

ALFALFA VARIETIES AND BRANDS FOR CALIFORNIA'S DIFFERENT SOILS AND CLIMATES

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Alfalfa is an important cash crop in every important agricultural county of California. Over 90 percent of the tonnage produced is either harvested in the form of a bale or a cube, with only a small quantity going for dehydration, greenchop feeding, ensilage, or direct pasture. The use of alfalfa has some influence on variety selection, but is not the greatest factor in that selection. It is a vital part of the varietal selection process when late fall, winter, or spring harvests are desired. Dormancy and fall growth potential of alfalfa varieties dictate whether or not any forage will be available to harvest during these periods of time (Table 1).

Undoubtedly the greatest factors influencing varietal performance are climate and soil type. Since they affect so strongly the effect of diseases, insects, and nematodes, the great soil and climate (rainfall, temperature, humidity, frost-free days, etc.) diversity expressed throughout the alfalfa growing areas of California make the proper varietal or brand choice one of the most difficult considerations facing farmers. Fortunately alfalfa breeders, both public and private, from California and from out of state, have given us a great number of varieties that can be evaluated for adaptation to our six major climate areas. These are, with the approximate percent of state acreage for each area:

1. San Joaquin Valley - 50%
2. Low desert valleys of southern California - 25%
3. Northern California high elevation mountain valleys - 13%
4. Sacramento Valley - 8%
5. High desert valleys of southern California - 2%
6. Coastal Valleys - 2%

These areas are distinctly different and require varieties of different dormancy characteristics (Table 1). In addition, among dormancy groups, varieties have different capabilities to resist diseases, insects, nematodes, short cutting frequencies, etc. (Table 2).

Because of these differences and the diversity of California's producing areas, it becomes essential that growers know the intended use for their alfalfa, the soil and weather characteristics that may limit production, as well as the characteristics of the alfalfa varieties and brands that are offered for sale. When one has these factors in mind, he can make an intelligent choice that will insure that he achieves the important requirements in alfalfa production of:

1. High yields.
2. High stand persistence through the length of the alfalfa rotation.
3. Proper quality for the intended market.

The information contained in this paper is provided as an aid to producers and others interested in understanding factors affecting varietal adaptation. Hopefully it will help define as accurately as possible the characteristics of varieties and brands sold throughout the state. Some varieties may not be listed. Their omission has been inadvertent and not deliberate. This information supplements and updates that published in the proceedings of past symposia since 1977. Information was provided by those responsible for the development of the variety or brand.

UC Variety and Brand Evaluation Program

A total of 27 replicated yield trials, where harvests are measured and other observations made, are located mostly on experimental stations (Tables 3,4,5,6,9,10,11) but also in growers' fields (Tables 7 and 12) in areas where no experimental station is immediately available. Data from these 27 trials is supplemented by replicated observational trials planted in farmers' fields, and not harvested for yield, at 43 different locations throughout the state. These replicated trials provide stand persistence ratings (Table 13), opportunities to make observations on fall and winter dormancy (Table 14), summer recovery,

ability to combat weed invasion, and occasionally ratings on disease (Tables 8 and 15), insect, and nematode (Table 12) tolerance or resistance. Examples of some of these data are tabularized. Collectively, they provide a tremendous resource of information on the local adaptation of alfalfa varieties and brands.

Most of the University of California variety trials, where yield has been measured, last only four years. In many instances, these trials are kept an additional one or two years in order to obtain stand persistence information. An example of a fifth year stand persistence ranking is given in Table 5 for the University of California at Davis. These soils are prone to have problems with *Phytophthora* root rot as they are a clay loam soil, although quite well drained internally. Nevertheless, on this soil, only varieties with good resistance to *Phytophthora* root rot can persist, as shown with the percent stand remaining ratings for the 18 entries. CUF 101 and WL 512, although containing a low level of resistance to *Phytophthora* root rot, just don't persist over a long period of time, as shown by this fifth year ranking.

Table 3 shows fourth year stand rankings for 48 entries planted at the West Side Field Station in Fresno County on Panoche clay loam soils. These soils are similar to the Yolo clay loam soils in Davis in that they are heavy but with fairly good internal drainage. Nevertheless, they are prone to problems with *Phytophthora* root rot if irrigated too frequently or with too much water in one application. In this trial you can quickly see that only the semidormant varieties with Lahontan-type background are persisting. The top entry, USDA-SAA-PGL, is a lahontan derivative from the USDA program at Tucson, Arizona. Falkiner was derived from Lahontan by the CSIRO in New South Wales, Australia. Fortunately, some of the newer nondormant varieties and/or experimental selections do show persistence, such as NK K7-701. At this location, productivity is affected when the stand drops below about 60 percent of normal. Table 4 shows two-year stand persistence ratings of some additional alfalfa varieties and brands at the West Side Field Station. In this trial, many nondormant varieties are showing good persistence two years after planting. Apparently breeders are improving in their level of resistance to *Phytophthora* root rot.

A similar situation is evident in the semidormant trial at U.C. Davis, illustrated in Table 6, where new varieties and experimental selections such as WL 77-T-25 and UC 1031 show good tolerance to stand decline due to *Phytophthora* root rot and other disease organisms.

Normally the high elevation mountain valleys have a much longer stand life than do the low elevation valley areas of the Sacramento, San Joaquin and low desert valleys. Table 7 gives a simplified stand estimate after the fourth year of planting at McDoel, Butte Valley in Siskiyou County, approximately 4300 feet elevation. Also given are tons per acre to illustrate that with dormant varieties it is more difficult to associate a lower yield with poor stands, although in general this trend still exists. For example, Epic (ranked third) and NAPP 62 (ranked fourth) had only average stands while WL 312 (ranked fifth) had a poor stand.

Tables 10 and 11 summarize yield over eight years and percent of original stand remaining after eight production years at the Cedarville Airport, the site of the Modoc County Experimental Station. Note the three lowest yielding varieties over an eight-year average, Nevada Syn WW, Resistador II and Washoe, all had the highest percent stand remaining. Climate can seriously modify the productive ability of varieties with good stands.

Many other observations are made both at experiment station sites where yields are taken and at experimental sites located in farmers' fields, as in the case of leaf disease observations made in Humboldt County in a coastal environment under cool climate conditions (summarized in Table 8) and in the Tulare County first year observations (summarized in Tables 13 and 15).

Fall dormancy information is gathered by measuring height of alfalfa during the fall months, usually two to three weeks after the last fall cutting. Table 9 summarizes some fall dormancy readings in the cold area of Tulalake in Siskiyou County, and Table 14 in the warm valley area of Tulare County. The fact that the height measured in both trials was similar has no significance as they reflect completely different environments. When compared relatively with each other, however, they do indicate those varieties with more height having less winter dormancy than those varieties with lower height readings. These kinds of data are used to develop information such as contained in Tables 1 and 2.

