



SEED GUIDE

2027





Whether you plant conventional seed or varieties with trailblazing traits, make W-L Alfalfas® your partner

THE LEGACY of W-L Alfalfas is second to none. For more than 65 years, we have stayed committed to a singular focus: to produce high-quality alfalfa seed that helps improve various production goals for alfalfa growers.

A lot has changed since 1958, but our commitment to farmers across the world is that they benefit from improved alfalfa varieties that span the entire spectrum of dormancies, technologies and traits. "Better Seed Through Research" has been our slogan since our inception, and while research and development remains the backbone of everything we do, we maintain a "grower first" attitude in delivering the highest-performance alfalfa varieties.

There are various cornerstones in our rich history, from our first HQ™ (High Quality) selected variety to demonstrate increased milk production potential, to HopperShield™ varieties with some of the industry's best potato leafhopper resistance, to Roundup Ready® alfalfa varieties with vast benefits in establishment and high efficacy weed control in-crop giving growers cleaner, higher producing stands, to

now, realizing truly game-changing technology with W-L Alfalfas brand varieties that include HarvXtra® Alfalfa with Roundup Ready® technology, giving growers tremendous value with the flexibility to achieve substantially higher fiber digestibility and feed value, or increasing dry matter yield potential by delaying cutting frequency, without sacrificing forage quality.

While the past and present are exciting to say the least, our future remains fueled by our research and desire to improve genetics and trait offerings to advance forage quality and yield potential, true to our forward-looking spirit. Building on a rich heritage of innovation, in 2001, W-L Alfalfas became part of the Forage Genetics International breeding program to create one of the industry's largest alfalfa research and development programs in the world. Though more than 65 years has passed since our beginning, the mission Ward Waterman and Harold Loomis started in 1958 remains the same, to deliver breakthrough products farmers need to meet increased demands on a global scale.

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AGRONOMIC TRAITS

	Fall Dormancy	Winterhardness	UltraCut® Disease Package	HarvXtra® Alfalfa	Roundup Ready® Technology	Hopper Shield	Wet Soil Tolerance*	Multileaf Expression	Disease Resistance Index	Salt Tolerance
DORMANT										
WL 3344HQ.RR	3.3	1.0			☑		Good	High	34/35	G
WL 3311HQ	3.4	1.0	☑				Excellent	Very High	40/40	G
WL 3474.HVXRR	4.4	1.8	☑	☑	☑		Excellent	Very High	40/40	G
WL 3473.HVXRR	4.3	1.9	☑	☑	☑		Excellent	Very High	39/40	G
WL 3451HQ.RR	4.4	1.4	☑		☑		Excellent	Very High	40/40	G
WL 3441HQ.RR	4.3	2.0			☑		Excellent	Very High	35/35	G
WL 3440HQ.RR	4.0	2.0			☑		Good	High	34/35	G
PowerStand® RR	4.0	2.0			☑		—	High	28/30	—
WL 359LH.RR	3.9	2.2			☑	☑	—	High	34/35	—
WL 3426HQ	4.4	1.3	☑				Excellent	Very High	40/40	G
WL 3422HQ	4.0	2.0					Good	High	34/35	—
WL 358LH	4.1	2.0				☑	—	Very High	34/35	—
WL 3581.HVXR	4.6	1.7	☑	☑	☑		Excellent	Very High	40/40	G
WL 3546HQ.RR	5.0	1.4	☑		☑		Excellent	Very High	40/40	G
WL 3521HQ	5.0	1.8	☑				Excellent	Very High	40/40	G
WL 377HQ	5.0	2.5					—	Very High	30/30	G

SEMI-DORMANT

HVX3686RR	6.0	—		☑	☑		—	—	—	—
WL 458HQ.RR	6.0	—			☑		—	Moderate	—	G
WL 467HQ	6.0	—					—	Moderate	—	G

NON-DORMANT

WL 3847HQ.RR	8.3	—			☑		—	—	—	G
WL 538HQ	8.0	—					—	—	—	G
WL 3979.HVXRR	9.0	—		☑	☑		—	—	—	G
WL 3968HQ.RR	9.3	—			☑		—	—	—	G
WL 3910HQ	9.4	—					—	—	—	G

G = Germination

Salt Selected Variety: In addition to industry-standard salt germination testing and building upon Forage Genetics International's stress-resilient genetic background, Salt Selected Varieties must meet the following criteria:

- 1): Parent selection under salt stress: Derived from parental lines selected in nurseries with routine salt application.
- 2): Demonstrated field performance: Confirmed yield potential and persistence in FGI yield trials conducted under salt stresses.

PEST RESISTANCE TRAITS

DORMANT

	Bacterial Wilt	Fusarium Wilt	Verticillium Wilt	Anthraxnose (Race 1)	Anthraxnose (Race 5)	Phytophthora Root Rot	Aphanomyces (Race 1)	Aphanomyces (Race 2)	Evolving Aphanomyces Strains ²	Pea Aphid	Blue Alfalfa Aphid	Spotted Alfalfa Aphid	Stem Nematode	Northern Root-Knot Nematode	Potato Leafhopper	Salt Selected Variety
WL 3344HQ.RR	HR	HR	HR	HR	—	HR	HR	R	—	R	—	R	R	—	—	☑
WL 3311HQ	HR	HR	HR	HR	HR	HR	HR	HR	HR	R	—	R	R	—	—	
WL 3474.HVXRR	HR	HR	HR	HR	HR	HR	HR	HR	HR	R	—	—	R	—	—	
WL 3473.HVXRR	HR	HR	HR	HR	R	HR	HR	HR	HR	R	—	R	R	—	—	
WL 3451HQ.RR	HR	HR	HR	HR	HR	HR	HR	HR	HR	R	—	R	R	—	—	
WL 3441HQ.RR	HR	HR	HR	HR	—	HR	HR	HR	R	R	—	R	HR	—	—	☑
WL 3440HQ.RR	HR	HR	HR	HR	—	HR	HR	R	—	R	—	—	R	—	—	
PowerStand® RR	HR	HR	HR	R	—	HR	R	—	—	—	—	—	—	—	—	
WL 359LH.RR	HR	HR	HR	HR	—	HR	HR	R	—	R	—	R	R	—	HR	
WL 3426HQ	HR	HR	HR	HR	HR	HR	HR	HR	HR	R	R	HR	HR	—	—	
WL 3422HQ	HR	HR	HR	HR	—	HR	HR	R	—	—	—	—	R	—	—	
WL 358LH	HR	HR	HR	HR	—	HR	HR	R	—	HR	—	—	R	—	HR	
WL 3581.HVXRR	HR	HR	HR	HR	HR	HR	HR	HR	HR	R	R	R	R	—	—	
WL 3546HQ.RR	HR	HR	HR	HR	HR	HR	HR	HR	HR	R	HR	R	R	—	—	
WL 3521HQ	HR	HR	HR	HR	HR	HR	HR	HR	HR	R	R	HR	R	—	—	
WL 377HQ	HR	HR	HR	HR	—	HR	HR	—	—	HR	—	HR	HR	HR	—	

SEMI-DORMANT

HVX3686RR	MR	HR	—	R	—	HR	R	—	—	HR	MR	HR	R	—	—	☑
WL 458HQ.RR	HR	HR	HR	HR	—	HR	HR	—	—	HR	R	R	HR	—	—	☑
WL 467HQ	HR	HR	R	HR	—	HR	R	—	—	HR	—	R	HR	HR	—	☑

NON-DORMANT

WL 3847HQ.RR	R	R	R	R	—	HR	—	—	—	HR	R	HR	HR	—	—	☑
WL 538HQ	R	HR	R	HR	—	HR	MR	—	—	HR	HR	HR	HR	—	—	☑
WL 3979.HVXRR	MR	HR	R	HR	—	HR	—	—	—	HR	HR	HR	R	—	—	☑
WL 3968HQ.RR	R	HR	—	HR	—	HR	R	—	—	R	R	HR	HR	—	—	☑
WL 3910HQ	R	HR	R	R	—	HR	—	—	—	R	HR	HR	HR	—	—	☑

RESISTANCE RATINGS

% Resistant Plants	Resistance Class	Class Abbreviation
0-5	Susceptible	S
6-14	Low Resistance	LR
15-30	Moderate Resistance	MR
31-50	Resistance	R
50+	High Resistance	HR

Achieve solid yield potential and exceptional winterhardiness in shorter growing season environments

Satisfying the needs of shorter-season growers, WL 3344HQ.RR combines solid yield potential with industry-leading winterhardiness, all backed with the "HQ" high-quality forage designation. WL 3344HQ.RR is an ideal pick for dairy, beef, or cash hay growers looking to maximize profit potential while utilizing the Roundup Ready[®] weed control system in alfalfa.

WL 3344HQ.RR Advantages

- Quick regrowth in a FD3, that delivers potential for high yields and long stand life
- Extremely winterhardy (WH=1.0); delivers excellent cold tolerance even under harsh weather conditions
- Improved salt tolerance of germinating seeds similar to tolerant check
- The HQ brand is proven to "hold" forage quality over a longer period of time; WL 3344HQ.RR supports higher forage quality and greater harvest flexibility when harvest is delayed
- Disease resistance index (DRI) of 34/35 and strong resistance to insects and nematodes provide for solid yield potential and long stand life across a wide range of soil types and climates
- Dark green, fine-stemmed and highly digestible
- Outstanding winterhardiness allows intensive harvest management for maximum quality and yield potential without sacrificing stand life in Northern Plains, Upper Midwest, Northeast or Pacific Northwest regions

Planting WL 3344HQ.RR alfalfa and utilizing the Roundup Ready[®] weed control system provides many benefits over conventional herbicide programs

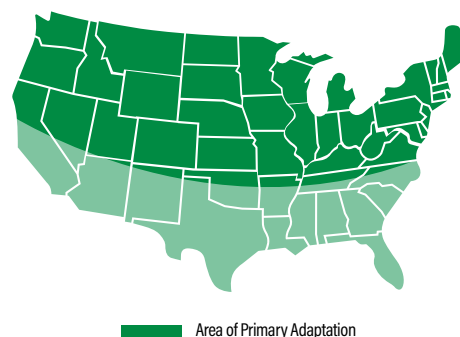
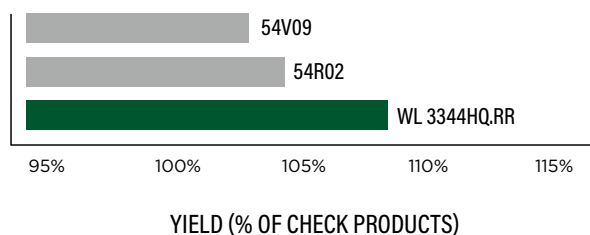
- Weed control at both stand establishment and in established stands means fewer weeds and higher quality hay and haylage, which can result in more milk and beef per acre
- Optimal crop safety at all growth stages provides increased yield potential in both the establishment and subsequent years
- The simplicity of using a single herbicide (Roundup[®]) provides optimal weed control with no need to tank-mix; one herbicide does it all
- Flexibility in timing of application allows growers to spray when necessary; minimal carryover or crop rotation limitations
- Minimal wait (5 days) after Roundup[®] application before haying/feeding

AGRONOMIC TRAITS	
Fall Dormancy	3.3
Winterhardiness	1.0
Maturity	Medium
Digestibility	Excellent
Recovery After Harvest	Fast
Standability	Excellent
Multileaf Expression	High
Disease Resistance Index	34/35
Salt Tolerance	Germination
Salt Selected Variety	☒

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	High Resistance
Anthracnose (Race 1)	High Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	High Resistance
Aphanomyces Root Rot (Race 2)	Resistance
Leaf Disease	High Resistance
Pea Aphid	Resistance
Spotted Alfalfa Aphid	Resistance
Stem Nematode	Resistance

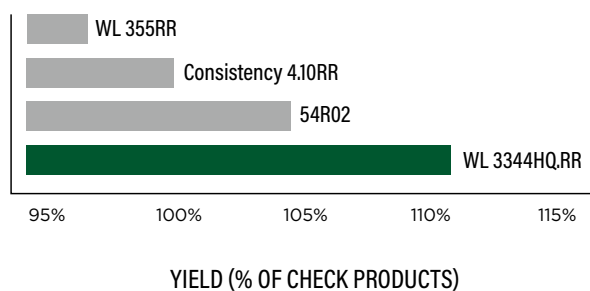
WL 3344HQ.RR Outyields the Competition in the East*

WI 2015-2017



WL 3344HQ.RR Outyields the Competition in the West*

ID 2015-2017



* Results are based on controlled field trials at the listed W-L Alfalfas location. Results may vary and are dependent on factors outside of W-L Alfalfa's control, such as weather. Yield, profit and other results cannot be predicted or guaranteed by W-L Alfalfas

Exceptional winterhardiness and outstanding profit potential

WL 3311HQ is building on WL 319HQ with the addition of the UltraCut[®] alfalfa disease package.

WL 3311HQ Advantages

- Highly resistant to multiple races of Aphanomyces for protection during establishment and early season cool and wet soil conditions
- Highly resistant to multiple races of Anthracnose for protection during warm and humid weather conditions
- Salt Tolerance at germination
- Outstanding feed value with very high leaf to stem ratio
- Highest levels of cold tolerance and winterhardiness available in the W-L lineup today
- Disease resistance index (DRI) of 40/40 and strong resistance to aphids and nematodes provides solid yield potential and long stand life across a wide range of soil types and climates
- Dark green, fine-stemmed, and highly digestible
- Fast recovery after cutting and outstanding winterhardiness allows intensive harvest management for maximum quality and yield potential with little to no sacrifices in stand life

UltraCut[®] Disease Package

W-L Alfalfas with the UltraCut[®] Disease Package can provide agronomic advantages by helping protect your crop against yield-limiting and evolving Anthracnose and Aphanomyces disease strains. You could see an increase in yield with each cutting when disease threatens your alfalfa and expand the acres you're able to plant. Help grow a healthy alfalfa crop even in field conditions susceptible to Anthracnose and Aphanomyces threats with the UltraCut[®] Disease Package.



WL 3311HQ

Competitor FD4 Variety

2020 Wisconsin Variety Demo. Photo from September 8, 2022.



WL 3311HQ

Competitor FD4 Variety

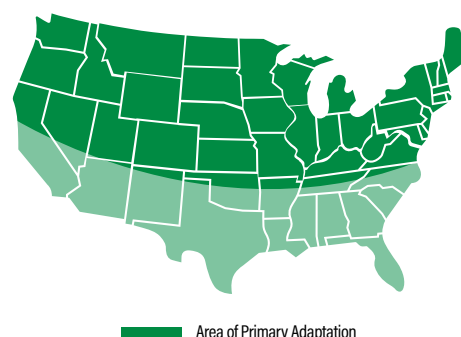
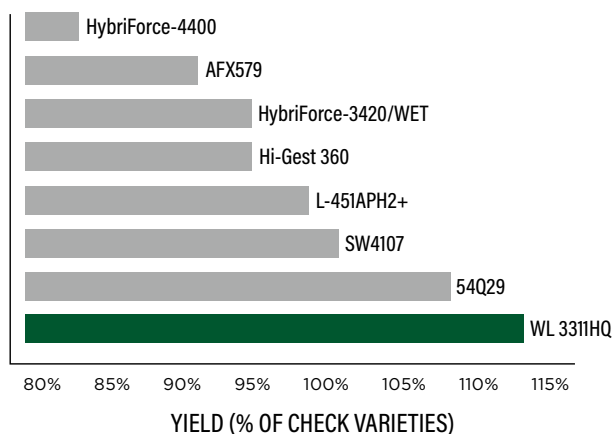
2023 Nampa, Idaho Variety Demo. Photo from May 2024.

