



## SITE PREPARATION & PLANTING HELPS



GREAT BASIN SEED

[www.greatbasinseed.com](http://www.greatbasinseed.com)



GREAT BASIN SEED

---

PREMIUM  
**PASTURE**  
SEED

**SOWING**  
INSTRUCTIONS

---

☞ *Pasture mixes are a fantastic solution for hay and/or grazing situations. They have the potential to grow long-lived stands that produce year after year. **However, correct and effective sowing of pasture grass seed is crucial!** Follow the guidelines on both sides of this card to increase your chances of success!*

**FOR BEST ESTABLISHMENT:**

- ☞ Sow NO DEEPER than .25" (1/4 inch)
- ☞ Scarify, disk, harrow or agitate soil bed
- ☞ Sow in early spring or late fall
- ☞ Set drill to **LIGHTLY** scratch the surface!
- ☞ Compact surface after broadcasting
- ☞ High frequency, low volume water

**AVOID:**

- ☞ Sowing in high heat
- ☞ Planting too deep
- ☞ Hard crusty soils
- ☞ Dry seed bed at germination time
- ☞ High volume, low frequency water

Great Basin Seed  
450 South 50 East  
Ephraim, UT 84627  
435.283.1411 (Phone)  
435.283.6872 (Fax)

[www.greatbasinseed.com](http://www.greatbasinseed.com)

Portions of this work were taken directly from the following publications:

“Intermountain Planting Guide” by the USDA-ARS-Forage and Range Research Lab, Logan Utah

Valuable additional information is found on the USDA/NRCS “PLANTS DATABASE” website at <http://plants.usda.gov>

# ESTABLISHING AND MANAGING AN IRRIGATED PASTURE SEEDING

## TIME OF SEEDING

Many seasonal seeding options are available when considering irrigated plantings. Plantings can be made almost any time during the growing period if sufficient irrigation water is available, and can be applied often enough to allow the soil surface to remain moist and favorable for seed germination and seedling emergence. Plantings made in mid-summer heat and periods of persistent wind are very susceptible to drought, and require careful management to succeed. Small seeded varieties of grasses and legumes are extremely sensitive to crusting soils that often inhibit or reduce their ability to emerge. Mortality due to crusting can be minimized by frequent irrigations that keep the soil surface moist. If low humidity, wind and high temperatures persist, it is more effective to irrigate in the early evening so soils will remain moist during the night allowing seedlings to emerge.

Spring is the optimum season to establish irrigated seedings. High humidity, lower temperatures, and abundant soil moisture provide excellent conditions for germination and root development while significantly reducing the risk of seedling mortality due to surface crusting. In the spring too much moisture is occasionally a problem keeping soil too wet to permit tillage and seeding, thus delaying seedling emergence until the hotter, drier portions of the summer. Caution should be used when spring seeding legumes to ensure temperatures are warm enough to minimize frost damage. Fall plantings are most successful from late August to mid-September (depending on elevation) in most valleys of the Intermountain Region. Cooling temperatures, less wind, and increasing humidity enhance the opportunity for good plant establishment. Newly seeded plants should be about 2 to 3 inches in height or have three leaves prior to the onset of severe winter temperatures. Seedings made after mid-September risk winter kill as a result of poorly developed root systems. Most small grass and legume seedings require at least 6 weeks of active growth prior to killing frost to assure seedling establishment.

## SEEDBED PREPARATION

An optimum seedbed is firm, but not hard surfaced (footprint about one quarter inch deep), fine but not powdered, moist but not wet, and free of competition from existing plants. Firmness is usually accomplished by using a cultipacker, roller harrow, or spike tooth harrowing multiple times. Such preparations retain soil moisture and reduce soil air space, keeping the germinating seed in good contact with soil and moisture. A firm seedbed promotes movement of moisture upward during the night to reduce the potential of soil crusting and seedling mortality. A firm seedbed also enhances accurate seed placement and uniform seedling emergence.

