

Revegetation Equipment Catalog

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

Seeding/Planting Ground Seeding

Seeding is the metering and distribution of seed either by broadcasting on the soil surface or by drilling seed in the soil at a predetermined depth. Special planters are required to place plants or plant parts in the soil. Direct seeding is generally preferred for revegetation projects because seed is relatively inexpensive, easily stored and transported, and some seed may be readily available or can be collected. Accurate metering systems distribute seed uniformly and increase the probability of success over the entire seeded area. Drill seeding places the seed in the soil at targeted depths and covers the seed, thereby increasing the probability of seedling germination and emergence. Broadcast seeding generally requires as much as 50% more seed to equal the results of drill seeding and seed should be pressed into the soil surface to improve seed-to-soil contact. Seedbed condition, quality of seed, probability of rainfall, and weed competition influence the chances of successful plant establishment.

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Grass Drills and Seeders



Metering Systems.

Seed metering and placement are key components of a drill/seeder. Hard, slick seed is easily metered in fluted or cup-feed mechanisms. Uniform metering of chaffy or fluffy seed plagued the industry for years. The development of the semicircular seedbox, auger agitator, and pickerwheel mechanism by the Texas Agricultural Experiment Station eliminated much of the metering variability, and it is now the industry standard. Slick and chaffy seed will not meter uniformly in a mix, therefore, separate seedboxes are required to meter these two seed types. Additional seedboxes are available to apply fertilizer, pesticides, or other slick seed.

Seed Placement.

Placing seed in a seed furrow at a shallow depth and pressing the soil around the seed is often a challenge under rangeland conditions. The problem becomes complex when seed of some species needs to be placed at shallow depths while other species in the same mix germinate best when placed on the soil surface. Understanding these requirements determines the type of devices used. When clean-tilled land is present, double disk openers with depth bands and presswheels can be used very effectively. When brush debris, crop residue, or rocks are present, different approaches must be taken. These may include coulters to cut trash, modified disk openers, cultipackers, steel runner openers, chain harrows, chain drags, rubber-tire packers, or broadcast (no openers). When two rows of cultipackers are used, seed is dropped between the first and second row. Large diameter seed tubes (2 inches or more) are necessary to prevent clogging when dispensing chaffy seed.

Description

Grass drills and seeders consist of seed hoppers, metering devices, and some type of seed placement device. Grass drills range in width from 6 to 15 feet, while grain drills can be up to 40 feet wide. Row spacing varies between 8 and 12 inches, with 12 inches common for rangeland seeding. The metering systems have the capability to deliver 0.5 to 20 lbs of seed per acre. Drills use several different styles of ground-drives to power the metering system. Most drills are towed and use a hydraulic lift mechanism

while some drills attach to the tractor's 3-point hitch. No-till drills use coulters of various sizes and shapes to cut cover-crop residue ahead of the seed-furrow openers. Drills and seeders designed for rangeland are normally extra-heavy duty to withstand the rigors of rough-terrain. The Forest Service developed an extra-heavy-duty drill with single-disk openers that can seed in rough, non-tilled soil with limited debris. This drill is widely used by government agencies in the western U.S.

Application

Cropland drills are applicable for clean-tilled land and do not do well when rocks and debris are present. Rangeland drills are designed with a variety of options to overcome the rigor of rangeland conditions. Seed mixes are commonly used on rangeland. Chaffy and slick seed must be metered separately. Knowledge of the optimum seeding depth of the selected species is important to insure that the correct furrow openers, depth bands, presswheels, and covering devices are used.



Additional information

Wiedemann, H.T.; Brock, J.H.; Fisher, C.E.; Cross, B.T. 1979. Seed metering and placement devices for rangeland seeders. Transactions of the American Society of Agriculture and Biological Engineers. 22(5): 1275-1278.

Sources

The following manufacturers' websites list information on equipment sizes, accessories, dealers, and contact information.