AGRONOMIC TRAITS	
Fall Dormancy	3.4
Winterhardiness	1.0
Maturity	Medium
Digestibility	Excellent
Recovery After Harvest	Fast
Standability	Excellent
Multileaf Expression	Very High
Disease Resistance Index	40/40
Salt Tolerance	Germination

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	High Resistance
Anthracnose (Race 1)	High Resistance
Anthracnose (Race 5) ¹	High Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	High Resistance
Aphanomyces Root Rot (Race 2)	High Resistance
Evolving Aphanomyces Strains ²	High Resistance
Pea Aphid	Resistance
Spotted Alfalfa Aphid	Resistance
Stem Nematode	Resistance

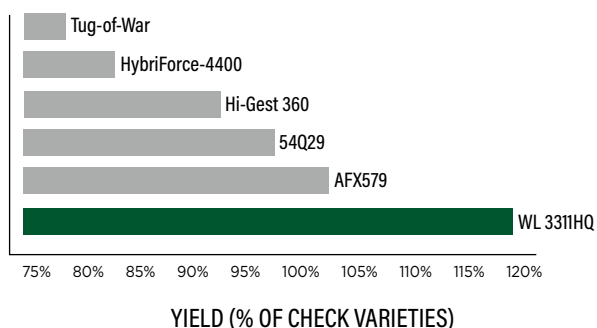
WL 3311HQ Outyields the Competition in the East*

WI 2021-2023



WL 3311HQ Outyields the Competition in the West*

ID 2023-2024



¹ Includes Race 1 protection, along with Anthracnose Race 5 protection, which is patented by FGI.

² Includes Race 1 and Race 2 protection. In addition, Forage Genetics International, LLC (FGI) has identified a novel source of Aphanomyces resistance in the greenhouse and field that visibly outperforms unrelated varieties on the market when grown under natural or artificial disease pressure. FGI researchers have been working cooperatively with universities collecting and testing the most virulent strains of Aphanomyces to help determine the level of resistance to this novel source.

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HarvXtra[®] Alfalfa with Roundup Ready[®] Technology and an industry leading disease package, UltraCut[®]

HarvXtra[®] Alfalfa gives growers flexibility in choosing to maximize quality or achieve greater yield potential through delayed harvest management.

WL 3474.HVXRR Advantages

WL 3474.HVXRR gives growers tremendous value of flexibility in choosing to maximize exceptional fiber digestibility, or accumulate greater yield potential by delaying cutting frequency, without sacrificing feed quality.

- UltraCut[®] Disease Package improving establishment and in-crop performance, WL 3474.HVXRR's Disease Resistance Index (DRI) of 40/40 also includes HR (high resistance) to evolving Aphanomyces strains² and Anthracnose race 5¹
- Very winterhardy, (1.8), delivering long stand life under tough growing conditions
- WL 3474.HVXRR is stacked with Roundup Ready[®] Technology for exceptional broad spectrum weed control and crop safety to maximize seedling survival at establishment and provide a useful tool on established stands
- Salt Tolerance at germination
- Well-adapted for Midwest, Northeast, Central and Northern Plains, as well as Intermountain Regions and Northwestern U.S.; ideally-suited for on-farm dairy, beef or cash hay producers
- Expect fast recovery for frequent harvest schedules under intense management

UltraCut[®] Disease Package

W-L Alfalfas with the UltraCut[®] Disease Package can provide agronomic advantages by helping protect your crop against yield-limiting and evolving Anthracnose and Aphanomyces disease strains. You could see an increase in yield potential with each cutting when disease threatens your alfalfa and expand the acres you're able to plant. Help grow a healthy alfalfa crop even in field conditions susceptible to Anthracnose and Aphanomyces threats with the UltraCut[®] Disease Package.

WL 3474.HVXRR Firmly Establishes a New Level of Fiber Digestibility and Feed Value*

Variety	Yield %Ck m-y	NDFD %Ck	Milk lbs/Ac %Ck
WL 3474.HVXRR	116%	112%	129%
HybriForce-3400	106%	103%	107%
WL 356HQ.RR	100%	98%	100%
54HVX41	100%	112%	111%
54QR04	99%	102%	100%
Hi-Gest 360	99%	104%	103%

NDFD = Neutral Detergent Fiber Digestibility

Data from PA 2018-2019

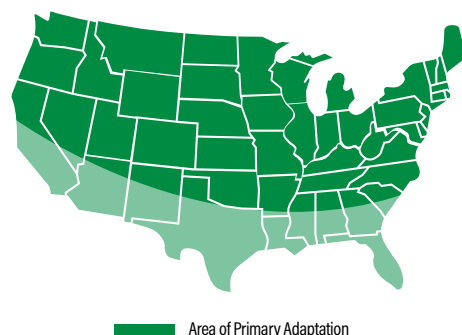
AGRONOMIC TRAITS	
Fall Dormancy	4.4
Winterhardiness	1.8
Maturity	Early
Digestibility	HarvXtra*
Recovery After Harvest	Very Fast
Standability	Excellent
Multileaf Expression	Very High
Disease Resistance Index	40/40
Salt Tolerance	Germination

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	High Resistance
Anthracnose (Race 1)	High Resistance
Anthracnose (Race 5) ¹	High Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	High Resistance
Aphanomyces Root Rot (Race 2)	High Resistance
Evolving Aphanomyces Strains ²	High Resistance
Pea Aphid	Resistance
Stem Nematode	Resistance

WL 3474.HVXRR Firmly Establishes a New Level of Fiber Digestibility and Feed Value in the East*

WI 2021-2023

Variety	Yield %Ck m-y	NDFD %Ck	Milk lbs/Ac %Ck
WL 3474.HVXRR	114%	111%	133%
54Q29	108%	99%	105%
54VR10	106%	99%	102%
SW4107	101%	101%	105%
54HVX42	100%	105%	107%
L-451APH2+	99%	98%	96%
Hi-Gest 360	96%	102%	101%
HybriForce-3420/Wet	96%	102%	101%
AFX 579	92%	101%	96%



W-L Alfalfas and Forage Genetics International recommends the use of RFQ (relative forage quality) in place of RFV (relative feed value) because it more accurately reflects the value that improved fiber digestibility has in forages like HarvXtra® Alfalfa with Roundup Ready® Technology. RFQ better reflects performance that can be expected when animals are fed forages.

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¹ Includes Race 1 protection, along with Anthracnose Race 5 protection, which is patented by FGI.

² Includes Race 1 and Race 2 protection. In addition, Forage Genetics International, LLC (FGI) has identified a novel source of Aphanomyces resistance in the greenhouse and field that visibly outperforms unrelated varieties on the market when grown under natural or artificial disease pressure. FGI researchers have been working cooperatively with universities collecting and testing the most virulent strains of Aphanomyces to help determine the level of resistance to this novel source.

HarvXtra[®] Alfalfa with Roundup Ready[®] Technology and an industry leading disease package, UltraCut[®]

HarvXtra[®] Alfalfa with Roundup Ready[®] Technology is truly a game changer in alfalfa production, and one of the most exciting breakthroughs to hit alfalfa and forage production ever.

WL 3473.HVXRR Advantages

WL 3473.HVXRR gives growers tremendous value of flexibility in choosing to maximize exceptional fiber digestibility, or accumulate greater yield potential by delaying cutting frequency, without sacrificing feed quality. Lignin (ADL %, acid detergent lignin) content of at least 15% less than competitive check varieties on average gives WL 3473.HVXRR at least a 15% greater RFQ (relative forage quality) and NDFD (neutral detergent fiber digestibility).

- UltraCut[®] Disease Package improving establishment and in-crop performance, WL 3473.HVXRR's Disease Resistance Index (DRI) of 39/40 also includes HR (high resistance) to evolving Aphanomyces strains², and resistance to Anthracnose race 5¹
- Disease Resistance Index (39/40) and very winterhardy, (1.9), delivering long stand life under tough growing conditions
- WL 3473.HVXRR is stacked with Roundup Ready[®] Technology for exceptional broad spectrum weed control and crop safety to maximize seedling survival at establishment and provide a useful tool on established stands
- Salt Tolerance at germination
- Well-adapted for Midwest, Northeast, Central and Northern Plains, as well as Intermountain Regions and Northwestern U.S.; ideally-suited for on-farm dairy, beef or cash hay producers
- Expect fast recovery for frequent harvest schedules under intense management
- Building on WL 3471.HVXRR with improved UltraCut[®] disease resistance, cold tolerance, persistence and HarvXtra forage quality.

UltraCut[®] Disease Package

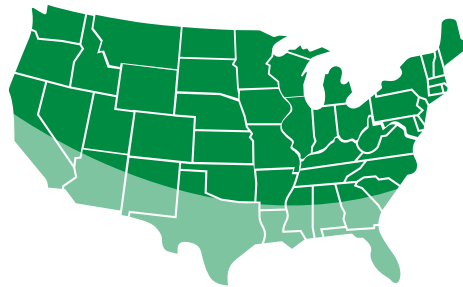
W-L Alfalfas with the UltraCut[®] Disease Package can provide agronomic advantages by helping protect your crop against yield-limiting and evolving Anthracnose and Aphanomyces disease strains. You could see an increase in yield with each cutting when disease threatens your alfalfa and expand the acres you're able to plant. Help grow a healthy alfalfa crop even in field conditions susceptible to Anthracnose and Aphanomyces threats with the UltraCut[®] Disease Package.





AGRONOMIC TRAITS	
Fall Dormancy	4.3
Winterhardiness	1.9
Maturity	Early
Digestibility	HarvXtra*
Recovery After Harvest	Very Fast
Standability	Excellent
Multileaf Expression	Very High
Disease Resistance Index	39/40
Salt Tolerance	Germination

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	High Resistance
Anthracnose (Race 1)	High Resistance
Anthracnose (Race 5) ¹	Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	High Resistance
Aphanomyces Root Rot (Race 2)	High Resistance
Evolving Aphanomyces Strains ²	High Resistance
Pea Aphid	Resistance
Spotted Alfalfa Aphid	Resistance
Stem Nematode	Resistance



Area of Primary Adaptation

* Results are based on controlled field trials at the listed W-L Alfalfas location. Results may vary and are dependent on factors outside of W-L Alfalfa's control, such as weather. Yield, profit and other results cannot be predicted or guaranteed by W-L Alfalfas

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² Includes Race 1 and Race 2 protection. In addition, Forage Genetics International, LLC (FGI) has identified a novel source of Aphanomyces resistance in the greenhouse and field that visibly outperforms unrelated varieties on the market when grown under natural or artificial disease pressure. FGI researchers have been working cooperatively with universities collecting and testing the most virulent strains of Aphanomyces to help determine the level of resistance to this novel source.

Improved disease package and Roundup Ready[®] Fall Dormant 4

WL 3451HQ.RR offers growers the ability to help protect yield and quality potential. WL 3451HQ.RR replaces WL 356HQ.RR and has HR levels for both evolving Aphanomyces strains² and Anthracnose Race 5. This creates better establishment success and in-season yield.

WL 3451HQ.RR Advantages

- Highly resistant to multiple races of Aphanomyces for protection during establishment and early season cool and wet soil conditions
- Highly resistant to multiple races of Anthracnose for protection during warm and humid weather conditions
- Salt Tolerance at germination
- Top choice for heavy, compacted and saturated soils
- Extremely winterhardy providing superb cold tolerance
- High multifoliate expression for maximum quality
- The Roundup Ready[®] Alfalfa trait provides optimal weed control, making crop management easier than ever before — it helps produce better feed quality and stand during establishment while increasing yield potential
- Disease resistance index (DRI) of 40/40 for solid yield potential and stand persistence across a wide range of soil types and climates
- Quick regrowth after cutting with outstanding standability for intensive management systems
- Dark green, fine-stemmed and a highly palatable HQ variety
- Very well-adapted and selected for use in the Midwestern, Northwestern, Central Plains or Northeastern regions of the U.S.

UltraCut[®] Disease Package

W-L Alfalfas with the UltraCut[®] Disease Package can provide agronomic advantages by helping protect your crop against yield-limiting and evolving Anthracnose and Aphanomyces disease strains. You could see an increase in yield with each cutting when disease threatens your alfalfa and expand the acres you're able to plant. Help grow a healthy alfalfa crop even in field conditions susceptible to Anthracnose and Aphanomyces threats with the UltraCut[®] Disease Package.



WL 3451HQ.RR

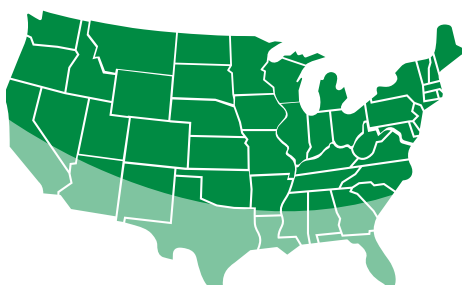
RR FD4 Comp

2020 Wisconsin Demo. Photo from May 6, 2022.

AGRONOMIC TRAITS	
Fall Dormancy	4.4
Winterhardiness	1.4
Maturity	Early
Digestibility	Excellent
Recovery After Harvest	Very Fast
Standability	Excellent
Multileaf Expression	Very High
Disease Resistance Index	40/40
Salt Tolerance	Germination

Planting WL 3451HQ.RR utilizing the Roundup Ready® weed control system provides many benefits over conventional herbicide programs

- Exceptional weed control at both stand establishment and in established stands means fewer weeds and higher-quality hay and haylage, which can result in more milk per ton fed and higher RFQ
- Optimal crop safety at all growth stages with the Roundup Ready® weed control system delivers increased yield potential in both the establishment year and subsequent years
- The simplicity of using a single herbicide (Roundup®) provides optimal weed control with no need to tank mix
- Flexibility in timing of application allows growers utilizing the Roundup Ready® system to spray when necessary; no carryover or crop rotation limitations
- Minimal wait (5 days) after Roundup® application before haying/feeding



Area of Primary Adaptation

¹ Includes Race 1 protection, along with Anthracnose Race 5 protection, which is patented by FGI.

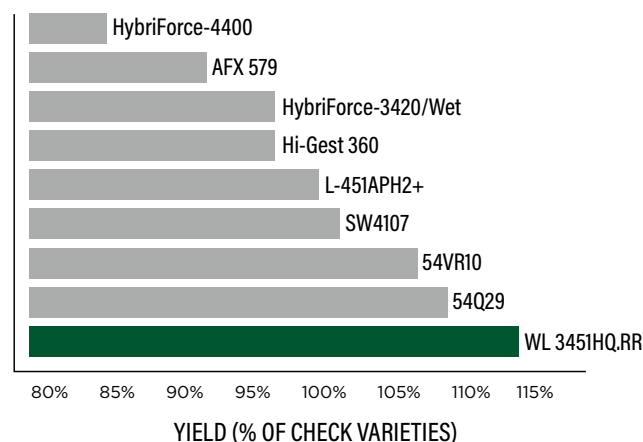
² Includes Race 1 and Race 2 protection. In addition, Forage Genetics International, LLC (FGI) has identified a novel source of Aphanomyces resistance in the greenhouse and field that visibly outperforms unrelated varieties on the market when grown under natural or artificial disease pressure. FGI researchers have been working cooperatively with universities collecting and testing the most virulent strains of Aphanomyces to help determine the level of resistance to this novel source.

* Results are based on controlled field trials at the listed W-L Alfalfas location. Results may vary and are dependent on factors outside of W-L Alfalfa's control, such as weather. Yield, profit and other results cannot be predicted or guaranteed by W-L Alfalfas

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	High Resistance
Anthracnose (Race 1)	High Resistance
Anthracnose (Race 5) ¹	High Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	High Resistance
Aphanomyces Root Rot (Race 2)	High Resistance
Evolving Aphanomyces Strains ²	High Resistance
Pea Aphid	Resistance
Spotted Alfalfa Aphid	Resistance
Stem Nematode	Resistance

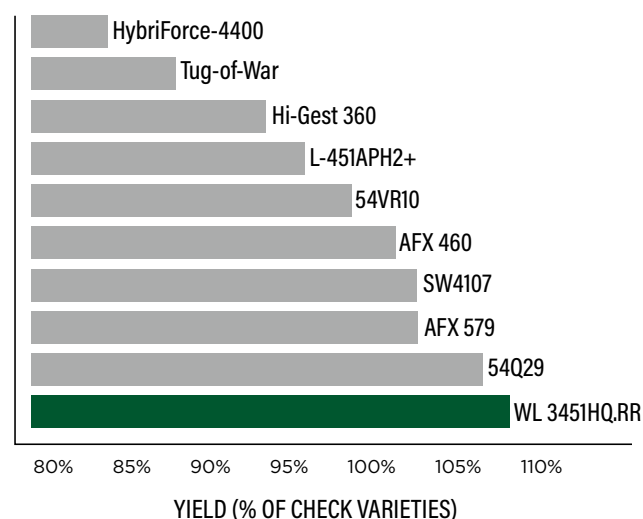
WL 3451HQ.RR Outyields the Competition*

WI 2021-2023



WL 3451HQ.RR Outyields the Competition*

ID 2022-2024

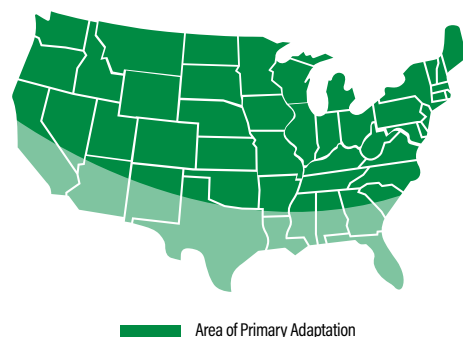


Roundup Ready® Fall Dormant 4 with High Resistance to Stem Nematode

WL 3441HQ.RR is a widely adapted Roundup Ready® variety containing high resistance to Stem nematode and multiple races of Aphanomyces; as well as tolerance to salt.

