WL ALFALFAS

BETTER SEED THROUGH RESEARCH®

2017 SEED GUIDE

genuity ROUNDUP READY ALFALFA

HQ™

HOPPER SHIELD
PATENTED® LEAFHOPPER PROTECTION

HARVXTRA with Roundup Ready® Technology


12M-24-030
S-14-1

A GLOBAL LEADER IN ALFALFA TECHNOLOGY

With more than half a century of alfalfa experience, our team has maintained a singular focus: to produce high-quality alfalfa seed that helps improve production for alfalfa growers. Thanks to that commitment, farmers across the world are benefiting from improved alfalfa products that span the entire spectrum of dormancies, technologies and traits.

With a backbone of research and development, we have had many advancements in the development and release of high-performance alfalfa varieties. This includes our first HQ selected variety to demonstrate increased milk production, to thirteen Genuity® Roundup Ready® alfalfas in our profile that deliver high yield potential and outstanding feed value, and for 2017, the onset of truly game-changing technology with our first W-L HarvXtra® Alfalfa release. Our research continues 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, W-L Research became part of the Forage Genetics International breeding program to create one of the industry's largest alfalfa research and development program in the world. For more than 40 years, we have had an international presence, and are well poised to deliver the breakthrough products farmers need to meet increased demands on a global scale.

GROWING A STRONG STAND DEPENDS ON THE SEED IT'S GROWN FROM.

We put more into our seed because you demand more out of it.

WL ALFALFAS
BETTER SEED THROUGH RESEARCH

HQ™ | genuity ROUNDUP READY ALFALFA | HOPPER SHIELD PATENTED* LEAFHOPPER PROTECTION | HARVXTRA with Roundup Ready® Technology

Learn more at wlbetterseed.com

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WL 341HVX.RR

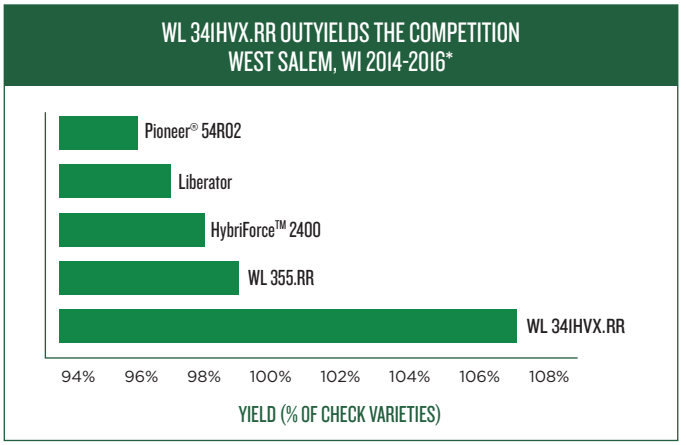
FD4

ALFALFA REINVENTED - THE NEW STANDARD OF YIELD POTENTIAL AND QUALITY WITH W-L HARVXTRA® ALFALFA

HarvXtra® Alfalfa with Roundup Ready® Technology is truly a gamechanger in alfalfa production, and one of the most exciting breakthroughs to hit alfalfa and forage production ever. Our first release, WL 341HVX.RR provides growers with expanded flexibility in cutting schedule to protect forage quality, or the ability to greatly enhance fiber digestibility and overall feed value while maintaining current harvest timing. Either option delivers tremendous value no matter the type of grower or operation.

WL 341HVX.RR Advantages

- WL 341HVX.RR gives growers tremendous value of flexibility in choosing to maximize unmatched 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 341HVX.RR at least a 15% greater RFQ (relative forage quality) and NDFD (neutral detergent fiber digestibility) than competitive check varieties
- Superb yield potential and agronomic characteristics under 3-cut system if extending cutting frequency, or under 4- to 5-cut systems to maximize feed value
- Perfect Disease Resistance Index (30/30) and very winterhardy, (2.1), delivering long stand life under tough growing conditions
- WL 341HVX.RR 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
- 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
- Quick stand establishment with WL 341HVX.RR that comes fully-loaded with W-L's The Gold Treatment® PLUS seed coatin treatment containing Stamina® fungicide



Planting WL 341HVX.RR utilizing the Genuity® Roundup Ready® weed control system provides many benefits over conventional herbicide programs

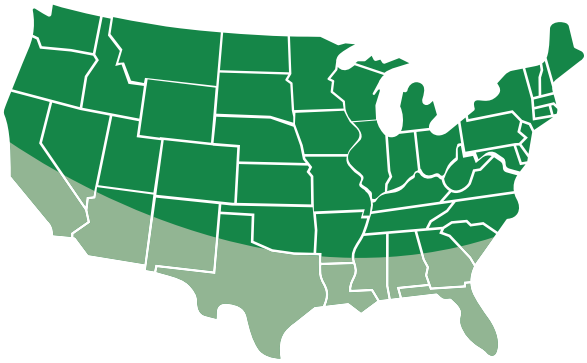
- Exceptional weed control at both stand establishment and in established stands means fewer weeds and higher-quality hay and haylage
- Exceptional crop safety at all growth stages with the Roundup Ready® weed control system
- Recommended 1st glyphosate application at 1st-3rd trifoliate stage to provide early weed control on new seedlings and lower seedling mortality
- The simplicity of using a single herbicide (Roundup®) provides superior 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

WL ALFALFAS
BETTER SEED THROUGH RESEARCH

HARVXTRA with Roundup Ready® Technology

Visit **wlresearch.com** for more information.

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



Area of Primary Adaptation

AGRONOMIC TRAITS

Maturity	Early
Fall Dormancy	**4.0**
Winterhardiness	**2.1**
Digestibility/Feed Value	HVXRR*
Recovery After Harvest	Very Fast
Standability	Excellent
Traffic Tolerance	Very Good
Disease Resistance Index	**30/30**

*HarvXtra® Alfalfa with Roundup Ready® Technology

PEST RESISTANCE TRAITS

Bacterial Wilt	HR
Fusarium Wilt	HR
Anthracnose	HR
Phytophthora Root Rot	HR
Aphanomyces Root Rot (Race 1)	HR
Verticillium Wilt	HR
Aphids	R
Nematodes	R

HR = HIGH RESISTANCE R = RESISTANT

WL 341HVX.RR Firmly Establishes a New Level of Fiber Digestibility and Feed Value

Boone, IA; Mt. Joy, PA; West Salem, WI 2015-2016

Variety	ADL	NDFD	RFQ**
WL 341HVX.RR	**73%**	**125%**	**128%**
WL 355.RR	100%	98%	100%
Pioneer® 54R02	99%	99%	99%
HybriForce™ 2400	100%	102%	101%
Liberator	96%	103%	107%

ADL = Acid Detergent Lignin
NDFD = Neutral Detergent Fiber digestibility
**Relative Forage Quality

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

DORMANT

W-L Research 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.

For more information:
wlresearch.com
harvxtra.com
harvxtra.com/resources.html

WL ALFALFAS BETTER SEED THROUGH RESEARCH

HARVXTRA with Roundup Ready® Technology

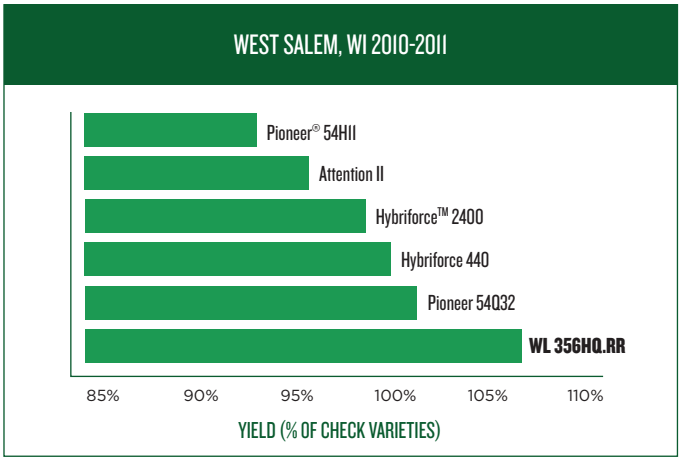
WL 356HQ.RR

FD4

OUTSTANDING YIELD POTENTIAL AND FORAGE QUALITY WITH POWERFUL PROTECTION ON YOUR TOUGHEST SOILS

WL 356HQ.RR Advantages

- Very high yield potential under 3- to 5-cut harvest managements
- Unique wet soil disease resistance package (HR to Aphanomyces Race 2) promoting better stand establishment, persistence, and forage yield potential
- WL 356HQ.RR carries the "HQ" designation, exhibiting strong potential to deliver optimal feed intake, milk production, and profit potential when fed
- Very winterhardy (WH=1.6); WL 356HQ.RR delivers long stand life under adverse weather and soil conditions
- Highly resistant (HR) to stem nematode
- Perfect Disease Resistance Index (DRI) of 35/35 promotes fast seedling establishment and long stand life
- Ideal FD4 variety for Midwest, Northern Plains, Pacific Northwest and Northeastern region of the U.S. for hay and haylage uses
- Salt tolerance of germinating seeds similar to resistant check



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Planting WL 356HQ.RR alfalfa and utilizing the Genuity® Roundup Ready® weed control system provides many benefits over conventional herbicide programs

- Unmatched 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 when tested
- Superior 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 superior weed control with no need to tank mix; one herbicide does it all
- 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

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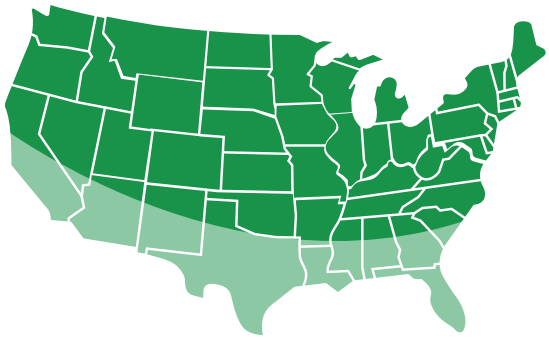


AREA OF PRIMARY ADAPTATION

AGRONOMIC TRAITS

Maturity	Early
Fall Dormancy	**3.8**
Winterhardiness	**1.6**
Digestibility/Feed Value	Superior
Persistence Index	Very High
Recovery After Harvest	Very Fast
Traffic Tolerance	Very Good
Standability	Excellent
Multileaf Expression	Very High

PEST RESISTANCE TRAITS

Bacterial Wilt	HR
Fusarium Wilt	HR
Anthracnose	HR
Phytophthora Root Rot	HR
Aphanomyces Root Rot - Race I	HR
Aphanomyces Root Rot - Race 2	**HR**
Verticillium Wilt	HR
Leaf Disease	HR
Aphids	R
Stem Nematode	HR
Disease Resistance Index	**35/35**

HR = HIGH RESISTANCE R = RESISTANT

WL 356HQ.RR Continues the "HQ" Tradition of Elite Forage Quality

Boone, IA 2011

VARIETY	CP	IVTD*	RFQ**
WL 356HQ.RR	**22.9**	**81.7**	**202**
Pioneer 53Q30	21.4	79.1	187
HybriForce-440	21.6	79.9	186
DKA 43-13	20.8	76.7	172

CP= Crude Protein
* *In Vitro* True Digestibility
** Relative Forage Quality

Do You Need Dual-Race Aphanomyces Root Rot Resistance?

The Aphanomyces fungus prunes alfalfa roots, resulting in stunted, chlorotic plants and poor seedling establishment on wet soils. Most alfalfa varieties currently marketed in the U.S. are resistant to Race 1 Aphanomyces, but very few varieties are resistant to Race 2.

Race 2 Aphanomyces isolates are widespread and cause severe disease on Race 1-resistant varieties. University forage specialists throughout the Midwest and Northeast suggest that Race 2 Aphanomyces represents a widespread risk to alfalfa varieties that possess only Race 1 Aphanomyces resistance.

Planting alfalfa with high resistance to Race 2 Aphanomyces (WL 356HQ.RR, left, below) will significantly improve alfalfa stand establishment and productivity on heavy or poorly drained soils where root diseases are prevalent.

WL 359LH.RR

FD4

ENHANCED YIELD POTENTIAL AND QUALITY WITH OUTSTANDING POTATO LEAFHOPPER RESISTANCE

The latest Genuity® Roundup Ready® is HopperShield™ potato-leafhopper-resistant alfalfa variety from W-L Research. 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 new product, now with the industry's leading eighth-generation PLH resistance package. 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.

