

## Chapter Three:

# *MANAGING GROOMING OPERATIONS, EQUIPMENT, and SAFETY*

Grooming operations are typically the largest part of an entity's budget in terms of the capital costs to purchase equipment, the ongoing operational costs of grooming, and the costs associated with repair and maintenance.

While there is no perfect way to manage grooming operations, this section provides basic guidelines for the management of trail grooming equipment and operations. What equipment to purchase, who will operate it, how will it be scheduled, where it will be stored, and how it will be maintained are all critically important decisions that must be made to properly manage grooming equipment. While some of these decisions are far-removed from the grooming equipment operator, a basic understanding of the "big picture" helps facilitate a better, more effective grooming operation.

## The Grooming Program Manager

Good quality grooming doesn't just happen by chance and will not be assured simply because new, fancy, or expensive equipment has been acquired for the grooming program. Successful grooming programs require a great deal of planning and management. And good equipment isn't a substitute for poor operators.

Regardless of the size of a grooming operation, it is recommended that there be a qualified manager in charge of the day-to-day grooming operation who understands heavy equipment operation and maintenance, trail grooming principles and practices, and snow mechanics. The ability to work with a diverse group of volunteers or employees, while balancing leadership and authority, is also a definite plus for this position.

The title of "grooming program manager" is important since it clearly defines the role of the individual filling the position. "Grooming" clearly indicates the focus of the job. "Program" suggests that grooming is a planned and coordinated activity which cannot be left to chance. "Manager" defines the role as coordinating and directing all aspects of the overall grooming program.

Particularly with volunteer club grooming operations, if a suitable candidate is not available within the existing organization, one needs to be recruited or hired. Typically, qualified heavy equipment managers who often are not busy in the winter months can be good candidates to recruit for this responsibility. An individual within the volunteer organization simply "taking" this job "because no one else will" is a recipe for disaster and should be avoided.

# Establishing Grooming Priorities

Snowmobilers would like to see every trail groomed tabletop smooth every day of the week. However grooming resources, in terms of available equipment and existing budget, are usually limited, so choices have to be made as to what the grooming priorities are. Grooming schedules should be developed that divide trail systems into manageable sections based upon what the budget and volunteer or labor resources will allow. Once priorities that consider traffic patterns have been determined for each trail section, a weekly schedule can be created by assigning grooming equipment and operators (Refer to the Appendix for a sample Weekly Grooming Schedule). Keep in mind that, while schedules are great for planning how to use resources, weather and changes in traffic patterns can upset the best laid plans. The Grooming Manager must stay engaged and flexible to ensure grooming is directed toward the highest priorities if conditions change.

## Factors to Consider

A number of factors should be considered when determining priorities and schedules:

- Where is the “base of operations” for the grooming program located? Is it central to the trail system or is it located at one end of it? How many miles/kilometers of trail must be groomed?
- What is the normal use pattern on the trail system? Is the snowmobile traffic normally heavy only on weekends or is traffic heavy every day of the week? Is there typically heavy night riding or are snowmobilers generally off the trail by dark? How early in the morning do riders normally get on the trail?
- Are there lodges, motels, hotels, or other businesses located on the trail that contribute large numbers of riders on a daily or regular basis? Are there attractions on the trail system that draw more traffic than other parts of the trail system? Are there trailheads or parking areas that regularly draw more use than others on the trail system?
- How many groomers are available for the trail system? If there are two or more available in the area, can they be staged in different locations or must they all operate from the same base? How many miles/kilometers of trail can each unit effectively groom each day/night when considering the set up time required to avoid heavy snowmobile traffic, average grooming speed, and normal weather patterns and temperatures?
- How many weeks will there be enough snow and traffic to justify the expense of grooming operations in the area? Should the trails receive more grooming during some weeks (middle of the season or around holidays, for instance) than others?
- What is the cost to groom a mile/kilometer of trail one time (fuel, maintenance, repairs, equipment depreciation, and labor as applicable)? How many dollars are available to fund these costs for the season? Will all labor be “paid” labor or will there be volunteer labor to supplement operating costs? If there is volunteer labor, how many hours per week will be dependably and consistently available? How many total miles/kilometers of grooming effort will this fund each week?

The answers to these questions all contribute to establishing priorities and setting grooming schedules that will be as effective as possible to address grooming needs.

If areas have traffic levels that are generally low, with little night riding and low weekday traffic, there is typically much flexibility as to when grooming efforts can be effective and few grooming repetitions per week will generally be required to have good trails.

