

Average yield (over all years and all sites) was 1,829 lb/acre (2,048.5 kg/ha). Estimates of forage yield under irrigation at Aberdeen average 2,786 lb/acre (2,100.7 kg/ha).

Seed harvest under irrigated field conditions (as opposed to test plots) indicates an average cleaned seed yield of 376 lb/acre (421.1 kg/ha) on fine sandy loam soil. Yields on irrigated seed fields have ranged from a high in 1958 of 736 lb/acre (824.3 kg/ha) to a low (1962) of 200 lb/acre (224 kg/ha). Yields taken from a field of silt loam soil, 1970-1972, ranged from 89 lb/acre (99.7 kg/ha) to 21 lb/acre (23.5 kg/ha).

Optimum soils for seed production are loamy sands, sandy loam, and fine sandy loam.

Nezpar has proven dependable in numerous plantings and has shown a capacity to establish and endure, as a stand, when properly planted and managed. It is adapted to coarse soils in areas having at least 9 inches (22.86 cm) annual precipitation. At elevations of 6,000 ft (1,828.8 m) and above, where the average annual temperature is 40° F (4.5° C) or less, plantings should be restricted to south and west slopes or other "hot" situations.

In sandy soils at the lower end of its precipitation range, seed should be planted three to four inches (7.62 to 10.2 cm) deep. Two years should be allowed for adequate stand establishment. In less droughty situations, shallower seeding depths may be preferable, depending on conditions such as soil, and age of seed. (Older seed does not have the same capacity to emerge from a deep planting that young

seed has). When included in a seed mixture that will be planted 1 inch (1.27 cm) deep, seed 5 to 10 years old is recommended. Shallow seedlings must be made late in the fall to reduce bird and rodent depredation.

Management of a dryland stand of Nezpar must take into consideration that the grass is not on its native site and may not be as long-lived or as drought or grazing tolerant as local ecotypes. Proper management will restrict use to late summer, fall or winter, thereby allowing seed production to maintain the stand. Experience indicates that the third and fourth years are especially critical, and maintenance or loss of the stand will depend on regeneration from the second and third year seed crops. The planting of a mixture of newly harvested seed, plus aged seed may help mitigate this critical period. By the eighth and ninth years, it appears that natural selection within the stand and/or crossing with native ecotypes produces a stand that is more adapted to the site than were the plants of the original seeding.

Nezpar Indian ricegrass is one of nature's most beautiful grasses, particularly adapted to sandy or rocky situations, a valuable plant for revegetation of disturbed areas, and among the best of grasses in nutritional quality as standing winter feed for livestock and wildlife.

Literature Cited

Robertson, Joseph H. 1976. The Autecology of *Oryzopsis hymenoides*. *Mentzellia* 2:18-21 and 25-27.



Sainfoin Shows Promise in New Mexico

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Sainfoin (*Onobrychis vicaefolia*), a nonbloating forage legume, is a relatively new crop in New Mexico. In recent years it has also been used successfully in Montana and Canada as a hay and pasture crop.

Sainfoin has shown promise in New Mexico as a pasture crop in pure stands and in mixtures with cool-season grasses. More extensive research is needed to determine the production potential and the cultural practices necessary to successfully grow this crop in the state. It is not a new crop, having been grown in Russia over 1,000 years ago and in Europe as early as the 14th century. It was grown for forage in both Russia and Europe on dry, calcareous soils where other forage legumes did not thrive.

It was introduced to the United States in the early 1900's but failed to gain acceptance. This was because it was tested on unadapted soils. Researchers also overlooked its non-bloating characteristics and thought cattle would not like it because of its poor leafiness and coarse stems.

A few years ago New Mexico State University initiated work on sainfoin as a possible alternate crop, not a replace-

ment, for alfalfa. Researchers were interested because it was nonbloating, drought tolerant, winter-hardy and resistant to the alfalfa weevil. The variety, Renumex, was released in 1978 as a hay and pasture crop.

The seeds are fairly large and have good vigor which makes establishment relatively easy. The growth characteristics are similar to those of alfalfa. It is well adapted to sandy or cobbly soils which are well drained. It begins growth approximately 10 days earlier in the spring than alfalfa.

Irrigated pastures are often used in conjunction with ranching operations. They are used as holding sites or calving pastures as well as a supplement to rangeland grazing. Excess pasture can be cut and put up as hay. Sainfoin lends itself very well to this type situation with its nonbloating characteristic and the excellent forage quality.

The feeding value of sainfoin is equal to alfalfa and is one of the most palatable forage crops in New Mexico. It is higher in sugar and carbohydrates than alfalfa, resulting in increased consumption and conversion. The forage makes excellent hay and may be cubed or processed for silage or haylage.



Pure stand of sainfoin on the J.V. Curtis farm near Clovis, New Mexico. Excellent pasture for cattle.

Being a legume it has the ability to make its own nitrogen. However, the seed has to be inoculated with a specific bacteria for sainfoin because alfalfa inoculants will not do the job.

It is not an efficient nitrogen fixer and suffers a mid-summer slump. Added nitrogen fertilizer is needed to maintain adequate growth during this period.

Calcareous soils will rapidly tie up phosphorus in an unavailable form but sainfoin has the ability to utilize this unavailable form of phosphorus. However, sainfoin did not respond to phosphorus fertilization when tested in Montana.

Sainfoin should not be planted on acid soils or on soils which are poorly drained but it will tolerate moderately alkaline soils. It performs well on less desirable soils as long as they have good drainage. But it does appear to favor sandy soils.

The high palatability of sainfoin can result in overgrazing unless strict grazing management is followed. Overgrazing can result in decreasing the life of the stand. When planted in mixtures with less palatable grasses, it may be overgrazed. Sainfoin will not compete well.

Unlike alfalfa, sainfoin has a weak crown which can be torn easily. Because of this characteristic it may be injured through trampling by grazing animals. By planting in rows, preferably on top of the bed, this trampling can be reduced. Animals tend to walk between the rows minimizing the injury and increasing the life of the stand.

Grazing trials at Clovis, New Mexico, using sainfoin and Jose Tall wheatgrass have been quite successful. Well managed, this type of pasture is capable of carrying three animal units and producing 900 pounds of beef to the acre over the grazing period of April to October.

Much more research is needed on sainfoin but it does show promise as a forage legume in an irrigated pasture program. There is a need to develop a proper fertilizer program, disease and insect resistance, and cultural practices to get the maximum out of it.

Sainfoin is intended as an alternate to alfalfa, not as a replacement or competition for alfalfa. It is not a wonder plant but it has the potential of being an excellent forage plant. ●