Acknowledgments

Much of the yield information has been collected by farm advisors, experiment station workers, extension specialists, and staff research associates, cooperating. Most of this information is not officially published but is available by contacting the appropriate individual conducting local tests.

Many people have assisted in providing information that has been summarized in this paper. I am grateful for the many private company breeders who also have assisted in assembling information from many different sources.

Table 1. Alfalfa variety and brand growth characteristics, principal areas of use, and distributor/owner/originator.

Variety or brand	Winter ¹ dormancy	Fall ² growth	Principal ³ areas of use	Distributor or owner or originator	Information supplied by:
WINTER DORMANT					
Anchor	D	2	8	North American Plant Breeders	Jim Moutray
Apollo	D	3	6,8	" "	" "
Apollo II	D	3	6,7,8	" "	" "
Armor	D	2	6,7,8	" "	" "
AS-67	D	2	8	Ferry-Morse	Phil Robnett/Tony Wilson
AS-60F	D	3	8	" "	" "
Atra 55	D	2	8	Arnold-Thomas Seed Service	Jack McGillis
Blazer	D	2	8	Union Seed Co.	Jess Bice/Don Brown
DeKalb Brand 120	D	2	8	Ramsey Seed/ DeKalb-Pfizer Genetics	Doug Roberts
DeKalb Brand 130	D	3	2,8	" "	" "
DeKalb Brand 131	D	3	8	Ramsey Seed	Tim Martin
Epic	D	2	8	Larry Peterson Limited	R. R. Kalton
Gladiator	D	2	8	Northrup King	Bill Knipe
Iroquois	D	1	8	New York College of Ag., Cornell Univ.	R. P. Murphy/C. C. Lowe
Oneida	D	1	8	" "	" " "
Pacer	D	2	8	Union Seed Co.	Jess Bice/Don Brown
Peak	D	2	8	Larry Peterson Limited	R. R. Kalton
Phytor	D	2	8	Northrup King	Bill Knipe
Pioneer Brand 524	D	2	8	Pioneer Hi-Bred International Inc.	Boyd Hartman
Pioneer Brand 526	D	2	8	" "	" "
Pioneer Brand 532	D	3	7,8	" "	" "
Pioneer Brand 545	D	2	8	" "	" "
Raidor	D	2	8	" "	" "
Ranger	D	1	8	USDA/Univ. of Nebraska	Vern Marble
RS 209	D	3	6,8	Ramsey Seed Co.	Tim Martin
Spredor 2	VD	1	8	Northrup King	Bill Knipe
Summit	D	3	6,8	NC+ Calif. Seed	Jim Loe
Sunrise	D	1	6,8	" "	" "
Thor	D	2	8	Northrup King	Bill Knipe
Trumpetor	D	2	8	" "	" "
WL 215	D	2	8	Germain's/W-L Research	Larry Satterlee
WL 219	D	3	8	" "	" "
WL 220	D	2	8	" "	" "
WL 221	D	2	8	" "	" "
Valor	D	1	8	Union Seed Co.	Jess Bice/Don Brown
Vancor	D	2	8	Northrup King	Bill Knipe
Vernal	D	1	8	University of Wisconsin	Vern Marble
SEMI WINTER DORMANT					
Alpha I	SD	4	2,3,5,6,8	NC+ Calif. Seed	Jim Loe
AS-49	SD	4	2,3,5,6	Ferry-Morse	Phil Robnett/Tony Wilson

Table 1. (Continued)

Variety or brand	Winter ¹ dormancy	Fall ² growth	Principal ³ areas of use	Distributor or owner or originator	Information supplied by:
AS-49R	SD	4	2,3,5,6	" "	" " " "
Cimarron	SD	4	2,5,6,8	Great Plains Research Co., Inc.	Thad Busbice
Condura 74 Brand	SD	4	2,5,6,8	Continental	Eldon Hoffman
DeKalb Brand 167	SD	4	2,3,5,6	Ramsey Seed	Tim Martin
GT-55	SD	3	2,3,5,6,8	Ferry-Morse	Phil Robnett/Tony Wilson
Hawk Brand	SD	3	2,8	Green Thumb, Inc.	Jim Froman
Lahontan	SD	3	2,3,5,6	USDA/Univ. of Nevada	Boyd Hartman
NC+ 5500 Brand	SD	4	2,3,5,6	NC+ Calif. Seed	Jim Loe
Pike	SD	4	2,3,4,5, 6,7	Northrup King	Bill Knipe
Pioneer Brand 555	SD	4	6,8	Pioneer Hi-Bred International, Inc.	Boyd Hartman
Resistador II	SD	4	2,5,6,7,8	Northrup King	Bill Knipe
SD 76 Brand	SD	4	2,5,6,8	Garner Seed	Bob Shotwell
Seagull Brand	SD	3	2,8	Green Thumb, Inc.	Jim Froman
WL 309	SD	3	6,8	Germain's/W-L Research	Larry Satterlee
WL 310	SD	2	2,8	" "	" "
WL 311	SD	3	2,8	" "	" "
WL 312	SD	3	2,8	" "	" "
WL 313	SD	3	8	" "	" "
WL 314	SD	3	7,8	" "	" "
WL 315	SD	3	6,7,8	" "	" "
WL 318	SD	4	2,5,6,8	" "	" "
1019 Brand	SD	4	2,3,4,5,6, 7,8	Northrup King	Bill Knipe
Vanguard	SD	4	6,8	North American Plant Breeders	Jim Moutray
Washoe	SD	3	2,4,5,6,8	USDA/Univ. of Nevada	Boyd Hartman

INTERMEDIATE WINTER DORMANT TO MODERATELY NON WINTER DORMANT

Amador	ID	5	2,3,4,5,6, 7	Northrup King	Bill Knipe
Baron	ID	4	2,3,4,5,6	North American Plant Breeders	Jim Moutray
Caliverde 65	ID	4	2,3,5,6	Univ. of Calif.	Vern Marble
Condura 73 Brand	ID	4	2,3,5,6	Continental	Eldon Hoffman
DeKalb Brand 185	MND	5	4,5,6	Ramsey Seed	Tim Martin
Joaquin 11	MND	5	2,3,4,5,6	Security Ag Research	Steve Rusconi
Mesilla	MND	5	2,4	New Mexico State Univ.	Bill Melton
NC+ 6600 Brand	ID	5	3,5,6,7	NC+ Calif. Seed	Jim Loe
NC+ 8000 Brand	MND	7	4,5,6	" " "	" "
NC+ 8800 Brand	ID	5	4,5,6	" " "	" "
Pioneer Brand 581	ID	4	2,3,5,6	Pioneer Hi-Bred International	Boyd Hartman
WL 450	MND	5	3,5,6	Germain's/W-L Research	Larry Satterlee
919 Brand	ID	5	3,4,5,6	Northrup King	Bill Knipe