WL 3441HQ.RR Advantages

- Disease resistance package greatly promoting establishment and in-crop performance, WL 3441HQ.RR Disease Resistance Index (DRI) of 35/35 also includes resistance to evolving Aphanomyces strains²
- Salt tolerance of germinating seeds similar to resistant check
- Very winterhardy (WH=2.0); WL 3441HQ.RR delivers long stand life under adverse weather and soil conditions
- Highly resistant (HR) to stem nematode
- Ideal FD4 variety for Midwest, Northern Plains, Pacific Northwest and Northeastern region of the U.S. for hay and haylage uses



AGRONOMIC TRAITS	
Fall Dormancy	4.3
Winterhardiness	2.0
Maturity	Early
Digestibility	Superior
Recovery After Harvest	Very Fast
Standability	Excellent
Multileaf Expression	Very High
Disease Resistance Index	35/35
Salt Tolerance	Germination
Salt Selected Variety	☑

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	High Resistance
Anthracnose (Race 1)	High Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	High Resistance
Aphanomyces Root Rot (Race 2)	High Resistance
Evolving Aphanomyces Strains ²	Resistance
Pea Aphid	Resistance
Spotted Alfalfa Aphid	Resistance
Stem Nematode	High Resistance

Planting WL 3441HQ.RR utilizing the Roundup Ready[®] weed control system provides many benefits over conventional herbicide programs

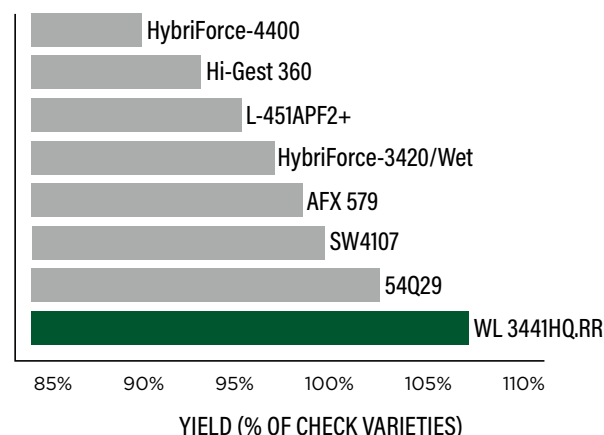
- Exceptional weed control at both stand establishment and in established stands means fewer weeds and higher-quality hay and haylage, which can result in more milk per ton fed and higher RFQ
- Optimal crop safety at all growth stages with the Roundup Ready[®] weed control system delivers increased yield potential in both the establishment year and subsequent years
- The simplicity of using a single herbicide (Roundup[®]) provides optimal weed control with no need to tank mix
- Flexibility in timing of application allows growers utilizing the Roundup Ready[®] system to spray when necessary; no carryover or crop rotation limitations
- Minimal wait (5 days) after Roundup[®] application before haying/feeding

¹ Includes Race 1 and Race 2 protection. In addition, Forage Genetics International, LLC (FGI) has identified a novel source of Aphanomyces resistance in the greenhouse and field that visibly outperforms unrelated varieties on the market when grown under natural or artificial disease pressure. FGI researchers have been working cooperatively with universities collecting and testing the most virulent strains of Aphanomyces to help determine the level of resistance to this novel source.

^{*} Results are based on controlled field trials at the listed W-L Alfalfa's location. Results may vary and are dependent on factors outside of W-L Alfalfa's control, such as weather. Yield, profit and other results cannot be predicted or guaranteed by W-L Alfalfas.

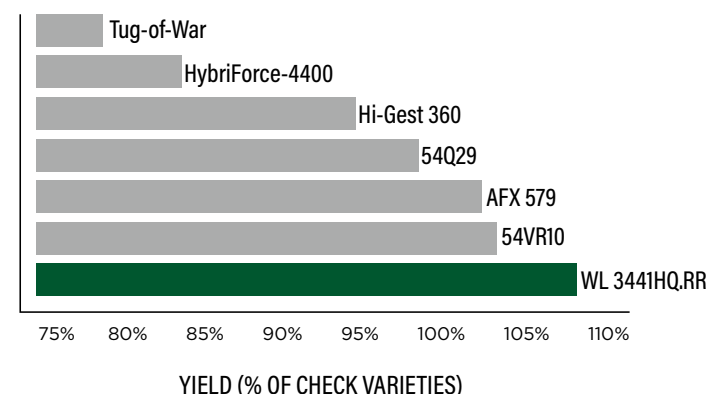
WL 3441HQ.RR Outyields the Competition in the East^{*}

WI 2022-2024



WL 3441HQ.RR Outyields the Competition in the West^{*}

ID 2023-2024



Roundup Ready® Fall Dormant 4 with improved disease and pest resistance

WL 3440HQ.RR, a solid FD4 Roundup Ready® alfalfa with an improvement over PowerStand® RR, boasts resistance to Aphanomyces Root Rot Race 2, Stem Nematode and Pea Aphid.

WL 3440HQ.RR Advantages

- Combines a fall dormancy rating of 4.0 with a winter-hardiness score of 2.0 for optimum persistence and high yield potential
- Good stress tolerance for dryland, irrigated and saturated soils under intense management situations
- Highly resistant to all six major alfalfa diseases—Phytophthora Root Rot, Bacterial Wilt, Fusarium Wilt, Anthracnose (Race 1), Aphanomyces (Race 1), and Verticillium Wilt
- Forage quality is above average with a high leaf-to-stem ratio

Planting WL 3440HQ.RR alfalfa and using the Roundup Ready® weed control system provides many benefits over conventional herbicide programs

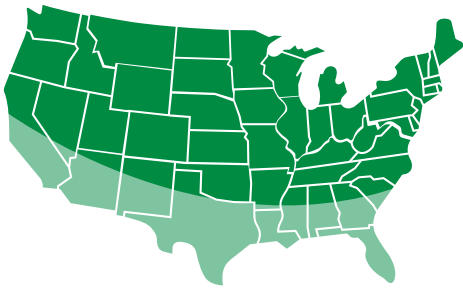
- Weed control at both stand establishment and in established stands means fewer weeds and higher quality hay and haylage, which can result in more milk and beef per acre
- Optimal crop safety at all growth stages with the Roundup Ready® weed control system delivers increased yield potential in both the establishment year and subsequent years
- The simplicity of using a single herbicide (Roundup®) provides optimal weed control with no need to tank mix
- Flexibility in timing of application allows growers utilizing the Roundup Ready® system to spray when necessary; no carryover or crop rotation limitations
- Minimal wait (5 days) after Roundup® application before haying/feeding





AGRONOMIC TRAITS	
Fall Dormancy	4.0
Winterhardiness	2.0
Maturity	Early
Digestibility	Superior
Recovery After Harvest	Fast
Standability	Excellent
Multileaf Expression	High
Disease Resistance Index	34/35
Salt Tolerance	Germination

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	High Resistance
Anthraxnose (Race 1)	High Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	High Resistance
Aphanomyces Root Rot (Race 2)	Resistance
Pea Aphid	Resistance
Stem Nematode	Resistance



Area of Primary Adaptation



Exceptional quality for an exceptional value

PowerStand® RR Delivers Outstanding Performance

- An economical Roundup Ready® alfalfa for dependable forage yield potential and good quality
- Good winterhardiness and pest package with resistance to key diseases
- Moderate to fast recovery after cutting for optimum yield potential

Planting PowerStand® RR alfalfa and utilizing the Roundup Ready® weed control system provides many benefits over conventional herbicide programs

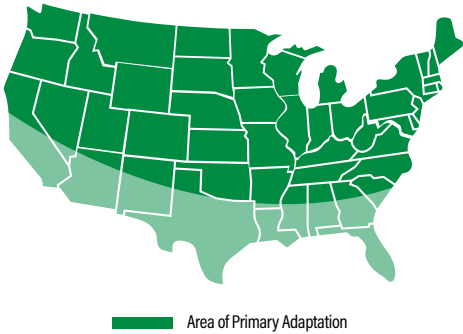
- Weed control at both stand establishment and in established stands means fewer weeds and higher quality hay and haylage, which can result in more milk and beef per acre
- Optimal crop safety at all growth stages provides increased yield potential in both the establishment and subsequent years
- The simplicity of using a single herbicide (Roundup®) provides optimal weed control with no need to tank-mix; one herbicide does it all
- Flexibility in timing of application allows growers to spray when necessary; minimal carryover or crop rotation limitations
- Minimal wait (5 days) after Roundup® application before haying/feeding





AGRONOMIC TRAITS	
Fall Dormancy	4.0
Winterhardiness	2.0
Recovery After Harvest	Moderate to Fast
Standability	Excellent
Multileaf Expression	High
Disease Resistance Index	28/30

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	High Resistance
Anthrachnose (Race 1)	Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	Resistance



Achieve greater yield potential and outstanding forage quality under heavy leafhopper pressure

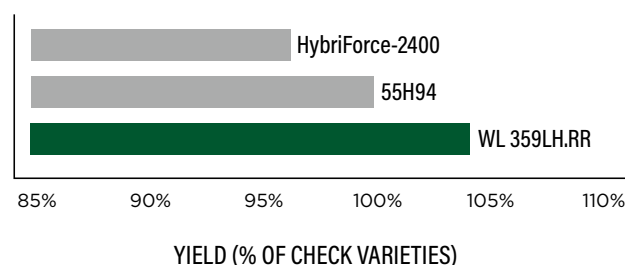
WL 359LH.RR is our third release in the category of stacked glyphosate tolerance and potato leafhopper resistance. Bred and selected for the Midwest and Northeastern U.S. growers, WL 359LH.RR is an exciting product. The HopperShield™ lineup, and now WL 359LH.RR, is an ideal pick for dairy, beef or cash hay growers looking for top yield potential and quality under various levels of leafhopper pressure.

WL 359LH.RR Advantages

- Excellent potato leafhopper resistance with HopperShield™ protection delivers high yield potential and forage quality without the need to spray, even under heavy leafhopper pressure
- Impressive stand health visuals under various levels of leafhopper pressure, coupled with ability to apply broad-spectrum weed control and crop safety of glyphosate
- Winterhardy (WH=2.2); WL 359LH.RR delivers solid winter survival, even under harsh winter conditions
- Disease resistance index (DRI) of 34/35 for solid yield potential and stand persistence across a wide range of soil types and climates
- Dark green, fine-stemmed and a highly palatable HopperShield™ product
- Under various management and cutting schedules, WL 359LH.RR helps ensure solid yield potential, quality and persistence against yield-robbing PLH pests
- Well-adapted and bred for use in the Midwestern or Northeastern U.S. for hay or haylage use

WL 359LH.RR Outyields the Competition*

IA 2015-2016



Planting WL 359LH.RR alfalfa and using the Roundup Ready® weed control system provides many benefits over conventional herbicide programs

- Superb weed control at both stand establishment and in established stands means fewer weeds and higher quality hay and haylage, which can result in more milk and beef per acre
- Optimal crop safety at all growth stages with the Roundup Ready® weed control system delivers increased yield potential in both the establishment year and subsequent years
- The simplicity of using a single herbicide (Roundup®) provides optimal weed control with no need to tank mix
- Flexibility in timing of application allows growers utilizing the Roundup Ready® system to spray when necessary; no carryover or crop rotation limitations
- Minimal wait (5 days) after Roundup® application before haying/feeding



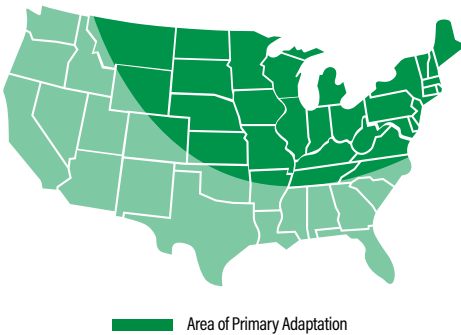
AGRONOMIC TRAITS	
Fall Dormancy	3.9
Winterhardiness	2.2
Maturity	Early
Digestibility	Superior
Recovery After Harvest	Very Fast
Standability	Excellent
Multileaf Expression	High
Disease Resistance Index	34/35

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	High Resistance
Anthracnose (Race 1)	High Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	High Resistance
Aphanomyces Root Rot (Race 2)	Resistance
Pea Aphid	Resistance
Spotted Alfalfa Aphid	Resistance
Stem Nematode	Resistance
Potato Leafhopper	High Resistance

Treatment Thresholds for Potato Leafhoppers*

IOWA STATE UNIVERSITY		
Alfalfa Stem	Conventional Varieties	WL 359LH.RR
4 inches	4	41
6 inches	6	62
8 inches	8	82
10 inches	10	103
LEAFHOPPERS PER 10 SWEEPS		

When compared to conventional alfalfas, WL 359LH.RR can tolerate over TEN times the level of potato leafhoppers before spray treatment is necessary.



* Results are based on controlled field trials at the listed W-L Alfalfas location. Results may vary and are dependent on factors outside of W-L Alfalfa's control, such as weather. Yield, profit and other results cannot be predicted or guaranteed by W-L Alfalfas.

UltraCut[®] Disease Package raises ante on alfalfa yield potential and persistence

Broad disease resistance is always a priority on our research team, constantly looking for additional tolerance across a wide geography. WL 3426HQ is a breakthrough W-L product, with the UltraCut[®] Disease Package that offers growers the ability to help protect yield and quality potential. If top tier yield potential, quality and persistence under tough soil conditions at establishment or in-crop are your must-haves, you've found your next conventional variety.

WL 3426HQ Advantages

- Building on the great performance of WL 349HQ, WL 3426HQ has improved disease resistance, cold tolerance and persistence; all contributing to improved yield potential.
- A new day in disease resistance greatly improving establishment and in-crop performance, WL 3426HQ's perfect Disease Resistance Index (DRI) of 40/40 also includes HR (high resistance) to evolving Aphanomyces strains², and HR to Anthracnose race 1 and race 5¹
- Extremely cold tolerant, WL 3426HQ delivers a winterhardiness rating of 1.3
- WL 3426HQ contains "HQ" high-quality feed value levels highly desirable for dairy and cash hay producers
- UltraCut[®] Disease Package offers expanding yield advantages over competitive checks with added years in production
- Salt Tolerance at germination
- Great standability for intensive management systems
- Dark green, fine-stemmed, and a highly palatable HQ variety
- Very well-adapted and selected for use in the Midwest, Northeast, Intermountain regions, Pacific Northwest or Central and Northern Plains of the U.S.
- Highly resistant (HR) to stem nematode

UltraCut[®] Disease Package

W-L Alfalfas with the UltraCut[®] Disease Package can provide agronomic advantages by helping protect your crop against yield-limiting and evolving Anthracnose and Aphanomyces disease strains. You could see an increase in yield with each cutting when disease threatens your alfalfa and expand the acres you're able to plant. Help grow a healthy alfalfa crop even in field conditions susceptible to Anthracnose and Aphanomyces threats with the UltraCut[®] Disease Package.

