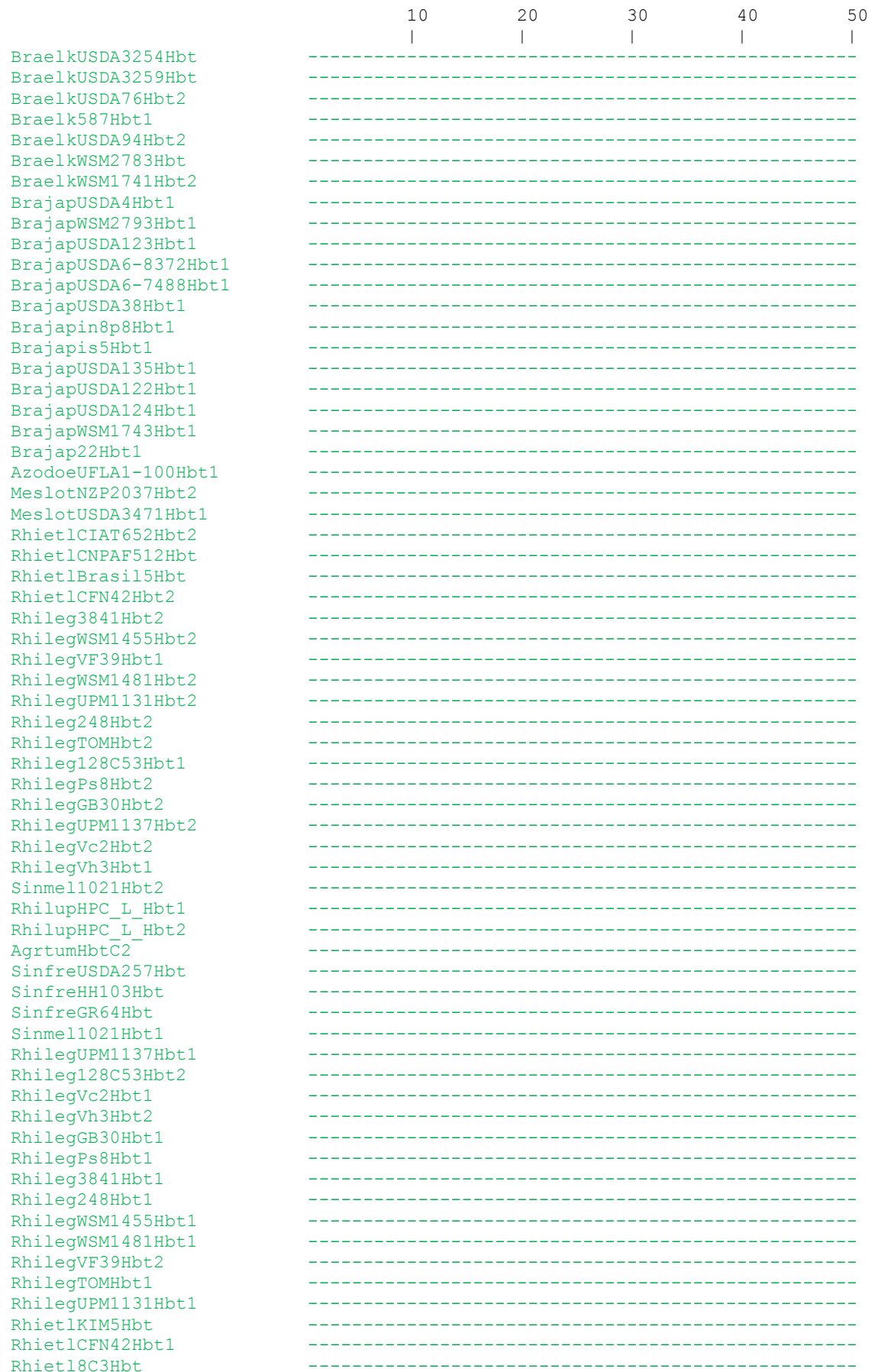


Figure S2
Gesto-Borroto et al.