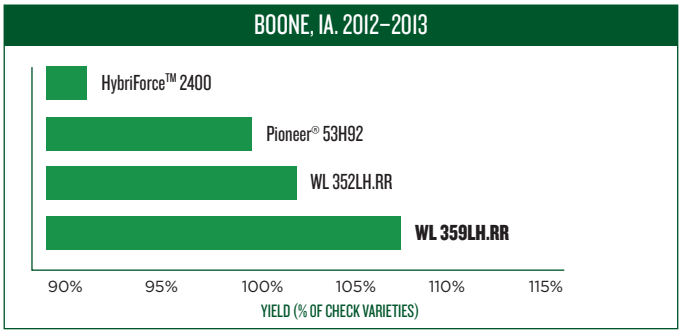
WL 359LH.RR Advantages

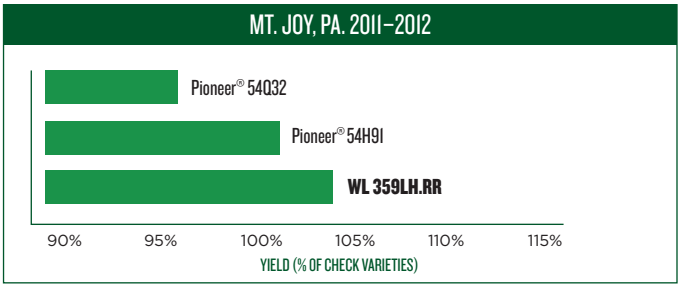
- Eighth-generation potato leafhopper resistance with HopperShield™ protection delivers high yield potential and forage quality without the need to spray, even under heavy leafhopper pressure
- Impressive stand health visuals under various levels of leafhopper pressure, coupled with ability to apply 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
- A perfect disease resistance index (DRI) of 30/30 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 ensures 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

Planting WL 359LH.RR alfalfa and using the Genuity® 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
- Superior crop safety at all growth stages with the Roundup Ready® weed control system provides increased yield potential at establishment and in subsequent years
- The simplicity of using a single herbicide (Roundup®) provides superior weed control with no need to tank mix; one herbicide does it all
- Flexibility in timing of application allows growers using the Roundup Ready® system to spray when necessary; no carryover or crop rotation limitations
- Minimal wait (five days) after Roundup® application before haying/feeding

WL 359LH.RR OUTYIELDS THE COMPETITION





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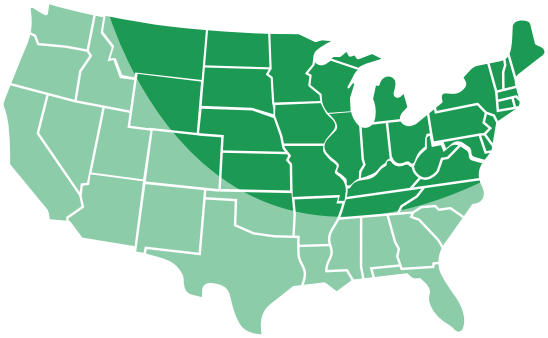

AREA OF PRIMARY ADAPTATION

AGRONOMIC TRAITS

Maturity	Early
Fall Dormancy	**3.9**
Winterhardiness	**2.2**
Persistence Index	Very High
Recovery After Harvest	Very Fast
Standability	Excellent
Digestibility/Feed Value	Superior
Traffic Tolerance	Very Good
Disease Resistance Index	**30/30**

PEST RESISTANCE TRAITS

Bacterial Wilt	HR
Fusarium Wilt	HR
Anthracnose	HR
Phytophthora Root Rot	HR
Aphanomyces Root Rot – Race I	HR
Verticillium Wilt	HR
Disease Resistance Index	**30/30**
Potato Leafhopper	**86%**
Leaf Disease	R
Aphids	R
Nematodes	R

HR = HIGH RESISTANCE R = RESISTANT

Treatment Thresholds for Potato Leafhoppers

ALFALFA STEM HEIGHT (INCHES)	LEAFHOPPERS PER 10 SWEEPS	
	CONVENTIONAL VARIETIES	WL 359LH.RR
4	4	**41**
6	6	**62**
8	8	**82**
10	10	**103**

Spray thresholds from Iowa State University

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

WL 354HQ

FD4

EXCEPTIONAL PRODUCTIVITY AND PERSISTENCE ON YOUR TOUGHEST SOILS

Outstanding yield potential and exceptional forage quality on your toughest soils make WL 354HQ the alfalfa variety of choice for dairy, beef, and cash hay producers looking to significantly reduce the impact of root disease on seedling establishment and stand life.

WL 354HQ Advantages

- Unique wet soil disease resistance package (including HR to Aphanomyces Race 2) demonstrates significant on-farm benefits in stand establishment, persistence, and forage yield
- A perfect Disease Resistance Index (DRI) of 35/35
- Very high yield potential under 3- to 5-cut harvest managements; high yield potential across a wide range of soil types
- Excellent feed value and digestibility helps produce more milk or beef and greater profit potential when fed
- A great choice for cash hay: WL 354HQ delivers very high RFQ and TDN numbers across a wide range of haying conditions
- Very winterhardy (WH=1.4); WL 354HQ delivers long stand life even under the toughest weather conditions
- Fast recovery after cutting and excellent standability encourages intensive harvest management
- Dark green, fine-stemmed, and highly palatable
- Excellent later-maturing companion to WL 363HQ
- Very well-adapted for use in the Midwestern, Northern Plains, Pacific Northwest and Northeastern regions of the U.S. for hay and haylage uses

GENESEO, NY 2008-2009 TOTAL YIELD	
Variety	Yield (T/A)
WL 354HQ	**18.28**
Pioneer® 54V46	17.33
ReGen	16.89
Milestone	16.84
WL 348AP	16.66
Perform	16.56
Ameristand 403T	15.36

WEST SALEM, WI 2008-2009 TOTAL YIELD	
Variety	Yield (T/A)
WL 354HQ	**14.92**
Pioneer® 54V46	14.20
WL 357HQ	14.15
Pioneer® 54H11	12.02
HybriForce™-400	11.83

NAMPA, ID 2008-2009 TOTAL YIELD	
Variety	Yield (T/A)
WL 354HQ	**25.18**
Ameristand 444NT	24.65
Pioneer® 54V46	24.29
CW 500	23.04
Bullseye	22.38
HybriForce™-400	22.36

MARSHFIELD, WI 2008-2009 TOTAL YIELD	
Variety	Yield (T/A)
WL 354HQ	**16.32**
Genoa	15.86
Pioneer® 54V46	15.15
WL 357HQ	14.96
HybriForce™-400	13.96

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HQ™

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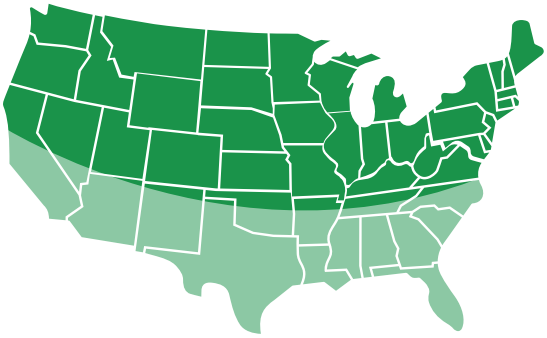


AREA OF PRIMARY ADAPTATION

WL 354HQ Delivers Greater Forage Quality

Marshfield, WI, 2008-2009

VARIETY	CP	RFQ*
WL 354HQ	**19.9**	**151**
CW 500	18.6	144
Pioneer® 54V46	18.2	146
HybriForce™-400	18.5	150

WL 354HQ beats HybriForce by $617 per acre
CP= Crude Protein
* Relative Forage Quality

DORMANT

AGRONOMIC TRAITS

Maturity	Early
Fall Dormancy	**3.9**
Winterhardiness	**1.4**
Digestibility/Feed Value	Superior
Persistence Index	Very High
Disease Resistance Index	**35/35**
Recovery After Harvest	Very Fast
Traffic Tolerance	Very Good
Standability	Excellent

PEST RESISTANCE TRAITS

Bacterial Wilt	HR
Fusarium Wilt	HR
Anthracnose	HR
Phytophthora Root Rot	HR
Aphanomyces Root Rot – Race I	HR
Aphanomyces Root Rot – Race 2	**HR**
Verticillium Wilt	HR
Leaf Disease	R-HR
Aphids	R
Nematodes	R-HR

HR = HIGH RESISTANCE R = RESISTANT

Do You Need Dual-Race Aphanomyces Root Rot Resistance?

The Aphanomyces fungus prunes alfalfa roots, resulting in stunted, chlorotic plants and poor seedling establishment on wet soils. Most alfalfa varieties currently marketed in the U.S. are resistant to Race 1 Aphanomyces, but very few varieties are resistant to Race 2.

Race 2 Aphanomyces isolates are widespread and cause severe disease on Race 1-resistant varieties. University forage specialists throughout the Midwest and Northeast suggest that Race 2 Aphanomyces represents a widespread risk to alfalfa varieties that possess only Race 1 Aphanomyces resistance.

Planting alfalfa with high resistance to Race 2 Aphanomyces (see **WL 354HQ** below) will significantly improve alfalfa stand establishment and productivity on heavy or poorly drained soils where root diseases are prevalent.

Impact of Race 2 Aphanomyces on Stand Establishment

WL 358LH

FD4

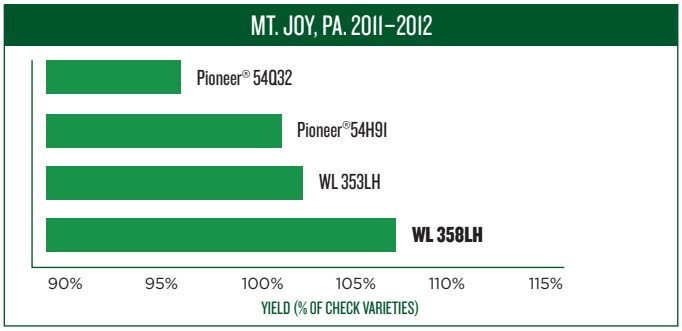
THE NEXT LEVEL OF ENHANCED POTATO LEAFHOPPER RESISTANCE AND OUTSTANDING YIELD POTENTIAL

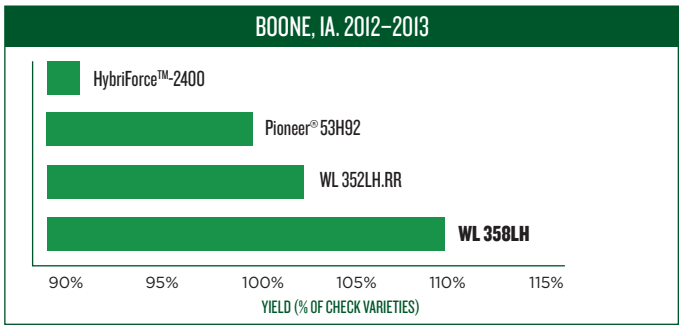
WL 358LH is the next level in the widely recognized line of HopperShield™ alfalfa genetics from W-L Research. Geared and selected for Midwest and Northeastern U.S. growers, WL 358LH is the latest in the line of varieties selected for the highest potato leafhopper resistance available, now the industry's 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

- Eighth-generation potato leafhopper resistance, this HopperShield™ variety is a true "no-spray" PLH-resistant alfalfa
- 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 superior cold tolerance, even under harsh weather conditions
- A perfect disease resistance index (DRI) of 30/30 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 OUTYIELDS THE COMPETITION





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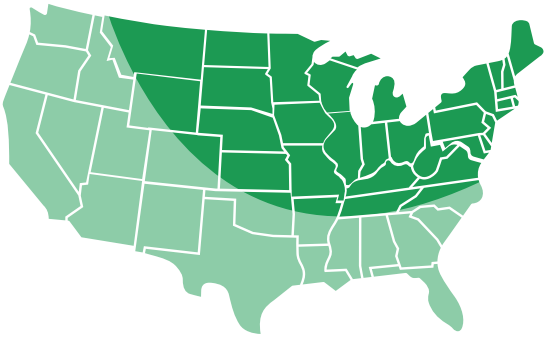

AREA OF PRIMARY ADAPTATION

AGRONOMIC TRAITS

Maturity	Early
Fall Dormancy	**4.1**
Winterhardiness	**2.0**
Persistence Index	Very High
Recovery After Harvest	Very Fast
Standability	Excellent
Digestibility/Feed Value	Superior
Traffic Tolerance	Very Good
Disease Resistance Index	**30/30**

PEST RESISTANCE TRAITS

Bacterial Wilt	HR
Fusarium Wilt	HR
Anthracnose	HR
Phytophthora Root Rot	HR
Aphanomyces Root Rot – Race I	HR
Verticillium Wilt	HR
Disease Resistance Index	**30/30**
Potato Leafhopper	**92%**
Leaf Disease	R
Aphids	R
Nematodes	R

HR = High Resistance R = Resistant

Treatment Thresholds for Potato Leafhoppers

ALFALFA STEM HEIGHT (INCHES)	LEAFHOPPERS PER 10 SWEEPS	
	CONVENTIONAL VARIETIES	WL 358LH
4	4	**41**
6	6	**62**
8	8	**82**
10	10	**103**

Spray thresholds from Iowa State University

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

DORMANT

HopperShield is a trademark of W-L Research.

WL 343HQ

FD4

EXCEPTIONAL FORAGE QUALITY AND OUTSTANDING WINTERHARDINESS

Outstanding feed value and exceptional yield potential make WL 343HQ the alfalfa variety of choice for dairy, beef, and cash hay producers looking to maximize production and profit potential in their operations.

