Number 137 Idaho Current Information Series October 1970

Sainfoin

Forage and Seed Production
in
Northern Idaho

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What is Sainfoin?

Sainfoin is a perennial legume similar to alfalfa. It produces forage growth three to five feet tall with coarse stems, vetch-like leaves and pink flowers. Unlike alfalfa, sainfoin is non-bloating and is resistant to the alfalfa weevil and bacterial wilt. However, sainfoin is not free of insect and disease problems. Two insects, a root weevil (*Sitona scissifrons* Say) and a seed pest (*Bruchiduis unicolor* Oliver) have caused damage to sainfoin in the United States. Root, crown, and stem rot incited by *Sclerotinia trifloriorum* and *Fusarium* root rot are the two most prevalent diseases of sainfoin in the United States. No bacterial or virus diseases have been identified on sainfoin to date.

To test the adaptability of sainfoin to north Idaho conditions, trials were established at Moscow, Potlatch, Grangeville, Sandpoint, and near Kendrick to compare alfalfa and sainfoin forage yields. Seed yields of sainfoin were obtained from trials at Moscow and Potlatch, Idaho.

Stand Establishment

Sainfoin was seeded at 25-30 pounds per acre and alfalfa at 8-10 pounds per acre. Both legumes were planted one-half inch deep in a firm, well prepared seedbed. Sainfoin establishment was good at all locations except in the acid soils near Sandpoint, Idaho. Alfalfa stands were generally better than sainfoin stands at all locations.

Forage Production

1968

In 1968 trials near Moscow, Eski sainfoin produced 4.2 tons of hay per acre from the first cutting (table 1). The highest yielding alfalfa from a comparable study at Moscow was Vernal which produced 2.7 tons of hay per acre from one cutting and 3.6 tons of hay per acre from two cuttings. Since sainfoin produced a very little regrowth, no second cuttings were taken.

In 1968 trials near Potlatch and 1969 trials near Kendrick, alfalfa and sainfoin yields were similar the first year after establishment (Table 2).

The second year after establishment sainfoin stands at Moscow, Potlatch, and Kendrick were badly deteriorated, largely due to Sclerotinia, and the trials were discontinued on these plots. This emphasizes the lack of stand persistence of sainfoin over a wide range of locations.

Table 1 - Forage yields of sainfoin cut once at full bloom at Moscow and Potlatch, 1968

Variety or Selection	Tons per acre at 15% moisture		
	Moscow	Potlatch	Mean
Eski	4.3	3.1	3.7
Onar	3.9	2.9	3.4
NK - M1976	3.2	2.4	2.8
NK - M1139	2.9	2.4	2.6
Mean	3.7	2.7	

Table 2 - Forage yield of sainfoin and alfalfa cut once at full bloom near Kendrick, 1969.

Variety or Selection	Tons/acre at 15% moisture
Alfalfa	
Vernal	1.86
Rhizoma	1.91
Alfa	2.39
Sainfoin	
Eski	2.39
NK - M1976	1.85
NK - M1139	1.75

1970

In 1970 trials near Grangeville, Eski sainfoin was the highest yielding of all entries (Table 3). However, sainfoin entries at Moscow in 1970 were distinctly poorer than alfalfa entries (Table 3). These yield figures show that present varieties of sainfoin have the potential for high

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yields under one cutting hay systems but are not always superior to alfalfa.

In trials near Sandpoint no yield data were taken because stands of sainfoin were poor and plants were pale yellow. This location was the only one where sainfoin did not establish. Poor stands and yields are currently thought to be a result of poor root nodulation which essentially starves the sainfoin plant for nitrogen. Stand persistence may also be related to effectiveness of root nodulation.

Table 3 - Forage yields of alfalfa and sainfoin at Grangeville and Moscow, 1970.

	Tons per acre at 15% moisture		
Variety or Selection	Moscow	Grangeville	Mean
Alfalfas			
Ladak	3.7	3.9	3.8
Vernal	4.0	3.3	3.7
Rhizoma	3.8	3.4	3.6
Alfa	3.5	3.5	3.5
Mean	3.8	3.5	
Sainfoins			
Eski	2.4	4.1	3.2
Onar	2.6	3.4	3.0
NK - M1976	2.4	3.3	2.8
NK - M1139	2.6	3.1	2.8
Mean	2.5	3.5	

Seed Production

Yields of up to 1000/lbs/acre of clean seed were obtained near Moscow (Table 4) but were much lower in the Potlatch area.

Lower seed yields at Potlatch were a result of seed loss by shattering. To prevent shattering seed should be swathed at a moisture content of 40%.

Pollination requirements of sainfoin are not entirely known since there are questions on whether sainfoin is a cross of self-pollinated crop. Present indications are that insects are required for tripping the sainfoin flower but not for pollen transfer.

Table 4 - Seed yield of sainfoin at Moscow and Potlatch, 1968.

	Lb. of clean seed per acre		
Variety or Selection	Moscow	Potlatch*	Mean
Eski	958	46	502
Onar	1089	97	593
NK - M1976	924	121	522
NK - M1139	578	139	358
Mean	887	101	

*Some shattering loss.

Present Potential of Sainfoin

At the present time, sainfoin **can not** be recommended for general use in northern Idaho. However, if new varieties are developed which exhibit: (1) better stand persistence, (2) better regrowth after the first cutting and (3) better stand establishment, then sainfoin should have a place in northern Idaho. Since research on sainfoin breeding has only recently been initiated in the U. S., improved varieties should soon be available that are better adapted to northern Idaho conditions.

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PUBLISHED AND DISTRIBUTED IN FURTHERANCE OF THE ACTS OF MAY 8 AND JUNE 30, 1914, BY THE UNIVERSITY OF IDAHO COOPERATIVE EXTENSION SERVICE, JAMES E. KRAUS, DIRECTOR; AND THE U.S. DEPARTMENT OF AGRICULTURE, COOPERATING.

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