If traffic levels are high everyday of the week, areas must look closely at scheduling factors to be as effective as possible with grooming expenditures. It is likely that 3 to 5 or even 7 repetitions per week may be needed to have good trails. And multiple groomers, staged at multiple locations, may be required since 40 to 60 miles (65 to 95 kilometers) is about the maximum a single unit can effectively groom per night without getting into times/traffic/temperatures that may not be productive for grooming. While some high traffic areas choose to groom mid-day to keep moguls from getting too deep, such efforts should be secondary to regular grooming at night (also), or when there is less traffic, to provide proper time for trail set up since it will generally not occur mid-day with traffic.

## Operator Selection and Training

For many of the same reasons that a skilled Grooming Program Manager needs to coordinate a grooming program, skilled grooming equipment operators need to be carefully selected and trained. Grooming Equipment Operators should be selected based upon their ability to operate heavy equipment and then be thoroughly instructed and tested on the operating features of grooming equipment, grooming principles and procedures, maintenance schedules, and safe operating procedures.

Operators should be knowledgeable of grooming practices and should have a fairly high degree of mechanical aptitude since on-the-trail repairs and adjustments are inevitable, even with the best and newest equipment.

An operator training checklist should be used to help deliver effective and consistent operator training. Training topics should be customized by the Grooming Manager to cover local issues, but should also cover general items such as grooming practices, vehicle characteristics, and vehicle operation. Following this process can help ensure that operator training is thorough and complete (Refer to the Appendix for a sample training checklist).



**Photo 3.1** Operator training is important and should include hands-on in-shop maintenance instruction.

# Operator Safety

Ensuring the safety of equipment operators must be the first priority of the grooming program. While the specific circumstances of every area's operation are different, there are a number of common safety practices that should be followed universally. The following is a list of common operator safety considerations. Local grooming entities are encouraged to add additional measures that fit their needs and local circumstances.

## **Always Wear Seat Belts**

Operators and passengers should wear seat belts at all times since sudden stops caused by the grooming equipment hitting fixed objects, such as rocks and stumps, are not uncommon and can easily launch the operator or passenger headfirst into the windshield or dashboard. Always proceed cautiously when operating grooming equipment since abrupt, dangerous stops can result in serious injuries.

## **Be Visible to Snowmobilers**

Ensure that the vehicle is highly visible in the daytime, as well as at night, by using reflective surfaces on the equipment and by always operating with cab marker lights, front and rear headlights, and an amber beacon turned "ON" at all times (day or night). Also operate a communicator radio beacon in the tractor at all times.

## **Be Prepared for Trouble**

Grooming equipment *will* malfunction, break, and get stuck. Contemplate all potential problems and provide procedures, tools, spare parts, and supplies to deal with them. Provide first aid kits and training for operators. Remember that they may also encounter members of the public who need help. A GPS unit is valuable to provide guidance during whiteouts and to provide rescue coordinates. Operators should be prepared to put winter survival techniques into effect in the event they become disabled in a remote area and must stay overnight. An avalanche beacon and probe (to assist with a rescue) should also be considered if operating in mountainous areas.

Essential tools that should always be carried include: axe, chainsaw, jack, snow shovel, chain/tow strap, rope, and flashlight.

A list of standard safety/emergency equipment should be carried in the groomer. Items to consider include:

First Aid Kit	Spare Batteries	Fire Extinguisher
Foil Blanket	Weatherproof Matches	Chains
Flares	Hydraulic Hoses/Fittings	Pry Bar
Spare Clothing	Tools	Paper
Towels	Snow Scraper	Plate for Jack
Hand Cleaner	Hi-Lift Jack	Tree Strap
Oil	Extra Fuel	Stakes
Sledge Hammer	Orange Spray Paint	Butane Torch/Heater

It is recommended that every grooming tractor carry a minimum of four 14-inch (36 cm), reflective, high visibility traffic cones. Use them to identify potential hazards such as a disabled groomer or winching cables, chains, or ropes temporarily strung across the trail.

Groomer operators should always be prepared by having a supply of high energy food, as well as a supply of drinking water, with in the tractor in the event they become stranded. Never leave home without packing a good sized lunch!

### **Avoid Grooming Across Ice**

Some State or Provincial trail programs do not allow groomed trails to cross lakes or other major ice crossings. If it is necessary to groom across ice, procedures (how thick, how is it checked, monitored, etc.) must be established to ensure that ice quality is adequate in thickness and quality before crossing. Some manufacturers install escape hatches (sun roofs) in their units to facilitate emergency operator exit from the cab should the unit go through the ice.