WL 343HQ Advantages

- Superior digestibility promotes more milk or beef and greater profit potential when fed; WL 343HQ consistently beat the competition in head-to-head digestibility comparisons
- Very high yield potential (FD=3.9) under 3-, 4-, and 5-cut harvest managements
- Very winterhardy (WH=1.7); WL 343HQ delivers long stand life even under the toughest weather conditions
- Proven ability to "hold" high feed value in the field over a longer period of time; WL 343HQ can deliver higher forage quality and greater harvest flexibility with less risk of rain damage to hay and haylage when harvest is delayed
- A perfect disease resistance index (DRI) of 30/30 and strong resistance to insects and nematodes promotes big yield potential and long stand life across a wide range of soil types
- Very fast recovery after cutting and excellent standability encourages intensive harvest management
- Dark green, fine-stemmed, and highly palatable
- Very well-adapted for use in the Midwestern, Northeastern, Northwestern, and Central Plains regions of the U.S. for hay and haylage uses

NORTHFIELD, MINNESOTA 2004-2006	
Variety	Yield (T/A)
WL 343HQ	**4.29**
Expedition	4.13
HybriForce-400 Wet	4.12
Attention	4.10
Ameristand 403 T	4.01
Pioneer 54H91	3.76

NAMPA, IDAHO 2005-2006	
Variety	Yield (T/A)
WL 343HQ	**9.93**
WL 357 HQ	9.66
Genoa	9.60
Mountaineer 2.0	9.51
Boulder	8.77
HybriForce-400	8.23

WEST SALEM, WISCONSIN 2004-2006	
Variety	Yield (T/A)
WL 343HQ	**6.73**
DKA42-15	6.62
Attention	6.61
Pioneer 54V46	6.58
HybriForce-400	6.45
Pioneer 54Q25	6.43

BOONE, IOWA 2004-2006	
Variety	Yield (T/A)
WL 343HQ	**7.00**
Genoa	6.69
Rebound 5.0	6.55
DKA42-15	6.53
HybriForce-400	6.49
Pioneer 54V46	6.37

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

WL ALFALFAS
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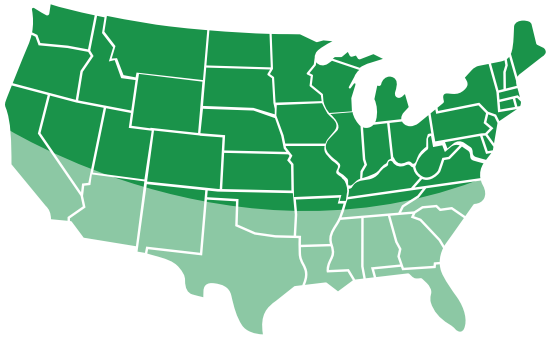


AREA OF PRIMARY ADAPTATION

AGRONOMIC TRAITS	
Maturity	Early
Fall Dormancy	**3.9**
Winterhardiness	**1.7**
Digestibility/Feed Value	Superior
Persistence Index	Very High
Disease Resistance Index	30/30
Recovery After Harvest	Very Fast
Traffic Tolerance	Very Good
Standability	Excellent
Multileaf Expression	Very High

PEST RESISTANCE TRAITS	
Bacterial Wilt	HR
Fusarium Wilt	HR
Anthracnose	HR
Phytophthora Root Rot	HR
Aphanomyces Root Rot	HR
Verticillium Wilt	HR
Leaf Disease	R
Aphids	HR
Nematodes	R
Disease Resistance Index (DRI)	**30/30**

HR = HIGH RESISTANCE R = RESISTANT

Forage Quality and Milk Economics

West Salem, Wisconsin, 2004-2006

VARIETY	CP	% IVTD*	RFQ**
WL 343HQ	**22.4**	**79.8**	**159**
WL 357HQ	22.4	78.5	147
Attention	22.4	78.8	149
HybriForce™-400	22.0	78.8	148
Pioneer® 54V46	20.9	77.4	138

Mount Joy, Pennsylvania, 2004-2006

VARIETY	CP	%IVTD*	RFQ**
WL 343HQ	**22.8**	**81.4**	**175**
Pioneer® 54V46	21.6	79.1	158
WL 357HQ	23.2	80.4	168
Attention	22.8	80.0	161
HybriForce™-400	22.1	80.1	165

Buck Creek, Indiana, 2004-2006

VARIETY	CP	%IVTD*	RFQ**
WL 343HQ	**22.4**	**82.2**	**174**
Pioneer® 54V46	21.3	80.3	152
Attention	20.6	79.5	145
HybriForce™-400	21.4	80.8	161

CP= Crude Protein
* In Vitro True Digestibility
** Relative Forage Quality

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

WL 372HQ.RR

FD5

EXCEPTIONAL TONNAGE AND FORAGE QUALITY UNDER INTENSIVE MANAGEMENT

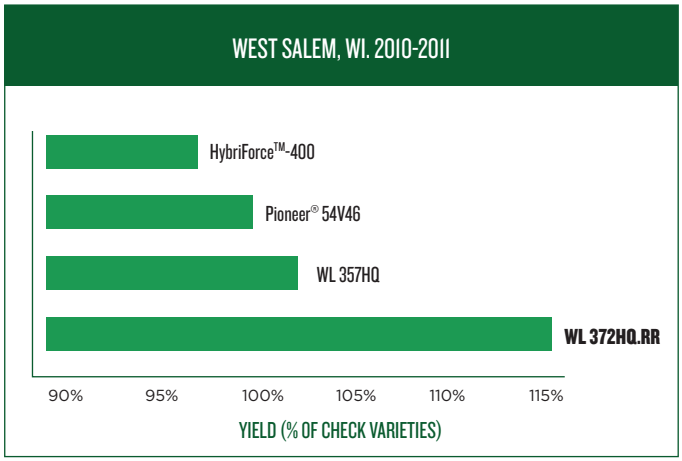
WL 372HQ.RR Delivers Outstanding Performance

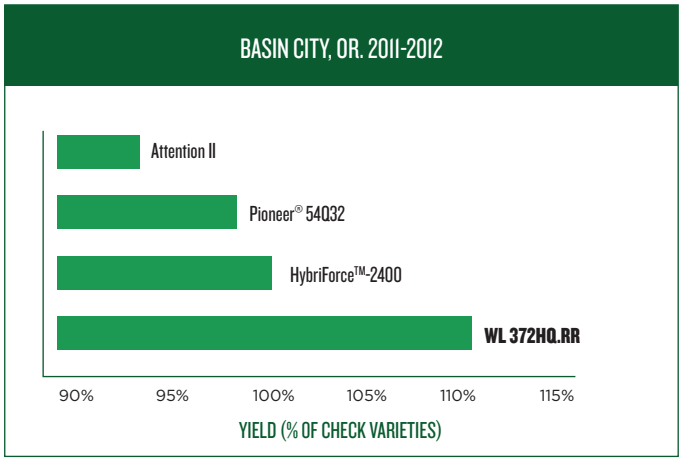
The combination of exceptional yield potential, very broad adaptation, and "HQ" superior feed value make WL 372HQ.RR the variety of choice for cash hay and dairy producers looking for an FD5 alfalfa that maximizes profit potential under intensive management while utilizing the breakthrough benefits of the Roundup Ready® weed control system in alfalfa.

WL 372HQ.RR Advantages

- Our highest-yielding winterhardy RR FD5 released to date
- Very high yield potential under 4- to 6-cut harvest schedules
- WL 372HQ.RR demonstrates "HQ" forage quality levels that promote optimized feed intake, milk production, and profit potential when fed
- Very winterhardy (WH=1.8); WL 372HQ.RR delivers long stand life even under harsh weather conditions
- Very strong disease package with a perfect Disease Resistance Index (DRI) of 30/30 to promote fast establishment
- High resistance (HR) to stem nematode
- Ideal FD5 variety for cash hay growers, dairy producers, or other intensive managers; WL 372HQ.RR has produced high yield potential of leafy, fine-stemmed hay with high RFQ levels

WL 372HQ.RR OUTYIELDS THE COMPETITION





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WL ALFALFAS® BETTER SEED THROUGH RESEARCH®

HQ™

genuity ROUNDUP READY® ALFALFA

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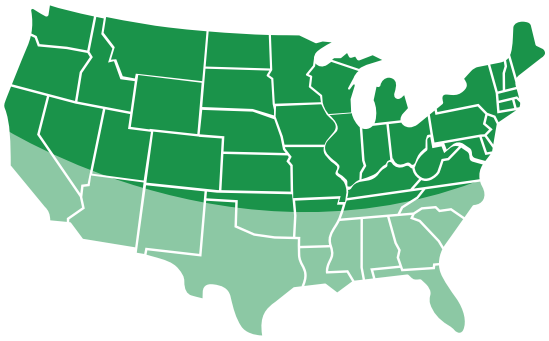


AREA OF PRIMARY ADAPTATION

Planting WL 372HQ.RR alfalfa and utilizing the Genuity® Roundup Ready® weed control system provides many benefits over conventional herbicide programs

- Unmatched 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 when tested
- Superior 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 superior weed control with no need to tank mix; one herbicide does it all
- 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

Maturity	Early
Fall Dormancy	**4.8**
Winterhardiness	**1.8**
Digestibility/Feed Value	Superior
Persistence Index	Very High
Recovery After Harvest	Very Fast
Traffic Tolerance	Very Good
Standability	Excellent
Multileaf Expression	Very High

PEST RESISTANCE TRAITS

Bacterial Wilt	HR
Fusarium Wilt	HR
Anthracnose	HR
Phytophthora Root Rot	HR
Aphanomyces Root Rot	HR
Verticillium Wilt	HR
Leaf Disease	R
Aphids	HR
Stem Nematode	HR
Disease Resistance Index	**30/30**

HR = HIGH RESISTANCE R = RESISTANT

WL 365HQ

FD5

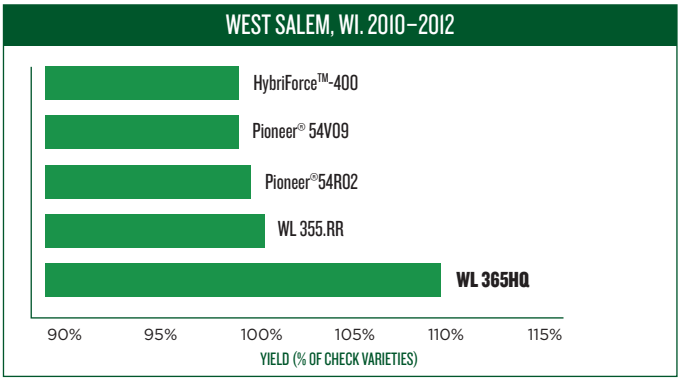
THE NEW 5/2 HIGH-YIELD LEADER

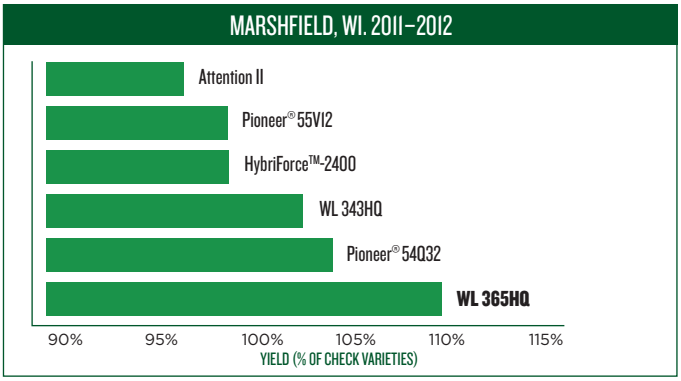
In 2002, W-L Research released its first 5/2 variety, which was an industry breakthrough, decoupling fall dormancy and winterhardiness, allowing growers across the U.S. to realize greater yield potential during the growing season without sacrificing winterhardiness or stand persistence. WL 365HQ is the latest release in the line of high-yielding types packed with HQ levels of forage quality.

WL 365HQ Advantages

- Very high yield potential and agronomic performance under 4- to 6-cut harvest management systems (FD=4.9), and now our highest-yielding winterhardy conventional HQ released to date
- HQ forage-quality levels make an ideal variety for cash hay or dairy producers
- Extremely winterhardy (WH=1.1); WL 365HQ delivers outstanding cold tolerance and long stand life, even under harsh weather conditions
- Perfect disease resistance index (DRI) of 30/30 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
- WL 365HQ delivers fast recovery, quickly closing the canopy to outpace yield-robbing weeds
- Very well-adapted and selected for use in the Midwestern, Northwestern, Central Plains or Northeastern regions of the U.S.

WL 365HQ OUTYIELDS THE COMPETITION





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WL ALFALFAS
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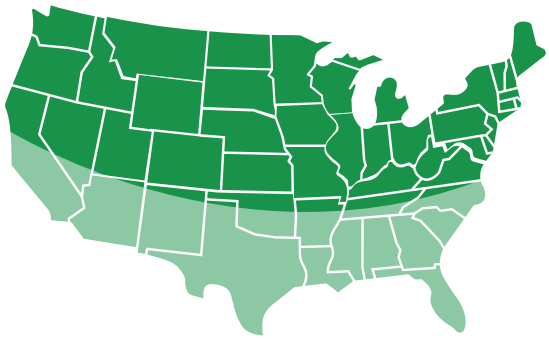


AREA OF PRIMARY ADAPTATION

WL 365HQ is our latest 5/2 winterhardy HQ variety, improving on the tradition of exceptional yield potential, very high winter survival and superb forage quality first set by WL 357HQ, then WL 363HQ and now WL 365HQ.