Table 1. (Continued)

Variety or brand	Winter ¹ dormancy	Fall ² growth	Principal ³ areas of use	Distributor or owner or originator	Information supplied by:
NON WINTER DORMANT					
Ardiente	ND	6	1,3,4,5	Ferry-Morse	Phil Robnett/Tony Wilson
AS-13R	ND	6	3,4,5,6	" "	" "
Galaxy	ND	6	1,3,4,5,6	NC+ Calif. Seed	Jim Loe
GT-13R Plus	ND	6	3,4,5,6	Ferry-Morse	Phil Robnett/Tony Wilson
Matador	ND	6	1,4,5,6	Northrup King	Bill Knipe
Moapa 69	ND	6	1,3,4,5,6	USDA/Univ. of Nevada	Boyd Hartman
ND 80 Brand	ND	6	1,3,4,5,6	Garner Seed Co.	Bob Shotwell
Pierce	ND	7	1,4,5	Northrup King	Bill Knipe
WL 508	ND	6	1,3,4,5,6	Germain's/W-L Research	Larry Satterlee
WL 512	ND	6	1,3,4,5,6	" "	" "
WL 514	ND	6	1,3,4,5,6	" "	" "
WL 515	ND	6	1,2,3,4,5,6	" "	" "
819 Brand	ND	6	1,4,5	Northrup King	Bill Knipe
Valador	ND	6	1,4,5	" "	" "
VERY NON WINTER DORMANT					
Converde 95 Brand	VND	7	1,3,4,5	Continental	Eldon Hoffman
CUF 101	VND	8	1,4,5	Univ. of Calif.	Bill Lehman
El Unico	VND	7	1,4	Univ. of Arizona	Mel Schonhorst
Granada	VND	8	1,4,5	North American Plant Breeders	Jim Moutray
Hayden	VND	7	1,4	Univ. of Arizona	Mel Schonhorst
Lew	VND	7	1,3	" " "	" "
Maxidor	VND	8	1,4,5	Northrup King	Bill Knipe
Mesa Sirsa	VND	7	1	Univ. of Arizona	Mel Schonhorst
Pioneer Brand 572	VND	7	1,3,4,5	Pioneer Hi-Bred International	Boyd Hartman
Rincon	VND	7	1	New Mexico State University	Bill Melton
Sonora 70	VND	7	1	Univ. of Arizona	Mel Schonhorst
UC Cargo	VND	7	1,4	Univ. of Calif.	Bill Lehman
UC Salton	VND	7	1,4	" " "	" "

¹Winter Dormancy

VND = Very nonwinter dormant
 ND = Nonwinter dormant
 MND = Moderately nonwinter dormant
 ID = Intermediate winter dormant
 SD = Semi winter dormant
 D = Winter dormant
 VD = Very winter dormant

²Fall Growth Similarities

1 = Vernal
 2 = Thor
 3 = Lahontan
 4 = Caliverde 65
 5 = DeKalb Brand 185
 6 = Moapa 69
 7 = UC Cargo
 8 = CUF 101

(continued next page)

3Principal Areas of Use

- 1 = Low desert valleys of southern California, southern Arizona, southern Nevada, and southern New Mexico.
- 2 = High desert valleys of southern California, southern Arizona, southern Nevada, southern New Mexico and west Texas.
- 3 = Coastal valleys of central and southern California.
- 4 = Southern San Joaquin Valley.
- 5 = Northern San Joaquin Valley.
- 6 = Sacramento Valley.
- 7 = North coastal valleys.
- 8 = High elevation mountain valleys of northern California, Nevada, northern Arizona, and northern New Mexico.