Example of high-resistance Multi-Race Aphanomyces and Anthracnose varieties (in the middle) compared to susceptible competitive check varieties (on outsides)



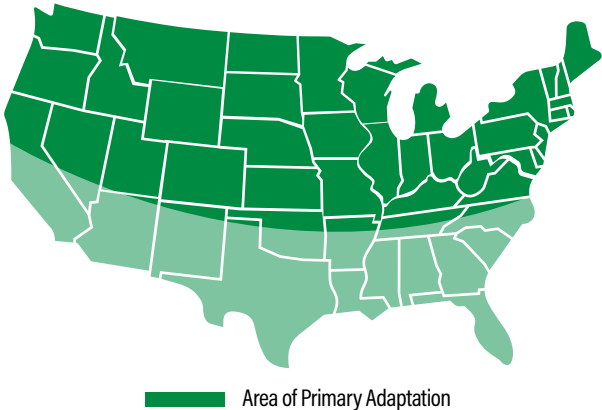
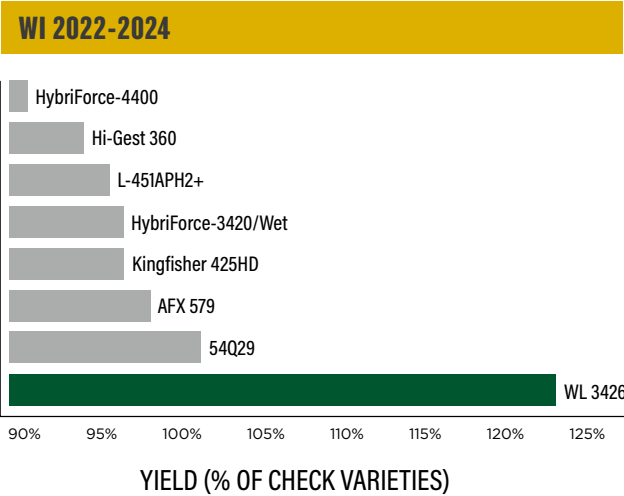
Photo from FGI Research Facility; West Salem, WI; June 2018



AGRONOMIC TRAITS	
Fall Dormancy	4.4
Winterhardiness	1.3
Maturity	Early
Digestibility	Superior
Recovery After Harvest	Very Fast
Standability	Excellent
Multileaf Expression	Very High
Disease Resistance Index	40/40
Salt Tolerance	Germination

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	High Resistance
Anthracnose (Race 1)	High Resistance
Anthracnose (Race 5) ¹	High Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	High Resistance
Aphanomyces Root Rot (Race 2)	High Resistance
Evolving Aphanomyces Strains ²	High Resistance
Blue Alfalfa Aphid	Resistance
Pea Aphid	Resistance
Spotted Alfalfa Aphid	High Resistance
Stem Nematode	High Resistance

WL 3426HQ Outyielded Seven Leading Competitors in the Midwest*



1 Includes Race 1 protection, along with Anthracnose Race 5 protection, which is patented by FGI.

2 Includes Race 1 and Race 2 protection. In addition, Forage Genetics International, LLC (FGI) has identified a novel source of Aphanomyces resistance in the greenhouse and field that visibly outperforms unrelated varieties on the market when grown under natural or artificial disease pressure. FGI researchers have been working cooperatively with universities collecting and testing the most virulent strains of Aphanomyces to help determine the level of resistance to this novel source.

* Results are based on controlled field trials at the listed W-L Alfalfas location. Results may vary and are dependent on factors outside of W-L Alfalfa’s control, such as weather. Yield, profit and other results cannot be predicted or guaranteed by W-L Alfalfas.

WL 3422HQ Advantages

- An economical alfalfa for dependable forage yields and good quality
- Good winterhardiness and pest package with strong resistance to key diseases
- Moderate to fast recovery after cutting for optimum yields
- Multi-race Aphanomyces resistance paired with resistance to alfalfa stem nematode provides both establishment and in-season pest protection for increased yield potential, persistence and broad geographical adaptation



AGRONOMIC TRAITS	
Fall Dormancy	4.0
Winterhardiness	2.0
Recovery After Harvest	Moderate to Fast
Average Stand Life	Medium
Multileaf Expression	High
Disease Resistance Index	34/35

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	High Resistance
Anthraxnose (Race 1)	High Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	High Resistance
Aphanomyces Root Rot (Race 2)	Resistance
Stem Nematode	Resistance

Area of Primary Adaptation

WLALFALFAS.COM | (800) 406-7662

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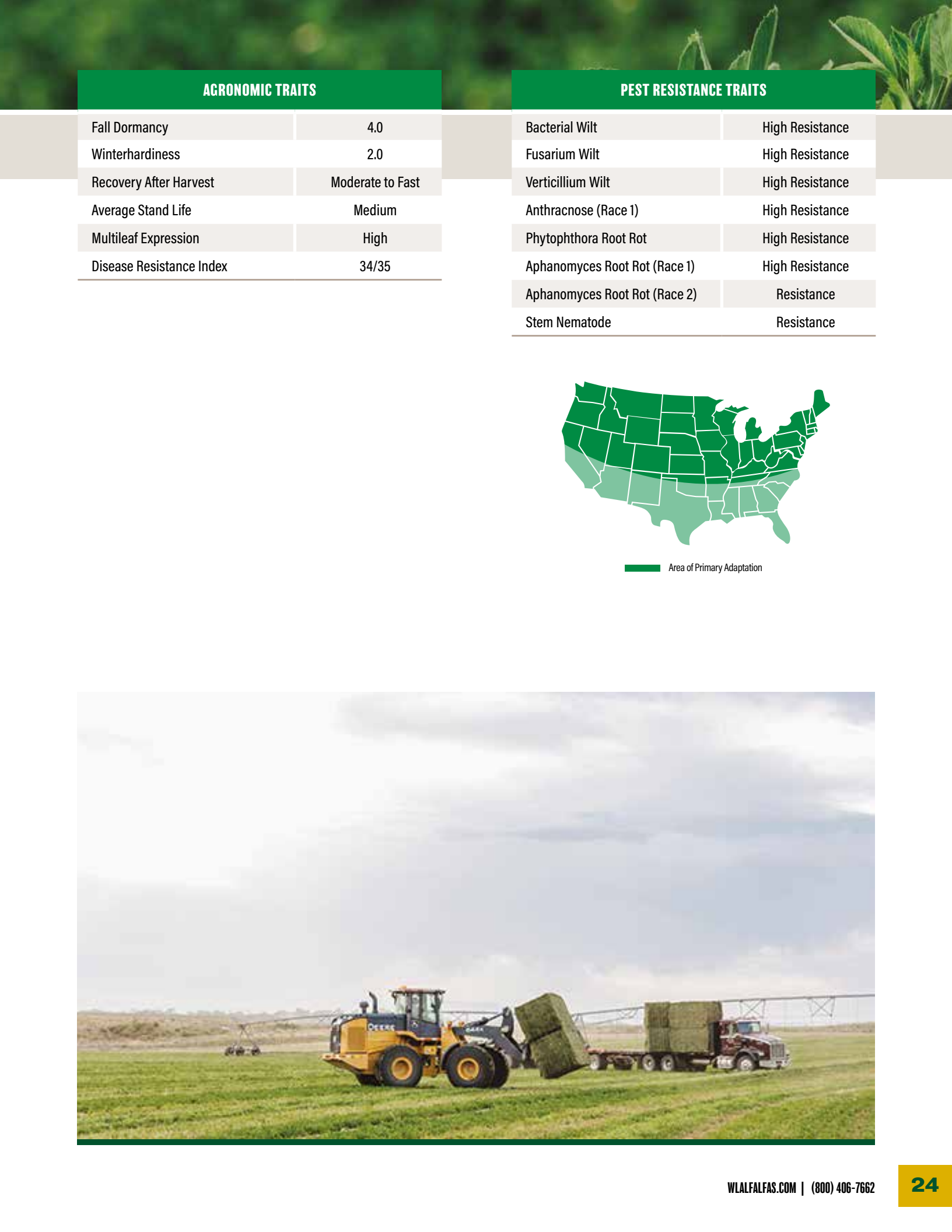
AGRONOMIC TRAITS	
Fall Dormancy	4.0
Winterhardiness	2.0
Recovery After Harvest	Moderate to Fast
Average Stand Life	Medium
Multileaf Expression	High
Disease Resistance Index	34/35

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	High Resistance
Anthraxnose (Race 1)	High Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	High Resistance
Aphanomyces Root Rot (Race 2)	Resistance
Stem Nematode	Resistance

Area of Primary Adaptation

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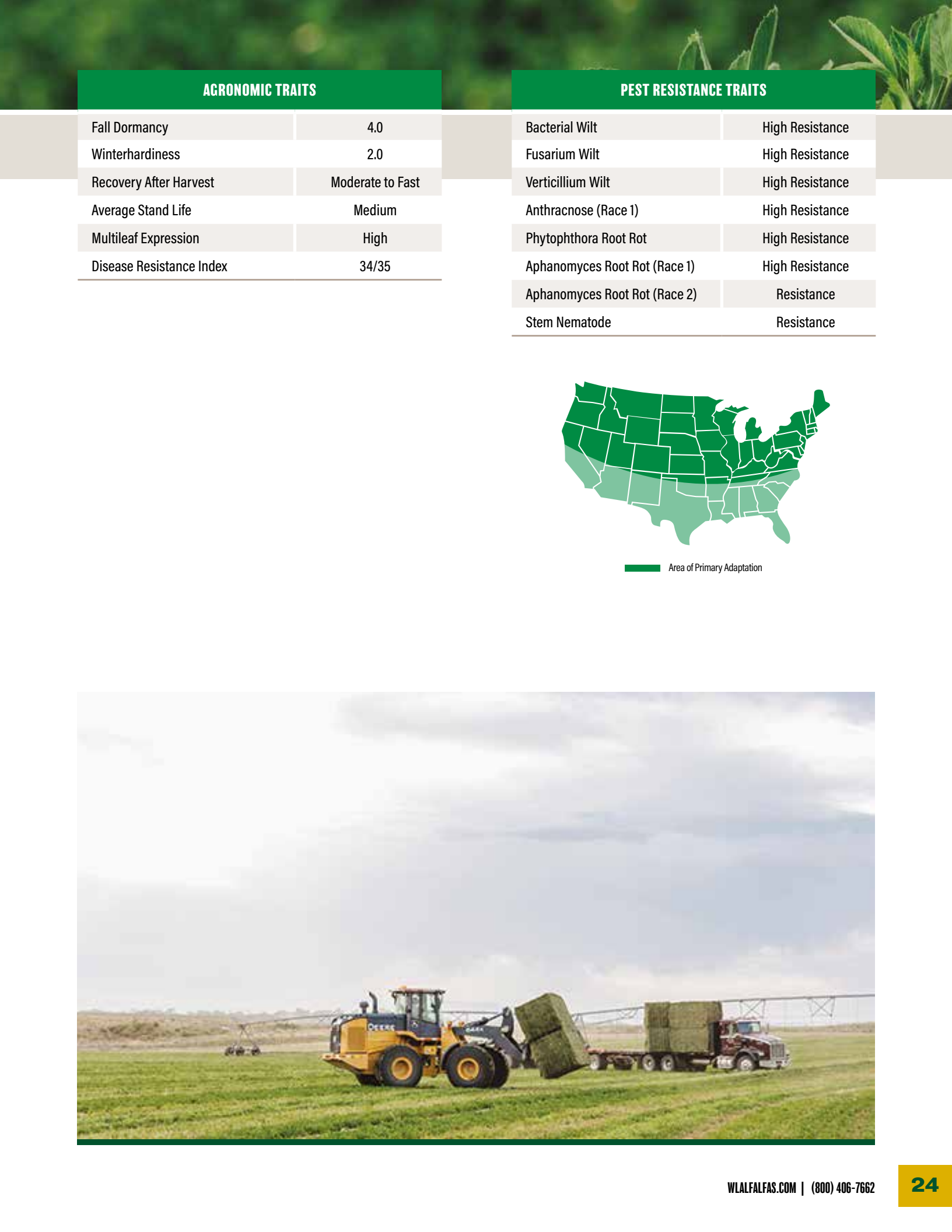
AGRONOMIC TRAITS	
Fall Dormancy	4.0
Winterhardiness	2.0
Recovery After Harvest	Moderate to Fast
Average Stand Life	Medium
Multileaf Expression	High
Disease Resistance Index	34/35

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	High Resistance
Anthraxnose (Race 1)	High Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	High Resistance
Aphanomyces Root Rot (Race 2)	Resistance
Stem Nematode	Resistance

Area of Primary Adaptation

WLALFALFAS.COM | (800) 406-7662

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The next level of enhanced potato leafhopper resistance

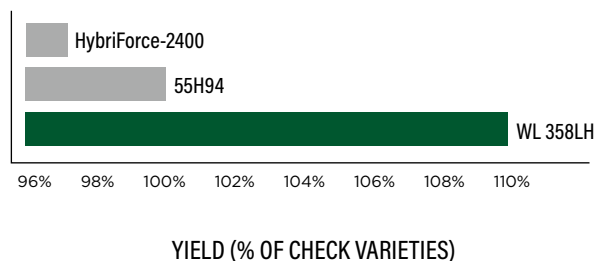
Geared and selected for Midwest and Northeastern U.S. growers, WL 358LH is the latest in the line of varieties selected for some of the highest potato leafhopper resistance available, now an industry leading eighth-generation. Combined with an improved yield and quality package, WL 358LH is an ideal pick for dairy, beef or cash hay growers looking to maximize production under various levels of leafhopper pressure.

WL 358LH Advantages

- Superb yield potential and agronomic performance under 3- to 5-cut harvest management systems, with or without leafhopper pressure
- Visually impressive variety under moderate or heavy PLH pressure
- Winterhardy (WH=2.0); WL 358LH delivers optimal cold tolerance, even under harsh weather conditions
- Disease resistance index (DRI) of 34/35 for solid yield potential and long stand life across a wide range of soil types and climates
- Dark green, fine-stemmed and a highly digestible HopperShield™ variety
- Regardless of management style or cutting schedule, WL 358LH delivers peace-of-mind on yield potential, quality and persistence-robbing PLH pests
- Very well-adapted and selected for use in the Midwestern or Northeastern U.S. for hay or haylage use

WL 358LH Outyielded Two Leading Competitors in IA*

IA 2015-2016



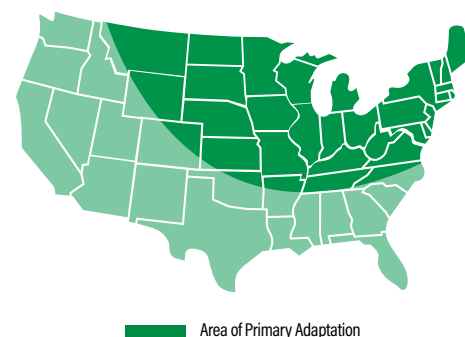
Hopper burn in non-PLH variety.

AGRONOMIC TRAITS		PEST RESISTANCE TRAITS	
Fall Dormancy	4.1	Bacterial Wilt	High Resistance
Winterhardiness	2.0	Fusarium Wilt	High Resistance
Maturity	Early	Verticillium Wilt	High Resistance
Digestibility	Superior	Anthracnose (Race 1)	High Resistance
Recovery After Harvest	Very Fast	Phytophthora Root Rot	High Resistance
Standability	Excellent	Aphanomyces Root Rot (Race 1)	High Resistance
Multileaf Expression	Very High	Aphanomyces Root Rot (Race 2)	Resistance
Disease Resistance Index	34/35	Pea Aphid	High Resistance
		Stem Nematode	Resistance
		Potato Leafhopper	High Resistance

Treatment Thresholds for Potato Leafhoppers*

IOWA STATE UNIVERSITY		
Alfalfa Stem	Non-PLH Varieties	WL 358LH
4 inches	4	41
6 inches	6	62
8 inches	8	82
10 inches	10	103
LEAFHOPPERS PER 10 SWEEPS		

When compared to conventional alfalfas, WL 358LH can tolerate over TEN times the level of potato leafhoppers before spray treatment is necessary.



* Results are based on controlled field trials at the listed W-L Alfalfas location. Results may vary and are dependent on factors outside of W-L Alfalfa's control, such as weather. Yield, profit and other results cannot be predicted or guaranteed by W-L Alfalfas.