DORMANT

AGRONOMIC TRAITS

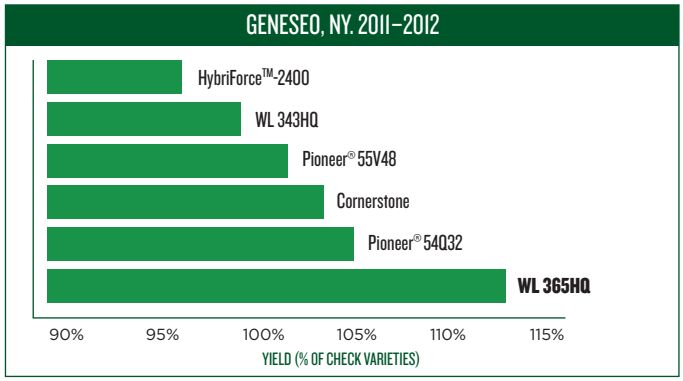
Maturity	Early
Fall Dormancy	**4.9**
Winterhardiness	**1.1**
Persistence Index	Very High
Recovery After Harvest	Very Fast
Standability	Excellent
Digestibility/Feed Value	Superior
Traffic Tolerance	Very Good
Disease Resistance Index	**30/30**

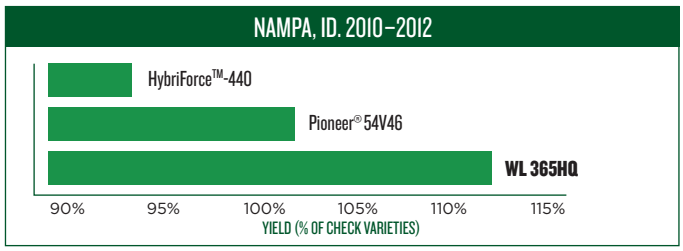
PEST RESISTANCE TRAITS

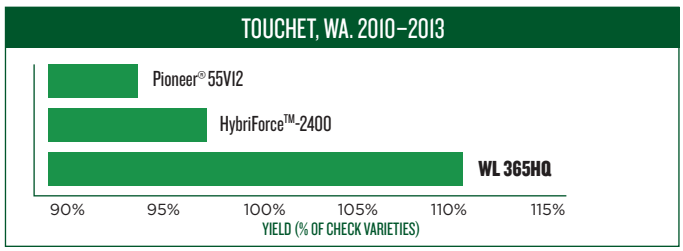
Bacterial Wilt	HR
Fusarium Wilt	HR
Anthracnose	HR
Phytophthora Root Rot	HR
Aphanomyces Root Rot – Race 1	HR
Verticillium Wilt	HR
Disease Resistance Index	**30/30**
Aphids	HR
Stem Nematodes	R

HR = HIGH RESISTANCE

WL 365HQ OUTYIELDS THE COMPETITION







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WL 377HQ

FD5

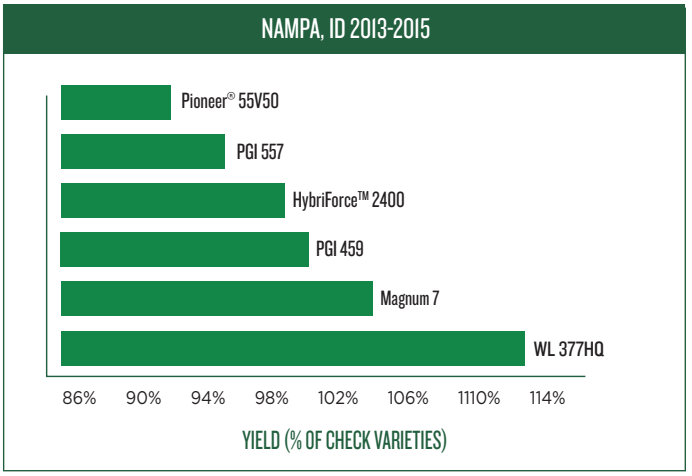
TOP OF OUR FD5 CLASS IN THE WEST

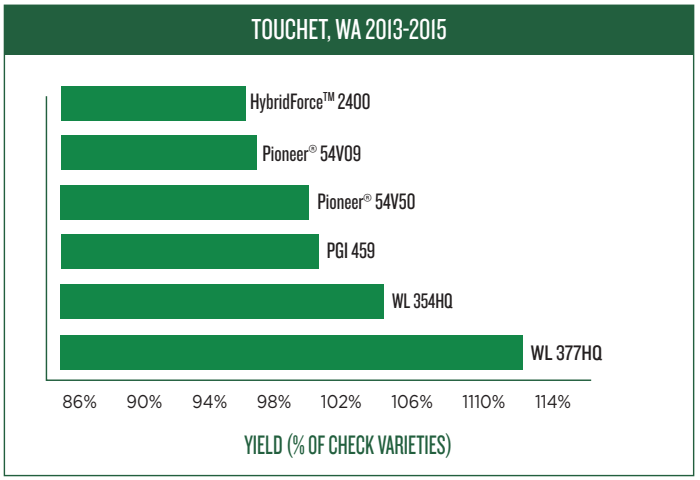
There have been many breakthrough varieties since the inception of W-L Research, WL 377HQ is one of those varieties. Simply put, if exceptional yield potential, 'HQ' levels of feed value, and high resistance to all major nematodes and aphids are high on your wish list, then WL 377HQ is your kind of product.

WL 377HQ Advantages

- Superb yield potential and agronomic performance under 4 to 6-cut harvest management systems (FD=5.0) in locations throughout the West
- Solid winterhardiness (WH=2.5); WL 377HQ delivers excellent cold tolerance and persistence
- "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
- Perfect 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





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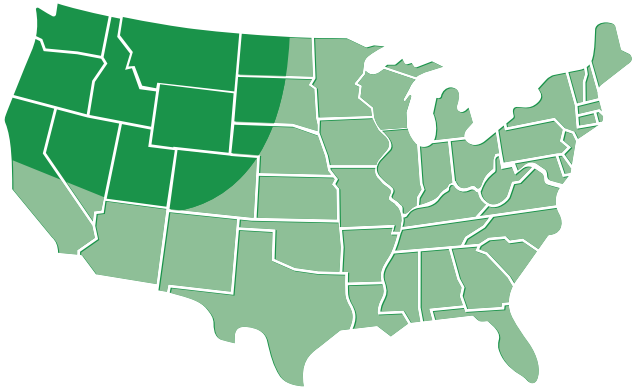


Area of Primary Adaptation

AGRONOMIC TRAITS

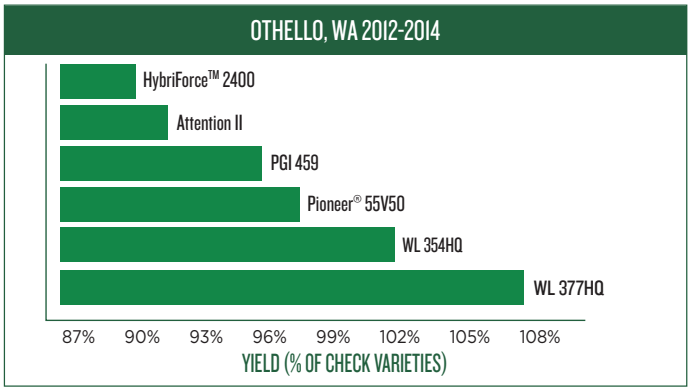
Maturity	Early
Fall Dormancy	**5.0**
Winterhardiness	**2.5**
Persistence Index	Very High
Recovery After Harvest	Very Fast
Standability	Excellent
Digestibility/Feed Value	Superior
Traffic Tolerance	Very Good
Disease Resistance Index	**30/30**

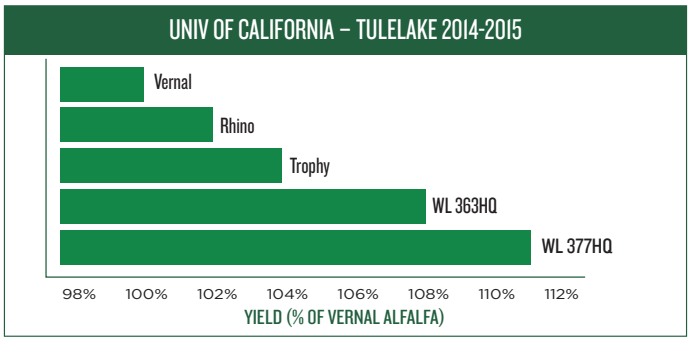
PEST RESISTANCE TRAITS

Bacterial Wilt	HR
Fusarium Wilt	HR
Anthracnose	HR
Phytophthora Root Rot	HR
Aphanomyces Root Rot (Race 1)	HR
Verticillium Wilt	HR
Disease Resistance Index	**30/30**
Pea and Spotted Aphid	HR
Stem and Root Knot Nematode	HR

HR = HIGH RESISTANCE R = RESISTANT

WL 377HQ OUTYIELDS THE COMPETITION





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WL 377HQ Forage Quality Analysis

Nampa, 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

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

WL 363HQ

FD5

EXCEPTIONAL YIELD POTENTIAL

WL 363HQ Advantages

- Very high yield potential under 4-, 5-, and 6-cut harvest managements (FD=4.9); the highest-yielding winterhardy conventional HQ released to date
- Exceptional digestibility can produce more milk or beef and greater profit potential when fed
- Very winterhardy (WH=1.6); WL 363HQ delivers long stand life, even under the toughest weather conditions
- A great choice for cash hay, WL 363HQ delivers very high RFQ and TDN numbers across a wide range of haying conditions
- A perfect disease resistance index (DRI) of 30/30 and high resistance (HR) to both stem and root knot nematodes promotes big yield potential and long stand life across a wide range of soil types and growing conditions
- Fast recovery after cutting and excellent standability encourages intensive harvest management
- Dark green, fine-stemmed, and highly palatable
- Excellent early maturing companion variety to WL 319HQ and WL 343HQ
- Well-adapted for hay and haylage use in the Midwestern, Northeastern, Northwestern, and Central Plains regions of the U.S.

NEW CASTLE, KENTUCKY 2005-2006

Variety	Yield (T/A)
WL 363HQ	**15.52**
WL 357HQ	15.20
HybriForce-400	14.03
Attention	13.82
Pioneer 54V46	13.77
Ameristand 403T	13.34

ELTOPIA, WASHINGTON 2004-2006

Variety	Yield (T/A)
WL 363HQ	**28.74**
WL 357HQ	27.86
DKA42-15	27.59
Ameristand 444NT	27.03
Pioneer 53V08	25.82
HybriForce-400	25.45

NAMPA, IDAHO 2006-2007

Variety	Yield (T/A)
WL 363HQ	**21.07**
WL 357HQ	20.00
Ameristand 444NT	19.75
Pioneer 54V46	18.60
DKA42-15	18.39
HybriForce-400	16.31

LA CROSSE, WISCONSIN 2003-2005

Variety	Yield (T/A)
WL 363HQ	**24.22**
Garst 6415	23.35
DKA42-15	22.35
LegenDairy 5.0	22.33
HybriForce-400	20.05
Pioneer 54V54	19.38

BOONE, IOWA 2003-2005

Variety	Yield (T/A)
WL 363HQ	**20.80**
DKA50-18	20.30
Somerset	19.77
HybriForce-400	19.01
Pioneer 54V54	18.60
Ameristand 403T	18.51

MOUNT JOY, PENNSYLVANIA 2006-2007

Variety	Yield (T/A)
WL 363HQ	**19.91**
Pioneer 54V46	19.70
FSG 406	19.40
Garst 6400HT	18.95
Attention	18.58
HybriForce-420/Wet	18.16

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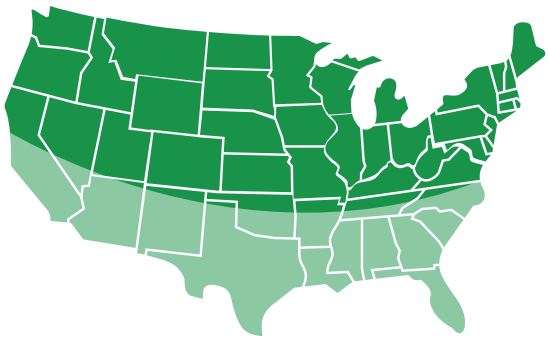


AREA OF PRIMARY ADAPTATION

Our newest winterhardy HQ (high-quality-selected) alfalfa, WL 363HQ carries on in the great tradition set by WL 357HQ: very high yield potential, outstanding winterhardiness, and unmatched forage quality.

DORMANT

AGRONOMIC TRAITS

Maturity	Early
Fall Dormancy	**4.9**
Winterhardiness	**1.6**
Digestibility/Feed Value	Superior
Persistence Index	Very High
Disease Resistance Index	30/30
Recovery After Harvest	Very Fast
Traffic Tolerance	Very Good
Standability	Excellent
Multileaf Expression	Very High

PEST RESISTANCE TRAITS

Bacterial Wilt	HR
Fusarium Wilt	HR
Anthracnose	HR
Phytophthora Root Rot	HR
Aphanomyces Root Rot	HR
Verticillium Wilt	HR
Disease Resistance Index	**30/30**
Aphids	HR
Stem Nematode	HR
Root Knot Nematode	HR

HR = HIGH RESISTANCE R = RESISTANT

Forage Quality

La Crosse, Wisconsin, 2004-2005

VARIETY	CP	%IVTD*	RFQ**
WL 363HQ	**19.8**	**73.9**	**155**
Rebound 5.0	19.0	73.5	152
Pioneer® 54V46	19.2	73.2	149
HybriForce™-400	19.6	73.7	146
Attention	19.3	73.2	144

Buck Creek, Indiana, 2004-2005

VARIETY	CP	%IVTD*
WL 363HQ	**19.7**	**78.2**
Attention	22.6	78.2
Genoa	21.9	78.2
Pioneer® 54V46	21.9	77.9
Pioneer® 54H11	21.9	77.7

CP= Crude Protein
* In Vitro True Digestibility
** Relative Forage Quality

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

WL 336HQ.RR

FD3

EXCEPTIONAL YIELD POTENTIAL WITH SUPERB WINTERHARDINESS

Satisfying the needs of shorter-season growers, WL 336HQ.RR combines solid yield potential with industry-leading winterhardiness, all backed with the "HQ" high-quality forage designation. WL 336HQ.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.