### **Stay in Communication and Work the Plan**

Modern FM radios and cellular or satellite telephones make it easier for operators to stay in frequent contact with their home base. Always file a “trip plan” before leaving on a grooming run. Agree upon a regular schedule of contact between the groomer operator and home base and the procedure that will be followed if contact is lost. Ensure that a plan is in place should contact be overdue or an actual emergency is reported, and then stick to the plan.



### **Carry Extra Signs for Replacement**

A supply of extra trail signs, stakes, and fasteners should be carried on the grooming tractor to replace missing signs or stakes since the groomer operator is often the most familiar with where these signs should be along the trail. Replacing the missing signs, particularly safety and regulatory signs, helps ensure that the route will be safe for snowmobilers, as well as for the groomer the next time it must pass through that area.

### **Routine Preventive Maintenance**

The importance of an effective preventive maintenance program to safety should not be underestimated. Well maintained equipment is far less likely to injure an operator or to strand an operator in a dangerous situation. Failure to perform preventive maintenance procedures should be treated as a safety violation rather than an operational oversight.

### **Check Equipment Prior to Departure**

Thoroughly check the tractor over *prior* to departure on a grooming run. Check the fuel and fluid levels. Check for cracked or broken parts. Check the tracks. Check the hydraulic lines. Check the flashlight and be sure the tool and emergency kits are together. Be sure to have adequate clothing along in case the heater or tractor quit. **DO NOT** leave unless everything checks out okay and is in place.

## **Use Caution When Stopping or Parking on the Trail**

Always use caution when stopping or parking on the trail, so the groomer does not become a hazard for approaching snowmobilers. There are essentially two types of stops, planned and unplanned.

**Planned Stops:** A “planned stop” is one made by a groomer operator when there is full control over when and where to stop.

Always use good judgment in where stops are made on the trail and be certain the groomer is well off the main traveled portion of the trail, if at all possible, when the machine is parked. Plan ahead and pull over in an area that minimizes risk to traffic on the trail. Pull completely off the trail on a straightaway, at an intersection, or in a parking lot whenever possible to prevent having to stop on the trail and potentially create a hazard.

It is good to develop areas on the trail system where planned stops and/or turnarounds can be made safely, and then keep these areas packed throughout the winter season.

An example of when it is beneficial to try to use a planned stop is when snowmobilers approach from the rear of the groomer on a narrow or winding trail. Signal for them to wait to pass the groomer until you’ve found a safe location to stop the groomer. Once the groomer has stopped and it is clear ahead, signal for them to go by.

**Unplanned Full Stops:** An unplanned full stop is one made by a groomer operator when there isn’t control over the location of the stop. This can include meeting snowmobiles on a very narrow trail, having snowmobilers stop the groomer to ask for information, encountering blow-downs or other situations requiring trail maintenance, mechanical failure of the groomer, encountering a disabled snowmobile, or encountering an accident on the trail. Operators must use their best judgment to size up the location of the unplanned stop. Is the site safe or unsafe to stop with the groomer?

If you believe the location has good visibility, that the expected time to get underway again will not be lengthy, and that it overall is safe to stop at the site, stop briefly to correct the problem, handle the situation, or give information, but do it as quickly as possible and then get underway again.

If you believe the site is unsafe due to the location and/or visibility, look for other options and if possible use extreme caution while proceeding to a safer location to stop.

General guidelines for unplanned stops include:

**Snowmobiles Approaching the Groomer from the Front:** When snowmobilers approach the groomer from the front on a narrow trail, move the groomer to the far right side of the trail as quickly as possible and stop. After checking to see that no traffic is coming from the opposite direction, signal to the snowmobilers to proceed past the groomer.

Informational Stop by Snowmobiler: Tell the snowmobiler that it is not a safe location to stop. Request that they follow the groomer down the trail to a safer location where you'll stop and answer their questions.

Repairs to the Trail or Removing Blow-Downs: If you anticipate the time needed to stop to remove debris or deadfall or to repair the trail will be relatively short, make sure all of warning lights remain on, and quickly make the necessary corrections to the trail, then get underway again. If the stop is anticipated to take a longer period of time, consider placing warning devices, like what are shown in Figure 3.1, on the trail to warn snowmobiles of the groomer's presence.