W-L Alfalfas bulks up HarvXtra[®] Alfalfa lineup with FD5 addition

WL 3581.HVXRR offers another valuable winterhardy option with UltraCut[®] alfalfa disease resistance package and the HarvXtra[®] Alfalfa trait.

WL 3581.HVXRR Advantages

- Building on the great performance of WL 375HVX.RR, WL 3581.HVXRR has improved disease resistance, cold tolerance and persistence; all contributing to improved yield potential.
- WL 3581.HVXRR offers tremendous value of flexibility in choosing to maximize fiber digestibility, or realize greater yield potential by delaying cutting frequency, perhaps removing 1 cut, without sacrificing feed quality
- Features UltraCut[®] Disease Package, a Disease Resistance Index (40/40), which includes High Resistance to evolving Aphanomyces strains²; and Anthracnose Race 5¹
- WL 3581.HVXRR contains Roundup Ready[®] Technology for unsurpassed broad spectrum weed control and crop safety to maximize seedling survival at establishment and provide a useful tool on established stands
- Salt Tolerance at germination
- Well-adapted for Midwest, Northeast, Central, Northern, & Southern Plains, as well as Intermountain Regions and Pacific Northwest; ideally-suited for on-farm dairy, beef or cash hay producers
- WL 3581.HVXRR delivers quick recovery for frequent harvest schedules under intense management
- Quick stand establishment with WL 3581.HVXRR that comes fully loaded with W-L's Gold Treatment PLUS containing Stamina[®] seed treatment

UltraCut[®] Disease Package

W-L Alfalfas with the UltraCut[®] Disease Package can provide agronomic advantages by helping protect your crop against yield-limiting and evolving Anthracnose and Aphanomyces disease strains. You could see an increase in yield potential with each cutting when disease threatens your alfalfa and expand the acres you're able to plant. Help grow a healthy alfalfa crop even in field conditions susceptible to Anthracnose and Aphanomyces threats with the UltraCut[®] Disease Package.

Visual example of planting WL 3581.HVXRR with high resistance to multiple races of aphanomyces and anthracnose significantly improves stand establishment and production.



Susceptible Variety

WL 3581.HVXRR (High Resistance)

AGRONOMIC TRAITS	
Fall Dormancy	4.6
Winterhardiness	1.7
Maturity	Early
Digestibility	HarvXtra*
Recovery After Harvest	Very Fast
Standability	Excellent
Multileaf Expression	Very High
Disease Resistance Index	40/40
Salt Tolerance	Germination

WL 3581.HVXRR Performance in the West*

ID 2019-2021

Variety	Yld %Ck m-y	NDFD %Ck	RFQ %Ck	Milk lbs/ Ac %Ck
WL 3581.HVXRR	108%	110%	114%	116%
54VR10	107%	99%	99%	106%
WL 356HQ.RR	107%	103%	104%	110%
54HVX41	97%	109%	115%	104%

NDFD = Neutral Detergent Fiber Digestibility RFQ = Relative Forage Quality

WL 3581.HVXRR Firmly Establishes a New Level of Fiber Digestibility and Feed Value in the East*

WI 2019-2021

Variety	Yld %Ck m-y	NDFD %Ck	RFQ %Ck	Milk lbs/ Ac %Ck
WL 3581.HVXRR	110%	116%	121%	127%
54Q29	103%	100%	97%	103%
54VR10	103%	99%	97%	100%
WL 375HVX.RR	102%	111%	105%	111%
54HVX42	101%	108%	109%	110%
AFX 579	100%	97%	96%	97%
L-451APH2+	96%	101%	96%	95%
HybriForce-3400	88%	106%	112%	96%

NDFD = Neutral Detergent Fiber Digestibility RFQ = Relative Forage Quality

1 Includes Race 1 protection, along with Anthracnose Race 5 protection, which is patented by FGI.

2 Includes Race 1 and Race 2 protection. In addition, Forage Genetics International, LLC (FGI) has identified a novel source of Aphanomyces resistance in the greenhouse and field that visibly outperforms unrelated varieties on the market when grown under natural or artificial disease pressure. FGI researchers have been working cooperatively with universities collecting and testing the most virulent strains of Aphanomyces to help determine the level of resistance to this novel source.

* Results are based on controlled field trials at the listed W-L Alfalfas location. Results may vary and are dependent on factors outside of W-L Alfalfa's control, such as weather. Yield, profit and other results cannot be predicted or guaranteed by W-L Alfalfas.

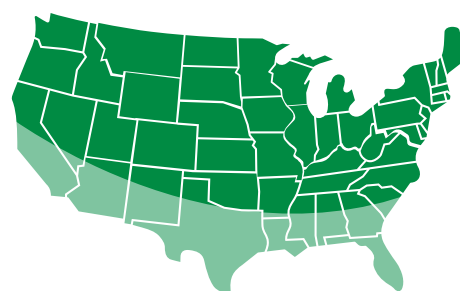
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In the following states, purchase and use of HarvXtra® Alfalfa with Roundup Ready® Technology is subject to a Seed and Feed Use Agreement, requiring that products of this technology can only be used on farm or otherwise be used in the United States: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming. In addition, due to the unique cropping practices do not plant HarvXtra® Alfalfa with Roundup Ready® Technology in Imperial County, California, pending import approval and until Forage Genetics International, LLC (FGI) grants express permission for such planting.

HarvXtra® Alfalfa with Roundup Ready® Technology has pending import approvals. GROWERS MUST DIRECT ANY PRODUCT PRODUCED FROM HARVXTRA® ALFALFA WITH ROUNDUP READY® TECHNOLOGY SEED OR CROPS (INCLUDING HAY AND HAY PRODUCTS) ONLY TO UNITED STATES DOMESTIC USE. It is a violation of national and international law to move material containing biotech traits across boundaries into nations where import is not permitted. Growers should talk to their grain handler or product purchaser to confirm their buying position for this product.

Visit www.ForageGenetics.com/legal for the full legal, stewardship and trademark statements for these products.

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	High Resistance
Anthracnose (Race 1)	High Resistance
Anthracnose (Race 5) ¹	High Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	High Resistance
Aphanomyces Root Rot (Race 2)	High Resistance
Evolving Aphanomyces Strains ²	High Resistance
Blue Alfalfa Aphid	Resistance
Pea Aphid	Resistance
Spotted Alfalfa Aphid	Resistance
Stem Nematode	Resistance



Area of Primary Adaptation

W-L Alfalfas and Forage Genetics International recommends the use of RFQ (relative forage quality) in place of RFV (relative feed value) because it more accurately reflects the value that improved fiber digestibility has in forages like HarvXtra® Alfalfa with Roundup Ready® Technology. RFQ better reflects performance that can be expected when animals are fed forages.

Likewise, RFQ is a far better index of forage quality than TDN (total digestible nutrients) because the TDN equation may not properly reflect fiber digestibility.

Exceptional tonnage and forage quality under intensive management

The combination of exceptional yield potential, very broad adaptation, and HQ superior feed value make WL 3546HQ.RR the variety of choice for cash hay and dairy producers. WL 3546HQ.RR is an FD5 alfalfa that maximizes profit potential under intensive management while utilizing the breakthrough benefits of the Roundup Ready[®] weed control system in alfalfa.

WL 3546HQ.RR Advantages

- Highly resistant to multiple races of Aphanomyces for protection during establishment and early season cool and wet soil conditions
- Highly resistant to multiple races of Anthracnose for protection during warm and humid weather conditions
- Top choice for heavy, compacted and saturated soils
- Salt Tolerance at germination
- High multifoliate expression for maximum quality
- The Roundup Ready[®] Alfalfa trait provides optimal weed control, making crop management easier than ever before — it helps produce better feed quality and stand during establishment while increasing yield potential
- Disease resistance index (DRI) of 40/40 for solid yield potential and stand persistence across a wide range of soil types and climates
- Quick regrowth after cutting with outstanding standability for intensive management systems
- WL 3546HQ.RR demonstrates HQ forage quality levels that promote optimized feed intake, milk production, and profit potential
- Very winterhardy (WH=1.4); WL 3546HQ.RR delivers long stand life even under harsh weather conditions
- Resistant to aphids and nematodes
- Ideal FD5 variety for cash hay growers, dairy producers, or other intensive managers; WL 3546HQ.RR has produced high yield potential of leafy, fine-stemmed hay with high RFQ levels establishment and long stand life



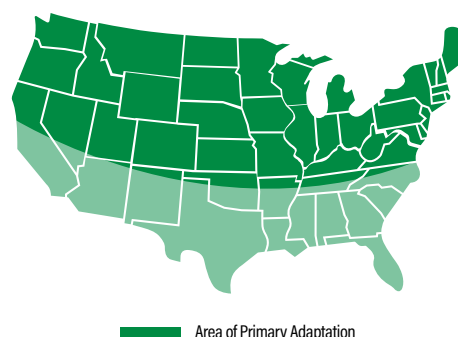
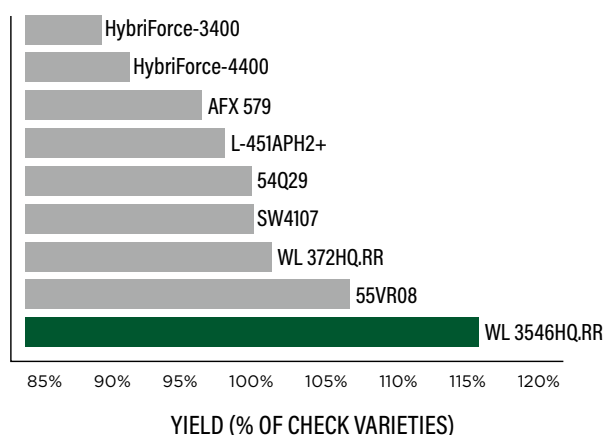
2022 West Salem, WI Seeding; Photo August 2023.

AGRONOMIC TRAITS	
Fall Dormancy	5.0
Winterhardiness	1.4
Maturity	Early
Digestibility	Excellent
Recovery After Harvest	Very Fast
Standability	Excellent
Multileaf Expression	Very High
Disease Resistance Index	40/40
Salt Tolerance	Germination

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	High Resistance
Anthracnose (Race 1)	High Resistance
Anthracnose (Race 5) ¹	High Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	High Resistance
Aphanomyces Root Rot (Race 2)	High Resistance
Evolving Aphanomyces Strains ²	High Resistance
Pea Aphid	Resistance
Blue Alfalfa Aphid	High Resistance
Spotted Alfalfa Aphid	Resistance
Stem Nematode	Resistance

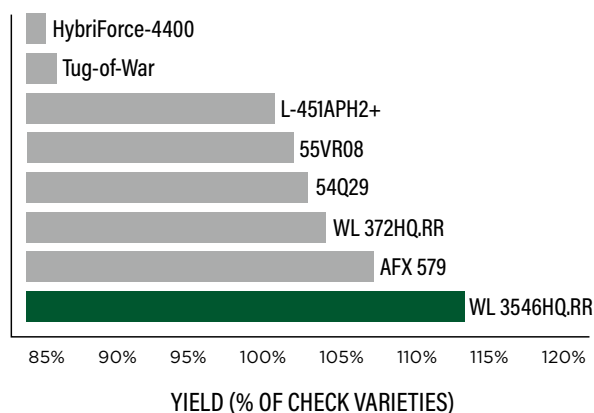
WL 3546HQ.RR Outyields the Competition in the East*

WI 2020-2022



WL 3546HQ.RR Outyields the Competition in the West*

ID 2024



¹ Includes Race 1 protection, along with Anthracnose Race 5 protection, which is patented by FGI.

² Includes Race 1 and Race 2 protection. In addition, Forage Genetics International, LLC (FGI) has identified a novel source of Aphanomyces resistance in the greenhouse and field that visibly outperforms unrelated varieties on the market when grown under natural or artificial disease pressure. FGI researchers have been working cooperatively with universities collecting and testing the most virulent strains of Aphanomyces to help determine the level of resistance to this novel source.

UltraCut[®] Disease Package raises ante on alfalfa yield potential and persistence

Broad adaptation is a priority of our breeding program. WL 3521HQ provides high yield potential across a wide range of FD5 alfalfa production areas through its unparalleled establishment and persistence from the UltraCut[®] disease resistance package paired with great cold and salt tolerance.

WL 3521HQ Advantages

- A new day in disease resistance greatly affecting establishment and in-crop performance, WL 3521HQ's perfect Disease Resistance Index (DRI) of 40/40 also includes HR (high resistance) to evolving aphanomyces strains², and HR to anthracnose race 1 and race 5¹
- Salt Tolerance at germination
- Superb winterhardiness (WH=1.8); WL 3521HQ delivers excellent cold tolerance and persistence
- WL 3521HQ contains high-quality feed value levels highly desirable for dairy and cash hay producers
- UltraCut[®] Disease Package offers expanding yield advantages over competitive checks with added years in production
- WL 3521HQ delivers fast recovery in an FD5 package
- Great standability for intensive management systems
- Dark green, fine-stemmed, and a highly palatable HQ variety
- Very well-adapted and selected for use in the Midwest, Northeast, Intermountain regions, Pacific Northwest or Central and Northern Plains of the U.S.

High-resistance Multi-Race Aphanomyces and Anthracnose varieties (in the middle) compared to susceptible competitive check varieties (on outsides)



Photo from FGI Research Facility; West Salem, WI; June 2018



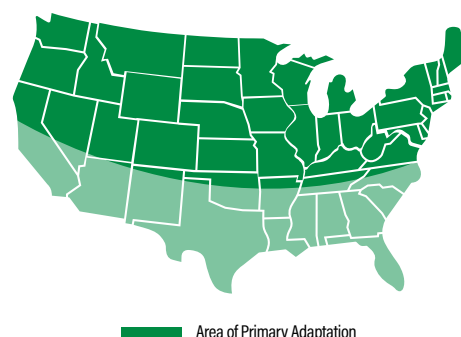
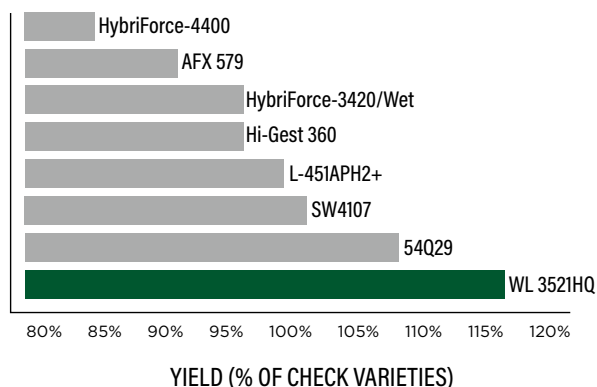
Photo from FGI Research Facility; Nampa, ID; 2023

AGRONOMIC TRAITS	
Fall Dormancy	5.0
Winterhardiness	1.8
Maturity	Early
Digestibility	Superior
Recovery After Harvest	Very Fast
Standability	Excellent
Multileaf Expression	Very High
Disease Resistance Index	40/40
Salt Tolerance	Germination

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	High Resistance
Anthracnose (Race 1)	High Resistance
Anthracnose (Race 5) ¹	High Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	High Resistance
Aphanomyces Root Rot (Race 2)	High Resistance
Evolving Aphanomyces Strains ²	High Resistance
Blue Alfalfa Aphid	Resistance
Pea Aphid	Resistance
Spotted Alfalfa Aphid	High Resistance
Stem Nematode	Resistance

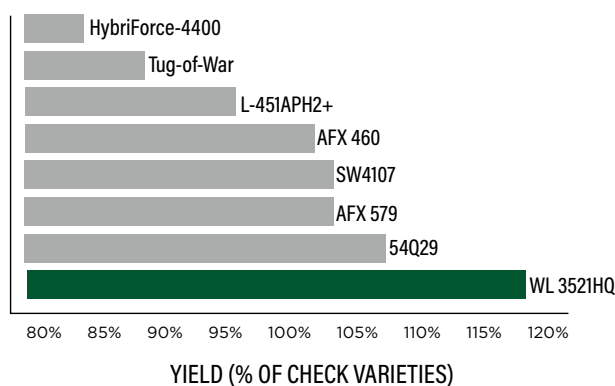
WL 3521HQ Outyields the Competition in the East*

WI 2021-2023



WL 3521HQ Outyields the Competition in the West*

ID 2022-2024



¹ Includes Race 1 protection, along with Anthracnose Race 5 protection, which is patented by FGI.

