc.com
 - www.for.gov.bc.ca