

Why is variety Selection important for Pest Management?

Important Traits:

- ❑ High Yields (positively correlated with weed, insect & disease resistance)
- ❑ Vigorous re-growth
- ❑ Persistence (Standability) – Weeds are a result of loss of stand! Ability to recover from stress
- ❑ Weeds (competition)
- ❑ Insects (regrowth, specific resistance)
- ❑ Diseases/nematodes (root health)
- ❑ Look for Specific Pest resistances in your area

Check Out the Varieties

www.nafa.org

Fall Dormancy Rating	Number of varieties	Fall Dormancy Class
2	5	V. Dormant
3	13	Dormant
4	82	Dormant
5	31	M. dormant
6	14	Semi-dormant
7	7	Semi-dormant
8	9	Non-dormant
9	17	Non-dormant
10	3	V. Non-dormant
Total	181	

Alfalfa Variety Ratings 2020

Winter Survival, Fall Dormancy & Pest Resistance Ratings for Alfalfa Varieties



This National Alfalfa & Forage Alliance publication is intended for use by Extension and agri-business personnel to satisfy a need for information on characteristics of certified-eligible alfalfa varieties. NAFA updates this publication annually.

WINTER SURVIVAL, FALL DORMANCY & PEST RESISTANCE RATINGS FOR ALFALFA VARIETIES

FALL DORMANCY (FD) RATING DESCRIPTIONS			
FD Rating	Description	FD Rating	Description
1	Very Dormant	6	Semi-Dormant
2	Dormant	7	Non-Dormant
3	Moderately Dormant	8	Very Non-Dormant
4		9	
5		10	
		11	

FD is the degree of fall alfalfa growth, as a response to temperature and day length. Lower dormancy ratings exhibit less fall growth, while higher dormancy ratings indicate greater fall growth. FD ratings are indices assigned by comparing the height of fall growth with standard check varieties, and tested across locations and years to accurately represent dormancy response across environments.

RESISTANCE RATINGS		
Plants	Resistance Class	Class Abbreviations
	Susceptible	S
	Low Resistance	LR
10-30%	Moderate Resistance	MR
31-50%	Resistance	R
>50%	High Resistance	HR

WINTER SURVIVAL RATINGS		
Category	Check Variety	Score
Extremely Winterhardy	ZC 9830	1
Very Winterhardy	5262	2
Winterhardy	WL325HQ	3
Moderately Winterhardy	G-2852	4
Slightly Winterhardy	Archer	5
Non-Winterhardy	CUF 101	6

Information is obtained from the Association of Official Seed Certifying Agencies (AOSCA) and the National Alfalfa Variety Review Board (NAVRB) report. Blank spaces indicate the variety has no approved rating through AOSCA.

Variety Characteristics

(Reported by companies, NAFA Variety Leaflet)

Alfalfa has the widest range of pest resistance of virtually any crop

Characteristics:	Range
Fall Dormancy	2-10
Winter Survival	1 (superior)-6 (none)
Bacterial Wilt	LR to HR
Fusarium Wilt	LR to HR
Anthracnose Race 1	LR to HR
Phytophthora Root Rot	LR to HR
Spotted Alfalfa Aphid	LR to HR
Pea Aphid	LR to HR
Blue Alfalfa Aphid	LR to HR
Stem Nematode	LR to HR
Aphanomyces Race 1	LR to HR
Aphanomyces Race 2	LR to HR
S. Root Knot Nematode	LR to HR
N. Root Knot Nematode	LR to HR
Potato Leafhopper	LR to HR
Mulifoliolate Expression	L to H
Continuous Grazing Tolerance	Y or N
Standability Expression	MR to R
Salt Tolerance (G-Germination, F-Forage)	G or F
Technology (H-Hybrid, R-RRA, HarvXtra)	C or H or R

Pest Resistance Ratings in Alfalfa:

HR	(Highly Resistant)	>51%
R	(Resistant)	31-50%
MR	(Moderately Resistant)	15-30%
LR	(Low Resistance)	6-14%
S	(Susceptible)	<5%
T	(Tolerance)	*

**Tolerance is the ability of a population to endure a pest or environmental stress. Plants perform in spite of disorder.*

Why is only 50% resistance required for High Resistance?

- Alfalfa varieties are a population
 - Complex inheritance (polyploidy)
 - Alfalfa Varieties are a synthetic made up of a range of plant types (susceptible, resistant)
- High 'plasticity' of alfalfa densities
 - Yields are similar with young stands ranging from 20 plants/ft² (0.1 m²) to 100 plants/ft²
 - We can afford to lose 80% of seedling plants and still have a good stand, and high yields with remaining resistant plants.

