Hand Tools Safety: Lawncare Training Guide

Hand tool care and safe use

Introduction

Many hand tools such as rakes, shovels, pruners are used widely in lawncare operations. While these non–powered tools do not cause major injuries, there is potential for injuries requiring absence from work and/or hospital treatment when they are used improperly. Examples of such injuries from hand tools are bruises, cuts, sprain, back problems and carpal tunnel syndrome.

The US Bureau of Labor Statistics (2006) reported approximately 205,000 wrist, hand and finger injuries that required absence from work in 2006. The rate of these injuries per 10,000 full-time workers in all private industries is approximately 29.6 incidences. Similar information published by the US Consumer Product Safety Commission (CPSU) show nationwide over 28,000 receiving hospital treatment for injuries sustained from the use of hand tools such as rakes and shovels (University of Calif., 2010).

A large majority of these injuries can be avoided with proper selection and maintenance, and careful use of the tools. The overall goal of this training guide is to familiarize the users with the different hand tools used in lawncare and their safe and proper use to minimize the number of injuries.

General Safety Rules for Hand Tool Use

- Select the right tool for the job.
- Select tools to match the strength and size of the user.
- Maintain and store the tools properly (sharpening the blade periodically, oil coating to prevent rusting, lubricating, and replacing broken or worn out parts).
- Do not use hand tools under the influence of alcohol or drugs or when fatigued.
- Maintain proper posture when using hand tools. Stretching and twisting of body may cause muscle and back problems.
- Use Personal Protective Equipment (PPE) such as goggles, gloves, appropriate clothing, and steel toed shoes during the use of hand tools to minimize the number of hand tool related injuries.

Hand Tools

The following sections will provide a general description of hand tools such as rakes, shovels, and pruners used in lawncare. Safe practices to minimize the number of injuries specific to each category of tools are listed in each section.

Rakes

While there are many different types of rakes, only lawn and garden rakes used in lawncare are discussed here. Lawn rakes have fan-like, flat, springy teeth. They are designed to glide over the grass and gather grass clippings, leaves, and other debris without pulling out or damaging the sod. Lawn rakes made of steel, polypropylene and bamboo are available. While polypropylene and bamboo rake tines have the advantage of being rust free, the wire holding the tines together have the potential to rust if they are not stored properly or coated with oil. Lawn rakes work most effectively when they are used like a broom. A sweeping motion works better than a raking action.

Steel-tine rakes have flat tines. The tines on a good steel lawn rake are made of spring steel and they have the ability to snap back into position even when they are severely bent during use. When they remain bent, they can be straightened with the help of a pair of pliers. However, due to weakening, there is a strong likelihood that the straightened point may bend again. Since the steel rakes have the potential to rust, they should be coated with oil before storing for a longer period.

Polypropylene rakes do not rust like metal rakes. They also do not become brittle and break like bamboo rakes. In order to extend the life of this type of rake, it must have strong steel wire reinforcement across the tines and around the area where the head attaches to the handle. This type of rake should be stored indoors to reduce photodecomposition.

Bamboo rakes are light and they do not rust like metal rakes. For prolonged life, good reinforcement across the tines and around the area where the head is attached to the handle is essential. Since the bamboo can be weakened due to weathering, they must be kept out of the sun and rain when not in use. Avoiding exposure to sun and rain will also help prevent the reinforcement from rusting.

Garden Rakes are quite different from the lawn rakes. They come with a long handle and a head with a set of equally spaced tines approximately three inches long. Unlike the rakes discussed earlier, the garden rakes have fewer tines. These short and sturdy tines point downwards and they lack the capacity to spring back. The spacing between the tines is larger than that of the lawn rakes. The garden rakes are generally used in loose soil for leveling and preparing a smooth seed bed and for incorporating nutrients and lime. Since their primary use involves moving and spreading soil, garden rakes are made of steel and they are considerably sturdier than lawn rakes. For this reason, during off season, they should be treated and stored appropriately to prevent rust.

Safe Use of Rakes

- Select the right size rake for the job. Choose a rake that is light and easy to use matching the size and strength of the user.

- Do not reach too far out and extend the back during raking. Use shorter raking strokes by standing in an upright position.
- Depending on whether the user is left or right handed, continuous raking may overstress the same set of muscles. Periodic breaks or shifting of hand positions may help to minimize this overstressing.
- When rakes are left on the ground, make it a practice to have the tines face down.
- During transport, secure rakes to avoid injuries.

Shovels, Spades and Forks

Shovels, spades and forks are widely used for such lawncare applications as digging and moving soil, edging, splitting plants and transplanting. These come with long and straight handles or with short handles with D-shape grips. A shovel with a longer handle (40 – 48 inches) will allow one to dig deeper holes without significant bending and throw soil further when necessary. Long handles also provide better leverage when digging large holes. Shovels with shorter handles (26-30 inches) are ideally suited for more delicate work that requires better control. They are also good for digging trenches and in areas where there is space limitation.