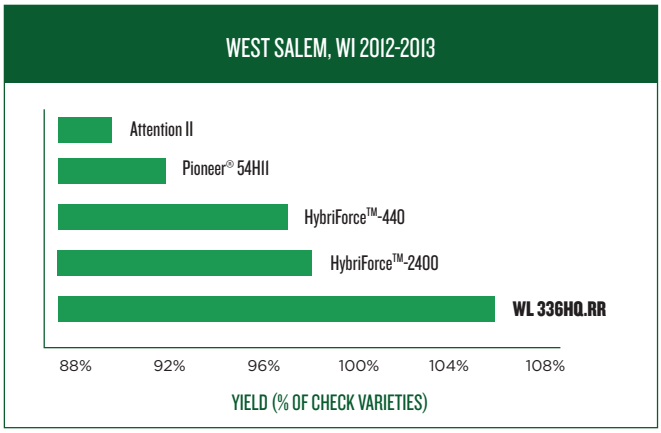
WL 336HQ.RR Advantages

- Superb yield potential under 2-, 3- to 4-cut harvest management systems
- Quick regrowth in a FD3, that delivers potential for high yields and long stand life
- Very winterhardy (WH=1.0); WL 336HQ.RR delivers excellent cold tolerance even under harsh weather conditions
- The HQ brand is proven to "hold" forage quality over a longer period of time; WL 336HQ.RR promotes higher forage quality and greater harvest flexibility when harvest is delayed
- A perfect disease resistance index (DRI) of 30/30 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
- Improved salt tolerance of germinating seeds similar to tolerant check
- 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 336HQ.RR alfalfa and utilizing the Genuity® 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
- Superior 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 superior weed control with no need to tank-mix; one herbicide does it all
- Flexibility in timing of application allows growers to spray when necessary; no carryover or crop rotation limitations
- Minimal wait (5 days) after Roundup® application before haying/feeding

WL 336HQ.RR OUTYIELDS THE COMPETITION



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WL ALFALFAS
BETTER SEED THROUGH RESEARCH

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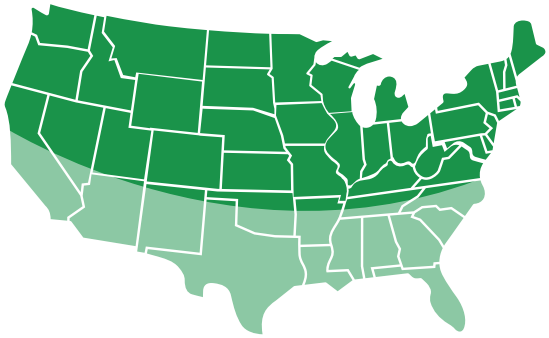

AREA OF PRIMARY ADAPTATION

DORMANT

AGRONOMIC TRAITS

Maturity	Medium
Fall Dormancy	**3.2**
Winterhardiness	**1.0**
Persistence Index	Very High
Recovery After Harvest	Very Fast
Standability	Excellent
Digestibility	Excellent
Traffic Tolerance	Very Good
Multileaf Expression	High

Forage Quality

VARIETY	CP	%IVTD*	RFQ**
WL 336HQ.RR	**21.0**	**77.0**	**159**
HybriForce-2400	19.9	74.7	144
Attention II	20.3	74.8	152
54H11	20.1	73.9	136

CP= Crude Protein
*** In vitro true digestibility
*** Relative forage quality

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

PEST RESISTANCE TRAITS

Bacterial Wilt	HR
Fusarium Wilt	HR
Anthracnose	HR
Phytophthora Root Rot	HR
Aphanomyces Root Rot	HR
Verticillium Wilt	HR
Leaf Disease	R
Pea Aphid	HR
Spotted Alfalfa Aphid	R
Nematodes	MR
Disease Resistance Index	**30/30**

HR = HIGH RESISTANCE R = RESISTANT MR = MODERATE RESISTANCE

WL 319HQ

FD3

EXCEPTIONAL WINTERHARDINESS AND OUTSTANDING PROFIT POTENTIAL

Proven in university and regional tests all across the country, WL 319HQ delivers exceptional yield potential and outstanding feed value. WL 319HQ also provides producers with the highest levels of cold tolerance and winterhardiness available in the W-L lineup today. And when fed to dairy or beef cattle, WL 319HQ easily beats the competition in head-to-head comparisons for palatability, digestibility, and overall profit potential.

WL 319HQ Advantages

- Very high yield potential under both 3- and 4-cut harvest managements
- Group 1.3 winterhardiness and Group 2.8 fall dormancy can deliver fast recovery after cutting, high yields, long stand life, and excellent cold tolerance
- A perfect disease resistance index (DRI) of 30/30 and strong resistance to insects and nematodes provide for big yield potential and long stand life across a wide range of soil types and climates
- Exceptional ration economics for both dairy and beef: high forage yield potential plus high feed quality delivers significantly greater profit potential when fed
- WL 319HQ consistently beats the competition in head-to-head digestibility and feed value comparisons ("Best In Show" winner at the World Forage Superbowl)
- 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

PENN STATE UNIVERSITY LANDISVILLE, 2001

Variety	Yield (T/A)
WL 319HQ	**12.93**
HybriForce™-400	12.75
Cimarron SR	11.87
Baralfa 53HR	11.67
Pioneer® 54H9	11.56
Vernal	10.16

UNIVERSITY OF MINNESOTA PLAINVIEW, 2001

Variety	Yield (T/A)
WL 319HQ	**7.53**
Somerset	7.40
TMF Multiplier 3	7.36
Magnum V-Wet	7.16
DK 124	7.06
Pioneer® 53Q60	6.97
Vernal	6.58

UNIVERSITY OF WISCONSIN MARSHFIELD, 2001

Variety	Yield (T/A)
WL 319HQ	**9.81**
MultiPlier-3	9.62
HybriForce™-400	9.19
Pioneer® 54H91	8.71
Oneida VR	8.47
Vernal	8.34

WASHINGTON STATE UNIVERSITY OTHELLO, 2001

Variety	Yield (T/A)
WL 319HQ	**16.1**
Pioneer® 54Q25	16.0
Vitro	15.7
HybriForce™-400	15.0
Reward II	14.5
Vernal	12.4

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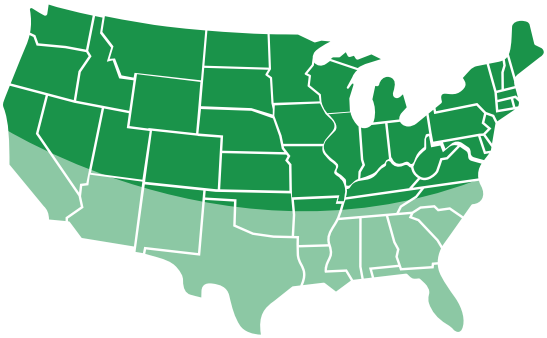

AREA OF PRIMARY ADAPTATION

AGRONOMIC TRAITS

Maturity	Medium
Fall Dormancy	2.8
Winterhardiness	**1.3**
Persistence Index	**Very High**
Recovery After Harvest	Very Fast
Standability	Excellent
Digestibility	Excellent
Traffic Tolerance	Very Good
Multileaf Expression	Very High

PEST RESISTANCE TRAITS

Bacterial Wilt	HR
Fusarium Wilt	HR
Anthracnose	HR
Phytophthora Root Rot	HR
Aphanomyces Root Rot	HR
Verticillium Wilt	HR
Leaf Disease	R
Aphids	R
Nematodes	MR
Disease Resistance Index (DRI)	**30/30**

HR = HIGH RESISTANCE R = RESISTANT MR = MODERATE RESISTANCE

Forage Quality and Milk Economics

Boone, Iowa, 2001

VARIETY	CP	%IVTD*
WL 319HQ	**23.4**	**79.4**
Geneva	22.6	78.1
Magnum V	21.9	76.2
Pioneer® 53Q60	21.9	78.2

La Crosse, Wisconsin, 2001

VARIETY	CP	%IVTD*
WL 319HQ	**22.3**	**77.1**
Magnum V	20.6	75.1
Affinity +Z	21.8	75.2
Pioneer® 53Q60	21.0	74.9

Mt. Joy, Pennsylvania, 2001

VARIETY	CP	%IVTD*
WL 319HQ	**25.2**	**82.6**
Geneva	25.0	82.4
Magnum V	24.3	81.6
Pioneer® 54V54	24.0	81.0

CP= Crude Protein
*In Vitro True Digestibility

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WL 454HQ.RR

FD6

EXCEPTIONAL YIELD POTENTIAL AND OUTSTANDING HAY QUALITY

WL 454HQ.RR Advantages

- Intermediate dormant FD=6.7
- Outstanding yield potential under 5-, 6-, and 7-cut harvest managements
- Highly resistant to all major aphid pests
- Highly resistant/resistant to all major nematode pests
- WL 454HQ.RR promotes optimized feed intake, milk production, and greater profit potential when fed
- Ideal intermediate variety for the cash hay producer: WL 454HQ.RR has consistently produced big yields of leafy, fine-stemmed hay with dark green color and high %TDN
- Very strong disease resistance package (including HR to Phytophthora Root Rot and Fusarium Wilt; R to Verticillium Wilt and Anthracnose) promotes fast seedling establishment and long stand life

Planting WL 454HQ.RR and Utilizing the Genuity® Roundup Ready® Weed Control System Provides Many Benefits Over Conventional Herbicide Programs

- Unmatched weed control both when establishing new stands and in established stands means fewer weeds and higher quality hay, which can result in higher %TDN and greater profit potential
- Superior crop safety at all growth stages with the Genuity® Roundup Ready® weed control system can deliver thicker stands and higher yields 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

WL 454HQ.RR: A Hay Quality Leader

Woodland, CA, 2005-2006

VARIETY	CP	RFQ*	TDN
WL 454HQ.RR	**23.5**	**185**	**63.7**
CW 704	22.0	173	62.5
HybriForce™-620	21.3	157	61.6
Pioneer® 6RI00	21.1	152	61.2
Amerileaf 721	20.9	150	60.9

CP= Crude Protein
TDN= Total Digestible Nutrients
*Relative Forage Quality

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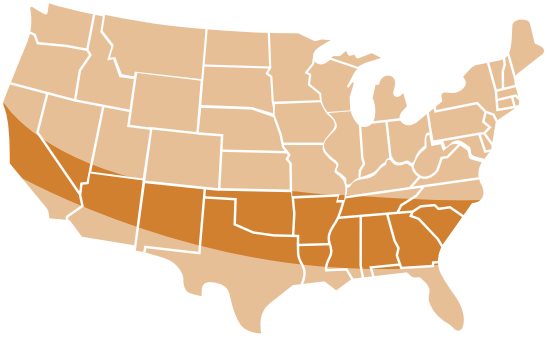


AREA OF PRIMARY ADAPTATION

WL 454HQ.RR Delivers More Tons of Weed-Free Hay

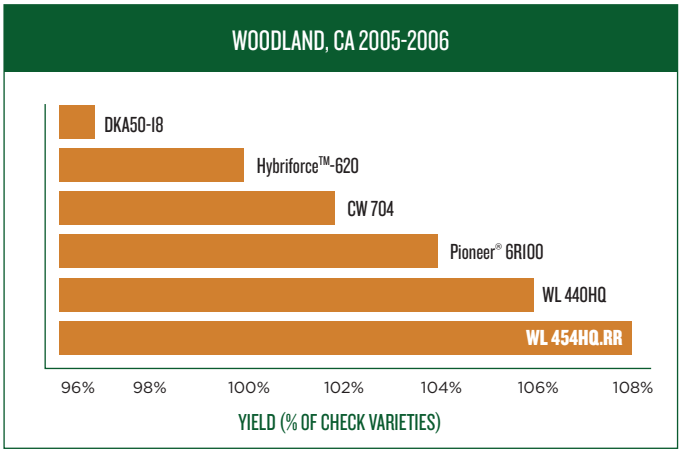
Outstanding yield potential and superior feed value make WL 454HQ.RR the variety of choice for cash hay and dairy producers looking for a FD6 alfalfa that maximizes production and profit potential in their operations while utilizing the breakthrough benefits of the Roundup Ready® weed control system.

AGRONOMIC TRAITS	
Fall Dormancy	**6.7**
Winter Activity	Moderate
Digestibility/Feed Value	Superior
Hay Quality (%TDN)	Excellent
Multifoliolate Expression	Very High
Persistence Index	Very High
Aphid Resistance Index	15/15
Recovery After Harvest	Very Fast
Wet Soil Tolerance	Excellent
Traffic Tolerance	Very Good
Standability	Excellent

PEST RESISTANCE TRAITS	
Bacterial Wilt	R
Fusarium Wilt	HR
Anthracnose	HR
Phytophthora Root Rot	HR
Verticillium Wilt	R
Stem Nematode	**HR**
Pea Aphid	HR
Spotted Alfalfa Aphid	HR
Blue Alfalfa Aphid	**HR**

HR = HIGH RESISTANCE R = RESISTANT

WL 454HQ.RR OUTYIELDS THE COMPETITION



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SEMI-DORMANT

WL 440HQ

FD6

EXCEPTIONAL YIELD POTENTIAL

Our intermediate HQ (high-quality-selected) alfalfa, WL 440HQ carries on the great tradition set by WL 442: very high yield potential, outstanding persistence, and superb hay quality. WL 440HQ is a leader in profit potential when compared to the competition. With outstanding levels of resistance to all important diseases, aphids, and nematode pests, WL 440HQ is clearly a per-acre profit leader.