Unless erosion or abnormal conditions exist, nurse crops are generally not recommended since most annual crops create competition for the smaller emerging perennial grasses and forbs. Where wind or water create potential erosion or where seedling desiccation is a problem, plant small seeded species directly into grain

stubble with a no-till or minimum-till drill. If soil conditions are moderately firm and slightly moist, a conventional grain drill properly equipped for planting small seeds may work effectively.

## SEEDING DEPTH

Perennial grasses, legumes, and forbs have small seeds and are particularly sensitive to excessive planting depths. *Great care should be taken not to exceed proper seed depth, which is generally 1/4 to 1/2 inch for grasses and 1/8 to 1/4 inch for most legumes and forbs.* A general rule of thumb states that seeds should be planted approximately five times the width of the seed at its narrowest point. It is estimated, for each additional 1/2 inch small seeded varieties are placed below their optimum seeding depth, 30 - 50% mortality is likely to occur. An emerging seedling is dependent on energy stored in the seed for initial growth until the leaves begin to develop. Since most small seeds contain limited energy food reserves, it is very difficult to emerge and survive from excessive depths. Coarse textured (sandy) soils require less energy for seedlings to emerge than fine textured soils. This requires minor adjustments in seeding depth according to soil type.

## EQUIPMENT

Planting equipment for small seeded grasses and legumes should have good seed box agitation so light, awned, or irregularly sized seeds do not bridge over the openings. Agitation works in combination with accurate monitoring to allow even flow of a wide range of species used in planting mixes. Accurate seeding depth is critical, and is typically accomplished with depth control bands attached to double disk openers or manual and hydraulic depth control. Firming the soil over the seed with press wheels, or rolling devices promotes good seed to soil contact. Sometimes weight added to the press wheels will help compensate for soft seed beds. It is possible to use regular grain drills if fitted with depth bands, seed monitoring, and firming devices. A common equipment error in planting small seeded grasses or legumes, is to assume that a drill equipped and set for planting grain will adequately plant small seeded species. Oftentimes the seed is placed too deep using a grain drill and the planting fails to establish.

Small legumes, such as alfalfa, are heavier and smaller than most grass seeds and in mixes can move rapidly through lighter seed to the bottom of the seeder box. They are more evenly distributed in a mix if they can be planted from a separate seed box, or placed in seeders that have constant seed box agitation. The addition of rice hulls to seed mixes keeps different species in balance and assists in even seed flow through conventional drills.

Broadcast seeding can be an effective planting method. In this method seed is broadcast onto a well prepared seedbed followed by a roller harrow or a cultipacker equipped with indent rollers that press the seed into the seedbed surface.

## FERTILIZATION

Adequate levels of all nutrients must be available for optimum forage production. It is recommended that a soil test be conducted to determine the status of nutrients such as phosphorus, potassium, sulfur, and zinc prior to establishing a new stand. It is

best to apply and incorporate these nutrients at recommended rates before seeding. A soil test is also important to determine soil texture, salt (salinity) levels, and soil pH. These are important considerations in selecting the appropriate forage for the site. By varying fertilizer application on existing forage stands it is possible to push grass-legume mixes to more grass by increasing nitrogen or more legume by increasing phosphorus and potassium. After establishment nitrogen is essential to maintain high yields and good forage quality and should be applied one year after seeding. Rates of nitrogen applied depend on the production potential of the site and the composition of legumes in the stand (see Table 1). Apply nitrogen as early as possible in the spring. When applying nitrogen at rates greater than 100 pounds/acre consider splitting the nitrogen into two or more separate applications, one made in early spring and one in June. In-season applications of nitrogen should be timed with rainfall or irrigation events to move the fertilizer into the soil.

## IRRIGATION

Proper irrigation of pastures requires an understanding of fundamental soil, water and plant relationships. In addition, irrigation must be coordinated with other pasture management practices such as grazing, fertilizer application and weed control to maximize pasture production. In a rotationally grazed pasture the grazing period may be from 1 to 7 days, followed by a 3 to 4 week rest period. Thus, irrigation can be applied immediately following removal of animals from the pasture and between grazing periods as needed. Irrigation should be completed well in advance (3 to 5 days) of the next grazing cycle to reduce animal compaction of the wetted soils.