**Photo 3.2** Stop only where there is good sight distance



**Figure 3.1** Use warning devices like traffic cones, flares, crossed poles, or flagging to warn snowmobilers of parked groomers and on-trail hazards.



Mechanical Failure of Groomer or Stuck on the Trail: If the groomer becomes disabled or stuck on the trail and cannot be moved, take action quickly by placing warning devices in the front and rear of the groomer to warn approaching snowmobiles of the hazard. If the groomer needs to be left on the trail for an extended period of time, place additional warning signs or devices to mark the groomer's presence.



**Photo 3.3** Place cones or other warning devices around and in advance of a groomer that has broken down on the trail and must remain there for an extended period.

Assistance to Disabled Snowmobiler: If you anticipate that there will be a need to be in the location for an extended period of time, park the groomer as far right on the trail as is safely possible and place warning devices in front and back of the groomer. If communications are available, call for assistance for the snowmobiler and get underway again as quickly as possible.

Crash Related Stop: If you come upon the site of any crash, presume that it is most likely an “Unsafe Site.” DO NOT proceed until the site is made safe!

First, park the groomer as far right on the trail as is safely possible and place warning devices on the trail to warn snowmobilers of the hazard. After securing the site, assess the situation to determine if there are any injuries and, if so, the type of injuries and the number of people injured.

If the accident is because a snowmobile collided with the groomer, do not move the equipment – just secure the scene and assess the needs.



**Photo 3.4** Beware that collisions may be with the groomer!

As you assess the situation at the accident scene, determine if current resources at the site are sufficient to handle the emergency. If the answer is “Yes” – offer any assistance you can give and stay at the site until the trail has been cleared.

If the answer is “No” – the current resources at the site are not sufficient to handle the emergency, take control and:

- A. Call local dispatch or 911 if phone or radio service is available. If not, send someone for help.
- B. State the problem or situation.
- C. Give the number of injured, if any.
- D. Give the location, trail number, or trail name.
- E. If known, state the best way for rescue to arrive.
- F. Stay calm and do not talk too much.
- G. Don’t move the injured, but protect all victims at the scene and keep the injured warm.
- H. If there are bystanders, ask them to either close the trail or direct traffic until other help arrives.
- I. Update emergency personnel upon their arrival.
- J. **DOCUMENT, DOCUMENT, DOCUMENT!** After the scene has been turned over to emergency personnel, write down everything that you observed and that transpired while you were at the accident scene.



# Common Operator Guidelines and Policies

For the benefit of the operator and/or grooming program, many areas have formal guidelines or policies related to operator safety, practices, or behavior that include:

## No Alcohol or Drugs

Many areas have a Zero Tolerance policy regarding the use of alcohol or drugs when on duty. Other areas also specify a period of time prior to a grooming shift where alcohol cannot be consumed to prevent operators from showing up for their shift under the influence of or impaired by alcohol or drugs. Some areas go as far as to not allow groomer operators to run their shift if they have a hangover since the Grooming Managers believe this also constitutes an “impaired” and therefore unsafe situation. Zero Tolerance means there is no second chance – operators are terminated for their first infraction since the safety risks and liability associated with impaired groomer operators can be extremely significant.



**Photo 3.5** The operators of this groomer were smoking marijuana and drove off the bridge.

## No Smoking

Many areas prohibit smoking while in grooming equipment, in their shop, and in maintenance areas. Certainly, smoking must be prohibited around all refueling areas. Smoking bans are due to operator health and safety. Smoking in the cab of grooming tractors can also decrease the unit’s resale value.

## Firearms

Many areas prohibit an operator from carrying a firearm in the grooming tractor as a safety as well as a liability issue. Additionally, many government agencies involved with trail grooming have policies that prohibit employees from hunting while on duty.

## Passengers in Groomer

While some areas routinely groom with two people in the grooming tractor (a driver and an assistant), other areas prohibit the operator from carrying passengers not involved with the grooming operation. The most important aspect of whether or not to allow passengers is a safety issue. First, is the operator competent enough to not be distracted by a passenger? Second, the Manager should know beforehand that there is a passenger so, in the event of an emergency, rescuers know how many people they need to retrieve.

## Communications

Communications are so important to the success of any grooming program that many areas have established formal communication policies and procedures. All are based on the need to communicate, communicate, and communicate some more! Operators must communicate the condition of equipment to other operators and the Manager. They must communicate the condition of the trails they have been over to relief operators and the Manager. They must communicate anything (weather, large groups, trail conditions, hazards, etc.) they even slightly suspect to be pertinent to the overall grooming program to the Manager. They must communicate to someone (dispatcher, family, or Manager) when they depart on a grooming run, their planned route, as well as their safe return. And when in doubt, they must feel safe to ASK, because there is no dumb question!