WL 440HQ Advantages

- Very high yield potential under 5- to 7-cut harvest managements
- Excellent digestibility promotes more milk and greater profit potential when fed
- A great choice for cash hay; WL 440HQ can deliver very high %TDN numbers across a wide range of haying conditions
- Proven ability to hold high feed value in the field over a longer period of time; WL 440HQ delivers higher forage quality and greater harvest flexibility with less risk of damage to hay and haylage when harvest is delayed
- High resistance to all major diseases, high resistance to both stem and root knot nematodes, and high resistance to all three aphid pests produces big yield potential and long stand life across a wide range of soil types and growing conditions
- Very fast recovery after cutting and superior standability encourages intensive harvest management
- Dark green, fine-stemmed, and highly palatable

WOODLAND, CALIFORNIA 2006-2007	
Variety	Yield (T/A)
WL 440HQ	**8.43**
CW 704	8.02
Genoa	7.15
Expedition	6.98
Mountaineer 2.0	6.76
Amerimax 500	6.43

MODESTO, CALIFORNIA 2007	
Variety	Yield (T/A)
WL 440HQ	**7.55**
Dura 512	7.31
CW 704	7.09
Amerileaf 721	6.97
HybriForce™-620	6.72
Pioneer® 58N57	6.53
Yosemite	6.22

WOODLAND, CALIFORNIA 2005-2007	
Variety	Yield (T/A)
WL 440HQ	**15.22**
TruTest	14.49
CW 704	14.36
Tango	14.00
Amerileaf 721	13.92
Whitney	13.53
LM 459	13.06

MODESTO, CALIFORNIA 2006-2007	
Variety	Yield (T/A)
WL 440HQ	**15.21**
AL 721	14.49
CW 704	12.93
Whitney	12.81
Magnum V	12.73
Tahoe	12.25
Dura 512	11.76

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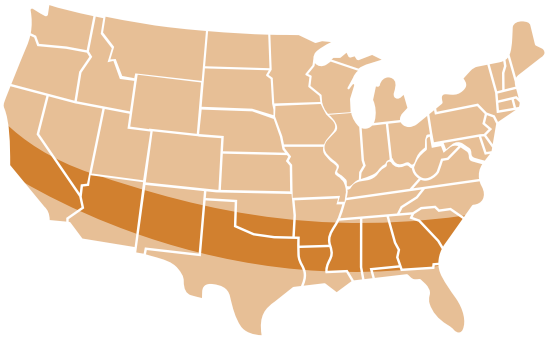


AREA OF PRIMARY ADAPTATION

Exceptional yield potential and very broad adaptation make WL 440HQ the alfalfa variety of choice for dairy and cash hay producers looking to maximize both production and profit potential in their operations.

SEMI-DORMANT

AGRONOMIC TRAITS

Fall Dormancy	**6.0**
Digestibility/Feed Value	Superior
Persistence Index	Very High
Disease Resistance Index	30/30
Tolerance to Wet Soils	Excellent
Aphid Resistance Index	15/15
Recovery After Harvest	Very Fast
Traffic Tolerance	Very Good
Standability	Excellent
Multileaf Expression	High

PEST RESISTANCE TRAITS

Bacterial Wilt	HR
Fusarium Wilt	HR
Anthracnose	HR
Phytophthora Root Rot	HR
Verticillium Wilt	HR
Blue Alfalfa Aphid	HR
Pea Aphid	HR
Spotted Alfalfa Aphid	HR
Stem Nematode	**HR**
Blue Alfalfa Aphid	**HR**

HR = HIGH RESISTANCE

Forage Quality and Milk Economics

Woodland, California, 2006-2007

VARIETY	CP	RFQ*	TDN
WL 440HQ	**21.0**	**169**	**58.7**
Tango	20.3	159	58.0
CW 704	20.0	152	57.3
Amerileaf 721	19.4	151	57.1
LM 459	19.1	147	56.4

CP= Crude Protein
TDN= Total Digestible Nutrients
*Relative Forage Quality

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

WL 552HQ.RR

FD8

INCREDIBLE YIELD POTENTIAL BACKED BY SUPERB FORAGE QUALITY

WL 552HQ.RR provides growers looking for excellent yield potential and solid forage quality the perfect FD8 product. This makes WL 552HQ.RR a top pick for cash hay and dairy producers who want to maximize profit potential while utilizing the Genuity® Roundup Ready® weed control system.

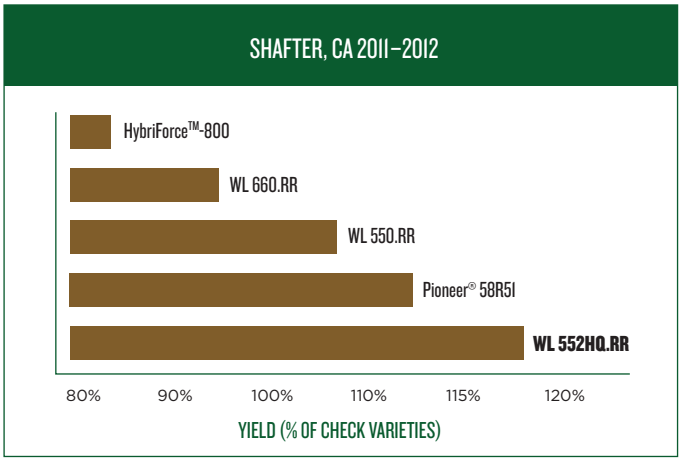
WL 552HQ.RR Advantages

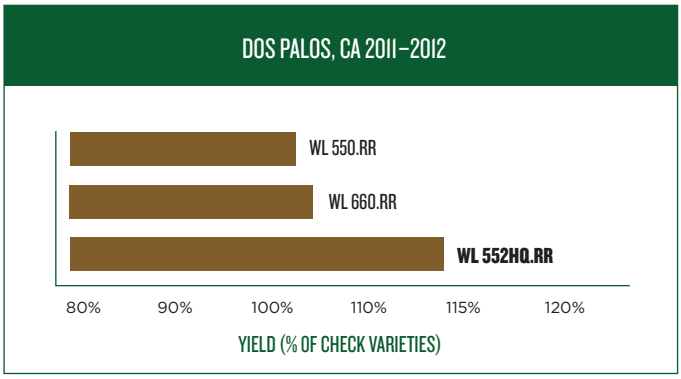
- WL 552HQ.RR is a winter-active, nondormant FD=8.2
- HR to R to all major aphids
- HR to R to all major nematodes
- WL 552HQ.RR promotes optimized feed intake, milk production, and greater profit potential
- An ideal nondormant variety for the cash hay producer, WL 552HQ.RR produces big yield potential of leafy, fine-stemmed hay with dark green color and high %TDN
- With a very strong disease resistance package (including HR to Phytophthora Root Rot, R to Fusarium Wilt, and Anthracnose) it promotes fast seedling establishment and long stand life
- WL 552HQ.RR has excellent tolerance to leaf diseases, promotes improved leaf retention, higher protein levels, and greater %TDN

Planting WL 552HQ.RR and Utilizing the Genuity® Roundup Ready® Weed Control System Provides Many Benefits Over Conventional Herbicide Programs

- Unmatched weed control when establishing new stands and in established stands can mean fewer weeds and higher-quality hay, which can result in higher %TDN and greater profit potential
- Superior crop safety at all growth stages with the Genuity® Roundup Ready® weed control system means thicker stands and higher yields 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

WL 552HQ.RR EXCELS AGAINST THE COMPETITION





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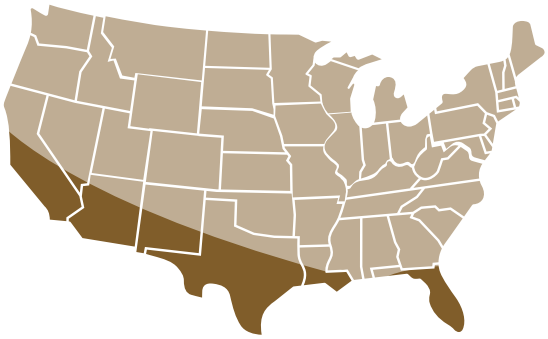

AREA OF PRIMARY ADAPTATION

AGRONOMIC TRAITS

Fall Dormancy	**8.2**
Winter Activity	High
Digestibility/Feed Value	Superior
Hay Quality (%TDN)	Excellent
Persistence Index	Very High
Aphid Resistance Index	15/15
Recovery After Harvest	Very Fast
Wet Soil Tolerance	Excellent
Traffic Tolerance	Very Good
Standability	Excellent

PEST RESISTANCE TRAITS

Spotted Alfalfa Aphid	HR
Pea Aphid	R
Blue Alfalfa Aphid	R
Phytophthora Root Rot	HR
Fusarium Wilt	R
Verticillium Wilt	R
Bacterial Wilt	R
Anthracnose	R
Stem Nematode	R
Root Knot Nematode (Southern)	R

HR = HIGH RESISTANCE R = RESISTANT

NONDORMANT

WL 552HQ.RR Delivers Superior Fiber Digestibility and Feed Value

Shafter, California, 2011-2012

VARIETY	NDFD	RFQ*	TDN
WL 552HQ.RR	**55.4**	**178**	**62.8**
HybriForce™-800	54.6	173	61.1
Pioneer® 58R51	52.6	166	60.8
WL 550.RR	50.9	152	59.8
PGI 909	51.4	149	59.1

CP= Crude Protein
TDN= Total Digestible Nutrients
*Relative Forage Quality

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

WL 535HQ

FD8

A YIELD POTENTIAL LEADER

Broadly adapted across the entire southwestern U.S. where nondormant alfalfas are grown. WL 535 HQ has delivered outstanding persistence and long stand life under intensive harvest managements, providing producers with a valuable tool to increase both production and profit potential.

WL 535HQ Advantages

- Winter-active, nondormant FD=8.2
- 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 535HQ 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 535HQ promotes high yield potential of leafy, fine-stemmed hay with high %TDN 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 Verticillium Wilt) promotes fast stand establishment and longer stand life
- Excellent tolerance to leaf diseases provides improved leaf retention, higher protein levels, and greater %TDN
- Very fast recovery after cutting

BAKERSFIELD, CALIFORNIA, 1997-1999	
Variety	Yield (T/A)
WL 535HQ	**11.87**
Pioneer® 5939	11.35
DK 189	11.26
Condor	10.65
Mecca II	10.12
Cuf 101	9.17

SHAFTER, CALIFORNIA, 1997-1999	
Variety	Yield (T/A)
WL 535HQ	**12.84**
DK 180ML	12.72
Pioneer® 5939	12.66
Condor	12.60
Pioneer® 58N57	12.28

FRESNO, CALIFORNIA, 1997-1999	
Variety	Yield (T/A)
WL 535HQ	**8.95**
Corona	8.24
DK 189	8.06
Pioneer® 5715	7.68
Tahoe	7.67

LODI, CALIFORNIA, 1997-1999	
Variety	Yield (T/A)
WL 535HQ	**10.72**
DK 189	10.69
Tahoe	10.51
13R Supreme	9.74
Archer	9.31
Pioneer® 5715	8.50

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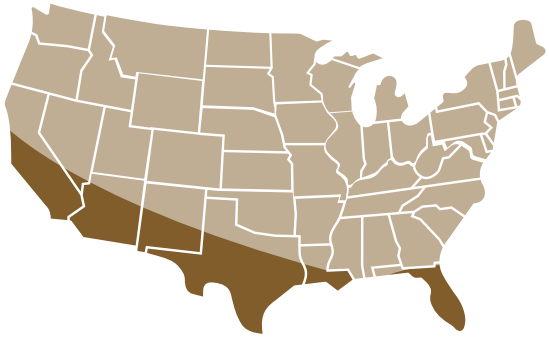


AREA OF PRIMARY ADAPTATION

AGRONOMIC TRAITS	
Fall Dormancy	**8.2**
Winter Activity	High
Digestibility/Feed Value	Superior
Hay Quality (%TDN)	Excellent
Persistence Index	Very High
Aphid Resistance Index	15/15
Recovery After Harvest	Very Fast
Wet Soil Tolerance	Excellent
Traffic Tolerance	Very Good
Standability	Excellent
Leaf Type	Trifoliate

PEST RESISTANCE TRAITS	
Spotted Alfalfa Aphid	HR
Pea Aphid	HR
Blue Alfalfa Aphid	HR
Phytophthora Root Rot	HR
Fusarium Wilt	HR
Verticillium Wilt	HR
Stem Nematode	R
Root Knot Nematode (Southern)	R

HR = HIGH RESISTANCE R = RESISTANT

WL 535HQ Delivers

WL 535HQ can deliver big yield potential, exceptional feed value, and outstanding profit potential for both dairy and cash hay producers. WL 535HQ carries on the great HQ tradition set by WL 525HQ. Intense selection for parent plants with high forage quality traits (high % crude protein, excellent fiber digestibility, and higher %TDN) 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 535HQ delivers.