The timing and amount of irrigation water required by pastures, like any other crop, depend on the soil water holding capacity, weather conditions and crop growth. Unless there is a limiting layer in the soil, most of the plant roots in a pasture will be found in the top 2 to 3 feet, except for a few deeply rooted species such as alfalfa. The soil water holding capacity varies from about 1 inch per foot of depth in a sandy soil to about 2 inches per foot depth in a loamy soil. (See Table 3) This means that in a sandy soil, approximately 2-1/2 inches of water is available for plant use in the 2-1/2 foot root zone; whereas, in a loamy soil approximately 5 inches of water would be available for the pasture to use in the same 2-1/2 foot root depth. For best growth of pastures, it is recommended that irrigation take place when approximately 50% of the water has been used or depleted out of the root zone. This means that for a pasture on a sandy soil, the irrigation would need to occur when approximately 1-1/4 inches of water has been used by the pasture. About 2-1/2 inches of water would be used in between irrigations on a loamy soil.

As an example of scheduling irrigations, assume the crop water use rate is 1/4 inch per day. On a sandy soil, to maintain a pasture at its most vigorous growth, irrigation would be needed approximately every 5 days. About 1-1/4 inches of water should be added to the soil. This is because in 5 days, 1-1/4 inches of water would be depleted at a rate of 1/4 of an inch per day. However, on a loamy soil the pasture would be irrigated about every 10 days with 2-1/2 inches of irrigation water for the same consumptive use rate of 1/4 inch per day.

Grass pastures need to be irrigated about twice as often as a deeper-rooted alfalfa crop. However, because it is shallower rooted, only about half the amount of water could be stored in the root zone of the pasture with each irrigation compared to an alfalfa field. Irrigation on pastures need to be more frequent with lighter amounts than on some other crops. This means that a loamy soil with a 5-day grazing period followed by 25 days of rest, would need to be irrigated approximately 5 days prior to the beginning of grazing, receive another irrigation immediately after grazing, and one approximately 10 days later. Thus during a 4-week grazing cycle, there would be three 2-1/2 inch irrigations if the crop-water use rate continued at 1/4 of an inch a day.

Air temperatures and other weather conditions change from early April through the middle of the summer and continue on into the fall. This suggests that the daily crop water use rate of pastures is relatively low in the spring, increases toward the end of June through July and then begins decreasing from August through October. The amount of vegetation present also affects the rate at which pastures will use water. For example, grass that is approximately 10 inches tall will use more water than grass that is 4 to 5 inches tall. Water consumption decreases during grazing and increases during the recovery period prior to the next grazing. Frequency of irrigation will vary according to species used. Irrigated pasture grasses such as perennial ryegrass, orchardgrass, and meadow brome have high demands for water, whereas smooth brome and intermediate wheatgrass have moderate moisture requirements. For optimum plant production, it is important to irrigate often enough to promote uninterrupted plant growth. Too little irrigation water will restrict forage production, while too much leaches nitrogen fertilizer into lower soil levels making it unavailable to shallow rooted plants.

## WEED CONTROL

Trade names used in this publication are for clarification only. No discrimination is intended and no endorsement is given by Utah State University or USDA-ARS. This guide is not intended to provide adequate information for application of herbicides. Before using any product mentioned in this publication, read carefully and observe all directions, precautionary statements and other information appearing on the appropriate EPA registered product label. Due to changing labels, laws, and regulations, the authors can assume no liability for the recommendations. Any use of a pesticide contrary to label instructions is neither legal nor recommended.

Weed control is especially critical when establishing new seedlings. Weedy annual broadleaf and grass species develop rapidly causing extensive water and nutrient competition with slower maturing perennial grasses, legumes, and forbs. As perennial forage plants fully establish, the opposite occurs, with annual weed populations unable to compete against the well devel-

# ESTABLISHING AND MANAGING A RANGELAND AND DRY PASTURELAND SEEDING

## TIME OF SEEDING

Seeding to correspond with favorable moisture conditions is the most important factor in establishing a good rangeland planting. Generally arid rangeland and dryland pasture seedings should be planted in late fall. Fall plantings should be made late enough to delay germination (dormant seedings) until the following spring when young seedlings can take advantage of cooler temperatures and moisture from winter snowfall. Most grass, forb, legume, and shrub seeds will survive the winter. Early fall seedings can be risky if germination does not occur soon enough to allow moderate root development prior to winter when immature seedlings exposed to freezing temperatures can experience severe winter mortality, particularly in areas of limited snow cover. Early fall seedings are not generally recommended on rangelands or dryland pasture.