Pest Resistance:



Nematode damage



Spotted Alfalfa Aphid

Alfalfa stem nematode damage



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Key Traits and Resistances (SJV):

Traits (Resistances)	Recommended Ratings (SJV)	Notes
Winter Survival (WS)	*	Not needed
Bacterial Wilt (BW)	R	Occassional
Verticillium Wilt (VW)	MR	Not common
Fusarium Wilt (FW)	HR	Important disease
Phytophthora (PRR)	HR	Important disease
Aphanomyces	*	Not common
Spotted Alfalfa Aphid(SAA)	HR	Key pest
Pea Aphid (PA)	HR	Key pest
Blue Alfalfa Aphid (BAA)	HR	Key pest
Potato Leafhopper (PLH)	*	Not common
Stem Nematode (SN)	HR	Key widespread problem
S. Root Knot Nematode	MR	Specific sites
N. Root Knot Nematode	*	Not common
Salinity Tolerance	Good	Specific sites

Remember:

- ❑ **Pest Resistance is not absolute**
 - V. high pest numbers can overwhelm even highly resistant varieties
 - 200 kindergardeners wrestling a pro?
- ❑ **Since varieties are populations, crops can still be impacted**
- ❑ **Does not negate other IPM techniques**

The importance of varieties to pest control

- ❑ Plant breeders have contributed significantly to the IPM goals for alfalfa
- ❑ Really, the ONLY economic option in many cases, especially diseases
- ❑ Variety Selection is an important IPM tool!

Intermountain 4 cut (Siskiyou)