THE HQ CHOICE FOR UNBEATABLE FEED VALUE

Fresno, California, 1997-1999

VARIETY	RFV*	TDN
WL 535HQ	**212**	**57.5**
Dura 843	205	56.8
DK 189	193	56.1
Pioneer® 5715	194	56.0
Tulare	194	55.8

Bakersfield, California, 1997-1999

VARIETY	RFV*	TDN
WL 535HQ	**217**	**58.1**
Pioneer® 58N57	211	57.3
Tulare	208	57.2
DK 180ML	204	56.9
Salado	199	56.4
Coronado	195	56.1

TDN= Total Digestible Nutrients
*Relative Feed Value (RFV)

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

NONDORMANT

WL 662HQ.RR

FD9

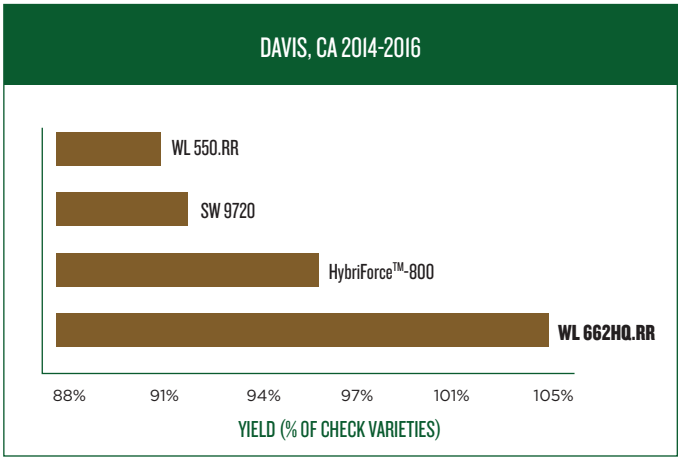
OUTSTANDING YIELD, EXCELLENT HAY QUALITY AND EXCEPTIONAL GROWER VALUE

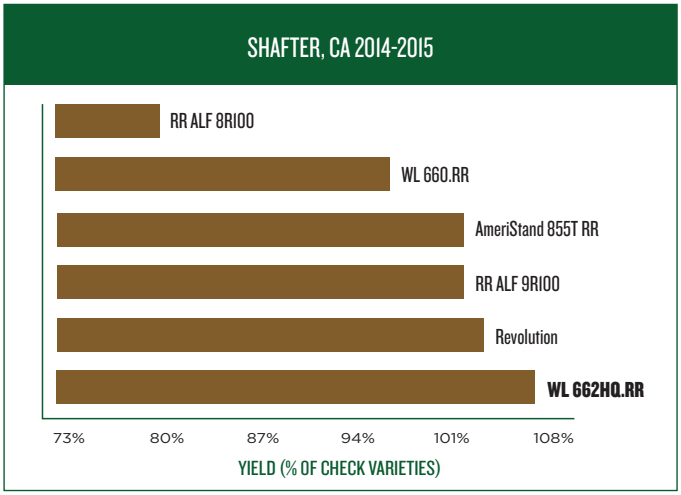
WL 662HQ.RR Advantages

- Winter-active, very nondormant FD=9.2
- Very high yield potential under 8- to 11-cut harvest managements
- WL 662HQ.RR demonstrates strong potential to deliver optimal feed intake, milk production, and greater profit potential when fed
- Highly resistant (HR) to all major aphid pests
- Highly resistant/resistant to all major nematode pests
- Very strong disease resistance package (including HR to Phytophthora Root Rot and Fusarium Wilt); promotes fast seedling establishment and long stand life
- Ideal FD=9 variety for the cash hay producer: WL 662HQ.RR consistently produces big yields of leafy, fine-stemmed hay with high %TDN
- Salt-tolerant at seed germination, similar to the salt-tolerant checks
- Outstanding persistence and long stand life on your toughest fields

Planting WL 662HQ.RR alfalfa and utilizing the Genuity® Roundup Ready® weed control system provides many benefits over conventional herbicide programs

- Unmatched weed control at both stand establishment and in established stands can mean fewer weeds and higher quality hay and haylage, which can result in more milk per ton fed and higher %TDN when tested
- Superior 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 superior weed control with no need to tank-mix; one herbicide does it all
- 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





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WL 662HQ.RR Delivers Superior Performance

A unique combination of exceptional yield potential, very broad adaptation, and superior feed value make WL 662HQ. RR the variety of choice for cash hay and dairy producers looking for an FD9 alfalfa that maximizes profit potential in their operations while utilizing the breakthrough benefits of the Roundup Ready® weed control system in alfalfa.

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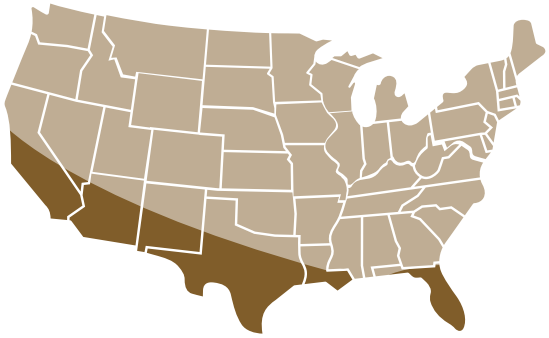
HQ™

genuity ROUNDUP READY ALFALFA

Visit **wlresearch.com** for more information.



AREA OF PRIMARY ADAPTATION

AGRONOMIC TRAITS

Fall Dormancy	**9.2**
Winter Activity	**Very High**
Digestibility/Feed Value	Superior
Hay Quality (%TDN)	Excellent
Persistence Index	Very High
Aphid Resistance Index	15/15
Recovery After Harvest	Very Fast
Wet Soil Tolerance	Excellent
Traffic Tolerance	Very Good
Standability	Excellent

PEST RESISTANCE TRAITS

Spotted Alfalfa Aphid	HR
Pea Aphid	HR
Blue Alfalfa Aphid	HR
Phytophthora Root Rot	HR
Fusarium Wilt	HR
Verticillium Wilt	R
Bacterial Wilt	MR
Anthracnose	MR
Stem Nematode	R
Root Knot Nematode (Southern)	R

HR = HIGH RESISTANCE R = RESISTANT MR = MODERATE RESISTANCE

WL 656HQ

FD9

THE BEST YIELD POTENTIAL IN THE WEST

Exceptional yield potential, broad adaptation, and excellent hay quality makes WL 656HQ the nondormant alfalfa variety of choice for cash hay and dairy producers looking to maximize both production and profit potential.

WL 656HQ Advantages

- Winter-active, very nondormant FD=9.3
- Very high yield potential and outstanding persistence across a wide range of soil types and harvest schedules
- Optimal digestibility promotes more milk and greater profit potential when fed
- A great choice for cash hay; WL 656HQ can deliver very high %TDN numbers across a wide range of haying conditions
- Proven ability to "hold" high feed value in the field over a longer period of time; WL 656HQ helps deliver higher forage quality and greater harvest flexibility with less risk of damage to hay and haylage when harvest is delayed
- Highly resistant to all major disease, insect, and nematode pests that attack alfalfa in the Southwestern U.S.
- Very fast recovery after cutting and superior standability encourages intensive harvest management
- Great visual appeal in the field; dark green, leafy, finestemmed, and tolerant to leaf disease

SHAFTER, CALIFORNIA 2006-2008 (25 CUTS)

Variety	Yield (T/A)
WL 656HQ	**34.6**
WL 625HQ	32.1
Ameristand 802	32.0
WL 711	30.6
Cuf 101	30.5
Pioneer® 59N49	30.1
Pioneer® 58N57	29.1

WL 656HQ outyields Pioneer by 17%

HOLTVILLE, CALIFORNIA 2008-2009 (19 CUTS)

Variety	Yield (T/A)
WL 656HQ	**17.7**
TriplePlay	15.9
S&W 9301	15.5
WL 625HQ	15.2
Magna 901	14.8
Pioneer® 59N49	14.8
CW 907	14.7
Sequoia	13.5

WL 656HQ outyields CalWest by 20%

UNIVERSITY OF CALIFORNIA KEARNEY 2009 (7 CUTS)

Variety	Yield (T/A)
WL 656HQ	**12.1**
Saltana	11.7
WL 625HQ	11.3
Magna 995	10.9
UC Impalo	10.6
CUF 101	9.9
Dura 843	9.2
Pioneer® 59N49	9.0

SHAFTER, CALIFORNIA 2006-2008 (16 CUTS)

Variety	Yield (T/A)
WL 656HQ	**19.28**
WL 625HQ	17.8
Cuf 101	18.2
Pioneer® 59N49	17.7
Magna 801FQ	16.8
CW 907	16.0
S&W 9720	15.7
Dura 843	15.6

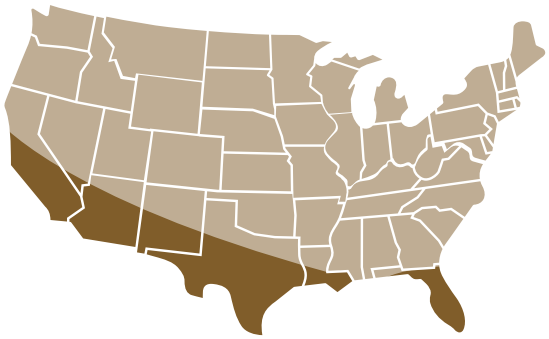
WL 656HQ outyields S&W by 23%

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

WL ALFALFAS
BETTER SEED THROUGH RESEARCH

HQ™

Visit **wlresearch.com** for more information.



AREA OF PRIMARY ADAPTATION

AGRONOMIC TRAITS	
Fall Dormancy	**9.3**
Digestibility/Feed Value	Superior
Persistence Index	Very High
Tolerance to Wet Soils	Excellent
Aphid Resistance Index	15/15
Recovery After Harvest	Very Fast
Traffic Tolerance	Very Good
Standability	Excellent

PEST RESISTANCE TRAITS	
Spotted Aphid	HR
Pea Aphid	R
Blue Aphid	HR
Phytophthora Root Rot	HR
Fusarium Wilt	HR
Verticillium Wilt	HR
Bacterial Wilt	HR
Anthracnose	HR
Stem Nematode	**HR**
Root Knot Nematode (Southern)	**HR**

HR = HIGH RESISTANCE R = RESISTANT

WL 656HQ: The One To Beat!

Our newest, very nondormant HQ (high quality-selected) alfalfa, WL 656HQ carries on in the great tradition set by WL 625HQ: Very high yield potential, outstanding persistence, and exceptional hay quality. WL 656HQ 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 656HQ is clearly the nondormant alfalfa to beat.

WL 656HQ: A HQ Leader

Shafter, California, 2006-2008

VARIETY	CP	RFQ*	TDN
WL 656HQ	**22.9**	**179**	**64.7**
WL 625HQ	22.4	172	63.9
CW 907	22.0	170	63.7
Pioneer® 59N49	21.5	161	62.8
Cuf 101	22.3	161	62.6
Magna 901	22.2	157	62.0
S&W 9720	21.6	155	61.7

CP= Crude Protein
TDN= Total Digestible Nutrients
*Relative Forage Quality

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

AGRONOMIC TRAITS

	Fall Dormancy	Winterhardiness	Feed Value	Persistence Index	Recovery After Harvest	Standability	Wet Soil Tolerance	Traffic Tolerance	Aphid Resistance Index	Multileaf Expression
DORMANT										
WL 341HVX.RR	4.0	2.1	HarvXtra®	Very High	Very Fast	Excellent		Very Good		Very High
WL 356HQ.RR	3.8	1.6	Superior	Very High	Very Fast	Excellent	Excellent	Very Good		Very High
WL 359LH.RR	3.9	2.2	Superior	Very High	Very Fast	Excellent		Very Good		High
WL 354HQ	3.9	1.4	Superior	Very High	Very Fast	Excellent	Excellent	Very Good		Very High
WL 358LH	4.1	2.0	Superior	Very High	Very Fast	Excellent		Very Good		Very High
WL 343HQ	3.9	1.7	Superior	Very High	Very Fast	Excellent		Very Good		Very High
WL 372HQ.RR	4.9	1.8	Superior	Very High	Very Fast	Excellent		Very Good		Very High
WL 365HQ	4.9	1.1	Superior	Very High	Very Fast	Excellent		Very Good		Very High
WL 377HQ	5.0	2.5	Superior	Very High	Very Fast	Excellent		Very Good		Very High
WL 363HQ	4.9	1.6	Superior	Very High	Very Fast	Excellent		Very Good		Very High
WL 336HQ.RR	3.2	1.0	Superior	Very High	Very Fast	Excellent		Very Good		High
WL 319HQ	2.8	1.3	Superior	Very High	Very Fast	Excellent		Very Good		Very High
SEMI-DORMANT										
WL 454HQ.RR	6.7		Superior	Very High	Very Fast	Excellent	Excellent	Very Good	15/15	High
WL 440HQ	6.0		Superior	Very High	Very Fast	Excellent	Excellent	Very Good	15/15	High
NONDORMANT										
WL 552HQ.RR	8.2		Superior	Very High	Very Fast	Excellent	Excellent	Very Good	15/15	
WL 535HQ	8.2		Superior	Very High	Very Fast	Excellent	Excellent	Very Good	15/15	
WL 662HQ.RR	9.2		Superior	Very High	Very Fast	Excellent	Excellent	Very Good	15/15	
WL 656HQ	9.3		Superior	Very High	Very Fast	Excellent	Excellent	Very Good	15/15	

PEST RESISTANCE TRAITS

Bacterial Wilt	Fusarium Wilt	Verticillium Wilt	Anthracnose Race 1	Phytophthora Root Rot	Spotted Alfalfa Aphid	Pea Aphid	Stem Nematode	Aphanomyces Race 1	Aphanomyces Race 2	Southern Root-Knot Nematode	Northern Root-Knot Nematode	Potato Leafhopper	Disease Resistance Index	Salt Tolerance	
HR	HR	HR	HR	HR	R	R	R	HR		R	R		30/30		
HR	HR	HR	HR	HR	MR	R	HR	HR	HR				35/35	G	
HR	HR	HR	HR	HR				HR				HR	30/30		
HR	HR	HR	HR	HR	HR	HR	R	HR	HR				35/35		
HR	HR	HR	HR	HR	R			HR				HR	30/30		
HR	HR	HR	HR	HR		HR	R	HR					30/30		
HR	HR	HR	HR	HR	R	R	HR	HR					30/30		
HR	HR	HR	HR	HR	HR	HR	R						30/30		
HR	HR	HR	HR	HR	HR	HR	HR	HR		HR	HR		30/30		
HR	HR	HR	HR	HR		HR	HR	HR			HR		30/30		
HR	HR	HR	HR	HR	R	HR	MR	HR					30/30	G	
HR	HR	HR	HR	HR	R	HR	MR	HR					30/30		
R	HR	R	R	HR	R	HR	HR							G	
HR	HR	HR	HR	HR		HR	HR	R		HR			30/30		
R	R	R	R	HR	HR	R	R			R				G	
	HR	HR		HR	HR		R			R				G	
MR	R	R	MR	HR	HR	HR	R							G	
MR	HR		R	HR	HR	HR	HR							G	

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

SALT TOLERANCE

G = Germination
F = Forage

W-L GOLD TREATMENT® PLUS | SEED TREATMENTS/COATINGS

A PREMIUM SEED ENHANCEMENT AVAILABLE EXCLUSIVELY FOR ALL W-L ALFALFAS

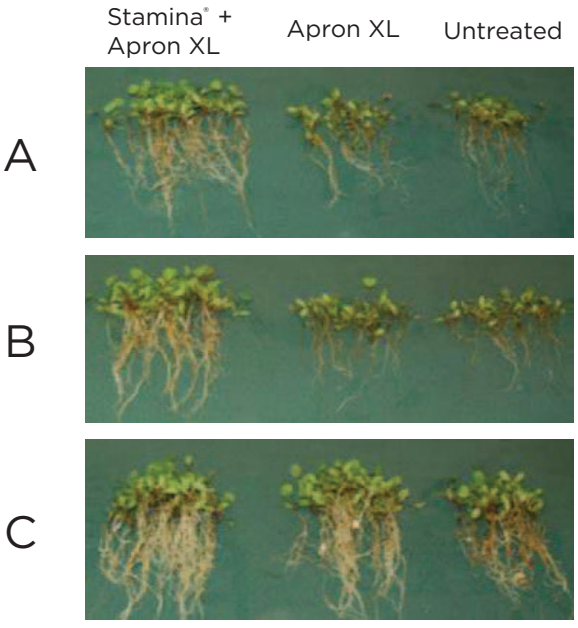
You make a substantial investment in a multi-year crop of alfalfa. Seedling vigor and standability, quick establishment, and maximum plant population in your stand is imperative. This is why W-L Research developed Gold Treatment® Plus seed coating and treatment.