[AGCO Corporation](#)

Duluth, GA 30096

[Brillion Farm Equipment](#)

Brillion, WI 54110

[CrustBuster Speed King, Inc](#)

Dodge City, KS 67801

[Grasslander Seeder](#)

Hennessey, OK 73742

[Great Plains Manufacturing, Inc.](#)

Salina, KS 67402

[Haybuster Agricultural Products](#)

Jamestown, ND 58401

[Metal Masters](#)

Hayward, CA 94545

[Nyssa Machine & Welding Manufacturing](#)

Nyssa, OR 97913

P&F Services

Kemmerer WY 83101

307-877-6455

[Sukup Manufacturing Co.](#)

Sheffield, IA 50475-0677

[Truax Company, Inc.](#)
New Hope, MN 55428

Grain Drills



Description

Grain drills use a fluted, seed-metering device, precise furrow openers, and covering devices. Furrow openers can be chisels, single disks, or double disks. Presswheels and covering devices are standard. Grain drills vary in width from 6 to 40 feet. Row spacing varies from 6 to 30 inches, with 7.5 inches widely used for cereal grains. Drills are either towed or attached to the tractor's 3-point hitch. All towed units have hydraulic lift mechanisms. On some models, extra hoppers are available for fertilizer, pesticide, or additional seed metering. Numerous options are available to improve drill efficacy based on local soil conditions.

Conservation tillage requires drills that will operate in heavy crop residue. These drills are labeled no-till drills. They use coulters and other devices to slice through trash and undisturbed soil prior to seed placement by standard openers and covering devices. The frame is built to hold add-on weights or weight transfer mechanisms to assure trash cutting and soil penetration.

Application

Grain drills are very precise tools and are widely available. They normally meter cereal grains, legumes, and forages; however, hard, slick grass seed can also be metered. Drills perform best on well-tilled cropland free of rocks and debris. Chisel openers are useful in dry soils, and single disk openers can cut through firm soil and limited crop residue. Double disk openers are the most accurate and widely used. No-till drills are used when planting into heavy crop residue or grass turf. Grain drills are not suited for rocky or brush-littered soil conditions or rough rangeland.

Sources

Conventional and no-till grain drills are available from all major tractor manufacturers. Tractor dealers often provide drills manufactured by short-line companies. The manufacturers' websites list information on equipment sizes, accessories, dealers, and their contact information.

[AGCO Corporation](#)

Duluth, GA 30096

[Antonio Carraro](#)

Napa, CA 94559

[Belarus Tractor International](#)

Milwaukee, WI 53223

[Branson Tractors](#)

Lafayette, GA 30728

[Case IH Agriculture](#)

Racine, WI 53404

[Challenger \(Caterpillar rubber-track\)](#)

Duluth, GA 30096

[Deere & Company](#)

Moline, IL 61265

[Fendt](#)

Duluth, GA 30096

[Kioti Tractor Division](#)

Wilson, NC 27893

[Kubota Tractor Corporation USA](#)

Torrance, CA 90504

[McCormick USA, Inc.](#)

Pella, IA 50219

[Mahindra USA, Inc.](#)

Houston, TX 77095

[Massey Ferguson](#)

Duluth, GA 30096

[New Holland North America](#)

New Holland, PA 17557

[Same Deutz-Fahr North America](#)

Stone Mountain, GA 30083-1101

[Tafe USA, Inc.](#)

Guntown, MS 38849

[Valtra USA, Inc.](#)

Hoffman Estates, IL 60195

[Zetor Tractors](#)

Harrisburg, PA 17112

Air Seeders



Description

Air seeders use standard drill openers or unit planters on a framework similar to a chisel plow. A very large, towed hopper meters seed and moves the seed by airflow to the furrow opening device. Hopper capacity varies from 200 to 400 bushels. Some systems have an additional hopper that supplies fertilizer in concert with the seeding operation. The seeding units vary in width from 28 to 60 feet. Row spacing varies from 7½ to 30 inches depending on the type of crop. Different types of fluted metering systems are available to supply very low to very high rates of different sized seed or fertilizer. The systems use electronic seed counting, and seeding rates can be monitored or changed on-the-go from the tractor cab. Many of the same options to improve grain drill efficacy in different soil conditions are available for air seeders.

