GREAT BASIN SEED

SHOSHONE SAINFOIN

- Drought tolerant, winter hardy forb
- Relished by wildlife, especially deer and elk
- Deep-rooted and very drought-resistant
- Good hay, exceeds alfalfa yields on first cutting
- Very palatable, grazed by livestock
- Tolerance of northern root-knot nematode

DEEP ROOTED

NEMATODE RESISTANCE

DROUGHT TOLERANT

EXCELLENT FOR WILDLIFE

EXCEEDS ALFALFA YIELDS ON FIRST CUTTING

450 S 50 E, Ephraim, UT 84627
(435) 283-1411 • greatbasinseed.com

GREAT BASIN SEED

SHOSHONE SAINFOIN

AGRONOMIC TRAITS

Ease of Establishment	Good
Life Cycle	Perennial
Forage Yield	Medium
Forage Quality	Excellent
Maturity	Early Spring
Persistence	Excellent
Palatability	Excellent
Growth Habit	Upright
Drought Tolerance	High
Moisture Use	Low
Hay	Excellent
Silage	Good
Pasture	Excellent
Growth	Spring & Summer

PLANTING GUIDE

Seeding Rate (Interseed)	5-15 lbs. per acre
Seeding Rate (Stand-alone item)	30-40 lbs. per acre
Min. Precipitation	15-18 inches
Seeding Depth	0.25 - 0.75 inches
Average Seeds per lb.	Approx. 30,000
Lifecyle	Perennial
Best Sowing Time	Fall, Spring

450 S 50 E, Ephraim, UT 84627
(435) 283-1411 • greatbasinseed.com

SHOSHONE SAINFOIN

Shoshone Sainfoin (Onobrychis viciifolia) was selected for it's tolerance of northern root-knot nematode. It was developed by intercrossing the surviving plants remaining in an irrigated sainfoin variety trial infested with the Northern Root-knot nematode in southeastern Wyoming. It has good drought tolerance, winter hardiness, and is also resistant to alfalfa stem nematode. Shoshone is the preferred variety when sugar beets or other root crops are included in an irrigated crop rotation. It expressed a higher level of tolerance to the parasite than 'Remont' sainfoin by having greater shoot/root weight and lower plant mortality. Shoshone was jointly released in 2005 by the College of Agriculture, Agricultural Experiment Stations at the University of Wyoming and Montana State University, and by the United States Department of Agriculture, Natural Resources Conservation Service at Bridger, MT. The variety was named in honor of Chief Washakie of the Eastern Shoshone Tribe. Shoshone Sainfoin

GENERAL SHOSHONE SAINFOIN INFORMATION

Sainfoin is deep-rooted and very drought-resistant, provided the annual rainfall is 12 inches or over. It yields best on deep, well-drained soils, and will not withstand wet soils or high water tables. Tests show that it will not tolerate saline soils and that it is not as winterhardy as the locally-recommended cultivars of alfalfa. Shoshone Sainfoin

Sainfoin grows taller than alfalfa, its stem is hollow, there are many leaflets (like a vetch) and its flowers, which are pink, are borne on a raceme. The "seed" used to establish this crop is, in fact, a pod which contains a single seed. Even without the pod, the true seed is large (for a legume); there are only 28,000 seeds per pound.Shoshone Sainfoin

Sainfoin has good drought resistance and grows well on a variety of soils, it does especially well on high lime, well-drained soils of high fertility. However it does not do well on soils which are wet or have a high water table. It has a low tolerance to flooding, waterlogging or even high water table. It's intolerant of acidity and salinity.Shoshone Sainfoin

Sainfoin begins growth in the spring about the same time as alfalfa, but flowers one to two weeks earlier. First cutting hay yields have exceeded those of alfalfa in Montana, but alfalfa yields are greater in subsequent cuttings. In areas where hay production is limited to one dryland cutting, or because of a shortage of irrigation water, it may replace alfalfa.

450 S 50 E, Ephraim, UT 84627
(435) 283-1411 • greatbasinseed.com

GREAT BASIN SEED

SHOSHONE SAINFOIN

Sainfoin is very palatable and is grazed by livestock in preference to alfalfa. It is relished by deer. Although very coarse, the herbage is highly nutritious. Compared with alfalfa, forage dry-matter yields of sainfoin are about 20 percent lower under dryland conditions, and may be 30 percent or more lower in irrigated areas. Onobrychis species have never been known to cause bloat nor is it attacked by alfalfa weevil. It is highly palatable to both sheep and cattle, being preferred over alfalfa. It may be grazed or used for hay, either alone or in mixtures with grasses. Grows well with Russian wildrye and crested wheatgrass. Under irrigation, sainfoin is shorter-lived than alfalfa, but rotational grazing has been shown to prolong its life.

