



# Annual Costs to Establish and Maintain Birdsfoot Trefoil Pastures in Northern Utah, 2012

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## INTRODUCTION

Sample costs to establish and maintain birdsfoot trefoil (BFT; *Lotus corniculatus*) in northern Utah on a per-acre basis under flood irrigation are presented in this publication. This publication is based on the practices of cooperators who participated in a Utah Natural Resources Conservation Service (NRCS) Conservation Innovation Grant (CIG) project. This publication is intended to inform production decisions, suggest potential returns and assist in the preparation of business and marketing plans. The practices described are the production practices and materials considered typical of a well-managed farm in the region, as determined by producer survey results from 2012, rather than the recommendations of Utah State University. Costs, materials, and practices used are not applicable to all situations, as management and cultural practices vary among producers within the region. The “Your Farm” column in the costs table is provided for your use.

This publication is meant to reflect birdsfoot trefoil establishment and maintenance costs on a small-scale cattle grazing area (5 to 10 acres). Birdsfoot trefoil is a perennial legume, and under proper irrigation and management, stands in northern Utah can persist for up to 8 years after seeding. Establishment costs are amortized annually based on a 6 year stand life.



## ESTABLISHMENT PROTOCOLS (Table 1)

### Soil Testing

The ideal time to address soil nutrient deficits is before new perennial pastures are seeded. Therefore, a soil test should be taken at least 2 weeks before fertilizer is ordered. Instructions for soil sampling are available from Utah State University at <http://www.usual.usu.edu/forms/index.html>.

### Fertilization

On the USU soil test form, specify 100% alfalfa as the crop to be grown, since birdsfoot trefoil resembles alfalfa in its growth habit and fertility requirements.

Fertilizer recommendations based on soil test results may be downloaded at <http://www.usual.usu.edu/about/next/index.html> (“Fertilizer Management for Alfalfa”). Fertilizers higher in phosphate and potassium and lower nitrogen are recommended. As birdsfoot trefoil is a legume, it may not require nitrogen if the correct strain of fresh inoculant is applied at planting. Inoculant may be included as a seed coating or applied separately, but it must be the strain specific to birdsfoot trefoil. Alfalfa inoculant is incompatible and will be ineffective. Fertilizer pricing provided by IFA (Intermountain Farmers Association, 2012).

### **Planting**

Birdsfoot trefoil may be planted in the spring after the last frost or in early fall at least 6 weeks before the first frost (e.g., the first week of August), if sufficient irrigation is available. A seeding rate of 8 lbs/acre pure live seed (PLS) is commonly recommended for pure stands of birdsfoot trefoil, but a rate as high as 20 lbs/acre for broadcast seeding may result in higher yields and fewer weeds in the establishment year. It is especially important to use certified seed for perennial pastures to achieve persistent stands and high sustained yields. The birdsfoot trefoil cultivar ‘Norcen’ has proven to be winter hardy and persistent in northern Utah. Seed costs average \$7.02/pound, but may range from \$3 to \$10 a pound (Western Seed, 2012).

### **Weed Control**

Birdsfoot trefoil does not compete well with weeds or established forages during the seeding year. To effectively remove an established grass pasture, apply Roundup® following irrigation, and cultivate after plant death, in approximately 7 days. Eptam and 2,4-DB may be applied to birdsfoot trefoil seedlings. For low-input or organic seeding, an oat companion crop of 1 lb/acre will displace weeds. In the seeding year, weeds or the oat companion crop should be clipped to reduce competition with birdsfoot trefoil seedlings for sunlight. A crop oil concentrate is also recommended in conjunction with herbicide application. All herbicide and weed control pricing was provided by IFA (Intermountain Farmers Association, 2012).



### **Establishment Year Management**

Spring-planted birdsfoot trefoil should not be grazed until it has begun to flower. It is important to leave stubble of at least 3 inches, especially during the seeding year. This is best-achieved using rotational stocking. Even on established stands, birdsfoot trefoil should not be grazed between early September and the first frost. This allows the plant to store nutrients in the crown and root required for spring regrowth.

## **ANNUAL MAINTENANCE (Table 2)**

### **Irrigation System**

The annual assessment cost of a flood irrigation system is estimated at \$30/acre plus labor. For northern Utah it is expected that irrigation at a rate of approximately 3 acre-feet per season will begin in May and end in early October (Orloff et al., 1997).