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BrajapUSDA4Hbt3	-----
Brajap22Hbt3	-----
Brajapin8p8Hbt2	-----
Brajapis5Hbt2	-----
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CupnecJMP134Hbt	-----
CupnecN1Hbt2	-----
BurphySTM815Hbt2	-----
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BacsubfHb	-----
VitSDgb	-----
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CupnecN1fHb1	-----
CupnecJMP134fHb	-----
SaccerfHb	-----
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Brajapis5SDgb	-----
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BrajapUSDA38Hbt2	-----
BrajapUSDA123Hbt2	-----
BrajapWSM2793Hbt2	-----
BrajapUSDA135Hbt2	-----
BrajapUSDA4Hbt3	-----
Brajap22Hbt3	-----
Brajapin8p8Hbt2	-----
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CupnecJMP134Hbt	-----
CupnecN1Hbt2	-----
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MeslotR88bHbt	-----
MeslotCJ3symHbt	-----
MeslotUSDA3471Hbt2	-----
BurphySTM815fHb	-----
CupnecHPC_L_fHb	-----
CupnecN1fHb2	-----
Sinmel1021fHb	-----
BacsubfHb	-----
VitSDgb	-----
EsccolfHb	-----
RhilegUPM1137fHb	-----
CupnecN1fHb1	-----
CupnecJMP134fHb	-----
SaccerfHb	-----
BrajapUSDA110SDgb1	-----
BrajapUSDA122SDgb1	-----
Brajapin8p8SDgb	-----

Brajapis5SDgb	-----
BrajapUSDA135SDgb1	-----
BrajapWSM1743SDgb	-----
BrajapUSDA124SDgb1	-----
Brajap22SDgb	-----
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BrajapUSDA6-8372SDgb2	-----
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BrajapUSDA38SDgb1	-----
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BraelkUSDA94SDgb3	-----
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BraelkWSM2783SDgb3	-----
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BrajapUSDA122SDgb2	-----
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BrajapWSM2793SDgb2	-----
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SinfreHH103GCS	-----
SinfreUSDA257GCS	-----
Sinmel1021GCS	-----

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RhilegTOMGCS1	-----
RhietlCFN42GCS1	-----MFNHIDQNLCCRIP
AgrtumGCS	-----
MyctubHbtC1	-----
CupnecN1Hbt1	-----
BrajapUSDA4Hbt2	-----MARPRST
BrajapWSM2793Hbt3	-----MARPRST
MyctubHbtC2	-----
BurphySTM815Hbt1	-----
MycaviHbtC3	-----
BraelkWSM1741Hbt1	-----
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Braelk587Hbt1	-----	MTAAERREQITAGIVARTGISEAMIE			
BraelkUSDA94Hbt2	-----	MTGAERREQITAGIVARTGITEAMIE			
BraelkWSM2783Hbt	-----	MTGAERREQITADIVAKTGITEAMIE			
BraelkWSM1741Hbt2	-----	MEAIVAGPERRERLVAEIMERTGIDEAMIE			
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BrajapWSM2793Hbt1	-----	MSDRLKAEREAAAAARRNLLTQDAIERTGITEEMIG			