Table 2. Alfalfa variety and brand ratings for pest resistance.*

Variety or brand	SAA	PA	BAA	PRR	Sc	Rz	BW	FW	S An	CLS	DM	SN	RKN
WINTER DORMANT													
Anchor	S	R	S	S	S	S	R	S	S	T	R	T	S
Apollo	MR	R	S	R	S	S	R	MR	R	T	T	MT	S
Apollo II**	S	MR	S	R	--	--	R	HR	MR	--	--	MR	--
Armor	S	MR	S	R	--	--	R	R	MR	--	--	--	--
AS-67	T	T	--	T	--	--	R	MR	MR	MR	--	--	MR
AS-60F	T	T	--	T	--	--	T	MR	T	--	T	MR	T
Atra 55	S	S	S	S	S	S	R	--	S	R	T	S	--
Blazer	S	R	S	MR	S	S	HR	R	MR	--	--	R	--
DeKalb Brand 120	S	HR	--	R	--	--	HR	R	T	--	--	--	--
DeKalb Brand 130	R	R	MT	T	--	T	R	MR	MR	HT	--	MR	--
DeKalb Brand 131	R	S	S	S	--	--	MR	--	S	T	R	S	--
Epic	T	R	--	R	--	--	HR	R	MT	T	--	MR	--
Gladiator	S	R	S	S	--	--	R	T	T	MR	R	MR	--
Iroquois	S	S	S	S	S	S	R	--	S	T	--	S	--
Oneida	S	S	S	R	--	--	HR	--	S	R	HT	S	--
Peak	S	R	S	MR	S	S	HR	R	T	--	--	R	--
Phytor	S	S	S	R	--	--	R	--	S	MR	MR	S	--
Pioneer Brand 524	T	MT	--	--	--	--	MR	R	--	--	MR	--	--
Pioneer Brand 526	T	MT	--	--	--	--	R	--	--	--	MR	--	--
Pioneer Brand 532	T	T	--	MR	--	--	R	R	MR	--	--	--	--
Pioneer Brand 545	T	MT	--	R	--	--	R	R	--	--	--	--	--
Raidor	S	S	S	S	--	--	R	MR	R	R	R	MR	--
Ranger	S	S	S	S	--	--	T	--	S	MT	HT	S	--
RS 209	T	R	S	R	S	S	R	R	R	T	T	S	S
Spredor 2	S	S	S	S	--	--	HR	--	S	R	R	--	--
Summit	R	R	MT	MR	--	MT	R	MR	T	T	T	R	--
Sunrise	R	ST	S	ST	--	--	R	MR	T	T	MR	T	--
Thor	S	S	S	S	--	--	HR	--	S	R	R	T	--
Trumpetor**	S	R	S	S	--	--	MR	R	R	R	R	MR	--
WL 215	T	T	S	S	--	--	R	MR	S	T	MR	S	--
WL 219	MR	HR	S	T	--	T	R	MR	T	MR	MR	S	--
WL 220	MR	HR	S	MR	--	T	R	S	MR	T	T	S	--
WL 221	R	R	--	T	--	--	R	MR	MR	HT	--	MR	--
Valor	S	R	S	S	S	S	R	--	MT	MT	--	--	--
Vancor	S	R	S	R	--	--	R	MR	R	R	R	R	--
Vernal	S	S	S	S	--	--	R	--	S	T	HT	S	HT
SEMI WINTER DORMANT													
Alpha I	R	HR	MT	R	--	T	R	MR	R	T	MR	MR	--
AS-49	T	S	--	T	T	--	MR	R	S	HT	HT	T	S
AS-49R	T	T	--	MR	T	--	MR	R	--	HT	HT	MR	S
Cimarron	MR	R	S	MR	--	--	R	R	R	MR	T	--	--
Condura 74 Brand	R	R	MT	R	--	T	R	MR	R	T	MR	MR	--
DeKalb Brand 167	R	T	S	MR	--	--	T	--	S	T	T	T	--
GT-55	MR	MR	T	R	--	T	R	R	R	T	T	MR	T
Hawk Brand	R	R	--	R	--	--	R	MR	MR	MR	T	T	S
Lahontan	T	S	S	MR	S	S	R	S	S	S	S	R	S
NC+ 5500 Brand	R	R	S	R	--	--	R	--	S	T	T	T	--
Pike	MR	R	S	R	--	--	MR	MR	S	R	R	R	MR
Pioneer Brand 555	T	T	--	S	--	--	R	R	MR	--	MR	--	--
Resistador II	R	T	S	T	--	--	MR	--	S	R	R	R	--
SD 76 Brand	R	R	MT	MR	--	T	R	MR	MR	T	T	HT	--
Seagull Brand	R	R	--	R	--	--	R	MR	MR	MR	MR	MR	S
WL 309	R	R	T	S	--	MT	R	T	T	T	T	MR	--
WL 310	R	R	T	S	--	HT	R	MR	T	S	T	R	--
WL 311	R	HR	HT	T	--	HT	R	MR	MR	MR	T	T	--
WL 312	R	R	MT	R	--	HT	R	MR	MR	MR	T	MR	--

Table 2. (Continued)

Variety or brand	SAA	PA	BAA	PRR	Sc	Rz	BW	FW	S An	CLS	DM	SN	RKN
WL 313	MR	HR	T	T	--	--	HR	HR	MR	HT	--	T	--
WL 314	R	HR	T	T	--	--	R	R	MR	HT	T	HR	--
WL 315	MR	R	T	MR	--	--	HR	HR	MR	HT	--	MR	--
WL 318	R	HR	MT	R	--	T	R	MR	MR	MR	MR	MR	--
1019 Brand	MR	T	--	R	--	--	MR	--	--	R	R	R	--
Vanguard	T	S	S	S	S	S	R	T	R	T	T	S	S
Washoe	R	MR	S	R	--	--	R	S	S	S	S	R	S

INTERMEDIATE WINTER DORMANT TO MODERATELY NON WINTER DORMANT

Amador	T	S	S	R	--	--	--	R	--	MR	MR	MR	S
Baron	HR	HR	HR	R	--	--	MR	R	MR	--	--	--	--
Caliverde 65	HR	S	S	MT	--	--	R	--	S	MT	MT	MT	--
Condura 73 Brand	R	T	S	R	S	S	R	--	S	T	T	R	--
DeKalb Brand 185	R	T	S	T	--	--	S	--	S	T	T	S	--
Joaquin 11	R	S	S	T	--	--	T	--	S	S	S	T	T
Mesilla	R	R	S	T	--	--	--	R	--	--	--	T	--
NC+ 6600 Brand	MR	T	S	MR	--	--	T	T	S	T	T	T	--
NC+ 8000 Brand	R	MR	T	T	--	--	S	MR	S	S	T	S	--
NC+ 8800 Brand	R	MR	S	R	--	--	S	--	S	T	T	S	--
Pioneer Brand 581	R	T	T	R	T	S	R	--	S	T	R	R	--
WL 450	R	MR	S	MR	S	S	MR	--	T	T	R	R	T
919 Brand	MR	T	--	R	--	--	MR	--	--	MR	MR	MR	--

NON WINTER DORMANT

Ardiente	T	T	--	T	--	--	T	R	--	T	T	T	S
AS-13R	HT	--	T	R	--	--	T	R	--	T	T	MR	T
Galaxy	MR	R	MT	HT	--	--	MR	MR	T	--	MR	T	--
GT-13R Plus	HT	T	T	R	--	T	T	R	--	T	T	R	T
Matador	R	--	S	MR	--	--	MR	R	--	--	T	--	--
Moapa 69	T	S	S	S	S	S	S	R	S	S	S	S	T
ND 80 Brand	HR	MR	MR	--	--	MR	HR	S	--	--	--	--	--
Pierce	R	R	R	R	--	--	T	HR	S	MR	MR	R	--
WL 508	HR	R	S	T	S	T	--	--	MR	T	R	--	T
WL 512	HR	R	MT	MR	MT	T	MR	R	MR	T	MR	T	--
WL 514	R	R	R	T	--	--	MR	MR	S	--	--	T	--
WL 515	R	MR	R	R	--	--	MR	R	S	--	--	MR	--
819 Brand	R	MR	T	MR	T	--	--	R	T	--	--	--	T
Valador	R	T	S	R	T	--	--	R	MR	T	T	--	MR

VERY NON WINTER DORMANT

Abunda Verde Brand	R	R	MR	T	T	--	--	R	--	--	--	MR	T
Converde 95 Brand	R	R	S	S	S	S	S	--	S	S	R	S	T
CUF 101	HR	HR	R	MR	T	--	S	HR	S	S	MT	S	ST
El Unico	R	S	S	S	S	S	--	--	--	S	T	S	T
Granada	HR	HR	HR	HR	--	--	S	HR	S	--	MT	S	ST
Hayden	R	S	S	S	S	S	--	--	--	S	T	S	T
Lew	R	S	S	S	S	S	--	--	--	S	T	R	S
Maxidor	HR	HR	R	MR	T	--	--	R	--	--	--	R	T
Mesa Sirsa	R	S	S	S	S	S	--	--	--	S	T	T	MT
Pioneer Brand 572	R	R	T	T	T	S	S	--	S	S	HR	S	T
Rincon	R	R	S	S	S	--	T	T	--	--	T	--	--
Sonora 70	T	S	S	S	S	S	S	--	--	S	S	S	MT
UC Cargo	R	T	S	T	T	S	S	HR	S	S	ST	S	T
UC Salton	R	T	S	T	T	S	S	HR	S	S	ST	S	--