### **Fertilization**

Continue application of phosphate and potassium regime.

### **Weed Control**

Pursuit and Select applications are recommended, as well as continued use of crop oil concentrate. All herbicide pricing was provided by IFA (Intermountain Farmers Association, 2012).

### **Machinery and Ownership Costs**

Machinery costs for various activities are based on a survey of custom rates in the region. Costs of land rental/ownership, taxes, and insurance are not included, but should be considered.

## **REFERENCES**

- Intermountain Farmers Association, Country Stores. 2012. Personal interview. 26 September 2012.
- Orloff, S., H.L. Carlson, and L.R. Teuber (eds). 1997. Intermountain Alfalfa Management. Publ. 3366 of the University of California, Oakland. <http://anrcatalog.ucdavis.edu/Alfalfa/3366.aspx>
- Western Seed. 2012. Personal interview. 10 October 2012.

**Table 1: Birdsfoot Trefoil Pasture Establishment Costs, 1 acre**

Activity		Quantity	Unit	Price/Cost Per Unit	Total Cost/Acre	Your Farm
<b>Land Preparation</b>						
	Plowing	1	Acre	\$33.83	\$33.83	_____
	Harrow	2	Acre	\$9.82	\$19.65	_____
	Discing	2	Acre	\$16.14	\$32.28	_____
	Roller/Cultipack	1	Acre	\$8.91	\$8.91	_____
<b>Seeding</b>						
	Birdsfoot Trefoil Seed	8	Pound	\$7.02	\$56.16	_____
	Seeding	1	Acre	\$14.17	\$14.17	_____
<b>Fertilizer</b>						
	Phosphorus (11-52-0)	100	Pound	\$0.75	\$75.00	_____
	Potassium (0-0-60)	100	Pound	\$0.60	\$60.00	_____
	Fertilizer Application	1	Acre	\$5.75	\$5.75	_____
	Manure Application	1	Acre	\$57.50	\$57.50	_____
<b>Herbicide/Weed Control</b>						
	Roundup (before planting)	48	Oz	\$0.29	\$13.92	_____
	Roundup Application	1	Acre	\$6.65	\$6.65	_____
	Eptam (herbicide)	3	Pints	\$7.25	\$21.75	_____
	2,4-DB (herbicide)	3	Quarts	\$9.06	\$27.18	_____
	Crop Oil Concentrate	16	Oz	\$2.59	\$41.44	_____
	Herbicide Application	1	Acre	\$6.65	\$6.65	_____
<b>Irrigation (flood)</b>						
	Labor	5	Hours	\$15.00	\$75.00	_____
	Water Assessment	1	Share	\$30.00	\$30.00	_____
<b>Total Costs</b>					<b>\$585.84</b>	_____

**Table 2. Birdsfoot Trefoil Pasture Annual Maintenance Costs, 1 acre**

Activity	Quantity	Unit	Price/Cost Per Unit	Total Cost/Acre	Your Farm
<b>Fertilizer</b>					
Phosphorus (11-52-0)	100	Pound	\$0.75	\$75.00	_____
Potassium (0-0-60)	100	Pound	\$0.60	\$60.00	_____
Fertilizer Application	1	Acre	\$5.75	\$5.75	_____
Manure Application	1	Acre	\$57.50	\$57.50	_____
<b>Herbicide/Weed Control</b>					
Pursuit (herbicide)	4	Oz	\$3.87	\$15.48	_____
Select (herbicide)	11	Oz	\$0.66	\$7.26	_____
Crop Oil Concentrate	16	Oz	\$2.59	\$41.44	_____
Herbicide Application	1	Acre	\$6.65	\$6.65	_____
<b>Irrigation (flood)</b>					
Labor	5	Hours	\$15.00	\$75.00	_____
Water Assessment	1	Share	\$30.00	\$30.00	_____
<b>Establishment</b>					
	1	Annual	\$97.64	\$97.64	_____
<b>Total Costs</b>				<b>\$471.72</b>	_____

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This publication is issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Noelle E. Cockett, Vice President for Extension and Agriculture, Utah State University.