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Brajapis5Hbt1	-----	MSDRLKAEREAAAAARRSLLTQDAIERTGITEEMIG			
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BrajapUSDA122Hbt1	-----	MSDRLKAEREAAAAARRNLLTQDAIERTGITEEMIA			
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Brajap22Hbt1	-----	MSDRLKAEREAAAAARRSLLTQDAIERTGITEEMIA			
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MeslotUSDA3471Hbt1	-----	MTFNSAPIERVVPVAEEPLDKAGVDRQSID			
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RhietlCNPAF512Hbt	-----	MDNDIQGRPAHVAAIRERAEAMRAMGVDEAFIG			
RhietlBrasil5Hbt	-----	MDNDIQGRPAHVAAIRERAEAMRAMGVDEAFIG			
RhietlCFN42Hbt2	-----	MNNDIQGRPAHVAAIREKAEAMRAMGVDEAFIG			
Rhileg3841Hbt2	-----	MDNDIQGRPAHVAAIRERAEAMREMGVDAAFID			
RhilegWSM1455Hbt2	-----	MDNDIQGRPAHVAAIRERAEAMREMGVDAAFID			
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SinfreHH103Hbt	-----MTETKTTTLYEAIGGDAAVR
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RhietlCIAT894Hbt	-----MTVAIIFHQVHEGSGNGDDIGDGFVTEKVTTLYEAIGGDPTVR
RhietlIE4771Hbt	-----MKVADGKCIWDGFVTEKVTTLYQAIGGDPAVR
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BrajapUSDA122Hbt2	-----MTDSDVAISMFERIGGSATID
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BrajapWSM1743Hbt2	-----MTDSTTAISMFERIGGSATID
BrajapUSDA6-8372Hbt2	-----MTTSDVTTSMFERIGGSTTID
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Brajapis5Hbt2	-----MTNIDTSVSLFDRIGGSATID
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CupnecJMP134Hbt	-----MNTEPESTGQAGTEVTAFDLVGGEARVR
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BurphySTM815Hbt2	-----MTDPIDEAPSQPTAFELVGGEARVR
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MeslotUSDA3471Hbt2	-----MRKDVPTLYEWAGGSDALN
BurphySTM815fHb	-----MLSAEHRAIVKATVPVLLESNGE
CupnecHPC_L_fHb	-----MLSPNTIALVKATVPVLQHQGE
CupnecN1fHb2	-----MLTQQTKDIVKATAPVLAHQGY
Sinmel1021fHb	-----MLTQKTKDIVKATAPVLAHQGY
BacsubfHb	-----MLDNKTIEIKSTVPVLQHQGE
VitSDgb	-----MLDQQTINI IKATVPVLKEHGV
EsccolfHb	-----MLDAQTIATVKATIPLLVETGP
RhilegUPM1137fHb	-----MPKTLSSSETVAAVKATISALDEHGA

CupnecN1fHb1	-----MLSAASRPYIDASVPVLEHGL
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SaccerfHb	-----MLAEKTRSI IKATVPVLEQQGT
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Brajapis5SDgb	-----MTPEQVTLIQQSFSAKVAPISE
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BrajapUSDA124SDgb1	-----MTPEQITLIQQSFSAKVAPISE
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BrajapWSM2793SDgb2	-----MNMPSNPVELSFELAASRCA
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Brajapis5GCS	-----MTLAQTPNDENQDRDGRMRFMRVGTETGELLCEFWVAEPALP
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Rhileg248GCS2	-----MPSDQARGAQAGSLRDRLRFAGLDADQCELVRRNRPALEAHLK