(continued next page)

* Information supplied by companies or individuals indicated in Table 1. The author assumes no responsibility for accuracy of the data supplied by the different contributors

** Resistant to Verticillium wilt, Verticillium albo-atrum.

Pests and Diseases

SAA = Spotted alfalfa aphid
PA = Pea aphid
BAA = Blue alfalfa aphid
PRR = Phytophthora root rot
Sc = Scald
Rz = Rhizoctonia stem and root canker
BW = Bacterial wilt
FW = Fusarium wilt
S An = Southern anthracnose
CLS = Common leaf spot
DM = Downy mildew
SN = Stem nematode
RKN = Root-knot nematode species

Ratings

HR = Highly resistant
R = Resistant
MR = Moderately resistant
HT = Highly tolerant
T = Tolerant
MT = Moderately tolerant
ST = Slightly tolerant
S = Susceptible
-- = No data available

Definitions

I = Immune. Not subject to attack for a specified pest. Immunity is absolute, and seldom occurs in alfalfa.
R = Resistant. Ability of plants to restrict the activities of a specified pest.
T = Tolerant. Ability of plants to endure a specified pest or an adverse environmental condition, performing and producing in spite of the disorder.
S = Susceptible. Inability of plants to restrict the activities of a specified pest, or to withstand an adverse environmental condition.

Table 3. Fourth year stand persistence of
48 alfalfa varieties and brands.
West Side Field Station, Fresno
County. Pinoche clay loam soil.

Entry	Percent stand remaining 10/6/82
USDA-SAA-PGL	81.2
Lahontan	78.5
Falkiner	73.7
NK K7-701	73.7
581	70.0
FSR-IH-48	67.5
UC 133	67.5
Arizona Ron	67.5
Apollo	67.5
Amador	66.2
UC 127	66.2
Arizona Hayden PX	65.0
UC 143	65.0
AS-13R	65.0
WL 515	65.0
CW 20	63.7
FSR ND-75	62.5
USDA-PA-1	62.5
Condura 73 Brand	62.5
WL 512	61.2
Moapa 69	61.2
Pioneer RS	60.0
Pioneer RM	60.0
WL 318	58.7
WL CA 423-26	57.5
WL 514	57.5
USDA-BAA-19	57.5
UC 148	57.5
Ardiente	56.2
185	56.2
Arizona Cap	56.2
UC 103	56.2
WL 74 CA A	55.0
Valador	55.0
Diablo Verde Brand	53.7
FSR ND-69	53.7
Vanguard	52.5
572	52.5
Maxidor	51.2
CUF 101	51.2
Converde 95 Brand	50.0
Olympic	48.7
Kodiak Brand	47.5
Condura 55 Brand	43.7
4510-R	40.0
Valor	35.0
Hunter River	25.0
Wadi Quriyat	3.2
Mean	57.62
LSD .05	7.73
.01	10.22
% C.V.	9.6

Table 4. Second year stand persistence ratings of 48 alfalfa varieties and brands. West Side Field Station, Fresno County. Pinoche clay loam soil. Planted 11/18/80.

Entry	Percent stand remaining 10/6/82
Amador	78.7
AS-13R	77.5
Lahontan	76.2
NK C-80-628	76.2
WL 515	76.2
UC 196	75.0
Pioneer Experimental COM-1	73.7
DS 001	73.7
CW 8037	73.7
UC 195	72.5
Baron	72.5
NK C-80-631	72.5
Valador	72.5
Pioneer Experimental SM	72.5
Pierce	72.5
Matador	72.5
FSR 80A6	71.2
NK C-79-616	71.2
Magnum	71.2
UC 186	71.2
WL 76 CAK	70.0
WL 75 CA A-W	70.0
NC+ 8000 Brand	70.0
NC+ 6600 Brand	70.0
DS 012	70.0
MEA 00	70.0
CUF 101	70.0
MEA MM	68.7
Siriver	68.7
Rere	68.7
Cimarron	68.7
WL 514	68.7
Nova	68.7
Florida 77	68.7
UC 193	68.7
Moapa 69	68.7
CW 8035	68.7
Hunter River	67.5
WL 512	67.5
Galaxy	67.5
CUF 101A	67.5 (Cut also in mid December)
NC+ 8800 Brand	66.2
FSR A21-R	66.2
Ardiente	65.0
DS 005	63.7
Granada	63.7
572	62.5
Maxidor	55.0
Mean	70.02
LSD .05	6.70
.01	8.84
% C.V.	6.8

Table 5. Fifth year stand persistence of 18 alfalfa varieties and brands. University of California, Davis. Yolo clay loam soil.

Entry	Percent stand remaining 10/12/82
WL 318-B	63.7
NK PX 745	61.2
Lahontan	61.2
WL 318-A	60.0
Kamprath 76-6-3	52.5
Amador	50.0
CW 67	50.0
Pioneer Brand 581	47.5
FSR A-48	47.5
WL 318	45.0
AS-49R	40.0
Kamprath 77-8-4	40.0
Moapa 69	40.0
Green Valley Brand	38.7
WL 512	37.5
CUF 101	27.5
CUF 101-A	23.7
CUF 101-B	12.7
Mean	
LSD .05	12.1
.01	16.2
% C.V.	

WL 318 and CUF 101 were cut on two different late cutting schedules. "A" signifies one cutting one month after the date of the last harvest, normally about November 1. "B" signifies two cuts after the last harvest, the first around November 1 and the second around December 1.

Table 6. Third year stand persistence of 16 alfalfa varieties¹ and brands after three years. University of California, Davis. Yolo clay loam soil.

Entry	Percent stand remaining 10/12/82
581-A	79.0
581-B	78.0
WL 77-T-25	76.0
Lahontan	72.0
UC 1031	70.0
NK K7-704	70.0
Pioneer Experimental RX	70.0
Pike	68.0
Vangard	66.0
581	66.0
Ardiente	58.0
Rere	56.0
Moapa 69	48.0
Pacer	46.0
FSR I-H 98	42.0
UC 1030	32.0
Mean	62.3
LSD .05	12.6
.01	16.7
% C.V.	16.0

¹"A" signifies one additional harvest after the date of the last normal cutting, usually about November 1. "B" signifies two harvests after the last normal cutting, the first about November 1 and the second about December 1.

