

## Falcata Alfalfa for Intermountain Western US Grazing Lands

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Legumes when grown in mixes with grasses in a pasture or range situations increase productivity and quality. Western rangelands occupy large tracts of public and private lands that could be more productive by including a legume. Ideally this legume would have a growth pattern similar to cool season grasses to utilize winter precipitation and respond to moisture when available during summer months. Alfalfa certainly represents a proven legume that responds to moisture producing well in the spring and through the summer with adequate water. The sativa type alfalfas that are used in North America have limitations that include bloat particularly in the spring, but more problematic is they lack a desired level of persistence. Falcata type alfalfa may represent a gene pool that provides alternatives not found in the sativa types, particularly for improved persistence.

Endurance alfalfa is a diploid falcata released in 2008 and is intended for use only in mixtures with grasses for grazing situations. For this study, Endurance was tested with and without irrigation to determine its value for inclusion in pasture situations. Endurance's productivity ranged from about 80% in the spring to as little as 25% in the late summer of four sativa type alfalfa's when grown in monocultures. As expected when both types of alfalfa were grown in mixtures with grasses they out yielded the grass monocultures. Furthermore, yield of the Endurance-grass mixtures was not statistically different than the sativa-grass mixtures (Table 1). More importantly to a grazing situation is that stands of Endurance did not decrease in the grass mixtures whereas sativa type alfalfas decreased by 40% in grass mixtures over three yr. Even though Endurance, the diploid falcata alfalfa, produced less in monocultures than the sativa types, production of a grass mixture with Endurance is not significantly different than a sativa-grass mixture. Furthermore, an Endurance-grass mixture should produce more over an extended period since it persists much better than the sativa types tested.

Table 1. Yield of two grasses in monocultures and in mixtures with sativa and falcata alfalfas. Grasses included Cache meadowbrome and Martin tall fescue. Alfalfas included Amerigraze, Ladak, P53V08, and Spreader III, all sativa types, and Endurance, a diploid falcata.

Entry	Harvest 1	Harvest 2	Harvest 3	Harvest4	Stand <sup>1</sup>
	----- Mg/ha -----				%
	----- Non-Irrigated -----				
Sativa Alfalfa's	4.05 a <sup>2</sup>	1.45 a	1.10 a	0.46 a	94 a
Endurance	2.21 c	0.83 b	0.32 cd	0.03 b	103 a
Grasses	3.25 b	1.49 a	0.20 d	0.05 b	- -
Sativa/Grasses	4.10 a	1.73 a	0.62 bc	0.27 a	74 b
Endurance/Grasses	3.91 a	1.67 a	0.29 cd	0.06 b	103 a
	----- Irrigated -----				
Sativa Alfalfa's	3.48 a	2.42 ab	2.44 a	1.95 a	79 b
Endurance	2.30 b	2.31 ab	1.25 dc	0.47 c	99 a
Grasses	2.33 b	2.02 b	1.04 d	0.71 bc	- -
Sativa/Grasses	3.12 a	2.29 ab	1.78 bc	1.59 a	59 c
Endurance/Grasses	2.99 a	2.51 a	1.49 c	0.91 b	99 a

<sup>1</sup> Percent of alfalfa stand remaining four years after establishment.

<sup>2</sup> Means within a column followed by the same letter are not significantly different (0.05).