FD 3-4



**Desert 11 cut
(Imperial County)**

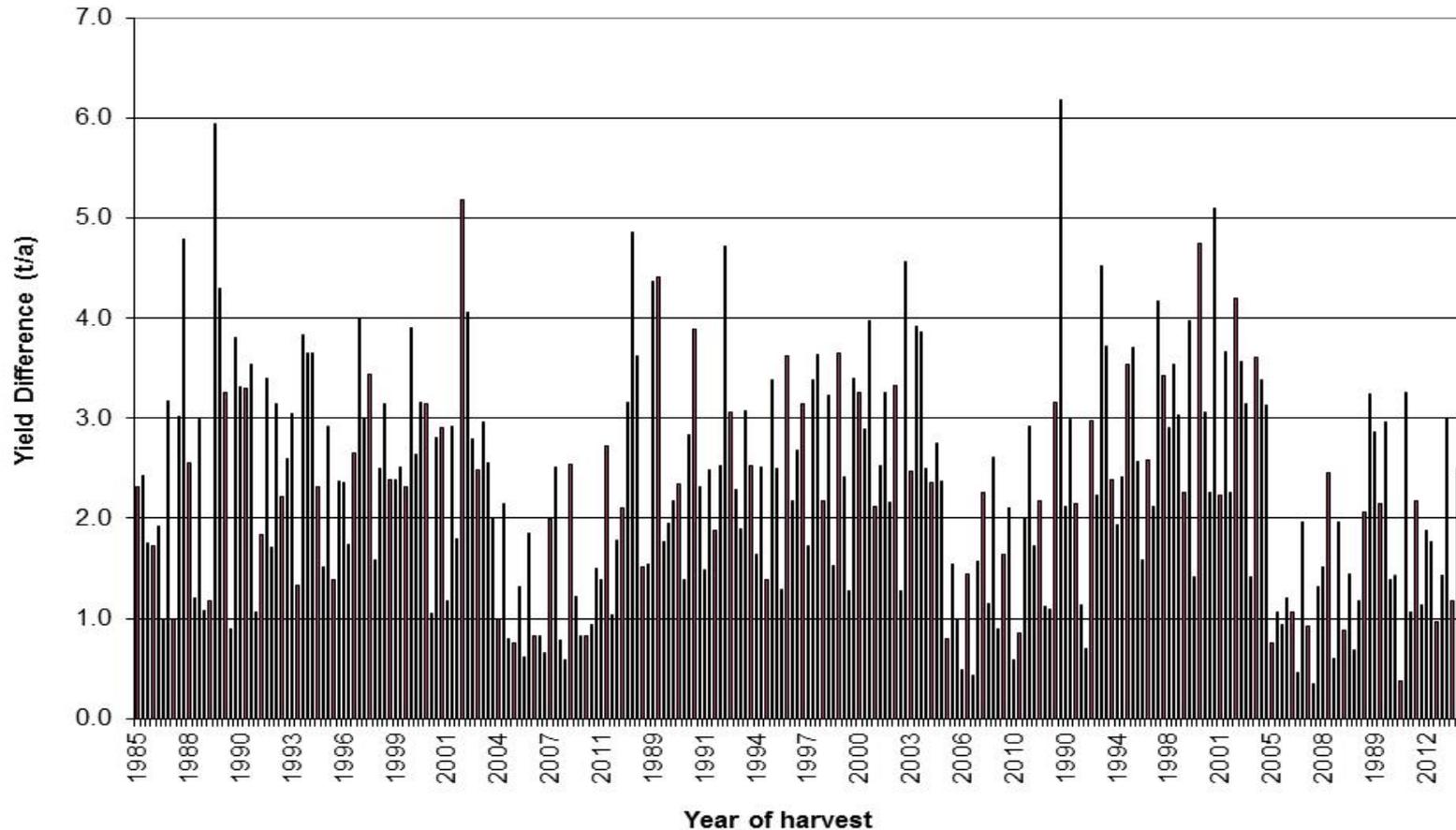
FD 8-10

Yields:

- **Integrates many traits**
 - **Fall Dormancy**
 - **Insect and disease resistance**
 - **Persistence**
- **Typically most important trait economically**

Yield Matters!

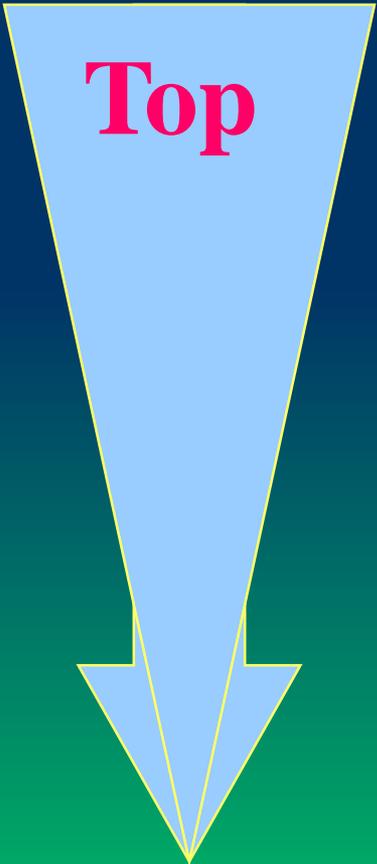
Yield difference in UW alfalfa variety trials between top and bottom varieties, Wisconsin, 1985 to 2012 after seeding year



Yield Differences: UC

Location:	Duration of Testing (years)	Ave. Trial Yield (Mg/ha/y)	Ave. Yield Difference Due to Variety	Potential Yield Difference (%)
Intermountain	32	13.8	3.3	23.9%
Sacramento Valley	27	20.7	5.9	28.4%
San Joaquin Valley	25	22.7	7.8	34.3%
Coastal	4	9	2.5	27.4%
High Desert	4	20.7	3.9	19.1%
Low Desert	21	17.5	33.7	21.0%
Statewide	113	19.9	6.0 (2.6 t/a)	30.0%

Criteria for Choosing Alfalfa Varieties:



Top

- ❑ Yield Potential
- ❑ Fall Dormancy for region
- ❑ Disease and Insect Resistance
- ❑ Persistence
- ❑ Biotech Traits (RR/HarvXtra)
- ❑ Potential Forage Quality
- ❑ Price of seed
- ❑ Hats

Web Delivery (<http://alfalfa.ucdavis.edu>)

The screenshot shows a web browser window displaying the UC Davis Alfalfa & Forages website. The browser's address bar shows the URL [alfalfa.ucdavis.edu/+producing/variety/?loc=UC Davis](http://alfalfa.ucdavis.edu/+producing/variety/?loc=UC+Davis). The website header includes the University of California logo and navigation links: Home, Producing Alfalfa, Variety Selection, Symposium, People, and Other Crops. The main content area is titled "Variety Selection" and features a map of California with four regions highlighted: Intermountain Areas, Sacramento Valley, San Joaquin Valley, and Low Desert Regions. The Intermountain Areas region is selected, leading to the "UC Davis Cultivar Alfalfa Variety (planted 2014)" section. This section provides a "Final Summary" link for the 2014-2017 multi-year summary and "Multi-year and Single-year Data" links for the years 2017, 2016, and 2015. A similar section is visible for the "UC Davis Cultivar Alfalfa Variety (planted 2011)", with summary and data links for 2011-2014 and 2011-2013. The browser's taskbar at the bottom shows the Windows Start button, search icon, and several open applications, including a presentation slide titled "funding, seed companies". The system tray in the bottom right corner displays the time as 10:32 PM on 6/20/2018.

Many Thanks!



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