Application

Air seeders are designed for high-acreage output on clean-tilled land or land with heavy crop residue. They can operate on rolling land, but are not suited for rocky or rough terrain.

Sources

The manufacturers' websites list information on equipment sizes, accessories, dealers, and contact information.

[AGCO Corporation](#)

Duluth, GA 30096

[Case IH](#)

Racine, WI 53404

[Deere & Company](#)

Moline, IL 61265

[Great Plains Manufacturing, Inc](#)

Salina, KS 67402

[New Holland North America](#)

New Holland, PA 17557

Unit Planters



Description

Unit planters are self-contained, single-row units mounted on a toolbar. A unit planter consists of a hopper, furrow opener, seed placement tube, furrow closing device, and a presswheel. The presswheel normally operates the seeding system through a chain-drive. The seed metering system uses a variety of plates and/or other mechanisms to supply single seeds uniformly spaced at accurate depths. Each planter is independently suspended so it can closely follow varying terrain. Additional hoppers are available for granular fertilizer, inoculum, or pesticides. In some cases a spray nozzle is attached to each planter to apply pesticide in a band over the row. Numerous types of coulters and row sweeps are available to improve efficacy in no- or limited-till conditions. Planting units can vary in width up to 90 feet by using a flexing toolbar. Distances between individual planters can be adjusted for specific crops and can vary between 15 and 40 inches.

Application

Unit planters are precision seeders that were originally designed to operate on clean-tilled land. However, due to conservation requirements, planters have been redesigned to operate in moderate to heavy crop residue. Unit planters are used where precise seed depth and spacing are important, and should not be used where rocks and brush debris are present.

Sources

The manufacturers' websites list information on equipment sizes, accessories, dealers, and contact information.

[AGCO Corporation \(Tye drills\)](#)

Duluth, GA 30096

[Case IH](#)

Racine, WI 53404

[Deere & Company](#)

Moline, IL 61265

[Great Plains Manufacturing, Inc.](#)

Salina, KS 67402

[Kinze Manufacturing, Inc.](#)

Williamsburg, IA 52361-1300

[New Holland North America](#)

New Holland, PA 17557

Rotary Spreaders



Description

Rotary spreaders are used to broadcast seed, fertilizer, or other granular products. They consist of a hopper with an adjustable gate opening to regulate the flow of material falling onto a rotating spinner. Spreader size can vary from small hand-held units to large tractor mounted units. Units of 1 to 2 bushel capacity are powered by a 12-volt electric motor and can be mounted on ATVs or pick-ups. Three- to 32-bushel spreaders are attached to a tractor's 3-point hitch and powered by the tractor's power-take-off. Spreading rates vary from 3 to 1000 pounds/acre and swath width will vary between 20 and 40 feet. Some models have an agitator in the hopper to prevent blockages and provide a uniform flow of material.

Application

Rotary spreaders are well suited for limited acreages on level or rolling terrain. Seed should be spread during or following the tilling operation. Spreaders can be attached directly to the tilling or mulching equipment. Fertilizer, seed only, seed blended with fertilizer, or lime may be applied on tilled soil or over pastures. Hand-operated units are not limited by type of terrain and are best suited for spot treatments. Rotary spreaders are simple and easy to use and maintain. They can be accurate, but are often misused, resulting in non-uniform applications. Tractor speed, flow rate, and swath width all affect the application rate; wind can distort the swath pattern.

Sources

The manufacturers' websites list information on equipment sizes, accessories, dealers, and their contact information.

[Forestry Suppliers, Inc.](#)

Jackson, MS 39284-8397

Herd Seeder Co., Inc.

Logansport, IN 46947

574-753-6311

[Reinco](#)

Plainfield, NJ 07061-0512

[Truax Company, Inc. \(Seeder\)](#)

New Hope, MN 55428