Shovels, spades, and forks with wood, fiberglass or tubular steel handles are readily available. Wood handles are less expensive and they work well for many years if they are stored indoor. The fiberglass handles are lighter and stronger and they last longer because they are weather resistant. Handles made of rolled (tubular) steel also have longer life. They tend to be heavier and more expensive compared to the other two types; but, are ideal for construction related uses.

The cutting edge of shovels, spades and forks come in different sizes and shapes to match the use. The blade of the shovel can be pointed, rounded or square. Pointed shovels are used primarily for digging. The tip is pointed to cut through roots or hard soil like heavy clay. Square nosed shovels are used for moving loose soil or light-weight materials such as mulch or compost. A rounded blade with a slight point is a general purpose shovel and it is generally used for digging and lifting.

A general purpose garden shovel is about 8 – 9 inches wide. Wider blades will have higher capacity; but, they will require considerably more strength during continuous use. If the user is not physically strong, a six inch wide shovel will be ideal.

A garden spade with a flat, sharp edge works well for uses such as cutting out sod, breaking apart crowded root stocks and smoothing off the sides of a trench. A trenching spade works exceptionally well for digging narrow trenches for underground sprinkler or drainage lines. The blade width varies only slightly in spades.

Although not technically a shovel, a spading fork with its wide, flat tines works well for breaking up hard clay or lifting and moving clumps of bulbs or shrubs. Most garden forks have heads of different

sizes with four tines. Heavy duty forks come with tines with square cross section and all the others will have triangular cross section. Select the fork size based on the strength of the user.

The angle between the blade and the handle (also known as cant) determines the purpose for which a particular shovel is used. For example, the shovel with minimum angle works better for digging holes than for scraping up loose earth. One has to bend over uncomfortably to bring the blade of a straight shovel parallel to the ground. A shovel with high cant provides better leverage for prying up heavy soil and other items. However, it is not suited for digging straight down because the handle has to be farther away from the user to bring the blade perpendicular to the ground.

Shovel Maintenance: Proper maintenance and storage are critical for making effective use of these tools. Shovels and spades must be kept sharp. A dull shovel tip is like a dull knife; it will not easily penetrate into the soil. This is particularly true in compacted soils and in heavy clays. After every use, the blade surface should be cleaned with a wire brush or coarse steel wool. Shovels should always be stored in a dry location. Before storing for extended periods, treating wood handles with linseed oil and blades with oil to prevent rust are highly recommended.

Small Shovels (Trowels)

A trowel is considered to be an essential tool in landscape operations. This tool is used for digging small holes or for bedding plant or bulb installation or for digging up dead plants or weeds. It works best in loose soil.

Safe Use of Shovels, Spades and Forks

- Choose the right size shovel for the job taking into consideration the physical strength of the user.
- Make sure the shovels have sharp edges.
- Make sure the area being dug is free of utility lines.
- Maintain proper posture during shoveling. With feet placed apart, maintain balance and solid footing.
- Avoid twisting the body during shoveling.
- Do not throw material in the air. Instead, let the material slide of the shovel blade.
- During transport, secure shovels, spades and forks in the vehicle to avoid injuries.

Pruning Devices

Trees and shrubs are pruned annually to keep them healthy and attractive. Pruning is also done to remove diseased and/or dead limbs or stems. Limited pruning can be done with flower shears. Large branches or woody stems require large pruners or loppers. Pruning is heavy work and it involves

repetitive motion and for this reason selecting the right tool for the job on hand is extremely important. Factors such as purpose of pruning, types of pruners available, when the pruning is to be done (summer or fall), and types of plant material to be pruned must be considered before selecting the pruners. Smaller jobs such as pruning flower bushes and thin branches can easily be carried out with hand pruners. Loppers and saws are needed for cutting through thick tree limbs and branches.

Types of Pruners: The three types of pruners commonly used are: anvil, ratchet, and bypass. The classification is strictly based on the type of blades.

- Anvil pruners feature a single straight blade that uses a splitting action to cut a stem or branch. This type of pruner is good for cutting dry branches and stems.
- Ratchet pruners are similar to anvil pruners, except they have a mechanism that allows cutting in stages. Ratchet pruners are recommended for those with limited strength.
- A bypass pruner cuts like scissors and is the most popular type. Two curved blades of a bypass pruner make a nice, clean cut. This type of pruner works well on actively growing stems.

Both hand pruners and loppers are available in these three types of blades.

The table below shows the conditions under which the different pruning tools can be used for best results.

Table. 1. Different pruning tools and their uses

Pruning Tool	Best Used For
Anvil Pruner	Dead Twigs and Branches Diameter of 5/8” or less Ex: Rose bushes, Hydrangea
Bypass Pruner	Live stems and branches Diameter 5/8” or less Ex: Rose bushes, Raspberry bushes
Hedge Shears	Hedges, Small Shrubs, Evergreens Diameter 2 1/4” or less Any kind of hedge shrub
Lopper	Medium Large Branches Diameter 2 1/2” or less Ex: Fruit and Nut Trees
Pole Pruner	Deadwood out of trees Diameter1 1/4” or less Ex: Any tree
Tree Pruner	Smaller tree branches Diameter 11/4” or less Ex: Any kind of tree

Safe Use of Pruners

Workers should be aware of the potential hazards associated with pruning operations. By taking small precautionary steps, it is easy to avoid injuries. Before pruning begins, workers should receive training in pruning hazards, safe pruning techniques, safe tool handling, ladder safety, and use of PPEs. The following are the safety tips to avoid pruning injuries.

