09 - 0873

PERENNIAL RYEGRASS SEED PRODUCTION RESEARCH ROSEAU/LAKE OF THE WOODS ,MINNESOTA- 2008

Perennial Ryegrass Seed Production Meeting -Roseau December 17,2008

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Table 1.

2007 Perennial Ryegrass Seed Production Variety Trial

Magnusson Research Farm

Variety	Seed lot	Seed Yield % of mean	2008 Seed Yield (#/ac)
Arctic Green(MHT)	3729	**129**	1617
Ragnar(p101)	3366	**120**	1512
Survivor	3848	**112**	1414
Brightstar SLT	3661	**111**	1396
Palmer V	3857	**111**	1396
Pennant III	3796	**105**	1325
Gator III	3856	**104**	1311
Ragnar II (p201)	3611	**100**	1264
Spreader III	3791	**94**	1182
NK-200	3538	**93**	1171
Barlennium	3797	**90**	1133
Affinity	3500	**88**	1110
Polar Green *	3372	**80**	1010
Allstarz	3795	**62**	774
	LSD @5%	**17**	**217**
		Mean yield	1258#/ac

Management:

Seeded 8/15/08 in fallow ground with spring wheat

40# N urea applied 6/8/08

.75pt 2,4-D+.75 pt. Banvel applied 6/8/08

* poor germination

10 oz. Quilt applied 6/30/08

No grass control herbicide or growth regulator applied

All plots badly lodged at harvest

Experimental Design:RCB with 4 reps

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Table 2.

2007 Perennial Ryegrass Winter Hardiness Variety Trial

Magnusson Research Farm

		Winter Injury*		
		Roseau**	St.Paul**	
Variety	seed lot	5/13/2008	4/22/2008	5/5/2008
Arctic Green(MHT)	3729	1	1	1.3
NK-200	3538	1	1.3	1.5
Survivor	3848	1	1	1.5
Spreader 3	3791	1	1.8	1.8
TQ x Spread sel.	3637	1	1.3	1.5
Polar Green	3372	1	1.3	1.5
WH x TQ sel.	3639	1	1.5	1.8
Brightstar SLT	3661	1	1	1
Ragnar II (P201)	3611	1	1	1.3
Ragnar (P101)	3366	1	1.3	1.3
Affinity	3500	1	1.3	1
Ribeye(annual)	3689	8.1	7.5	7.9
	LSD @5%	**0.1**	**0.8**	**0.9**

*Winter Injury; 1=no injury;9=dead

**Roseau plots seeded 8/13/07;St.Paul seeded 9/10/07

Plots seeded in bare tilled ground with no cover

Experimental design= RCB with 4 reps

Table 3.								
2007 Date of Seeding- Arctic Green perennial ryegrass								
F1 Magnusson Research Farm-Roseau,Mn								
	Tilled			Wheat stubble*			Mean of both treatments	
Seeding	Yield	Dry matter		Yield	Dry matter		Yield	Dry matter
Date**	(#/ac)	(T/ac.)		(#/ac)	(T/ac.)		(#/ac)	(T/ac.)
8/23/2007	1508	3.03		1606	2.98		1557	3
8/30/2007	2150	3.95		1240	2.77		1695	3.36
9/6/2007	1436	2.26		1115	2.61		1276	2.43
9/13/2007	1383	2.2		874	2.08		1128	2.14
9/20/2007	946	1.48		839	1.69		892	1.58
9/27/2007	526	1.02		491	0.77		508	0.89
10/4/2007	36	0.18		196	0.55		116	0.37
LSD @5%	606	0.96		528	0.47		319	0.63
Perennial ryegrass was direct seeded into tilled black ground or wheat stubble.								
*Stands in wheat stubble are variable								
** Rows were watered after seeding								

Table 4.