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Rhietl8C3GCS	-----MRDRLRFAGLDADQCELVRRNRPALEAHLK

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RhilegUPM1131Hbt2	RLVETFYGR---VLTHPDLGPVF-----DARLSGRWPEHMAKMKSF
Rhileg248Hbt2	RLVETFYGR---VLTHPDLGPVF-----DARLSGRWPEHMAKMKSF
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AgrtumHbtC2	ALTRRFYELMDTLPEAARCRAIH-----PADLSSSEAKFYDYLTGY
SinfreUSDA257Hbt	ALTRRFYELMGSLPEAARCRAVH-----PPDLSGSEEEKFYEYLTGW
SinfreHH103Hbt	ALTQRFYELMDSLPEAARCRAVH-----PPDLSGSEEEKLYEYLTGW
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Sinmell1021Hbt1	ALTQRFYELMDSLPEAARCRAVH-----PPDLTGSEEEKFYEYLTGW
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RhilegWSM1481Hbt1	ALTHRFYELMDSLPEASNVRAVH-----PPSLVGSEEEKFYEYMTGY
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RhilegTOMHbt1	ALTHRFYELMDSLPEARNVRAVH-----PPSLVGSEEEKFYEYMTGY
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RhietlCIAT894Hbt	ALTHRFYALMDRDLPEASNVRAVH-----PPSLEGSEEEKFYEYMTGY
RhietlIE4771Hbt	ALTHRFYELMDTLPQASNVRAVH-----PPTLRESEEEKFYEYMSGY
AzodoeUFLA1-100Hbt2	RLVEAFYRRMDSEAEAAHIRTMH-----APDLTNTKSVLKRYLTEW
Brajap22Hbt2	RLVESFYRRMDALPEAGIRAMH-----ADDLTSTKQVLKRYLSEW
BrajapUSDA110Hbt	LLVDRFYERMDTLPEAKVIRAMH-----AADLGLIRDVLKRYLTEW
BrajapUSDA122Hbt2	LLVDRFYERMDTLPEAQVIRAMH-----AADLGLIRDVLKRYLTEW
BrajapUSDA124Hbt2	RLVDRFYDRMDTLPEAKIIRAMH-----AADLGLIRDVLKRYLTEW
BrajapWSM1743Hbt2	RLVDRFYDRMDTLPEAQVIRAMH-----ADDLGLIRDVLKRYLTEW
BrajapUSDA6-8372Hbt2	ALVDRFYDRMDTLPEAQMIRAMH-----ADDLGLIRDVLKRYLTEW
BrajapUSDA6-7488Hbt2	ALVDRFYDRMDTLPEAQMIRAMH-----ADDLGLIRDVLKRYLTEW
BrajapUSDA38Hbt2	ALVDRFYDRMDTLPEAQLIRTMH-----ADDLGLIRDVLKRYLTEW
BrajapUSDA123Hbt2	LLVDRFYDRMDTLPEAQMIRVMH-----ADDLGLIRDVLKRYLNEW
BrajapWSM2793Hbt2	ALVDRFYERMDTLPEAQVIRAMH-----ADDLGLIRDVLKRYLTEW
BrajapUSDA135Hbt2	LLVDRFYDRMDRDLPEAKVIRAMH-----ADDLGLIRDVLKRYLTEW
BrajapUSDA4Hbt3	LLVDRFYKRMMDTLPEAQIIRAMH-----ADDLGLIRDVLKRYLTEW
Brajap22Hbt3	ALVDRFYDRMETLPEAKVIRAMH-----ADDLGLIRDVLKRYLTEW
Brajapin8p8Hbt2	ALVDRFYDRMDTLPEAKIIRAMH-----ADDLGLIRDVLKRYLTEW
Brajapis5Hbt2	ALVDRFYDRMDTLPEAKIIRAMH-----ADDLGLIRDVLKRYLTEW
CupnecHPC_L_Hbt	ELVDRFYDLMDLEPQFAGLRALH-----PASMDGSRDKLFWFLCGW
CupnecJMP134Hbt	ELVDRFYDLMDLEPEFAGLRALH-----PASLDGSRDKLFWFLCGW
CupnecN1Hbt2	ELVDRFYDLMDLETQFAGLRALH-----PPSLEGSRDKLFWFLCGW
BurphySTM815Hbt2	ELVDRFYDLMDLEADFARIRKLH-----PPTLEGSRDKLFWFLCGW
BraelkUSDA76Hbt1	DMTRIFYSR--YVPEDPLLGPLF-----AEMSPDHPERVAAWLSEV
Braelk587Hbt2	DMTRIFYSR--YVPEDPLLGPLF-----AEMSPDHPERVAAWLSEV
BraelkUSDA94Hbt1	DMTRIFYSR--YVPEDPLLGPLF-----AEMSPDHPERVAAWLSEV
MescicCMG6Hbt	RLTQTFYD---KVAQDPVIGPVF-----KTMSPDHPAHVAAFIGEY