## SEEDBED PREPARATION

If seedbeds have been disked or plowed for competition, weed, or brush control, it is very important to mechanically firm the soil, or fallow for a sufficient period to allow the soil to settle, additional weed control, and moisture to begin recharging in the soil profile. Where possible, prepare seedbeds with as little soil disturbance as possible to retain soil moisture and organic matter. This can be accomplished with combinations of chemical fallow, and/or minimum till or no-till drill seeding. Undisturbed soil with reduced competition in sensitive ecosystems creates an excellent environment for germination and establishment of seedlings.

In drier ecosystems, loose, dry-soil surfaces permit rapid evaporation. This condition often is the difference between good and poor stands. Care should be taken when disturbing soils that are light (sandy) or unstable to protect them from wind and water erosion.

## SEEDING DEPTH

Irregular range landscapes and rough surface conditions are difficult to navigate and can affect seeding depth accuracy. Depth of seeding varies with seed size, species, and soil type. On coarse (sands) textured soils seeds should be planted deeper than on lighter textured (clay-silt) soils. *Generally grass seeds should be planted no deeper than 1/4 to 1/2 inch.* Most small legumes and forbs establish effectively when planted only 1/8 to 1/4 inch deep. There are a few forbs and some shrubs such as winterfat, sagebrush, and forage kochia that do best when broadcast on unprepared surfaces. Since resources that promote seedling development (i.e., water and nutrients) are generally lacking on dryland sites as compared to irrigated pastures, it is very critical to pay close attention to accurate seed placement on rangeland sites.

## EQUIPMENT

Planting equipment for small seeded grasses and legumes should have good seed box agitation so light, awned, or irregularly sized seeds do not bridge over the openings. Agitation works in com-

ination with accurate monitoring to allow even flow of a wide range of species used in planting mixes. Accurate seeding depth is critical, and is typically accomplished with depth control bands attached to double disk openers or manual and hydraulic depth control. Firming the soil over the seed with press wheels, or rolling devices promotes good seed to soil contact. Sometimes weight added to the press wheels will help compensate for soft seed beds. It is possible to use regular grain drills if fitted with depth bands, seed monitoring, and firming devices. A common equipment error in planting small seeded grasses or legumes, is to assume that a drill equipped and set for planting grain will adequately plant small seeded species. Oftentimes the seed is placed too deep using a grain drill and the planting fails to establish.

Small legumes, such as alfalfa, are heavier and smaller than most grass seeds and in mixes can move rapidly through lighter seed to the bottom of the seeder box. They are more evenly distributed in a mix if they can be planted from a separate seed box, or placed in seeders that have constant seed box agitation. The addition of rice hulls to seed mixes keeps different species in balance and assists in even seed flow through conventional drills.

Broadcast seeding can be an effective planting method. In this method seed is broadcast onto a well prepared seedbed followed by a roller harrow or a culti-packer equipped with indent rollers that press the seed into the seedbed surface.

## FERTILIZATION

Application of fertilizer on arid rangelands is not recommended. It is usually beneficial only during abnormally wet years, and applications on dry years can reduce forage yields and seriously reduce plant vigor. Please see the irrigated pasture section of this guide for additional information on fertilization.

## WEED CONTROL

Successful seeding on rangelands is directly related to competition and weed control. Many native range plant species are especially poor competitors against weedy varieties particularly in the initial phases of establishment. Little label information is available on the tolerance of many native range plants to herbicides applied in the seedling stage. There are herbicides registered for use on rangelands and you should consult your local NRCS offices before selecting a herbicide. Don't overlook opportunities to reduce competition through cultural or biological procedures, such as disking, plowing, raiiling, mowing, grazing, and fire.