Growth Regulator and Fertility Timing on Perennial Ryegrass seeded in the spring under wheat F1 west side- Magnusson Research farm

var. Arctic Green(MHT) Per. Ryegrass

	Seed Yield		Harvest	
	% of mean	(#/ac.)	Lodging*	Height(in.)
1) no growth regulator+ early fert.	**97**	1141	8.7	26
2)no growth regulator + late fert.	**92**	1082	7.7	27
3)Apogee fall + early fert.	**97**	1133	8.0	27
4)Apogee fall + late fert.	**91**	1067	8.0	27
5)Apogee spring + early fert.	**113**	1320	5.0	23
6)Apogee spring + late fert.	**110**	1290	5.0	23
LSD @5%	**19**	232	1.6	2

Experimental Design: RCB with 3 reps

Fertilizer Rate=100+33+47+15s

Early fert applied 9/5/07; N,P,K,S 33-33-47-15s

Remainder of Nitrogen (67#) applied 5/28/08

Late fert.= all fert applied 10/15/07 100-33-47-15s

Apogee treatments =

fall	12 oz.+4pts. 28% + .25%NIS	9/16/2007
spring	6 oz.+4 pt. 28%+.25%NIS	6/15/2008

Harvest date 8/14/08

*Lodging-1=none;9=flat

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Table 5.

Growth Regulators applied to spring seeded Arctic Green Perennial ryegrass

F1 west Magnusson Research plots

		Application	Seed	Harvest	
Treatment	Rate/adjuvant	timing	Yield(#/ac)	Lodging	Ht.(in.)
No treatment			1053	8.5	27.0
Apogee	8oz.+2.5%Class Act NG	4-Jun	1293	3.0	20.0
Apogee	4oz.+2.5%Class Act NG	4-Jun	1512	5.5	23.0
Palisade	1 Pt.	4-Jun	1151	4.0	22.0
Apogee	10oz.+2.5%Class Act NG	22-Jun	1169	3.5	21.5
	LSD @5% level		NS	2.5	3.5

6/4/2008 ryegrass 2-3 nodes wind nw 5mph 55F

6/22/2008 ryegrass 50% headed

calm winds 11:00 am 72F

Harvested-8/8/08

General Management:

Seeded 5#/ac under spring wheat 5/24/07

Fertility- 100+30+40+15s applied 10/15/07

3/4 pt. 2,4-D + 3/4 pt. Banvel

10 oz.+.25%NIS Assure II

Experimental Design:RCB with 2 reps

Table 6.

2008 Fungicides applied to Arctic Green perennial ryegrass

F1 Magnusson Research Farm-Roseau.Mn

Treat#	Trade Name	Application timing	Application Rate	Additive	Seed Yield (#/ac)	Harvest color 10=green	Harvest height(in.)
1	No Treatment				1083	6.5	26
2	Absolute	Optimum	7.7 oz.	1%COC	888	6.0	24
3	Quilt	Optimum	10 oz.		867	6.5	23
4	Tilt	Optimum	4 oz.		999	6.0	24
5	Twinline	Optimum	9 oz.		959	7.0	25
6	Proline	Optimum	5 oz.		879	7.0	25
7	Absolute	2x	5 oz.	1 %COC	1017	6.5	26
8	Quilt	2x	8 oz.		950	6.0	25
9	Twinline	2x	6 oz.		1017	7.0	26
10	Folicur 3.6	2x	3 oz.		1115	6.0	24
11	Headline	2x	6 oz		1151	5.0	24
12	Tilt	2x	3 oz.		941	5.0	22
			LSD @5% level		**NS**	**1.3**	**3**

Treatment Timing:

2X First application 6/14/08 2-3 nodes flag-early boot 6-10" tall

7:30am 52F wind 0-5 wsw

Second application 7/5/2008

Optimum 7/4/08 mostly headed with some pollen shedding 20-24" tall

8:00am 63F wind 5-10ssw

Experimental Design: RCB with 2 reps

Harvested 8/8/08

Trade Name	common name	Active Ingredient (#/gal.)	
Absolute	tebuconazole+triflozystrobin	2.18#+2.18#	Folicur+Flint
Headline	pyraclostrobin	2.09#	
Tilt	propiconazole	3.6#	
Twinline	pyraclostrobin+ metconazole	1.08#+.67#	Headline+Caramba
Quilt	propiconazole+azoxystrobin	1.04# +.62#	Tilt+Quadris
Proline	prothioconazole	4#	
Folicur	tebuconazole	3.6#	