Sainfoin is well suited to hay harvesting as it grows upright and is easily cut. It is somewhat higher in moisture content than alfalfa. Since regrowth is very poor, it is best suited to taking one clipping at about the half- to full-bloom stage. Unlike alfalfa, it does not drop its lower leaves; stems remain succulent as the plant matures so that quality does not decrease so rapidly. Yield is often better than that of alfalfa for one clipping, but only 80 to 90 percent as high when two cuttings per season are compared. It competes poorly in mixtures with aggressive grasses and, although total yield is usually not affected, the proportion of sainfoin decreases.

The advantages of sainfoin for pasture use include excellent quality and palatability that give superior animal performance without the danger of bloat. Compared with orchardgrass in irrigated areas, it yields about one-third less, regrows more slowly after grazing and has a shorter productive life. However, grazing in the bud or early bloom stage, and keeping the grazing height above about 8 inches, will lengthen productive life from two to three to about six years in irrigated areas.

It's adapted to dryland pastures as well, and grows satisfactorily in mixtures with bunchgrasses such as Russian wildrye or crested wheatgrass. However, total yields are slightly higher when sainfoin is grown alone. Sainfoin is a very early-growing legume, and it may tolerate light grazing during the bud stage and still yield a good crop of hay. Residual yield after hay cutting may be grazed, but once this species reaches full bloom, regrowth is very poor.

450 S 50 E, Ephraim, UT 84627
(435) 283-1411 • greatbasinseed.com

USDA PLANT DOCUMENTATION

Great Basin Seed

GREAT BASIN SEED

SHOSHONE SAINFOIN

PLANT FACT SHEET

SAINFOIN
Onobrychis viciifolia Scop.
Plant Symbol = ONVI

USES

Hay/pasture: Sainfoin is an introduced non-bloat causing legume which can be used as hay, or grazed in pastures alone or in a grass-legume mix. It is often grown as a mix with Russian wildrye or crested wheatgrass or Siberian wheatgrass. It is also commonly included in a mixed blend of sainfoin, meadow brome and birdsfoot trefoil and/or orchardgrass.

Sainfoin is highly palatable to sheep and cattle and is preferred over alfalfa. Long-term sainfoin dry matter yields range from around 20 to 30% less than those of alfalfa. First cut hay yields are often greater than those for alfalfa but later cuttings commonly yield less than alfalfa (Baldridge and Lohmiller 1990). Sainfoin is well suited to haying due to its upright growth habit. Regrowth is poor however and it is recommended to be cut once/season at the half- to full-bloom stage. Protein quality for sainfoin is around 68 compared to 71 for alfalfa out of a possible score of 100 for an "ideal protein" (Kaldy et al 1979). Sainfoin is also not susceptible to alfalfa weevil.

Rangeland: Sainfoin is preferred over alfalfa by mule deer and other wildlife. It matures earlier in the spring than alfalfa and stays green during the summer (Stevens and Monsen 2004). Its large, deep tap root also makes this species fairly drought tolerant. High protein, high palatability and its non-bloat characteristic make it a good choice for range improvement for livestock or wildlife. The foliage is readily eaten by elk, deer and sage grouse, and the seed is eaten by many other birds and rodents.

Pollinators: Sainfoin blossoms produce copious amounts of nectar and are highly attractive to pollinating insects, particularly honey bees (Pellett 1947) in May through July (Ogle et al 2007). Pollen is also produced in abundance. Honey made from sainfoin is reported to be of the finest quality (Dubbs 1967).