² Includes Race 1 and Race 2 protection. In addition, Forage Genetics International, LLC (FGI) has identified a novel source of Aphanomyces resistance in the greenhouse and field that visibly outperforms unrelated varieties on the market when grown under natural or artificial disease pressure. FGI researchers have been working cooperatively with universities collecting and testing the most virulent strains of Aphanomyces to help determine the level of resistance to this novel source.

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Exceptional FD5 Stem Nematode Variety

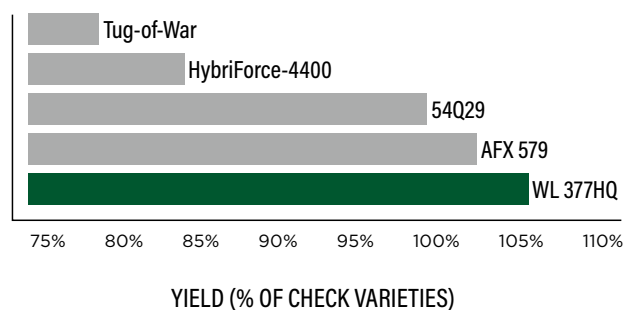
There have been many breakthrough varieties since the inception of W-L Alfalfas and WL 377HQ is one of those varieties. Simply put, if exceptional yield potential, 'HQ' levels of feed value, and high resistance to all major nematodes and aphids are high on your wish list, then WL 377HQ is your kind of product.

WL 377HQ Advantages

- Solid winterhardiness (WH=2.5); WL 377HQ delivers excellent cold tolerance and persistence
- Salt Tolerance at germination
- "HQ" feed value levels make WL 377HQ highly desirable for cash hay and dairy producers alike
- Highly-resistant to all major nematodes and aphids
- WL 377HQ delivers fast recovery, quickly closing the canopy to outpace yield-robbing weeds
- Disease resistance index (DRI) of 30/30 for solid yield potential and stand persistence across a wide range of soil types and climates
- Great standability for intensive management systems
- Dark green, fine-stemmed, and a highly palatable HQ variety
- Very well-adapted and selected for use in the Pacific Northwest, Intermountain regions or Central and Southern Plains of the U.S.

WL 377HQ Outyields the Competition in the West*

ID 2023-2024

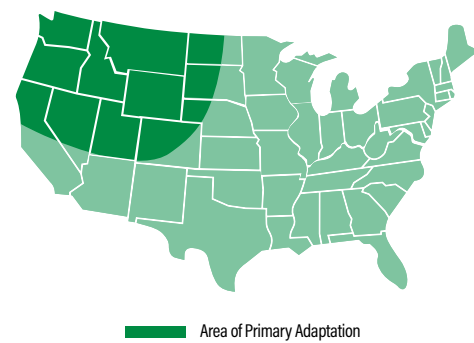


AGRONOMIC TRAITS		PEST RESISTANCE TRAITS	
Fall Dormancy	5.0	Bacterial Wilt	High Resistance
Winterhardiness	2.5	Fusarium Wilt	High Resistance
Maturity	Early	Verticillium Wilt	High Resistance
Digestibility	Superior	Anthracnose (Race 1)	High Resistance
Recovery After Harvest	Very Fast	Phytophthora Root Rot	High Resistance
Standability	Excellent	Aphanomyces Root Rot (Race 1)	High Resistance
Multileaf Expression	Very High	Pea Aphid	High Resistance
Disease Resistance Index	30/30	Spotted Alfalfa Aphid	High Resistance
Salt Tolerance	Germination	Stem Nematode	High Resistance
		Root-Knot Nematode (Northern)	High Resistance

WL 377HQ Forage Quality Analysis*

ID 2014			
Variety	CP	NDFD	RFQ
WL 377HQ	21.2	44.4	174
WL 363HQ	21.5	44.2	170
HybriForce-2400	21.3	44.2	166
Pioneer® 55Q27	21.2	43.7	166
Pioneer® 54Q25	20.7	43.9	160

CP= Crude Protein NDFD = Neutral Detergent Fiber Digestibility RFQ = Relative Forage Quality



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The first FD6 release of a HarvXtra[®] alfalfa product

HarvXtra[®] Alfalfa is the industry's first genetically enhanced alfalfa technology developed to maximize quality compared to conventional alfalfa at the same stage of maturity, by reducing the amount of lignin in the plant.

HVX3686RR Advantages

- HarvXtra Alfalfa gives growers the ability to better manage the yield-versus-quality trade-off. It offers more flexibility in cutting schedule to achieve improved forage quality or greater yield potential, when compared to conventional alfalfa at the same stage of maturity
- The HarvXtra technology provides unprecedented flexibility by widening cutting windows, which gives growers the option at each cutting to:
 1. Maintain their normal harvest schedules for higher-quality forage, **or**
 2. Delay harvest for 5-7 days for increased yield potential, without sacrificing forage quality, compared to conventional alfalfa at the same stage of maturity
- HarvXtra Alfalfa has 10-15% higher neutral detergent fiber digestibility (NDFd) than conventional alfalfa harvested at the same stage of maturity
- HarvXtra Alfalfa is stacked with the Roundup Ready[®] Technology for unsurpassed weed control with excellent crop safety

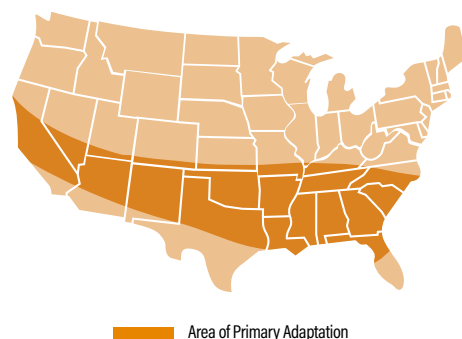
Planting HVX3686RR utilizing the Roundup Ready[®] weed control system provides many benefits over conventional herbicide programs

- Exceptional weed control at both stand establishment and in established stands means fewer weeds and higher-quality hay and haylage
- Exceptional crop safety at all growth stages with the Roundup Ready[®] weed control system
- Recommended 1st glyphosate application at 1st-3rd trifoliate stage to provide early weed control on new seedlings and lower seedling mortality
- The simplicity of using a single herbicide (Roundup[®]) provides optimal weed control with no need to tank mix
- Flexibility in timing of application allows growers utilizing the Roundup Ready[®] system to spray when necessary; no carryover or crop rotation limitations
- Minimal wait (5 days) after Roundup[®] application before haying/feeding



AGRONOMIC TRAITS	
Fall Dormancy	6.0
Winter Activity	Moderate
Digestibility	HarvXtra®
Persistence Index	Very High
Recovery After Harvest	Very Fast
Standability	Excellent
Salt Selected Variety	☑

PEST RESISTANCE TRAITS	
Bacterial Wilt	Moderate Resistance
Fusarium Wilt	High Resistance
Anthracnose (Race 1)	Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	Resistance
Blue Alfalfa Aphid	Moderate Resistance
Pea Aphid	High Resistance
Spotted Alfalfa Aphid	High Resistance
Stem Nematode	Resistance



HVX3686RR Variety Performance

Los Banos, CA 2020-2022

Variety	FD	Forage Yield (% Commercial Checks)	Forage Quality (NDFD % Commercial Checks)
		Los Banos, CA	Los Banos, CA
HVX3686RR	6	110	110
WL 454HQ.RR	6	106	101
RRALF 6R200	6	98	102

FD = Fall Dormancy

Note: Data come from FGI trials comparing HarvXtra® Alfalfa with Roundup Ready® Technology to commercial checks.

Seeded Fall of 2015 in Davis, Los Banos, Canyon. Data collected 2016-2019 in Davis and Los Banos, 2016-2017 in Canyon in 2015 trials.

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Salt tolerant variety with exceptional yield potential and outstanding hay quality

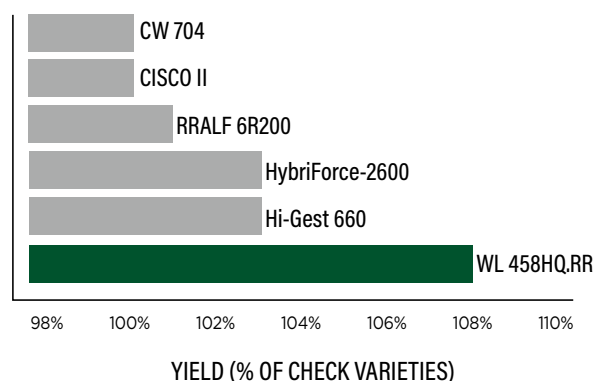
WL 458HQ.RR Advantages

- Semi-dormant FD=6
- Exceptional salt tolerance derived from our salt breeding program
- Resistant to all major aphid and nematode pests
- Supports optimized feed intake, milk production, and greater profit potential
- Ideal semi-dormant variety for the cash hay producer: WL 458HQ.RR has consistently produced big yields of leafy, fine-stemmed hay with dark green color and high feed value
- Very strong disease resistance package (including HR to Phytophthora Root Rot, Fusarium Wilt, Verticillium Wilt and Anthracnose) promotes fast seedling establishment and long stand life



WL458HQ.RR Outyields the Competition*

KS 2020-2022



WL 458HQ.RR Delivers More Tons of Weed-Free Hay

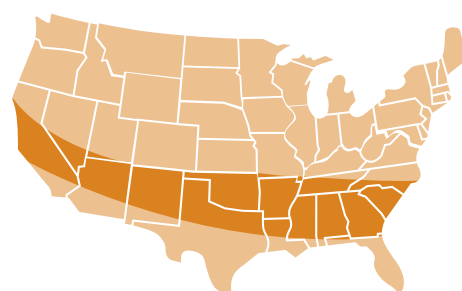
Outstanding yield potential and superior feed value make WL 458HQ.RR the variety of choice for cash hay and dairy producers looking for a FD6 alfalfa that maximizes production and profit potential in their operations while utilizing the breakthrough benefits of the Roundup Ready® weed control system.

AGRONOMIC TRAITS	
Fall Dormancy	6.0
Winter Activity	Moderate
Digestibility	Superior
Persistence Index	Very High
Recovery After Harvest	Very Fast
Standability	Excellent
Multileaf Expression	Moderate
Salt Tolerance	Germination
Salt Selected Variety	☑

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	High Resistance
Anthracnose (Race 1)	High Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	High Resistance
Blue Alfalfa Aphid	Resistance
Pea Aphid	High Resistance
Spotted Alfalfa Aphid	Resistance
Stem Nematode	High Resistance

Planting WL 458HQ.RR Alfalfa and Utilizing the Roundup Ready® weed control system provides many benefits over conventional herbicide programs

- Exceptional weed control both when establishing new stands and in established stands means fewer weeds and higher quality hay, which can result in higher forage quality and greater profit potential
- Optimal crop safety at all growth stages with the Roundup Ready® weed control system can deliver thicker stands and higher yield potential for the life of stand
- Flexibility in timing of herbicide application allows alfalfa producers utilizing the Roundup Ready® system to spray when necessary; no carryover or crop rotation limitations
- Minimal wait (5 days) after Roundup® application before haying/feeding



Area of Primary Adaptation

* Results are based on controlled field trials at the listed W-L Alfalfas location. Results may vary and are dependent on factors outside of W-L Alfalfa's control, such as weather. Yield, profit and other results cannot be predicted or guaranteed by W-L Alfalfas.

Consistent high performer in semi-dormant territory

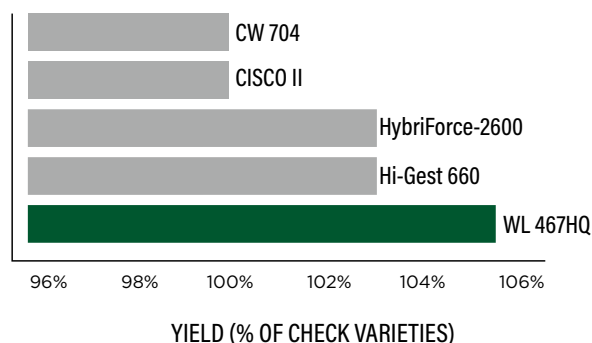
WL 467HQ complements and continues the gains made in the semi-dormant space for W-L Alfalfas. Not only is WL 467HQ a go-to selection for yield and 'HQ' levels of feed value, it contains an agronomic package of high resistance levels to yield-robbing stem nematode and pea aphid among others, making it a wise long-term investment.

WL 467HQ Advantages

- "HQ" feed value levels make WL 467HQ highly desirable for cash hay and dairy producers alike
- Salt Tolerance at germination
- Highly-resistant to stem and root knot nematode, and pea aphid to allow to maximize genetic potential
- WL 467HQ delivers fast recovery, quickly closing the canopy to outpace yield-robbing weeds
- Very strong disease resistance package, (including HR to Fusarium Wilt, Phytophthora Root Rot and Anthracnose; R to Verticillium Wilt) promoting quick establishment and long stand life
- Great standability for intensive management systems
- Dark green, fine-stemmed, and a highly palatable HQ variety
- Very well-adapted and selected for use in the Western U.S. and Southern Plains

WL 467HQ Outyields the Competition in the West*

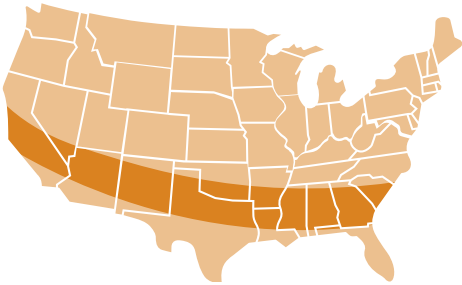
KS 2020-2022





AGRONOMIC TRAITS	
Fall Dormancy	6.0
Winter Activity	Moderate
Digestibility	Superior
Persistence Index	Very High
Recovery After Harvest	Very Fast
Standability	Excellent
Multileaf Expression	Moderate
Salt Tolerance	Germination
Salt Selected Variety	☒

PEST RESISTANCE TRAITS	
Bacterial Wilt	High Resistance
Fusarium Wilt	High Resistance
Verticillium Wilt	Resistance
Anthracnose (Race 1)	High Resistance
Phytophthora Root Rot	High Resistance
Aphanomyces Root Rot (Race 1)	Resistance
Spotted Alfalfa Aphid	Resistance
Pea Aphid	High Resistance
Stem Nematode	High Resistance
Root-Knot Nematode (Northern)	High Resistance



Area of Primary Adaptation

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Superb forage quality backed by high aphid resistance

WL 3847HQ.RR is adapted to the Southwest geographies and is focused on high quality forage with high resistance to both pea and spotted alfalfa aphids.