Reseeding for mine spoil reclamation, erosion control, watershed protection, greenstripping, military training, road right of ways, and control of heavy shrubbery can make herbicide application cost effective. Time of application is critical on sensitive rangelands where precipitation and length of active plant growth can occur during a narrow window of opportunity.

## GRAZING SYSTEMS

Most plant materials on dryland and range plantings require 1 to 2 years of deferred grazing to ensure systems adequate plant establishment. If materials are grazed too soon or too aggressively, diminished stand performance is likely.

# Site Preparation, Seed Sowing and Maintenance Guide



Species Name	Category	Planting Depth	Notes
Arrowleaf Balsamroot	Forb	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Blanketflower	Forb	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Blue Flax	Forb	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Brittlebush	Forb	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
California Poppy	Forb	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Forage Kochia	Forb	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Globemallow	Forb	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Indian Paintbrush	Forb	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Lupine	Forb	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Penstemon	Forb	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Rocky Mountain Beeplant	Forb	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Sage, Louisiana	Forb	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Showy Goldeneye	Forb	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Sticky Geranium	Forb	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Sunflower, Annual	Forb	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"

Species Name	Category	Planting Depth	Notes
Yarrow	Forb	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Alkali Bulrush	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Alkali Sacaton	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Baltic Rush	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Big Bluestem	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Birdsfoot Trefoil	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Blue Grama	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Bluegrass, Kentucky	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Bluegrass, Sandberg	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Bottlebrush Squirreltail	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Bromegrass	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Buffalograss	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Fescue	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Galleta Grass	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Garrison Creeping Foxtail	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Green Needlegrass	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Idaho Fescue	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Indian Ricegrass	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Inland Saltgrass	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Needle and Thread Grass	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Orchardgrass	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Prairie Junegrass	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Reed Canarygrass	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!

Species Name	Category	Planting Depth	Notes
Rye Grain	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Ryegrass	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Sand Dropseed	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Sherman Big Bluegrass	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Sideoats Grama	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Tall Fescue, Turf Type	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Teff Grass	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Timothy	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Wheatgrass, Bluebunch	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Wheatgrass	Grass	1/8" - 1/4" Max	Same planting depth for all varieties of wheatgrass
Wildrye	Grass	1/8" - 1/4" Max	Sensitive to planting depth...do not exceed maximum recommended depth!
Alfalfa	Legume	1/4" - 1/2"	Plant 1/2" - 3/4" deep in sandy soils
Cicer Milkvetch	Legume	1/4"	Plant max. 1/2" deep in sandy soils
Clovers	Legume	1/4"	Plant max. 1/2" deep in sandy soils
Crownvetch	Legume	1/2"	Responds well to mulching
Hairy Vetch	Legume	1/2"	Plant slightly deeper on sandy soils
Sainfoin	Legume	1/4" - 3/4"	Plant slightly deeper on sandy soils
Small Burnet	Legume	1/4" - 3/4"	Plant slightly deeper on sandy soils
Sweetvetch, Utah	Legume	1/2"	Plant slightly deeper on sandy soils
Flower Mixes	Seed Mix	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Cabin Seed Mix	Seed Mix	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Game Bird Mixes	Seed Mix	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Lawn and Turf Blend	Seed Mix	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"

Species Name	Category	Planting Depth	Notes
Pasture Mixes	Seed Mix	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Bitterbrush	Shrub	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Chokecherry	Shrub	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Cliffrose	Shrub	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Elderberry	Shrub	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Ephedra	Shrub	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Greasewood	Shrub	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Mahogany	Shrub	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Oregon Grape	Shrub	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Rabbitbrush	Shrub	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Sagebrush	Shrub	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Saltbrush	Shrub	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Serviceberry	Shrub	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Snowberry	Shrub	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Sumac	Shrub	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Winterfat	Shrub	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"
Woods Rose	Shrub	1/8" - 1/4" Max	Broadcast on surface or drill no deeper than 1/4"