Gold Treatment® Plus is a premium seed enhancement for use on all W-L Brand Alfalfas. It includes the LCO-promoter Optimize® Gold, which initiates the nodulation and nitrogen-fixing processes early, giving young alfalfa seedlings a boost and enhancing seeding-year populations, and thus yield and nutritional values.

To double up on protecting young seedlings from mortality, W-L's Gold Treatment® Plus also includes Stamina® fungicide to enhance broad-spectrum protection from seed and seedling diseases such as aphanomyces, phytophthora and rhizoctonia. With in-plant resistance coupled with premium growth promoters and seed protection, W-L's Gold Treatment® Plus is a leader in the industry in getting stands off to a strong start that will carry them for years to come.

- ***Optimize® Gold*** includes LCO Promoter Technology™, a patented technology that promotes early-stage seedling vigor, enhanced root development and improved stand establishment under adverse conditions
- ***Stamina®*** fungicide protects seed and new seedlings from fungal disease, and enhances plant health to encourage maximum populations, especially under tough soil conditions with elevated disease
- ***Nitragin® Gold*** pre-inoculant has guaranteed counts of 300+ million rhizobia per gram of inoculant
- ***Micronutrient Package*** Mo/Mn helps ensure early nodulation and improved nitrogen fixation
- ***Apron XL®*** fungicide protects young seedlings from damping-off diseases

W-L Research developed Gold Treatment® Plus featuring Optimize® Gold and Stamina® to provide protection from seedling to stand.



Seedlings inoculated with:

A - *Aphanomyces euteiches* Race 1

B - *Aphanomyces euteiches* Race 2

C - *Phytophthora medicaginis*

Untreated | Stamina® + Apron XL

West Salem, WI - Alfalfa spring seeded May 6, 2011. Photos taken on June 29, 2011. 54 Days After Seeding.

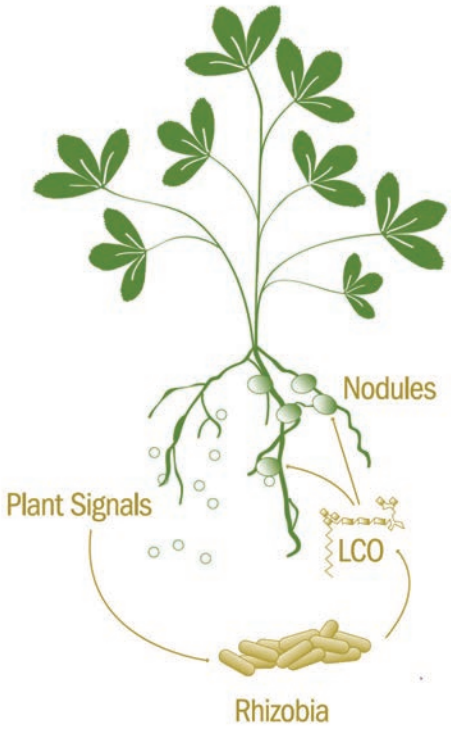
Photo and studies courtesy of BASF Corporation

Stamina® Fungicide Seed Treatment

BASF We create chemistry

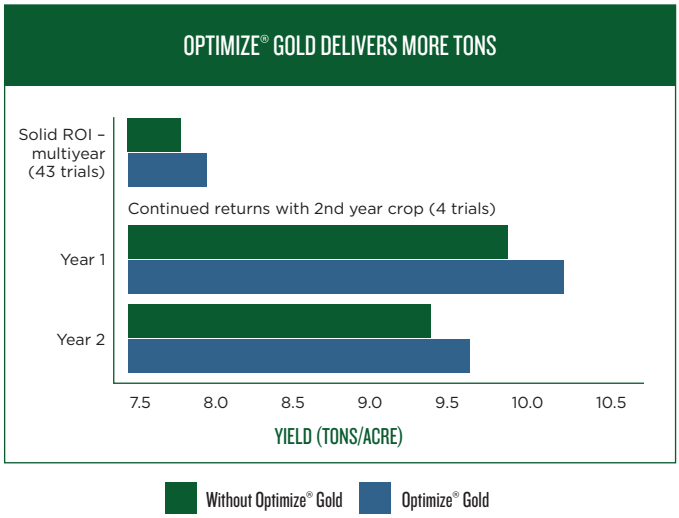
Enhancing the Nitrogen Fixation Cycle With Optimize® Gold

Gold Treatment® Plus takes high-quality W-L alfalfa seed and makes it better, promoting improved seedling vigor, faster stand establishment, and greater seeding-year profit potential. The growth boost provided by the addition of Optimize® Gold and micronutrients maximizes the seed-to-plant ratio, and helps ensure your investment in premium W-L alfalfa seed pays off immediately and for years to come.



Optimize® Gold

The impact of Optimize® Gold on seedling establishment and seeding-year yield



Improved Root System

Without Optimize® Gold | Optimize® Gold

Photo and studies courtesy of Monsanto BioAg, Inc.

SEED TREATMENTS/COATINGS

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W-L ALFALFAS BETTER SEED THROUGH RESEARCH®

Visit **wlresearch.com** for more information.

WE DIDN'T INVENT ALFALFA, WE JUST REINVENTED IT

HarvXtra® with Roundup Ready® Technology

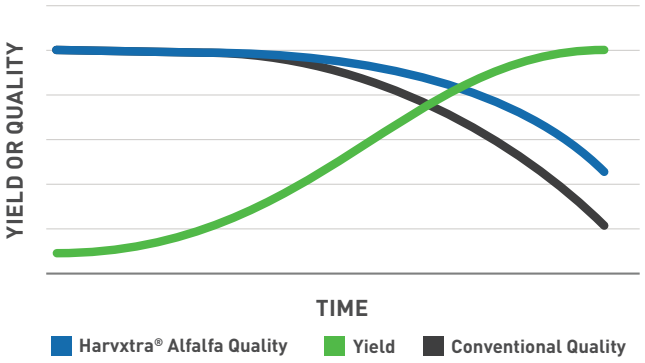
HarvXtra® alfalfa is the industry's first genetically enhanced alfalfa technology, developed to maximize quality compared to conventional alfalfa at the same stage of maturity, by reducing the amount of lignin in the plant. It's the most advanced alfalfa in the industry — and the biggest advancement in the field.

GREATER FLEXIBILITY

HarvXtra® technology gives you unprecedented control by widening cutting windows. This gives you the ability to better manage the yield-versus-quality trade-off. It also adds exceptional 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.

YIELD-VERSUS-QUALITY TRADE-OFF IN ALFALFA



FORAGE QUALITY LIKE NO OTHER

The genetically enhanced HarvXtra® 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.

TABLE 1: CHANGES IN ADL WITH ADVANCING MATURITY OF THE ALFALFA CROP

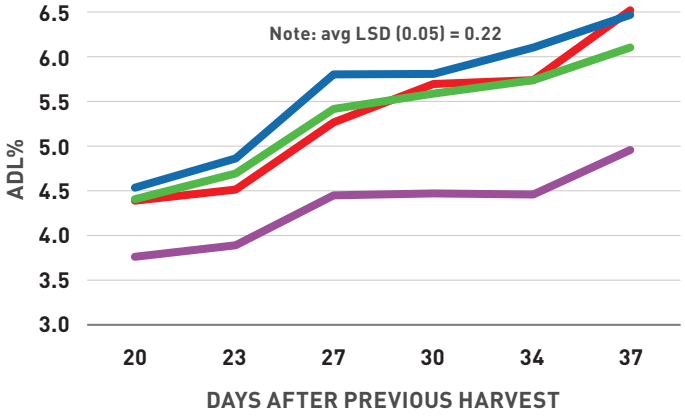
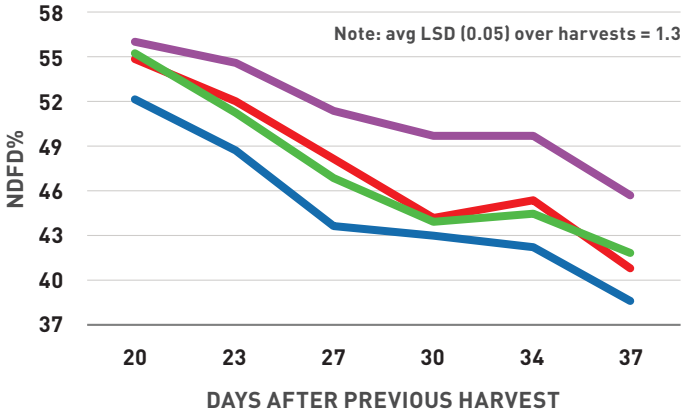


TABLE 2: CHANGES IN NDFD WITH ADVANCING MATURITY OF THE ALFALFA CROP



Data Summary from trials at West Salem, WI and Nampa, ID - August 2015 harvest of trials seeded May 2015.

54R02 (FD4) | Conventional FGI Variety (FD3) | Hi-Gest® 360 (FD3) | HarvXtra® Alfalfa with Roundup Ready® Technology (FD4)

In 2015, several trials were planted to compare HarvXtra® alfalfa and one or more alfalfa varieties selected for improved quality using conventional breeding techniques. The HarvXtra® trait provided a significant improvement over all commercial check varieties for acid detergent lignin (ADL) and neutral detergent fiber digestibility (NDFD) at every sampling date in this experiment. Lignin (ADL) content in HarvXtra® alfalfa was more than 20% lower than any of the commercial check varieties at the last sampling date.

AN ALFALFA THAT GIVES YOU OPTIONS. NOT LIMITS.

To learn more about HarvXtra® with Roundup Ready® technology, visit **harvxtra.com**

Superior Technology for Superior Alfalfa

We understand how important specific characteristics are when you make the choice of which alfalfa seed to plant. Like all growers, you want higher-quality hay, improved stand establishment, higher yield potential and longer stand life.

Genuity® Roundup Ready® Alfalfa provides breakthrough technology of advanced weed control and improved alfalfa production.

Based on comparisons to conventional alfalfa, Roundup Ready Alfalfa fields delivered:

Higher Yield Advantage

Controlling weed pressure during the establishment period provides increased yield over the life of the stand.

Better Weed Control

Fewer weeds in every ton for better, more consistent feed quality.

Easier Overall Management

Convenience of managing healthier, faster-growing stands.

Making the Choice for Genuity® Roundup Ready® Alfalfa

Genuity® Roundup Ready® Alfalfa allows you to improve management practices that lead to higher-quality alfalfa by delivering:

- Superior crop safety for healthier, faster-growing stands.
- Better stand during establishment means better stand persistence.
- Broadest application flexibility and minimal harvest restrictions — can apply from emergence up to 5 days before harvest.
- Fewer weeds in every ton, resulting in better-quality feed.
- Increased high-quality yield opportunity.
- The ability to use Roundup® brand agricultural herbicides in problem areas as a stand matures and weeds develop in thin areas.

NOTES

For the 2017 growing season, 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. In addition, due to the unique cropping practices do not plant HarvXtra® Alfalfa with Roundup Ready® Technology in Imperial County, California, pending import approval in China and until Forage Genetics International, LLC (FGI) grants express permission for such planting. 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 product purchaser to confirm their buying position for this product.

Do not export Genuity® Roundup Ready® Alfalfa seed or crop, including hay or hay products, to China pending import approval. In addition, due to the unique cropping practices do not plant Genuity® Roundup Ready® Alfalfa in Imperial County, California, pending import approvals and until Monsanto grants express permission for such planting.

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ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Roundup Ready® crops contain genes that confer tolerance to glyphosate, the active ingredient in Roundup® brand agricultural herbicides. Roundup® brand agricultural herbicides will kill crops that are not tolerant to glyphosate. Genuity Design®, Genuity Icons, Genuity®, Roundup Ready® and Roundup® are trademarks of Monsanto Technology LLC, used under license by FGI. HarvXtra® is a registered trademark of Forage Genetics International, LLC. HarvXtra® Alfalfa with Roundup Ready® Technology is enabled with Technology from The Samuel Roberts Noble Foundation, Inc. All other trademarks are of their respective owners.

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