STATUS

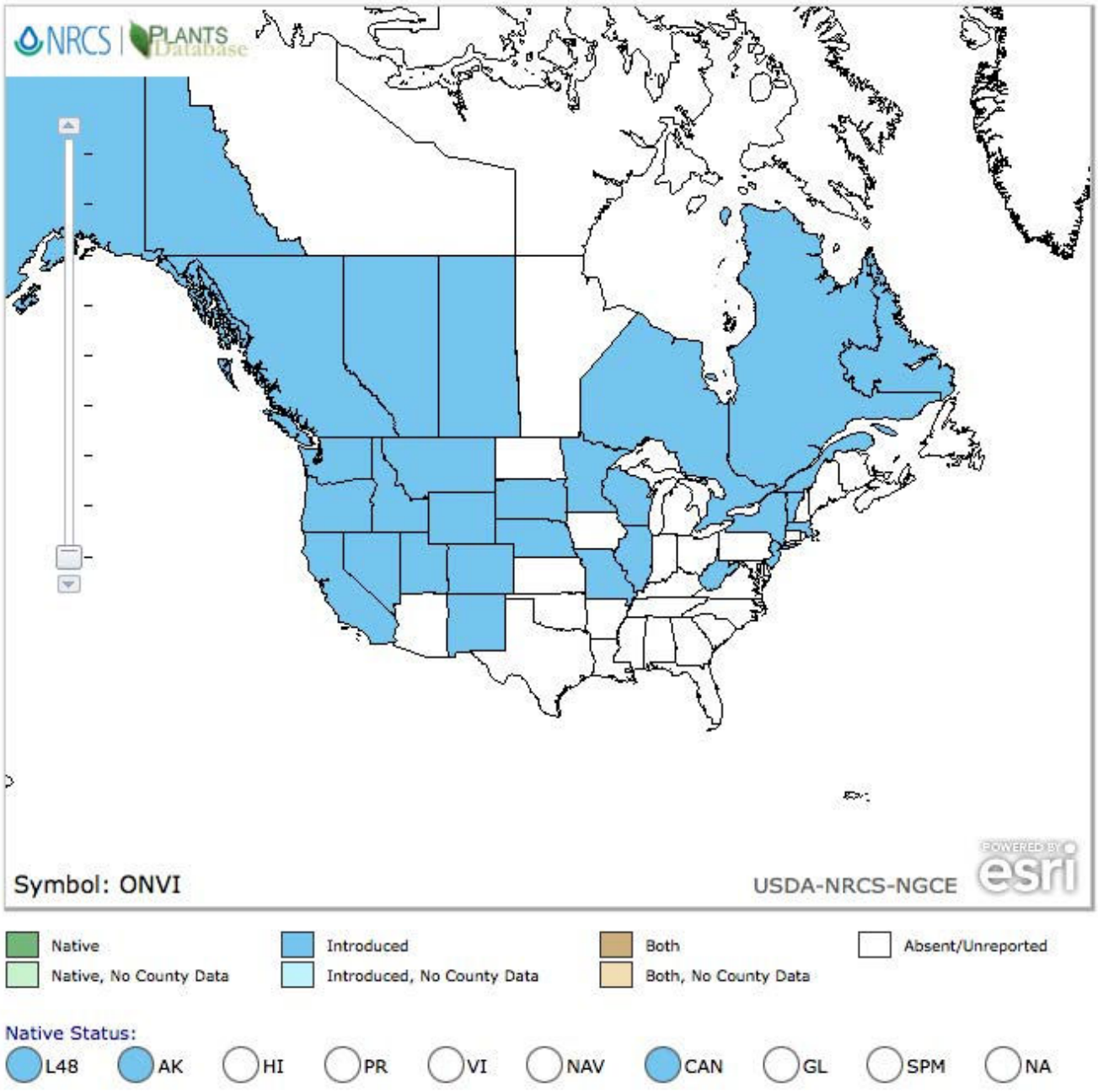
Consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status (e.g. threatened or endangered species, state noxious status, and wetland indicator values).

Contributed by: USDA NRCS Northeast
Plant Materials Program
All Information Provided by USDA

450 S 50 E, Ephraim, UT 84627
(435) 283-1411 • greatbasinseed.com

GREAT BASIN SEED

SHOSHONE SAINFOIN



Contributed by: USDA NRCS Northeast
Plant Materials Program
All Information Provided by USDA

