

2001

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Heathcliffe Riday
Iowa State University

E. Charles Brummer
Iowa State University

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Recommended Citation

Riday, Heathcliffe and Brummer, E. Charles, "Hybrid Alfalfa" (2001). *Iowa State Research Farm Progress Reports*. 1796.
http://lib.dr.iastate.edu/farms_reports/1796

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Abstract

One goal of the Iowa State University forage breeding program is to increase alfalfa yields. In many crops such as corn, hybrids have been used to increase yield. Hybrid alfalfa varieties could be a possible way to increase alfalfa forage yield. Commercially available alfalfa varieties are purple flowered and are of the sativa type. A second type of alfalfa, falcata, has yellow flowers and is more winter hardy and morphologically distinct from sativa alfalfa. We made sativa-falcata hybrids and tested them to determine if hybrids would outperform commercially available varieties and thus offer the possibility of creating higher yielding varieties for Iowa.

Keywords

Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences

Hybrid Alfalfa

Heathcliffe Riday, graduate research assistant
E. Charles Brummer, associate professor
Department of Agronomy

yearly yield for each alfalfa type was calculated at each location for 1998 and 1999 on a lbs./plant basis.

Introduction

One goal of the Iowa State University forage breeding program is to increase alfalfa yields. In many crops such as corn, hybrids have been used to increase yield. Hybrid alfalfa varieties could be a possible way to increase alfalfa forage yield. Commercially available alfalfa varieties are purple flowered and are of the sativa type. A second type of alfalfa, falcata, has yellow flowers and is more winter hardy and morphologically distinct from sativa alfalfa. We made sativa-falcata hybrids and tested them to determine if hybrids would outperform commercially available varieties and thus offer the possibility of creating higher yielding varieties for Iowa.

Materials and Methods

Thirty-six sativa types, forty-five sativa-falcata hybrids, and ten falcata types were grown at Ames and Nashua in plots of 10 plants each, replicated four times. Plots were established during the spring of 1998 and two harvests for yield were taken in 1998 (August and October). Three harvests for yield were taken in 1999 (May, July, and September). Average total

Results and Discussion

Sativa-falcata hybrid alfalfa out-yielded the currently grown sativa type alfalfa during 1998 and 1999 both at Ames and Nashua (Table 1). Both sativa-falcata hybrid alfalfa and sativa alfalfa out-yielded falcata alfalfa. This experiment suggests that sativa-falcata hybrid alfalfa could be used to obtain significantly higher yield than current commercially available alfalfa varieties. Yield from the plots of this experiment will be evaluated through the 2002 growing season to examine persistence and longer term yield trends of sativa-falcata hybrid alfalfa. In addition to yield, we are examining agronomically important traits such as plant height, maturity, growth habit, winter survival, regrowth, and forage quality.

During fall 1999 at Nashua and Ames we started to evaluate around 100 falcata alfalfa plants from over 30 falcata alfalfa varieties gathered from throughout Eurasia to determine which would best be suited for Iowa and yield the most as sativa-falcata hybrids. These studies may help alfalfa breeders increase forage yields in the coming years.

Table 1. Yields of the sativa and falcata types of alfalfa and their hybrid for 1998 and 1999, at Ames and Nashua, Iowa.

	Alfalfa Type		
	Sativa	Sativa-Falcata Hybrid	Falcata
	----- Yield (lbs./plant) -----		
All Years & Locations	0.22	0.24	0.19
Ames	0.24	0.26	0.20
Nashua	0.20	0.22	0.19
1998	0.11	0.12	0.10
1999	0.33	0.36	0.28

All comparisons between alfalfa types are significantly different.