Table 7.							
2008 Fungicides applications to Gator III Per.Ryegrass							
Byron Tveit farm-north of Roosevelt,Mn							
					Seed		
			Application		Yield		
Treat#	**Fungicide**	**Timing**	Rate	Additive	(#/ac)		
1	No Treatment				1448		
2	Absolute	Optimum	7.7 oz.	1%COC	1332		
3	Quilt	Optimum	10 oz.		1264		
4	Tilt	Optimum	4 oz.		1264		
5	Twinline	Optimum	9 oz.		1427		
6	Proline	Optimum	5 oz.		1398		
7	Absolute	2x	5 oz.+5 oz.	1 %COC	1392		
8	Quilt	2x	8 oz.+8 oz.		1347		
9	BASF 556	2x	6 oz.+6oz.		1579		
10	Folicur 3.6	2x	3 oz.+3oz.		1282		
11	Headline	2x	6 oz.+6oz.		1359		
12	Tilt	2x	3 oz.+3oz.		1305		
			LSD @5% level		**236**		
	Treatment Timing:						
	2X	First application 6/14/08 2-3 nodes flag-early boot 4-8" tall					
			7:00pm 64F wind 5-15 wsw				
		Second application		7/6/2008			
	Optimum	7/3/08 mostly headed with some pollen shedding 16-22" tall					
			6:30pm 74F wind 0-5w				
					Active		
	Trade				Ingredient		
	Name	common name			(#/gal.)		
	Absolute	tebuconazole+triflozystrobin			2.18#+2.18#		
	Headline	pyraclostrobin			2.09#		
	Tilt	propiconazole			3.6#		
	Twinline	pyraclostrobin+ metconazole			1.08#+.67#		
	Quilt	propiconazole+azoxystrobin			1.04# +.62#		
	Proline	prothioconazole			4#		
	Folicur	tebuconazole			3.6#		

Table 8.

2007-8Grass/Wild Oat Control in Perennial Ryegrass

var. Arctic Green(MHT) F1 Magnusson Research Farm-Roseau,Mn

Treatment	Rate/adjuvant	Application Date	Seed yield % of check	Seed yield (#/ac)	Harvest height(in.)	% Control Foxtail barley	% Control Volunteer wheat
No treatment			**100**	1253	25.5	0	0
Achieve L	8 oz.+.5%Supercharge+2.5%AMS	6/5/2008	**91**	1146	23	10	0
Assert*	1.2 pts.+1%COC	6/5/2008	**69**	865	23.5	20	10
Nortron	2 pts.	10/11/2007	**114**	1423	25.5	97	97
Nortron	2 pts.	5/20/2008	**102**	1276	23.5	70	88
Prowl 3.3	3.5 pts.	10/11/2007	**108**	1360	23.5	25	50
Prowl 3.3	3.5 pts.	5/20/2008	**98**	1222	23.5	40	55
	LSD @5% level		**35**	430	NS	51	30

General Management:
Seeded 5#/ac into wheat stubble 8/25/07
Fertility- 100+30+40+15s applied 10/15/07
3/4 pt. 2,4-D + 3/4 pt. Banvel
Experimental Design:RCB with 2 reps

10/11/2007	Most ryegrass emerged with 2-3 leaves
5/20/2008	Ryegrass vegetative-2-3" height
6/5/2008	ryegrass 2-3 nodes

*Assert treatment- Crop Oil Concentrate used by mistake instead Non-Ionic Surfactant

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Table 9.

2008 Effects of Late Spray applications applied to Perennial Ryegrass

var. Arctic Green(MHT) Magnusson Research Farm-Roseau,Mn

Treatment/Rate/Adjuvants	Seed Yield % of check	Seed Yield (#/ac)
No Treatment	**100**	1192
2,4-D ester 1pt+ Banvel 1 pt.+ 10 oz. Apogee+2.5% Class Act NG+ Quilt 10 oz.	**125**	1490
2,4-D ester 1pt+ Banvel 1 pt.+ Quilt 10 oz.	**106**	1267
2,4-D ester 1 pt.+ Banvel 1 pt.	**103**	1228
2,4-D ester 1 pt.+ Banvel 1 pt. +Assure II 10 oz.+.25%NIS+ Quilt 10oz.	**82**	978
LSD @5% level	**19**	244

Treatments applied: 6-23-08, Ryegrass 12-16 inches tall, 30% headed, Temp 70F, Wind ssw 0-5
10 oz. Assure II + .25%NIS applied to all plots 6/4/08
Fertility- 100+30+40+15s applied 5/10/08
Experimental Design: RCB with 3 reps

Table 10.

