

Revegetation Equipment Catalog

Descriptions, applications, pictures, and sources for equipment used on rangelands.

Controlling Plants by Fire

The use of prescribed fires to control weeds and woody vegetation, improve forage health, manipulate wildlife habitat, and reduce fire-prone vegetation is well established. Revegetation projects can benefit from the use of fire alone or in combination with mechanical or chemical treatments. Prescribed burning implies the use of stated goals and a well thought-out fire plan using recommended equipment and burning techniques. Consideration must be given to weather, vegetation, topography, and other variables. Fire can be a very cost-effective treatment and can cover large areas of varied terrain in a short time span if sufficient fine fuel is present. Burning treatments will be spotty if the fuel load is limited. Forage production and palatability is usually increased following a burn. Seeding may also be conducted following a burn. Erosion can be a problem following a fire. Escapes from planned burns present a real hazard; therefore, trained personnel and wise judgment are vital to successful prescribed fires.

Contents

[Ground Equipment](#)

[Drip Torch](#)

[Weather Instruments](#)

[Hand Tools](#)

[Pumper Trucks](#)

[Aerial Ignition Systems](#)

[Helitorches](#)

[Plastic Sphere Dispenser](#)

[Additional Burning Information](#)



Ground Equipment

Drip Torch



Description

Drip torches are used to ignite the fire front. They consist of a 5-quart-capacity fuel reservoir, a valve to control flow, and a tube to deliver fuel to the igniter. The igniter serves as a continuous flame to ignite drops of fuel which fall to the herbaceous vegetation as the drip torch is tilted toward the ground. Torches are also available that are pressured, carried as backpack units, or mounted on ATVs.

Application

Drip torches use a mixture of diesel fuel and gasoline to supply a steady stream of ignited fuel. A ratio of 70% diesel to 30% gasoline is a rule-of-thumb for warm weather and a 60:40 ratio is recommended for cool weather. The higher the air temperature the less gasoline is needed. To be safe, it is advisable to use the minimum amount of gasoline for proper operation.

Weather Instruments



Description

Weather instruments are critical to the conduct of all prescribed fires. Weather kits should be equipped with a psychrometer (temperature & relative humidity), anemometer (wind speed), bottle of water, note pad, and compass (Kit 1). Improvements in fire weather kits include a digital readout hygrometer that gives quick relative humidity and temperature in Fahrenheit or centigrade, and a hand-held wind indicator that uses a wind-driven fan (Kit 2) as opposed to the "pith ball" type.

Application

Burning is very weather sensitive. In addition to National Weather Bureau forecasts, on-site measurements are critical and should be taken prior to and during the burning activity. Data should be recorded at regular intervals, usually every 30 minutes. Wind speed affects fire behavior immediately. A change in relative humidity does not affect moisture levels in fine fuels for about 30 minutes.

Hand Tools



Description

Hand tools include swatters, shovels, fire rakes, axes, and a 3- to 5-gallon backpack pumper. It is important that these tools to be available to stop escaped fires. Fire tools are available from companies that specialize in burning and firefighting equipment. Two-way radios are critical for communication between members of the fire team.

Pumper Trucks



Description

Fire-fighting pumper trucks are necessary for the safe conduct of prescribed fires. The appropriate size depends on the application. Pumper units consist of a water tank, pump, gasoline or diesel engine, and a retractable hose 50 to 100 feet in length. Trucks should be 4-wheel drive for rangeland burning. Slip-on units (100 gallons) are suitable for $\frac{3}{4}$ -ton pickups. A 1-ton diesel truck with a self-contained 300 gallon unit is a popular size for research and commercial burning. Trucks should have racks for drip torches, fuel cans, hand tools, and radio and cell phone communication. Pumper units can be fabricated in a shop from components purchased separately or purchased as fully-equipped, self-contained units to be attached to a truck frame.

Application

Truck and pump engines should be kept in good condition to insure that they will operate when needed, and the pumping system must be protected in freezing weather. Fire trucks are placed at strategic locations during burning so they can quickly reach an escaped fire.

Aerial Ignition Systems

Helitorches



Description and Application

Helitorches are used by helicopters for aerial ignition of all types of large-scale prescribed fires including oil spills. Helitorches will operate under any helicopter equipped with a cargo hook and 28 VDC power. A 55-gallon tank supplies special fuel to a propane ignition system which then supplies a uniform stream of fire to the targeted area. A support trailer with mixing tanks to prepare the gel fuel is required. The pilot controls the helitorch operation. The burn boss is located in a separate aircraft or strategic ground site.

Plastic Sphere Dispenser



Description and Application

The plastic sphere dispenser (PSD) known colloquially as the "Ping Pong Ball Machine" was designed for rapid, low-cost ignition of fine fuel over long fire lines from helicopters. Plastic spheres containing potassium permanganate are injected with ethylene glycol (antifreeze) as they are ejected from an aircraft. After a delay of about 20 seconds a chemical reaction causes the plastic spheres to ignite. The PSD is installed in the passenger's compartment behind the helicopter pilot, and the operator sits next to the PSD. The operator receives commands from the fire boss in the front seat. This aerial ignition equipment is easy to setup and use because there is no mixing of flammable liquid, and the operator and burn boss are in the ignition aircraft. Dispensing can be adjusted to achieve ground distances of 4 to 70 feet between spheres.

Sources

The manufacturers' websites list information on equipment sizes, accessories, dealers, and contact information. Local farm and ranch supply stores and chemical dealers may stock sprayer equipment that is suitable for pumper trucks and hand tools.

[Cascade Fire Equipment Co.](#)

Medford, OR 97501

Premo Plastics Engineering LTD (PSD unit)
Victoria, British Columbia, Canada V9A4V2
250-382-3023

Simplex Manufacturing (Helitorch)
Portland, OR 97230
503-257-3511

[Forestry Suppliers, Inc. \(Catalog\)](#)

Jackson, MS 39284-8397

[SEI Industries Ltd. \(PSD unit, Bambi bucket, firefighting equipment\)](#)

Delta, British Columbia, Canada V4G1E5

[Wylie Sprayers, Inc. \(Sprayers, nozzles\)](#)

Petersburg, TX 79250

Additional Burning Information



McPherson G.R.; Rasmussen, G.A.; Wright, H.A.; Britton, C.M. 1986. Getting started in prescribed burning. Management Note 9. Lubbock, TX: Texas Tech University, Dept. of Range and Wildlife Management.

Scifres, C.J.; Hamilton, W.T. 1993. Prescribed burning for brushland management. College Station, TX: Texas A&M University Press.