Table 7. Fourth year stand estimate and 1982 yields for 47 alfalfa entries. MacDoel, Butte Valley, Siskiyou County. Average of three replications. Planted May 23, 1978. Elevation 4300 feet. Sprinkler irrigated. Sany loam soil type.

Entry No.	Name	Stand estimate ¹ 7/6/82	Dry tons/acre 1982
1	Rangelander	3	3.75
2	Drylander	3	3.78
3	Rambler	3	3.50
4	Roamer	1	3.06
5	Haymaker Brand	1	3.68
6	Action	2	4.00
7	SC-400	2	4.09
8	Vernal	1	4.30 (20) ²
9	Atra 55	1	4.28
10	530	2	4.05
11	Blazer	3	5.43 (1)
12	Thor	2	4.15
13	Gladiator	3	4.18
14	Aztec II	1	3.68
15	CW 68	3	4.34
16	Valor	2	4.04
17	Pacer	2	4.20
18	Riley	2	4.18
19	WL 220	2	4.33
20	CW 67	1	3.04
21	Anchor	2	4.34
22	Apollo	1	4.48
23	CW 0131	2	3.27
24	Maris Phoenix	2	4.00
25	Maris Kabil	1	4.13
26	Expo	2	4.74 (10)
27	Baker	3	4.25
28	CW 3	2	3.77
29	WL 219	1	4.79 (7)
30	Atra 60	2	4.88 (6)
31	Vangard	1	4.16
32	AS-49	1	3.38
33	Epic	2	5.10 (3)
34	Spreador	1	3.68
35	Kodiak	1	4.41
36	WL 310	1	4.73
37	Phytor	1	4.69
38	Atra 40	3	4.48
39	WL 312	1	4.89 (5)
40	Iroquois	2	4.76 (9)
41	NABP 62	2	4.89 (4)
42	Maris Sabil	1	4.29
43	Vista	3	4.78 (8)
44	Peak	3	5.32 (2)
45	Condura 55 Brand	3	4.24
46	Condura 73 Brand	1	3.54
47	Ranger	2	4.32 (19)

¹ = poor stand; 2 = average stand; 3 = good stand

²Yield ranking.

Table 8. Humboldt County alfalfa variety plot.¹
 Jim and David Hunt, cooperators. Leaf
 disease score, September 26, 1979.²

Variety	Score
MSE ₆ CLS ₃	1
WMP-14 CLS-3	1
Maris Phoenix	2
Pioneer 531	2
Vanguard	2
Gladiator	2
Thor	2
Saranac AR	2
FRS A-48	3
Resistador II	3
WL 318	3
Phytor	3
WL 311	3
WL 512	4
FSR A-57	4
UC 1971 PX	4
WL 512	4
DeKalb 167	5

¹Planted 9/16-17, 1978. Seeded by hand, raked and rolled. Plot size 10' x 10'. 4 reps.

²Common and Stemphylium leaf spots present.
 1 = very little damage; 5 = leaves heavily damaged.

Table 9. Fall dormancy, as height (inches), 11 weeks after last harvest 9/4/81. 46 alfalfa variety and brand trial.¹ Tulelake Field Station, Siskiyou County. 1981

Entry	Inches of height 11/20/81	DMRT .05
Pioneer Brand 526	17.75	a
LS79-1920	16.50	b
FSR IH-119	16.50	b
DeKalb Brand 167	16.00	b
AB 60F	14.50	c
Cimarron	14.25	c
FSR H-117	14.00	cd
WL 312	13.75	cde
UC 1030	13.25	def
Magnum	13.00	defg
Sverre	13.00	defg
WL 316	13.00	defg
FSR H-103	13.00	defg
WL 311	13.00	defg
CW 62	12.75	efgh
Armor	12.25	fghi
Raidor	12.25	fghi
NAPB 109	12.00	ghij
Vanguard	12.00	ghij
DeKalb Brand 130	12.00	ghij
CW 69	12.00	ghij
RS 209	11.75	hijk
WL 315	11.75	hijk
Trumpetor	11.75	hijk
NK 80334	11.50	ijk
AS 67	11.25	ijk
CW 61	11.25	ijk
Vancor	11.25	ijk
Futura	11.00	jk
NK 80335	10.75	k
Perry	10.75	k
Blazer	10.75	k
Pacer	10.75	k
Pioneer Brand 532	9.75	l
Pioneer Brand 524	9.75	l
Pioneer Brand 545	9.50	l
DeKalb Brand 120	9.50	l
Oneida	9.50	l
NAPB 90	9.00	l
Anchor	9.00	l
WL 221	8.75	l
Iroquois	8.75	l
Valor	8.00	l
Atra 55	8.00	l
Vernal	7.75	l
Strain 201	2.00	m
Average	11.53	
LSD .05	.88	
.01	1.16	
% C.V.	5.4	

¹Planted May 4, 1981 at 40 pounds per acre. Four reps, 5 x 20 feet.

Table 10. 8-year yield summary, 1974 alfalfa variety trial.¹ Cedarville, Modoc County. 1974-81. (Lancaster and Marble)