2008 Weed Control Applied to Arctic Green Perennial Ryegrass

F1 Magnusson Research Farm- Roseau,Mn

Treat#	Trade name	Rate	Adjuvant	Seed Yield (%mean)	Seed Yield (#/ac.)	Harvest height(in.)	7/4/2008 % height reduction	7/4/2008 % head reduction	7/4/2008 % control of volunteer wheat
1	Banvel+2,4-D amine	.75+.75		**108**	1430	27	0	0	0
2	Huskie	13.5 oz.		**109**	1445	27	0	0	0
3	Huskie	27 oz.		**97**	1290	26	0	3	0
4	Bronate Advance	1 pt.		**114**	1510	27	0	0	0
5	Curtail	1.5 pt.		**110**	1463	27	0	0	0
6	Callisto	3 oz.	1% COC	**106**	1400	27	0	0	25
7	Balance Flex	4 oz.		**101**	1341	26	0	0	8
8	Rage D-tech	1.5 pt.	.25% NIS	**102**	1353	28	0	0	0
9	WideMatch+2,4-D amine	1pt.+.75pt.		**98**	1299	28	0	0	0
10	Banvel+2,4-D amine+Assure II	label rates	.25%NIS	**108**	1433	26	0	2	100
11	Banvel+2,4-D amine+Assure II+Apogee	label rates	2.5% Class Act NG	**117**	1555	23	18	7	80
12	Banvel+2,4-D amine+Apogee	label rates	2.5% Class Act NG	**113**	1490	23	22	7	33
13	Assure II+Apogee	label rates	2.5% Class Act NG	**101**	1338	22	53	7	90
14	**Assure II**	**10 oz.**	1% COC	**56**	740	23	17	45	98
15	**Assure II**	**10 oz.**	.25%NIS	**83**	1100	25	5	17	100
16	**Apogee**	**8 oz.**	2.5% Class Act NG	**113**	1496	22	40	3	55
17	**Paramount**	**12 oz.**	1% COC	**97**	1290	26	0	0	0
18	**Nortron**	**2 pt.**		**100**	1320	25	1	3	53
19	**Assert**	**1.2 pt.**	.25%NIS	**91**	1210	27	0	2	0
20	**Achieve liquid**	**.5 pt.**	.25%Supercharge+2.5%ams	**71**	937	24	7	22	35
21	**Avenge**	**3 pt.**	.25% NIS	**98**	1302	24	0	3	8
22	No Treatment	none		**105**	1386	27	0	2	0
			LSD @5% level	**20**	262	2	9	9	26
			mean(average) yield		1324#/ac				

Plot treatments applied 6/14/2008. Sunny 55F wind wsw 5-10mph Ryegrass 2-3 nodes and 6-10" tall

Treatments in BOLD(#14-#21)= .75pt 2,4-D + .75pt. Banvel applied separately 6/18/08 for general broadleaf weed control

Harvested 8/13/08

Experimental Design: RCB with 3 reps

Trade Name	Common name-active ingredients	Active	Packaged Mix
Huskie	pyrasulfotole+bromoxynil+ safener	3.3%+26.3%	Pyrasulfotole+Buctril+BCS safener
Bronate Advance	MCPA+bromoxynil	2.5#+2.5#	MCPA+Buctril
Banvel+2,4-D amine	dicamba+2,4-D	4#+3.8#	
Curtail	2,4-DA+clopyralid	2#+.38#	2,4-D amine+Stinger
Callisto	mesotrione	4.0#	
Balance Flex	Isoxaflutole+safener		
Rage D-tech	carfentrazone+2,4-D ester	.13#+5.92#	Aim+2,4-D ester
Paramount	quinclorac	75%DF	
Assure II	quizalofop	.88#	
WideMatch	clopyralid+fluroxypyr	.75#+.75#	Stinger+Starane
Assert	imazamethabenz	2.5#	
Callisto	mesotrione	4.0#	
Nortron SC	ethofumesate	1.0#	
Avenge	difenzoquat	2.0#	
Achieve liquid	tralkoxydim	3.33#	
Apogee	prohexadione	27.5%DF	

Table 11.

