

NUTRIENT UPTAKE FOR ROUGH BLUEGRASS, 1998

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Rough bluegrass (*Poa trivialis*) was first grown in central Oregon in the mid-1970s. The crop consisted of the single cultivar, 'Saber', with relatively few acres until the mid-1980s. Since then, new varieties, which include 'Laser', 'Cypress', and 'Saber II' were introduced. Plantings steadily increased to approximately 5,300 acres in 1998. Cultural practices for rough bluegrass are substantially different from Kentucky bluegrass. Rough bluegrass is a shallow-rooted crop with a high water requirement. As harvest nears, growers maintain high moisture levels to cause the crop to lodge and keep the heads moist to reduce shatter and seed loss.

This research project was initiated to determine the nutrient uptake for rough bluegrass that would be used to assist growers in determining rate and timing of fertilizer applications to maximize their economic return. The 1998 growing season was the second year of a multi-year project conducted on commercial fields at two locations north of Madras, Oregon. Second year fields of the cultivars 'Cypress' and 'Saber II' were chosen for the study. The 'Cypress' location was fairly sandy soil with sprinkler irrigation, while the 'Saber II' location was on loamy soil using furrow irrigation. Row spacing at both locations was 15 inches apart.

Aboveground plant biomass samples were collected bi-weekly from April 16 to June 23. Two feet of two adjacent rows from three predetermined locations per field were clipped, dried, and weighed. A subsample was taken for analyses of nutrient content. The concentration of N, P, K, and S are given in Table 1.

Table 1. Aboveground plant biomass accumulation and nutrient concentration for Saber II and Cypress rough bluegrass, 1998.

Sampling Date	Biomass	N	P	K	S
	(lb/a)	------(%)-----			
<u>Saber II</u>					
April 16	2715	4.67	0.44	2.97	0.33
April 29	2642	4.63	0.52	3.39	0.39
May 13	4491	2.77	0.41	3.12	0.29
May 26	7709	1.97	0.34	2.52	0.21
June 9	8700	1.51	0.27	2.21	0.19
June 23	12024	1.61	0.26	1.78	0.21
<u>Cypress</u>					
April 16	2706	4.63	0.47	2.95	0.37
April 29	3190	3.83	0.48	3.42	0.35
May 13	4387	2.49	0.41	2.74	0.24
May 26	7394	2.28	0.35	2.39	0.23
June 9	7946	1.82	0.31	1.78	0.19
June 23	7999	1.87	0.29	1.46	0.18

Nutrient concentration decreased as plant biomass increased. Concentration of N, P, K, and S was similar for both sites early in the growing season and at harvest. Biomass was the similar for both sites at the initial sampling date, but the site planted with the cultivar Saber II produced approximately 25% more biomass than the site planted with the cultivar Cypress. A biomass of 4 to 6 tons per acre at harvest is comparable to many other species of grass grown for seed.

Table 2. Nutrient uptake for Saber II and Cypress rough bluegrass, 1998.

Sampling date	N	P	K	S
-----(lb/a)-----				
<u>Saber II</u>				
April 16	125	12	80	9
April 29	118	13	86	9
May 13	150	19	141	14
May 26	164	27	204	17
June 9	147	27	208	17
June 23	187	30	222	22
<u>Cypress</u>				
April 16	123	12	76	10
April 29	126	15	104	11
May 13	120	19	127	12
May 26	181	28	188	18
June 9	146	24	153	15
June 23	163	25	128	16

Nitrogen uptake at both sites was surprisingly high at the first sampling date (Table 2). More than two-thirds of the N was in the aboveground biomass when less than 25% of the biomass was accumulated. The early accumulation of N is important to growers. They should consider having most, if not all, fertilizer N applied by early April if the growth in 1998 is typical of most years. Applications in May and June are likely not an effective influence on yield.

Nitrogen accumulation in the aboveground biomass was between 150 and 200 lb/a. Last year's report contained an error when an amount of 300 lb/a was reported. When the error was corrected, N accumulation for both years was between 100 and 200 lb N/a.

Potassium accumulation was similar in amount to N, 150 to 225 lb/a, but occurred later than N accumulation. Accumulation of P and S were similar, between 15 and 25 lb/a. In contrast to the early accumulation of N, accumulation of P, K, and S did not reach near maximum until late May.