WL 3847HQ.RR Advantages

- Winter-active, non-dormant FD=8.3
- Improved salt tolerance of germinating seeds*
- Strong aphid resistance
- WL 3847HQ.RR is building on WL 558HQ.RR with several generations of breeding for improvements to disease and pest resistance, as well as persistence
- Combination of salt tolerance and high resistance to Phytophthora Root Rot provides improved establishment success



WL 3847HQ.RR Outyields the Competition*

LOS BANOS, CA 2021-2023

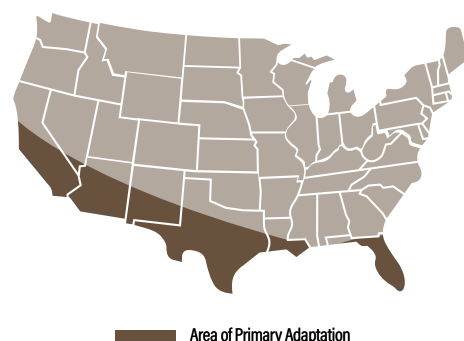
Variety	Fall Dormancy	2021 Forage Yield (% Commercial Checks)	2022 Forage Yield (% Commercial Checks)	2023 Forage Yield (% Commercial Checks)	Multi-Year
WL 3847HQ.RR	8	126	154	133	134
RRALF 9R100	9	108	134	107	113
6829R	9	103	88	100	98



AGRONOMIC TRAITS		PEST RESISTANCE TRAITS	
Fall Dormancy	8.3	Bacterial Wilt	Resistance
Winter Activity	High	Fusarium Wilt	Resistance
Digestibility	Superior	Verticillium Wilt	Resistance
Persistence Index	Very High	Anthracnose (Race 1)	Resistance
Recovery After Harvest	Very Fast	Phytophthora Root Rot	High Resistance
Standability	Excellent	Pea Aphid	High Resistance
Salt Tolerance	Germination	Blue Alfalfa Aphid	Resistance
Salt Selected Variety	☑	Spotted Alfalfa Aphid	High Resistance
		Stem Nematode	High Resistance

Planting WL 3847HQ.RR and Utilizing the Roundup Ready® weed control system provides many benefits over conventional herbicide programs

- Exceptional weed control when establishing new stands and in established stands can mean fewer weeds and higher-quality hay, which can result in higher forage quality and greater profit potential
- Optimal crop safety at all growth stages with the Roundup Ready® weed control system means thicker stands and higher yield potential for the life of the stand
- Flexibility in timing herbicide applications allows alfalfa producers utilizing the Roundup Ready® system to spray when necessary; no carryover or crop rotation limitations
- There is minimal wait (5 days) after a Roundup® application before haying/feeding



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Exceptional conventional FD8 with high yield potential

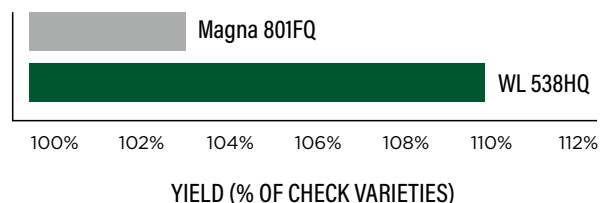
WL 538HQ is a new Fall Dormant 8, and is adapted to traditional western and southwestern non-dormant zones. This variety combines exceptional yield and good forage quality potential along with exceptional stand persistence. This variety is an excellent choice for forage production in the non-dormant regions of the U.S. replacing WL 535HQ.

WL 538HQ Advantages

- Winter-active, non-dormant FD=8.0
- Salt Tolerance at germination
- Very high yield potential across a wide range of soil types and harvest schedules
- Highly resistant to all major aphid pests
- Resistant to all major nematode pests
- WL 538HQ is highly palatable; optimizes intake, milk production, and can help lower feed costs and increase profit potential
- Ideal variety for the cash hay producer: WL 538HQ supports high yield potential of leafy, fine-stemmed hay with high feed value and dark green color
- Outstanding persistence and long stand life even under intensive cutting schedules
- Very strong disease resistance package (including HR to Phytophthora Root Rot, Fusarium Wilt and Anthracnose Race 1) promotes fast stand establishment and longer stand life
- Excellent tolerance to leaf diseases provides improved leaf retention, higher protein levels, and greater forage quality
- Fast recovery after cutting

WL 538HQ Outyields the Competition*

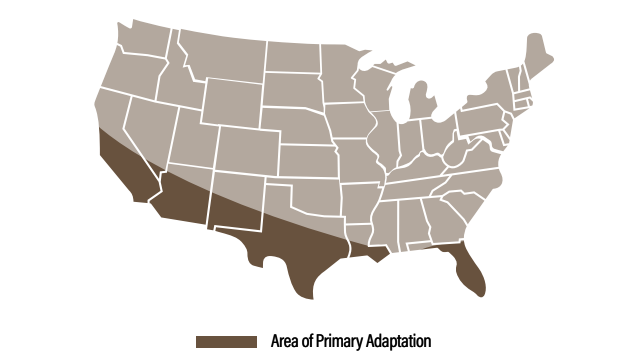
CA 2018-2020



AGRONOMIC TRAITS		PEST RESISTANCE TRAITS	
Fall Dormancy	8.0	Bacterial Wilt	Resistance
Winter Activity	High	Fusarium Wilt	High Resistance
Digestibility	Superior	Verticillium Wilt	Resistance
Persistence Index	Excellent	Anthracnose (Race 1)	High Resistance
Recovery After Harvest	Fast	Phytophthora Root Rot	High Resistance
Standability	Excellent	Aphanomyces (Race 1)	Moderate Resistance
Salt Tolerance	Germination	Blue Alfalfa Aphid	High Resistance
Salt Selected Variety	☑	Pea Aphid	High Resistance
		Spotted Alfalfa Aphid	High Resistance
		Stem Nematode	High Resistance

WL 538HQ Delivers

WL 538HQ can deliver big yield potential, exceptional feed value, and outstanding profit potential for both dairy and cash hay producers. WL 538HQ carries on the great HQ tradition set by WL 535HQ. Intense selection for parent plants with high forage quality traits (high % crude protein and excellent fiber digestibility) has resulted in an HQ alfalfa variety with superior hay quality. High forage yield potential plus exceptional feed value can equal greater profit potential, and WL 538HQ delivers.



* Results are based on controlled field trials at the listed W-L Alfalfas location. Results may vary and are dependent on factors outside of W-L Alfalfa's control, such as weather. Yield, profit and other results cannot be predicted or guaranteed by W-L Alfalfas.

HarvXtra[®] Alfalfa in FD9

WL 3979.HVXRR offers exciting harvest flexibility accomplished by reduced lignin content for FD9 growers.

WL 3979.HVXRR Advantages

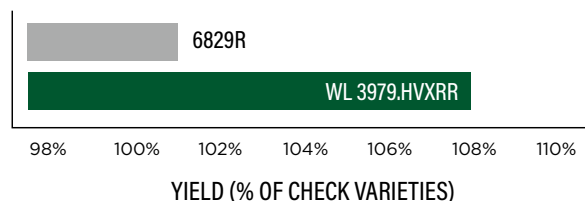
- Winter-active, non-dormant FD=9.0
- HarvXtra[®] Alfalfa gives growers the ability to better manage the yield-versus-quality trade-off, offering more flexibility in cutting schedule to achieve improved forage quality or greater yield potential when compared to conventional alfalfa at the same stage of maturity
- The HarvXtra[®] Alfalfa technology provides unprecedented flexibility by widening cutting windows, which gives growers the option at each cutting to:
 1. Maintain their normal harvest schedules for higher-quality forage, **or**
 2. Delay harvest for 5-7 days for increased yield potential, without sacrificing forage quality, compared to conventional alfalfa at the same stage of maturity
- HarvXtra[®] Alfalfa has on average 12-14% less lignin and 8-10% higher neutral detergent fiber digestibility (NDFD) than conventional alfalfa harvested at the same stage of maturity
- HarvXtra[®] Alfalfa is stacked with the Roundup Ready[®] Technology for unsurpassed weed control with excellent crop safety
- Salt Tolerance at germination

WL 3979.HVXRR Outyields the Competition*

LOS BANOS, CA 2019-2021

Variety	Yld %Ck m-y	NDFD %Ck	Milk lbs/Ac%Ck
WL 3979.HVXRR	129%	107%	136%
HVX840RR	111%	105%	113%
RRALF 9R100	109%	98%	104%
6829R	91%	99%	91%

MARICOPA, AZ 2018



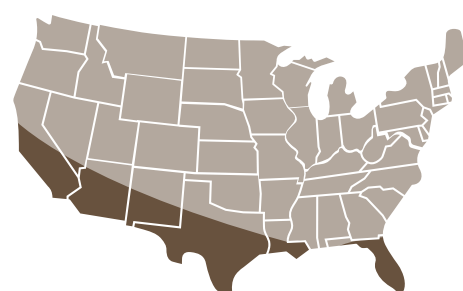
YIELD (% OF CHECK VARIETIES)



AGRONOMIC TRAITS		PEST RESISTANCE TRAITS	
Fall Dormancy	9.0	Bacterial Wilt	Moderate Resistance
Stand Persistence	Excellent	Fusarium Wilt	High Resistance
Early Seeding Vigor	Excellent	Verticillium Wilt	Resistance
Recovery After Harvest	Fast	Anthracnose (Race 1)	High Resistance
Leaf Retention	Excellent	Phytophthora Root Rot	High Resistance
Plant Color	Dark Green	Blue Alfalfa Aphid	High Resistance
Salt Tolerance	Germination	Pea Aphid	High Resistance
Salt Selected Variety	☑	Spotted Alfalfa Aphid	High Resistance
		Stem Nematode	Resistance

Planting WL 3979.HVXRR utilizing the Roundup Ready® weed control system provides many benefits over conventional herbicide programs

- Exceptional weed control at both stand establishment and in established stands means fewer weeds and higher-quality hay and haylage
- Exceptional crop safety at all growth stages with the Roundup Ready® weed control system
- Recommended 1st glyphosate application at 1st-3rd trifoliolate stage to provide early weed control on new seedlings and lower seedling mortality
- The simplicity of using a single herbicide (Roundup®) provides optimal weed control with no need to tank mix
- Flexibility in timing of application allows growers utilizing the Roundup Ready® system to spray when necessary; no carryover or crop rotation limitations
- Minimal wait (5 days) after Roundup® application before haying/feeding



Area of Primary Adaptation

* Results are based on controlled field trials at the listed W-L Alfalfas location. Results may vary and are dependent on factors outside of W-L Alfalfa's control, such as weather. Yield, profit and other results cannot be predicted or guaranteed by W-L Alfalfas.

Yield-packed potential backed by high resistance to stem nematode

WL 3968HQ.RR provides growers looking for the continued advantage of W-L Alfalfa's non-dormant program based on optimal yield potential, solid forage quality, high resistance to stem nematodes and resistance to aphids. WL 3968HQ.RR, building on WL 668HQ.RR, is a top pick for cash hay and dairy producers looking to maximize per acre profitability or milk/ton while utilizing the Roundup Ready® weed control system.

WL 3968HQ.RR Advantages

- Winter-active, non-dormant FD=9.3
- Salt Tolerance at germination
- Solid disease package supporting strong seedling establishment and enhanced persistence
- Highly resistant to Stem Nematode and Phytophthora Root Rot
- Ideal non-dormant variety for the cash hay or dairy producer: WL 3968HQ.RR produces big yields of leafy, fine-stemmed hay with dark green color
- Quick regrowth and canopy closure coupled with Roundup Ready® system should keep invasive weeds minimized
- Excellent tolerance to leaf diseases delivers improved leaf retention and overall forage quality



WL 3968HQ.RR Outyields the Competition*

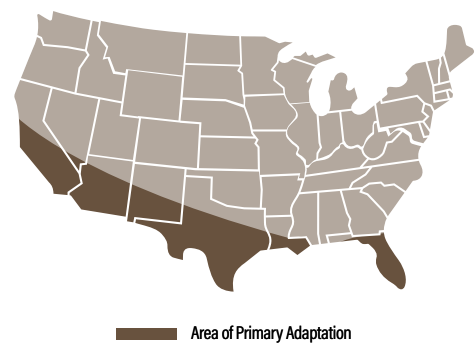
LOS BANOS, CA 2020-2022

Variety	Forage Yield (% Commercial Checks)			Multi Year
	2020	2021	2022	
WL 3968HQ.RR	121	127	136	125
AFX 1060	109	108	106	108
RRALF 9R100	104	106	106	105
Magna 995	100	112	105	104
Magna 801FQ	95	99	101	97

AGRONOMIC TRAITS		PEST RESISTANCE TRAITS	
Fall Dormancy	9.3	Bacterial Wilt	Resistance
Winterhardiness	Very High	Fusarium Wilt	High Resistance
Maturity	Early	Anthracnose (Race 1)	High Resistance
Digestibility	Superior	Phytophthora Root Rot	High Resistance
Recovery After Harvest	Very Fast	Aphanomyces (Race 1)	Resistance
Standability	Excellent	Blue Alfalfa Aphid	Resistance
Salt Tolerance	Germination	Pea Aphid	Resistance
Salt Selected Variety	☑	Spotted Alfalfa Aphid	High Resistance
		Stem Nematode	High Resistance

Planting WL 3968HQ.RR and Utilizing the Roundup Ready® weed control system provides many benefits over conventional herbicide programs

- Exceptional weed control when establishing new stands and in established stands can mean fewer weeds and higher-quality hay, which can result in higher forage quality and greater profit potential
- Optimal crop safety at all growth stages with the Roundup Ready® weed control system means thicker stands and higher yield potential for the life of the stand
- Flexibility in timing herbicide applications allows alfalfa producers utilizing the Roundup Ready® system to spray when necessary; no carryover or crop rotation limitations
- There is minimal wait (5 days) after a Roundup® application before haying/feeding



* Results are based on controlled field trials at the listed W-L Alfalfas location. Results may vary and are dependent on factors outside of W-L Alfalfa's control, such as weather. Yield, profit and other results cannot be predicted or guaranteed by W-L Alfalfas.

New Conventional Non-Dormant with High Yield Potential in the Southwest

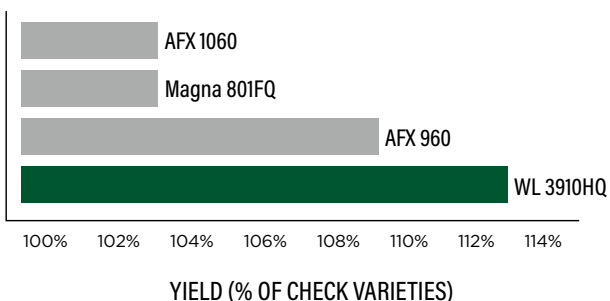
Exceptional yield potential, great persistence, and excellent hay quality makes WL 3910HQ the non-dormant alfalfa variety of choice for cash hay and dairy producers looking to maximize both production and profit potential.

WL 3910HQ Advantages

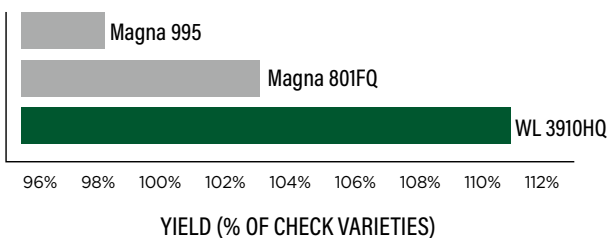
- Winter-active, very non-dormant FD=9.4
- Building on WL 656HQ
- Salt Tolerance at germination
- Very high yield potential and outstanding persistence across a wide range of soil types and harvest schedules
- Supports optimal milk and profit potential when fed
- A great choice for cash hay; WL 3910HQ can deliver very high forage quality across a wide range of haying conditions
- Highly resistant to major disease, insect, and nematode pests that attack alfalfa in the Southwestern U.S.
- Very fast recovery after cutting and optimal standability encourages intensive harvest management
- Great visual appeal in the field; dark green, leafy, fine stemmed, and tolerant to leaf disease

WL 3910HQ Performance*

MARICOPA, AZ 2020-2021



LOS BANOS, CA 2023-2024

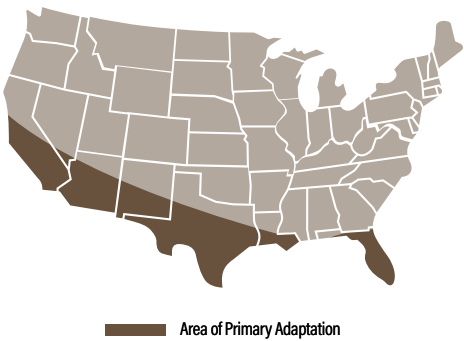




AGRONOMIC TRAITS		PEST RESISTANCE TRAITS	
Fall Dormancy	9.4	Bacterial Wilt	Resistance
Digestibility	Superior	Fusarium Wilt	High Resistance
Persistence Index	Very High	Verticillium Wilt	Resistance
Recovery After Harvest	Very Fast	Anthracnose (Race 1)	Resistance
Standability	Excellent	Phytophthora Root Rot	High Resistance
Salt Tolerance	Germination	Blue Alfalfa Aphid	High Resistance
Salt Selected Variety	☑	Pea Aphid	Resistance
		Spotted Alfalfa Aphid	High Resistance
		Stem Nematode	High Resistance

WL 3910HQ Delivers Outstanding Performance

Our newest conventional, very non-dormant HQ (high quality-selected) alfalfa, WL 3910HQ carries on in the great tradition set by WL 656HQ: Very high yield potential, outstanding persistence, and exceptional hay quality. WL 3910HQ offers a unique combination of high yield potential and high hay quality, producing outstanding per-acre profit potential when compared to the competition. With excellent levels of resistance to all important disease, aphid, and nematode pests, WL 3910HQ is clearly the non-dormant alfalfa to beat.