2008 Weed Control applications to Gator III Perennial Ryegrass

Byron Tveit farm- north of Roosevelt,Mn

Treat#	Trade Name	Application Rate	adjuvant	Seed Yield (%mean)	Seed Yield (#/ac)	Harvest height(in.)
1	Banvel+2,4-D amine	.75pt.+.75pt.		**97**	1213	27
2	Huskie	13.5 oz.		**105**	1308	26
3	Huskie	27 oz.		**114**	1427	25
4	Bronate Advance	1 pt.		**100**	1255	27
5	Curtail	1.5 pt.		**99**	1237	28
6	Callisto	3 oz.	none	**111**	1386	26
7	Callisto	3 oz.	1% COC	**103**	1287	27
8	Balance Flex	4 oz.		**100**	1255	26
9	Rage D-tech	1.5 pt.	.25% NIS	**101**	1264	25
10	WideMatch+2,4-D amine	1pt.+.75pt.		**86**	1073	27
11	Banvel+2,4-D amine+Puma+Apogee	label rates	2.5% Class Act NG	**103**	1287	25
12	Banvel+2,4-D amine+Apogee	label rates	2.5% Class Act NG	**114**	1424	26
13	Banvel+2,4-D amine+Puma	label rates		**102**	1270	26
14	**Paramount**	**12 oz.**	1% COC	**95**	1186	26
15	**Rimfire**	**2 oz.**	1% MSO	**64**	794	24
16	**Assert**	**1.2 pt.**	.25%NIS	**81**	1008	26
17	**Nortron**	**2 pts.**		**106**	1326	27
18	**Avenge**	**3 pts.**	1%COC	**100**	1243	27
19	**Puma**	**10 oz.**		**109**	1365	26
20	**Apogee**	**8 oz.**	2.5% Class Act NG	**121**	1513	25
21	**Puma+Apogee**	label rates	2.5% Class Act NG	**99**	1234	26
22	No Treatment	none		**90**	1127	26
			LSD @5% level	**13**	162	2
			Mean(average)yield	**1246#/ac**		

Experimental Design: RCB with 3 reps

Harvested 8/13/08

Treatments in Bold(14-21) applied 6/15/08 3:30pm 68F Ptcdy wind wsw 5-15 2-3 nodes and 4-8" tall

These treatments also had 3/4 pt.2,4-D + 3/4pt. Banvel applied 6/4/08 for broadleaf weed control

All other treatments also applied 6/4/08 wind nne 5-10mph 55F 6:00pm ground damp not wet--g.stage=vegetative

Trade Name	Common name-active ingredients	Active	Packaged Mix
Huskie	pryrasulfotole+bromoxynil+safener	3.3%+26.3%	Pyrasulfotole+Buctril+BCS safener
Bronate Advance	MCPA+bromoxynil	2.5#+2.5#	MCPA+Buctril
Banvel	dicamba	4#	
2,4-D amine	2,4-D	3.8#	2,4-D amine+Stinger
Curtail	2,4-DA+clopyralid	2#+.38#	2,4-D amine+Stinger
Callisto	mesotrione	4.0#	
Balance Flex	Isoxaflutole+safener		
Rage D-tech	carfentrazone+2,4-D ester	.13#+5.92#	Aim+2,4-D ester
Paramount	quinclorac	75%DF	
Rimfire	propoxycarbozone +mesosulfuron	8.14%+2.03%	Olympus+Silverado
WideMatch	clopyralid+fluroxypyr	.75#+.75#	Stinger+Starane
Assert	imazamethabenz	2.5#	
Callisto	mesotrione	4.0#	
Nortron SC	ethofumesate	1.0#	
Avenge	difenzoquat	2.0#	
Puma	fenoxyprop	1.0#	
Apogee	prohexadione	27.5%DF	