Grooming programs should invest in good communications equipment – whether cell phones, satellite phones, or two-way radios – to help ensure successful and effective communications within the program.

## Preparing the Trail

### Remove Bumps, Holes, and Debris Prior to Snowfall

Trail preparation prior to freeze-up and snowfall can be the single most important item to help provide a smooth and stable winter trail. The trail base should be made as smooth as practical since bumps and holes in the ground will also produce bumps in the trail after snowfall. Therefore, bumps and holes in the ground should be improved or removed prior to snowfall, with whatever equipment is practical and available, since removal after the ground is frozen or snow covered is much more difficult. Bumps located under the snow trail can reappear as bumps/moguls on heavily traveled trails almost immediately after grooming.



**Photo 3.6** Trail maintenance prior to snowfall can help make trails smoother in the winter.

Brush, stumps, and debris should also be removed from the trail, as well as along the trail, in areas where it could be a hazard to traffic or block visibility. A wide, smooth, brush-free trail makes grooming easier. Keeping debris off the trail helps prevent hazards as well as premature thawing of the trail base since debris can attract heat that can accelerate thawing the snow around it. It is also good to set trail markers and signs that must be driven into the ground before the ground freezes.



**Photo 3.7** It is easier to remove stumps, brush, and debris before snowfall accumulates.

### **Early Season Trail Preparation**

The first snowfalls that are processed on the trail often create the base for the remainder of the winter. An early solid, smooth base of snow will help keep the trail smoother throughout the rest of the winter. Early winter snowfalls can contain more free water and can compact well. Therefore, vigorous smoothing and heavy compaction is often important for early snows. Newly fallen snow layers should ideally be cut to 6 inches (15 centimeters) or less before compacting to ensure full compaction throughout the layer. Thick layers of newly fallen snow typically do not compact well.

In areas prone to wetness, such as low swampy crossings, it is advantageous to keep the snow thickness to a minimum in the early part of the winter. This allows the underlying soil to freeze and become stable. This frozen layer of earth will also help to keep the trail solid later into the spring season. Since snow is an excellent insulator, these areas should be kept thin so the ground remains frozen. Banked snow can be pulled onto these areas later in the season if bare spots occur.

Some wet areas, such as springs or seeps, never freeze to any degree and should be of concern throughout the season, particularly if they result in ice flows. Sometimes these areas can be covered with wood chips or similar material to minimize the carryover of mud and dirt onto the adjacent trail surface. However, before using wood chips or similar materials, be sure to check with the land managing agency for their approval. The best scenario is to avoid these types of areas if at all possible with the trail route.

# CHAPTER QUIZ

1. Ensuring the safety of groomer operators includes:
  - a) making sure they are prepared for trouble by carrying safety and emergency equipment
  - b) providing them with communication equipment and requiring them to file a “trip plan”
  - c) a good preventative maintenance program
  - d) requiring that they wear seat belts
  - e) a and b above
  - f) a, b, c, and d above
  
2. New equipment helps compensate for poor equipment operators.        True    False
  
3. Budget, weather, and traffic patterns should be considered when developing and managing weekly grooming schedules.        True    False
  
4. Groomer operators should never operate equipment while under the influence of drugs or alcohol because their abilities and judgment will be impaired. True    False
  
5. When parked on the trail, always shut the groomer’s lights off to avoid blinding or distracting oncoming snowmobile traffic.        True    False
  
6. A Grooming Manager:
  - a) is someone who directs all aspects of a grooming program and establishes priorities and schedules
  - b) is an important position for a successful grooming program
  - c) is anyone who wants to be in charge
  - d) should understand heavy equipment operation and maintenance, understand snow mechanics, and be able to work with people
  - e) a, b and d above
  - f) all of the above
  
7. A mid-day grooming in high traffic areas may be useful to keep moguls from getting too deep, but a second grooming should be scheduled that same night to provide better conditions and proper time for effective trail set up.        True    False
  
8. The following factors should be considered when establishing grooming priorities:
  - a) available labor and operating budget
  - b) number of groomers available
  - c) total miles/kilometers of trail to be groomed
  - d) snowmobile traffic patterns
  - e) locations of businesses, parking areas, and attractions
  - f) length of season, snow conditions, and weather patterns
  - g) all of the above