Entry	Yield in dry tons per acre, rank in parenthesis ²									DMRT .05	% Vernal
	1974	1975	1976	1977	1978	1979	1980	1981	Average		
Atra 55	2.40(25)	9.59(4)	10.15(1)	8.42(7)	9.84(1)	9.52(3)	9.45(2)	9.63(1)	8.63(1)	A	107.9
AR-THO MH-1 ³	2.59(7)	9.15(23)	9.71(3)	8.90(2)	9.44(2)	9.39(6)	8.93(10)	9.47(2)	8.45(2)	AB	105.6
Gladiator	2.56(9)	9.93(1)	9.60(5)	8.52(5)	9.29(4)	9.43(5)	9.12(6)	8.99(17)	8.43(3)	ABC	105.4
Citation	2.40(24)	9.50(10)	9.30(11)	9.10(1)	9.30(3)	9.52(4)	9.13(4)	8.77(27)	8.38(4)	ABCD	104.7
Anchor	2.31(32)	9.26(19)	9.07(17)	8.62(4)	8.79(13)	9.52(2)	9.63(1)	9.17(12)	8.30(5)	ABCD	103.7
WL 311	2.48(18)	9.36(14)	9.49(9)	8.80(3)	8.72(17)	9.29(8)	8.89(11)	8.92(20)	8.24(6)	ABCD	103.1
Iroquois	2.47(19)	9.29(17)	9.38(10)	8.23(13)	8.90(11)	8.94(15)	9.26(3)	9.21(8)	8.21(7)	ABCDE	102.7
Vista	2.64(5)	9.44(12)	9.55(8)	8.34(8)	8.73(16)	9.19(9)	8.55(22)	9.13(15)	8.20(8)	ABCDE	102.5
Honeoye	2.76(2)	9.63(2)	9.17(14)	8.15(14)	8.75(14)	8.88(18)	8.20(30)	9.41(3)	8.12(9)	ABCDE	101.5
Nugget	2.34(29)	9.52(7)	8.89(20)	7.81(25)	9.07(5)	9.59(1)	8.83(14)	8.89(21)	8.12(10)	ABCDE	101.5
Team	2.66(3)	9.25(20)	9.72(2)	8.24(12)	8.51(25)	8.51(29)	8.73(16)	9.31(5)	8.12(11)	ABCDE	101.5
123	2.51(13)	9.46(11)	9.14(16)	7.77(27)	8.70(18)	9.13(10)	8.87(12)	9.24(7)	8.10(12)	ABCDE	101.3
Thor	2.53(10)	9.55(5)	9.60(4)	8.31(9)	8.80(12)	8.74(23)	8.37(27)	8.69(28)	8.07(13)	BCDE	101.0
Saranac AR	2.52(12)	9.27(18)	9.18(13)	8.25(11)	8.96(10)	8.84(21)	8.44(23)	8.82(24)	8.04(14)	BCDE	100.5
WL 318	2.58(8)	9.03(26)	9.26(12)	8.42(6)	8.16(32)	8.88(20)	8.97(7)	8.93(19)	8.03(15)	BCDE	100.4
Agate	2.23(33)	8.87(33)	8.89(21)	7.91(21)	8.98(8)	9.08(11)	8.97(8)	9.24(6)	8.02(16)	BCDE	100.3
Vernal	2.39(26)	9.29(16)	8.77(25)	7.44(31)	8.97(9)	8.99(13)	8.96(9)	9.16(13)	8.00(17)	BCDE	100.0
WL 219	2.42(23)	9.11(24)	8.72(26)	8.10(16)	8.51(24)	8.70(25)	8.77(15)	9.19(11)	7.94(18)	BCDEF	99.3
Superstan	2.64(6)	9.52(8)	9.16(15)	7.27(34)	8.29(27)	8.71(24)	8.67(18)	9.04(16)	7.91(19)	BCDEFG	98.9
Promor	2.49(15)	9.01(28)	8.82(23)	7.91(22)	8.98(7)	8.98(14)	8.27(29)	8.82(25)	7.91(20)	BCDEFG	98.9
Ramsey	2.33(30)	8.73(35)	8.93(19)	8.03(17)	8.59(22)	8.64(27)	8.86(13)	9.14(14)	7.90(21)	BCDEFG	98.8
WL 215	2.31(32)	9.50(9)	8.31(32)	7.73(28)	8.59(21)	8.93(17)	8.35(28)	9.33(4)	7.88(22)	CDEFG	98.5
Arc	2.65(4)	9.42(13)	9.57(7)	7.93(20)	7.93(35)	8.08(31)	8.42(24)	8.86(23)	7.86(23)	DEFG	98.3
Saranac	2.44(21)	8.91(32)	8.53(30)	7.98(19)	8.63(20)	8.75(22)	8.58(20)	8.98(18)	7.85(24)	DEFG	98.1
530	2.50(14)	9.23(21)	8.89(22)	8.27(10)	8.69(19)	8.04(32)	8.67(17)	8.44(30)	7.84(25)	DEFG	98.1
AS-63	2.36(27)	9.02(27)	7.80(35)	7.80(26)	8.26(28)	9.01(12)	9.12(5)	9.20(10)	7.82(26)	DEFG	97.8
FSR SX-10 ³	2.48(16)	9.33(15)	8.37(31)	6.64(36)	9.00(6)	8.94(16)	8.58(19)	9.20(9)	7.82(27)	DEFG	97.8
FSR A-38 ³	2.42(22)	8.96(30)	8.62(29)	7.88(23)	8.57(23)	9.33(7)	8.40(25)	8.36(33)	7.82(28)	DEFG	97.8
Dawson	2.32(31)	9.55(6)	8.97(18)	8.13(15)	8.44(26)	7.44(33)	8.10(34)	8.42(31)	7.67(29)	EFGH	95.9
131	2.45(20)	8.80(34)	8.64(28)	7.29(32)	8.26(29)	8.88(19)	8.57(21)	8.37(32)	7.66(30)	EFGH	95.8
NEV SYN XX ³	2.84(1)	9.61(3)	9.58(6)	7.81(24)	8.21(30)	6.81(36)	8.14(33)	8.25(35)	7.66(31)	EFGH	95.8
T3X-301 ³	2.53(11)	9.04(25)	8.69(27)	7.28(33)	8.18(31)	8.26(30)	8.40(26)	8.77(26)	7.64(32)	EFGH	95.6

Table 10. (Continued)

Entry	Yield in dry tons per acre, rank in parenthesis ²									DMRT .05	% Vernal
	1974	1975	1976	1977	1978	1979	1980	1981	Average		
Narragansett	2.48(17)	9.21(22)	8.80(24)	6.98(35)	8.74(15)	8.68(26)	8.15(32)	8.09(36)	7.64(33)	EFGH	95.6
NEV SYN WW ³	2.34(28)	8.96(29)	8.26(33)	7.61(30)	7.95(34)	6.98(34)	8.19(31)	8.86(22)	7.39(34)	FGH	92.5
Resistador II	2.19(34)	8.23(36)	8.01(34)	7.98(18)	7.77(36)	8.53(28)	7.72(36)	8.54(29)	7.37(35)	GH	92.2
Washoe	2.03(35)	8.94(31)	7.73(36)	7.65(29)	7.98(33)	6.89(35)	7.97(35)	8.30(34)	7.19(36)	H	89.9
GRAND MEAN	2.46	9.24	8.98	7.99	8.65	8.72	8.65	8.92	7.95		99.4
% CV	9.1	4.9	6.8	5.3	4.5	9.8	9.0	6.6	11.6		
LSD (.05)	0.31	0.63	0.85	0.59	0.55	1.20	ns	0.83	0.45		
(.01)	0.41	0.83	1.13	0.79	0.73	1.59	ns	1.10	0.60		
LSDs				.05	.01						
Between varieties				.45	.60						
Between years				.13	.17						
Between years for same variety				.75	.99						
Between years for different variety				.84	1.07						

14 reps, 5 X 20 feet. Planted May 2, 1974 at 24 pounds/acre.