450 S 50 E, Ephraim, UT 84627
(435) 283-1411 • greatbasinseed.com

GREAT BASIN SEED

SHOSHONE SAINFOIN

DESCRIPTION

General: Fabaceae (Legume family). Sainfoin is a deep-rooted perennial legume arising from a branching root crown. Flowers are showy and pink, white or purple and tightly arranged in a compact raceme with 20 to 50 flowers per head (figure 1). Leaves are odd-pinnately compound with 11 to 21 leaflets. Sainfoin typically grows taller than alfalfa reaching 8 to 36 inches tall. The seeding unit is a single-seeded pod (figure 2). Seeds are large with only 18,500 (pre-husked) seeds per pound (USDA 2008). 2n=28 (Welsh et al 2003). Distribution: Sainfoin has been used as a forage legume for hundreds of years in Europe and Asia and was introduced to North America around 1900. It has since been widely used in the Intermountain and Rocky Mountain regions in hay plantings and reclamation plantings (Welsh et al 2003). For current distribution, consult the Plant Profile page for this species on the PLANTS Web site.
Habitat: Sainfoin can be found in western rangeland sites in 14 inch and greater precipitation areas. It is often associated with big sagebrush and mountain shrub communities in well-drained calcareous soils.
Adaptation: Early varieties from Western Europe did not perform well in the western United States. The plants were poorly adapted and had low forage yields. Newer varieties from Russia and Turkey however are better suited to western climates and perform similarly to alfalfa. (Baldridge and Lohmiller 1990). Sainfoin is best adapted to soils at least 18 inches deep with a pH of 6.6 to 8.0 (USDA 2008). It is best adapted to sites receiving at least 14 inches mean annual precipitation (MAP). Rangeland plantings have been successful in sagebrush, pinyon-juniper and mountain shrub areas in deep, calcium based soils (Stevens and Monsen 2004). Sainfoin has low salt tolerance. Sainfoin does not do well in sites with high water tables or wet soils.

ESTABLISHMENT

Sainfoin can be planted in the spring or fall. Seeding depth should be between 0.25 and 0.75 inches. All seed should be inoculated with the appropriate rhizobium prior to planting. Full seeding rate for pasture plantings is 34 lb/ac. Seed 2 to 5 lb/ac when used as a component of a rangeland mix. Sainfoin should not be mixed with aggressive grass species; consider alternate row planting (Ogle et al 2008).

MANAGEMENT

Do not graze for two seasons after planting. Stands should be allowed to naturally reseed every 2 to 3 years for reestablishment. Stands will persist 3 to 6 years under irrigation but will last longer if root and crown rot diseases are controlled. Some plantings in Montana have survived for over 60 years and are still used for pasture (Dubbs 1967). Sainfoin should not be planted next to shelterbelts because trees and shrubs will suffer from browsing by deer and elk (Stannard 2002).

Contributed by: USDA NRCS Northeast
Plant Materials Program
All Information Provided by USDA

450 S 50 E, Ephraim, UT 84627
(435) 283-1411 • greatbasinseed.com

GREAT BASIN SEED

SHOSHONE SAINFOIN

PESTS AND POTENTIAL PROBLEMS

Although sainfoin is resistant to many alfalfa related pests, long-term stand survival is limited in irrigated or wet conditions due to root and crown rot diseases (Morrill et al 1998). These root pathogens enter the plant through scars created by root-feeding insects, especially weevils. Control of these insects decreases tap root disease occurrence and increases the longevity of the stand.

Use of sainfoin has been limited largely due to high establishment costs. The large seed, high seeding rate and high seed prices often reduce interest in using this species.

ENVIRONMENTAL CONCERNS

Sainfoin has been widely used in reclamation and range enhancement seedings throughout the Great Plains, Rocky Mountains and Intermountain West and has become naturalized in some locations. It is not considered weedy or invasive, but may spread under ideal conditions via seed.

SEEDS AND PLANT PRODUCTION

The first seed crop can be harvested the second year after establishment. Seed yields can be as high as 1000 lb/acre under irrigated conditions. Under dryland conditions, seed yields are rarely more than 200 pounds per acre.

Seed should be harvested when seed moisture is <40% or when seed is beginning to shatter. Seed shatter can be a problem with this species and seed can be harvested by swathing followed by combining after 2 to 5 days of drying.

Prepared By
Derek Tilley, USDA NRCS Plant Materials Center, Aberdeen, ID
Dan Ogle, USDA NRCS Idaho State Office, Boise, ID
Loren St. John, USDA NRCS Plant Materials Center, Aberdeen, ID

Species Coordinator
Dan Ogle, USDA NRCS Idaho State Office, Boise, ID

For more information about this and other plants, please contact your local NRCS field office or Conservation District, and visit the PLANTS Web site<http://plants.usda.gov> or the Plant Materials Program Web site <http://Plant-Materials.nrcs.usda.gov>

Contributed by: USDA NRCS Northeast
Plant Materials Program
All Information Provided by USDA

450 S 50 E, Ephraim, UT 84627
(435) 283-1411 • greatbasinseed.com


Great Basin Seed