- Select the right type of pruner for the job on hand.
- Make sure the pruners are in good working condition and the blades are sharp.
- Use PPEs to protect from injuries. Use of eyewear eye protection, long sleeved shirts and pants to avoid cuts, and hard hats and steel toed shoes to protect against falling limbs and debris are recommended.
- Pruners often work at heights and they should be trained on ladder safety including proper climbing, ladder placement, and ladder maintenance.
- When pole pruners are in use, ensure that they do not come in contact with power or utility lines.
- Use proper lifting techniques by avoiding awkward postures.
- Do not reach too far out during pruning to avoid muscle pulls and or falls.
- Do not prune under the influence of alcohol or drugs.

Pruner Maintenance

Many injuries can be avoided with proper maintenance and storage of pruning tools. Dull, sticky tools may cause slipping which in turn can lead to cuts and other injuries. After each day's work, wipe the blade clean with dry cloth and lubricate the movable handle shaft and spring. Sharpen blades whenever extra effort is needed to make the cut. Adjust the blade or replace worn out parts when cut is not clean.

Clean-up of Yard Debris

Like all other jobs, yard work also ends in clean-up. This activity may include cleaning the work surrounding, cleaning the tools and storing them properly. While equipment such as a powered blower is most popular, brooms, brushes, rakes and hoses are widely used for cleaning the work areas and tools. Rakes are used to gather grass clippings, leaves and other debris and collect them into trash bags for proper disposal and/or composting. Brooms, brushes or water hoses are used to clean the walkways, driveways, and sidewalks.

At the end of each work day, all tools used should be cleaned and stored properly in a dry place. While cleaning, it is also a good practice to examine tools for broken, loose or worn out parts and repair them prior to storing. Tools that need maintenance should be labeled and left in the designated location for appropriate action.

Safety Concerns:

Use of PPEs such as safety glasses, sturdy work gloves, and heavy footwear is recommended during cleaning. Rubber or latex gloves should be used during washing tools. While cleaning sidewalks and street, take steps to protect both workers and passers-by. When working on the road side, appropriate signs must be posted to alert the drivers of motor vehicles to slow down. It is also a good practice to schedule such operations during a period when the traffic is low. Workers working in teams of two and wearing reflective stripes may also help to reduce accidents.

When lawncare workers work near sidewalks, they should watch for pedestrians on the sidewalks. Allow adequate time for them to pass by without rushing them. Special attention should also be directed towards protecting children and pets in the area close to the operation. Cleanup invariably involves lifting bags filled with grass clippings and other debris from the yard. Use a back brace and proper lifting posture to protect your back when lifting loads.

Hand Tool Care Maintenance and Storage

Properly maintained tools help improve efficiency of operation while minimizing opportunities for injuries and extending tool life. Time spent in tool maintenance (sharpening, cleaning, lubrication etc.) is time well spent.

Prior to use, always inspect the tools for defects or damage. Check for loose, bent, or cracked tool handles, mushroomed tool heads, sprung tool joints or worn teeth. If a hand tool fails the initial inspection, inform the crew leader, tag the tool clearly as “defective”, and remove it from service.

Allow adequate time at the end of each work day to clean the tools and properly pack and secure for transportation or storage. Maintaining a safe and efficient work environment will help avoid injuries and unnecessary expenditures in the long run.

Maintenance

- Keep metal blades of all tools sharp and well-oiled.
- Check for loose and worn out parts on tools regularly, and replace if necessary.
- Lightly sand and clean wooden parts regularly and treat them with a 50/50 linseed oil and turpentine mix.
- Identify damaged tools and store them in a designated location to allow either the supervisor or maintenance person to arrange for their repair.

Workers should know that the job is not complete until the tools are cleaned and stored in a designated location.

Cleaning

- Clean the tools immediately after use.
- Wash the tools using water. A wire brush may be useful to loosen the soil stuck to the blades.
- Avoid the risk of spreading pathogens while the tools are being cleaned.
- Coat the blades with light oil like WD-40 on areas prone to rust.

Storage

- Store tools in a dry, sheltered environment.
- Place tools on a rack for easy safety and easy access.
- Place similar tools close together so that workers can see easily the available tools.

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Credits

This module was developed with the support of National Youth Farm Safety Education and Certification (Grant No. USDA/NIFA-2010-41521-20830), the National Institute of Food and Agriculture, and the U.S. Department of Agriculture. Team members contributed to the development of this module include: Robert Grisso, John Perumpral, Don Ohanehi, Mike Goatley, Kathleen Jamison, Cathy Sutphin, Dan Swafford, and Carl Estes. Authors would also like to acknowledge the contribution of students (Matt Kandel, Andy Karpin, Jeremy Smith, JD McCoy, Jonathan Drooks, Meghan Laporta, Kristianne Macaraeg, Theresa Garwood, Chris Hollie and Adam Goatley) who participated in the project.