²To convert to hay at 12% moisture, multiply by 1.136. One harvest taken in 1974.

³Experimental selections. No seed available for sale.

Table 11. Percent of original stand remaining after eight production years.¹ Alfalfa variety trial. Cedarville, Modoc County. 1981.

Entry	% Stand remaining August 5, 1981	DMRT .05
Agate	72.50	a
Washoe	72.50	a
Nevada Syn WW	68.75	ab
Resistador II	68.75	ab
WL 215	65.00	abc
T3X-301	65.00	abc
WL 219	65.00	abc
Atra 55	62.50	abcd
Anchor	60.00	abcde
Ramsey	57.50	bcdef
WL 318	57.50	bcdefg
Gladiator	57.50	bcdefg
AS-63	57.50	bcdefg
Saranac	57.50	bcdefg
Saranac AR	57.50	bcdefg
Nuggett	57.50	bcdefg
Vernal	57.50	bcdefg
DeKalb Brand 123	57.50	bcdefg
Citation	55.00	bcdefg
AT MH-1	55.00	bcdefg
WL 311	55.00	bcdefg
Thor	55.00	bcdefg
DeKalb Brand 131	55.00	bcdefg
Iroquois	55.00	bcdefg
Honeoye	55.00	bcdefg
Vista	52.50	cdefg
FM A-38	52.50	cdefg
Promor	50.00	defgh
Dawson	50.00	defgh
530	47.50	efgh
Superstan	45.00	fgh
Team	45.00	fgh
Arc	45.00	fgh
Nevada Syn XX	40.00	ghf
FM SX-10	37.50	hi
Narragansett	30.00	i
Average	55.48	
LSD .05	11.16	
.01	14.77	
% C.V.	14.3	

¹Four reps, 5 x 20 feet. Planted May 2, 1974 at 24 pounds per acre.

Table 12. November through June yields of alfalfa and bermudagrass for 4 of 30 entries during second and third year. Hull Farms alfalfa variety trial, Blythe, Riverside County. Planted December 12, 1979¹ and plowed July 30, 1982. Soil type: Rositas sandy loam. (Ede, Lehman, Marble, Radewald)

Entry	Bermudagrass 6/25/82	Tons per acre dry matter alfalfa				4-cut total	% Stand remaining 9/24/81	% Weeds 9/24/81
		11/15/81	4/28/82	5/27/82	6/25/82			
UC 127 ²	0.01 a	0.61 a	1.77 a	1.65 a	2/25	6/28 a	65.0 a	25.0 a
Arizona Mesa Sirsa Exp. ²	0.22 b	0.40 b	1.32 b	1.50 ab	1.53	4.76 b	27.5 b	65.0 bc
UC Cargo	0.14 ab	0.35 b	1.36 b	1.33 b	1.25	4.28 b	35.0 b	50.0 b
CUF 101	0.27 b	0.32 b	1.40 b	1.39 b	0.83	3.94 b	27.5 b	35.0 b
Lahontan	0.27 b	0.09 c	0.64 c	0.95 c	0.72	2.41 c	5.0 c	97.5 d
LSD .05	0.17	0.11	0.24	0.22	1.11	1.31	12.1	19.7
.01	0.24	0.16	0.34	0.31	1.60	1.84	16.0	26.1

¹Nematodes present before planting included: dagger (Xiphinema spp.), root-knot (Meloidogyne spp.), ring (Criconemoides and Criconema spp.), lesion (Pratylenchus spp.) (Radewald)

²Experimental selections. No commercial seed available.

Table 13. First year stand persistence of Cardoza 21 alfalfa variety and brand trial. Tulare County. Four reps planted November 1981. (Frate and Marble)

Entry	% Stand remaining October 6, 1982	DMRT .05
PIO UMNQ-1	76.2	a
UC 127	75.0	ab
AS-13R	75.0	ab
UC 226	73.7	abc
UC 193	72.5	abc
Moapa 69	71.2	abcd
FSR ND 124	71.2	abcd
185	70.0	abcde
CUF 101	68.7	abcde
MEA 00	67.5	abcde
WL 515	67.5	abcde
WL 512	66.2	abcde
Granada	66.2	abcde
WL 514	66.2	abcde
Galaxy	65.0	bcde
Maxidor	63.7	cdef
Ardiente	61.2	def
572	61.2	def
Baron	60.0	ef
Joaquin 11	55.0	f
U-DOR	45.0	g
Mean		
LSD .05	8.61	
.01	11.46	
% C.V.		

Table 14. Fall dormancy expressed as height of recovery two weeks after September cutting. Cardoza 21 alfalfa variety and brand trial. Tulare, Tulare County. Four reps planted November 1981. (Frate and Marble)

Entry	Height in inches October 6, 1982	DMRT .05
MEA 00	17.7	a
UC 226	17.2	ab
CUF 101	17.2	ab
PIO UMNQ-1	17.0	abc
UC 193	17.0	abc
UC 127	16.2	abcd
Granada	15.7	abcde
Maxidor	15.7	abcde
FSR ND 124	15.2	bcdef
AS-13R	15.2	bcdef
Moapa 69	15.0	bcdef
WL 515	15.0	bcdef
Ardiente	14.7	cdef
WL 512	14.5	def
WL 514	14.5	def
185	14.5	def
572	14.5	def
Galaxy	13.7	ef
Baron	13.7	ef
Joaquin 11	13.2	ef
U-DOR	7.7	g
Mean	15.03	
LSD .05	2.01	
.01	2.7	
% C.V.	9.5	

Table 15. Leaf disease¹ ratings of Cardoza 21 alfalfa variety and brand trial. Tulare, Tulare County. Four reps planted November 1981. (Frate and Marble)

Entry	Foliar disease ratings October 8, 1982 ²	DMRT .05
UC 127	3.0	a
185	3.0	a
PIO UMNQ-1	3.0	a
UC 226	3.0	a
UC 193	3.0	a
572	3.2	ab
WL 512	3.2	ab
U-DOR	3.2	ab
CUF 101	3.2	ab
Granada	3.2	ab
AS-13R	3.5	abc
WL 515	3.5	abc
Galaxy	3.5	abc
FSR ND 124	3.5	abc
Baron	3.6	abc
WL 514	3.6	abc
MEA 00	3.7	abc
Maxidor	3.8	bc
Ardiente	3.8	bc
Moapa 69	3.8	bc
Joaquin 11	4.2	c
Mean		
LSD .05	0.71	
.01	0.94	
% C.V.		

¹Mostly Stemphylium leaf spot, small amount of common leaf spot.

² 1 = no damaged leaves; 10 = all leaves heavily damaged.