* Results are based on controlled field trials at the listed W-L Alfalfas location. Results may vary and are dependent on factors outside of W-L Alfalfa’s control, such as weather. Yield, profit and other results cannot be predicted or guaranteed by W-L Alfalfas.
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SEED TREATMENTS & COATINGS

Seed Treatment Package Offerings

TREATMENT OPTIONS	TREATMENT DESCRIPTION	STAMINA® FUNGICIDE	MEFENOXAM	INOCULANT	OPTIMIZE® GOLD	MICRO-NUTRIENTS	OMRI LISTED
GOLD® TREATMENT PLUS 34% Nutrient Coat	COS	✓	✓	✓	✓	✓	No
SPECIAL ORDER OPTIONS* (40 BAG MINIMUM ORDER)	TREATMENT DESCRIPTION	STAMINA® FUNGICIDE	MEFENOXAM	INOCULANT	OPTIMIZE® GOLD	MICRO-NUTRIENTS	OMRI LISTED
34% ORGANIC COAT Available on Select Products	OC			✓			Yes
GOLD® TREATMENT PLUS 8% Coat	COS8	✓	✓	✓	✓	✓	No
MEFENOXAM (APRON/ANCHOR)/INOCULANT	AN		✓	✓			No

*Special order options are only available on select products. Please consult with your alfalfa provider. Minimum order quantities and charges apply. No returns on special order products.

GOLD® TREATMENT PLUS Advantages:

Better emergence in wet or dry conditions

- Micronutrients surrounding the seed increases germination and emergence
- Controls early season diseases that attack new seedlings in wet environments

Optimal nodule formation for improved nitrogen fixation

- Unique mix of Rhizobium strains improves nodulation and promotes nitrogen-fixation

Optimal stand establishment

- Root and shoot development is enhanced and independent of soil conditions
- Improved plant health with multi-season benefits of greater yield potential
- Smooth finish and uniform seed size improves planting accuracy
- Ideal for reduced tillage

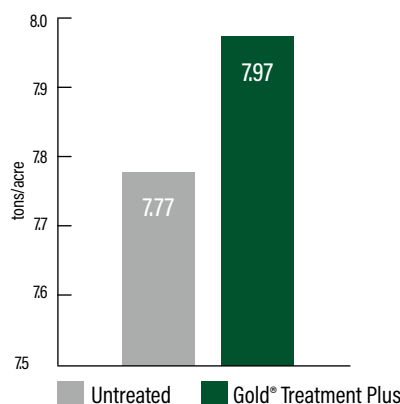
Example of Treated Root System



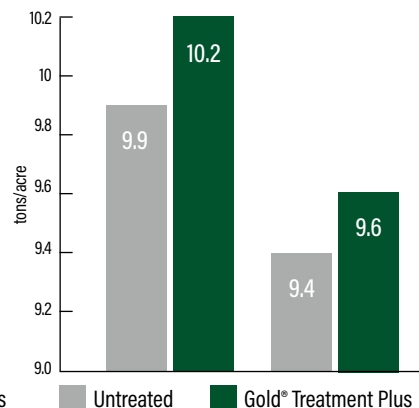
Untreated

Treated with GOLD®
TREATMENT PLUS

Yield Summary Solid ROI-Multi-year (43 Trials)



Continued returns with 2nd year crop (4 trials)



SEED TREATMENTS & COATINGS

GOLD® TREATMENT PLUS Proprietary Package Contains:

✓ **OPTIMIZE® GOLD WITH LCO PROMOTER TECHNOLOGY® FOR ALFALFA**

When present at the time of planting, LCO Promoter Technology® enables your crop to achieve its full genetic potential by enhancing nutritional capabilities that drive natural growth processes, maximizing plant health and crop performance.

✓ **STAMINA® (PYRACLOSTROBIN) FUNGICIDE**

Protects seed and new seedlings from fungal disease and enhance plant health, especially under tough soil conditions with elevated disease pressure. May result in higher germination rates, increased nodulation, healthier roots and larger plants.

✓ **INOCULANT**

Specially selected natural rhizobia strains (pre-inoculant) result in high levels of nitrogen fixation for maximum yield potential.

✓ **MEFENOXAM**

Protects against seedling damping-off diseases, especially in cool wet soils.

✓ **MICRONUTRIENTS**

Assists in early vigor and stand establishment.

✓ **PROTECTIVE COATING**

Coating keeps beneficial products close to the seed, provides better seed to soil contact, attract water for better moisture absorption and transfer to seed for germination, and better stands due to higher seed-to-seedling success rates



SEED TREATMENTS & COATINGS

Stamina® Fungicide Benefits

Why use Stamina®?

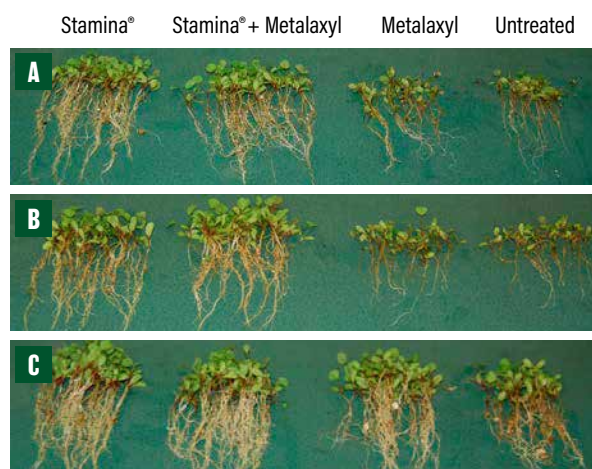
Powered by F500® fungicide, the same active ingredient that is in Headline® fungicide

Stamina® is a broad spectrum, seed-applied fungicide that provides suppression of seed and emerging seedling disease caused by these target diseases:

- Aphanomyces euteiches
- Rhizoctonia solani
- Fusarium spp.
- Phytophthora medicaginis

Seed treated with Stamina® results in:

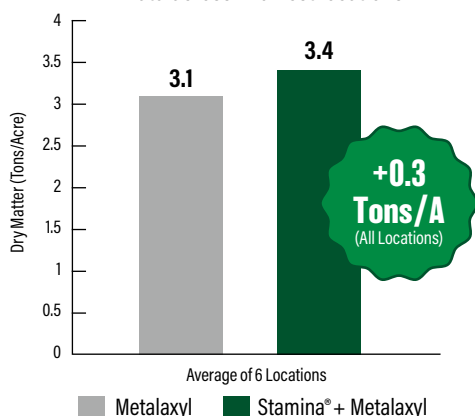
- A healthier stand with faster developing plants
- Increased forage yield
- More rapid and increased emergence of seedlings even under certain cold conditions



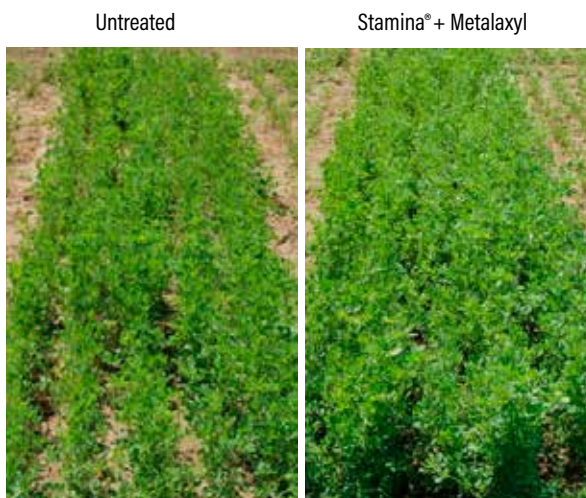
Seedlings inoculated with (A) Aphanomyces euteiches Race 1. (B) Aphanomyces euteiches Race 2 (C) Phytophthora medicaginis. Stamina applied at 3.1 fl oz/cwt & metalaxyl applied at 0.91 fl oz/cwt. 2011 Laboratory test conducted by an independent third party researcher.

Summary of Alfalfa Forage Yield, Seeding Year

Data across Midwest locations



Stamina applied at 3.1 fl oz/cwt. Metalaxyl applied at 0.91 fl oz/cwt. 2013 replicated trials conducted in West Salem, WI.



Alfalfa spring seeded May 6, 2013. Photos taken on June 29, 2013 in West Salem, WI. 54 Days After Seeding. Stamina 3.1 fl oz/cwt, metalaxyl 0.91 fl oz/cwt.

ULTRACUT®

Alfalfa Disease Package

UltraCut® Disease Package Promotes Plant Health and Yield Potential

See the difference in your field.

WL Alfalfa varieties with the UltraCut® disease package can help producers get healthier and more productive alfalfa crops. Its protection can help deliver an advantage through improved agronomic performance and yield potential. Crown, stem and root diseases can cause significant impact on alfalfa yield, quality and persistence. The UltraCut® Disease Package enables strong stand establishment through unmatched seedling genetic disease resistance, especially in field conditions susceptible to yield-robbing Anthracnose and Aphanomyces disease strains. UltraCut® disease package is built on several decades of industry-leading persistence breeding (yield over time). The persistence in UltraCut® disease package varieties can help growers to realize higher yield potential over multiple years.

**PROMOTES
PLANT HEALTH**

**STAND
ESTABLISHMENT**

**YIELD
POTENTIAL**

**DISEASE
RESISTANCE**

See healthier stands and more yield in your fields* by planting varieties with the UltraCut® Disease Package.



ULTRACUT®
Alfalfa Disease Package

UltraCut® alfalfa disease package varieties (in the middle) compared to susceptible competitive check varieties (on outsides), Photo taken at FGI Research Facility, June 2018, West Salem, WI

*Compared to varieties without the UltraCut alfalfa disease package in fields with disease pressure.

UltraCut® Disease Package is available in:

WL 3474.HVXRR • WL 3473.HVXRR • WL 3581.HVXRR • WL 3451HQ.RR
WL 3546HQ.RR • WL 3311HQ • WL 3426HQ • WL 3521HQ



Experience the many advantages of Roundup Ready® Alfalfa



Easier weed control

Get unsurpassed control of broadleaf and grass weeds, as well as suppression of most persistent, parasitic or poisonous weeds.



Cleaner stand establishment

Roundup Ready® Alfalfa's weed control helps you establish a strong stand.



Decreased damage from herbicides

Roundup Ready® systems provide excellent crop safety compared to conventional herbicides, with no crop rotation restrictions.



Flexibility in application timing

Enjoy the broadest application timing window for both crops and weeds. Wait only five days before grazing or harvest.

Controlling weed pressure during establishment provides these benefits:

- ✓ **MORE YIELD POTENTIAL**
Roundup Ready® Alfalfa lowers weed pressure early on, leading to greater yield potential.
- ✓ **MORE SAVINGS POTENTIAL**
Enjoy lower herbicide costs compared to conventional herbicide options.
- ✓ **MORE QUALITY POTENTIAL**
With fewer weeds in every ton, you can harvest a higher percentage of pure alfalfa.
- ✓ **MORE PERSISTENCE POTENTIAL**
The Roundup Ready® Alfalfa trait helps establish a strong stand, giving you thicker, denser alfalfa year after year.



Learn more at RoundupReadyAlfalfa.com



An alfalfa that gives you options. Not limits.

The genetically enhanced HarvXtra® Alfalfa technology fundamentally changes the relationship between forage quality and stage of maturity by modifying lignin content (ADL) beyond what is possible with conventional breeding techniques.

Introducing HarvXtra® Alfalfa with Roundup Ready® Technology

It's the industry's first genetically enhanced alfalfa developed to maximize quality compared to conventional alfalfa at the same stage of maturity, by reducing the amount of lignin in the plant.

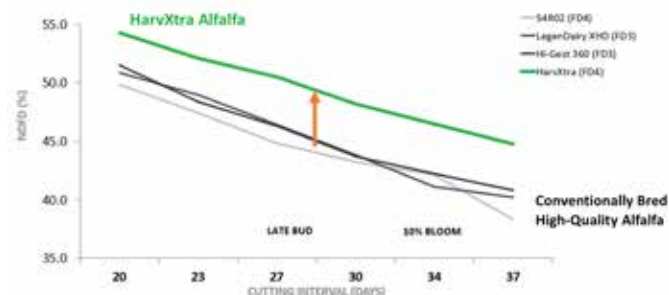
It's now available in WL 3474.HVXRR, WL 3473.HVXRR, WL 3581.HVXRR, HVX3686RR and WL 3979.HVXRR products. HarvXtra® Alfalfa with Roundup Ready® technology gives you unprecedented flexibility by widening cutting windows. This gives you the ability to better manage the yield-versus-quality trade-off. It also adds unsurpassed weed control with Roundup Ready® technology.

- Choose to maintain your current harvest schedule for higher quality forage, **or**
- Delay harvest a few days for increased tonnage without sacrificing acceptable forage quality.

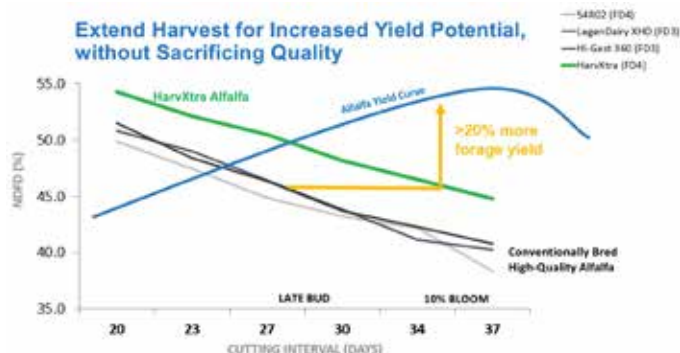
It's a True Game Changer

By reducing the amount of lignin in the plant, the HarvXtra® Alfalfa trait technology fundamentally changes the relationship between forage quality and stage of maturity. Less acid detergent lignin (ADL) and higher neutral detergent fiber digestibility (NDFD) improves digestibility and can command a higher price per ton come harvest.

HarvXtra® Alfalfa Delivers Exceptional Forage Quality



Extend Harvest for Increased Yield Potential, without Sacrificing Quality



Extend Harvest for Higher Yield Potential



Learn more at HarvXtra.com



SINCE 1958

WLALFALFAS.COM

HARVXTRA[®]
with Roundup
Ready[®] Technology

Roundup
Ready[®]
ALFALFA

ULTRA//CUT[®]
Alfalfa Disease Package

HQ[™]



In the following states, purchase and use of HarvXtra[®] Alfalfa with Roundup Ready[®] Technology is subject to a Seed and Feed Use Agreement, requiring that products of this technology can only be used on farm or otherwise be used in the United States: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming. In addition, due to the unique cropping practices do not plant HarvXtra[®] Alfalfa with Roundup Ready[®] Technology in Imperial County, California, pending import approval and until Forage Genetics International, LLC (FGI) grants express permission for such planting.

Forage Genetics International, LLC ("FGI") is a member of Excellence Through Stewardship[®] (ETS). FGI products are commercialized in accordance with ETS Product Launch Stewardship Guidance, and in compliance with FGI's Policy for Commercialization of Biotechnology-Derived Plant Products in Commodity Crops. HarvXtra[®] Alfalfa with Roundup Ready[®] Technology and Roundup Ready[®] Alfalfa have pending import approvals. GROWERS MUST DIRECT ANY PRODUCT PRODUCED FROM HARVXTRA[®] ALFALFA WITH ROUNDUP READY[®] TECHNOLOGY SEED OR CROPS (INCLUDING HAY AND HAY PRODUCTS) ONLY TO UNITED STATES DOMESTIC USE. Any crop or material produced from this product can only be exported to, or used, processed or sold in countries where all necessary regulatory approvals have been granted. It is a violation of national and international law to move material containing biotech traits across boundaries into nations where import is not permitted. Growers should talk to their grain handler or product purchaser to confirm their buying position for this product. Growers should refer to <http://www.biotradestatus.com/> for any updated information on import country approvals. Excellence Through Stewardship[®] is a registered trademark of Biotechnology Industry Organization.

ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Roundup Ready[®] crops contain genes that confer tolerance to glyphosate. Glyphosate herbicides will kill crops that are not tolerant to glyphosate.

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