MescicWSM1271Hbt	RLTQTFYD---KVAQDPVIGPVF-----KTMSPDHPAHVAAFIGEY
MescicWSM4083Hbt	RLTQTFYD---TVAQDPVIGPVF-----KTMSPDHPHVAAFIGEY
MeslotR7AHbt	RLTD-----KTMSPDHPHVAAFIGEY
MeslotMAFF303099Hbt	RLTQTFYD---KVAQDPVVGPF-----KAMSPDHPHVAAFIGEY
MeslotNZP2037Hbt1	RLTQTFYD---KVAQDPVVGPF-----KTMSPDHPAHVAAFIGEY
MeslotR88bHbt	RLTQTFYD---KVAQDPVVGPF-----KAMSPDHPAHVAAFIGEY

RhietlCIAT894GCS	AGLRDLFHRFQSFDPASRNFESE-----RQVERLHDLQSSSHWDVLTD
RhilegVh3GCS2	AGLRDLFHRFQSFDPASRNFESE-----RQIERLHDLQSSSHWDVLTD
Rhileg128C53GCS2	AGLRDLFHRFQSFDPASRNFESE-----RQVDRHLHDLQSSSHWDVLTD
RhilegPs8GCS2	AGLRDLFHRFQSFDPASRNFESE-----RQVERLHDLQSSSHWDVLTD
RhilegGB30GCS2	AGLRDLFHRFQSFDPASRNFESE-----RQVERLHDLQSSSHWDVLTD
RhilegUPM1137GCS2	AGLRDLFHRFQSFDPASRNFESE-----RQVDRHLHDLQSSSHWDVLTD
RhilegWSM1455GCS2	AGLRDLFHRFQSFDPASRNFESE-----RQVERLHDLQSSSHWDVLTD
Rhileg3841GCS2	AGLRDLFHRFQTFPDASRNFESE-----RQVERLHDLQSSSHWDVLTD
RhilegVc2GCS2	AGLRDLFHRFQSFDPASRNFESE-----RQIERLHDLQSSSHWDVLTD
Rhietl8C3GCS	AGLRDIFHRFQSFDPASRNFESE-----RQVERLHDLQSSSHWDVLTD
RhietlCIAT652GCS2	AGLRDIFHRFQSFDPASRNFESE-----RQVERLHDLQSSSHWDVLTD
RhietlCFN42GCS2	AGLRDLFHRFQSYPDAAARNFESD-----RQVDRLQDLQSSSHWDVLTD
SinfreGR64GCS	LALRDLFQRLQANPDVVRHFDSD-----RQLDRHLHDLQSSSHWNVLTD
SinfreHH103GCS	LALRDLFQRLQANPDVVRHFDSD-----RQLDRHLHDLQSSSHWNVLTD
SinfreUSDA257GCS	LALRDLFHRQLQNPDAIRHFDND-----RQLDRHLHDLQSSSHWNVLTD
Sinmel1021GCS	LALRALSHRLQASPDAAARHFDSD-----RQIDRLHDLQSSSHWNVLTD
RhietlCIAT652GCS1	GALDKFYAKIARTPAVSSFFTDK-----SQVAHAKKRQDDHWANLAGG
RhietlCNPAF512GCS	GALDKFYAKIARTPAVSSFFTDK-----SQVAHAKKRQDDHWANLAGG
RhietlGR56GCS	GALDKFYAKIARTPAVSSFFTDK-----NHVGHAKKRQDDHWANLAGG
Rhileg128C53GCS1	GALDKFYAKIARTPAVSGFFADK-----SHVDHAKKRQDDHWANLAGG
RhilegUPM1137GCS1	GALDKFYAKIARTPAVSGFFADK-----SHVDHAKKRQDDHWANLAGG
RhilegGB30GCS1	GALDKFYAKIARTPAVAGFFADK-----NHVGHAKKRQDDHWANLAGG
RhilegPs8GCS1	GALDKFYAKIARTPAVAGFFADK-----NHVGHAKKRQDDHWANLAGG
RhilegVc2GCS1	GALDKFYAKIARTPAVAGFFADK-----NHVGHAKKRQDDHWANLAGG
RhilegVh3GCS1	GALDKFYAKIARTPAVAGFFADK-----NHVGHAKKRQDDHWANLAGG
RhilegVF39GCS1	GALDKFYAKIARTPAVAGFFADK-----NHVGHAKKRQDDHWANLAGG
Rhileg3841GCS1	GALDKFYAKIARTPAVAGFFADK-----NHVGHAKKRQDDHWANLAGG
RhilegWSM1455GCS1	GALDKFYAKIARTPAVAGFFADK-----NHVGHAKKRQDDHWANLAGG
RhilegWSM1481GCS1	GALDKFYAKIARTPAVAGFFADK-----NHVGHAKKRQDDHWANLAGG
Rhileg248GCS1	GALDKFYAKIARTPAVAGFFADK-----NHVGHAKKRQDDHWANLAGG
RhilegTOMGCS1	GALDKFYAKIARTPAVAGFFADK-----NHVGHAKKRQDDHWANLAGG
RhietlCFN42GCS1	AALDKFYAKVARTPAVSGFFSDK-----NHVAHAKKRQDDHWGKLASG
AgrtumGCS	ASLDRFYTKVRAPETAKFFSSE-----AHIIHAKSMQLKHWSRIASG
MyctubHbtC1	VVVEDDFYVRVLADQLSAFFSG-----TNMSRIKKGQVEFFAAA
CupnecN1Hbt1	AVVDDDFVGNVAADSRINAKFAT-----ANIPRLKTRLVEQICAG
BrajaUSDA4Hbt2	AVVDHFSDAVVKNNAVVGQKSKNPQLREWHTKNLKRPLGKFMRTLWVCDV
BrajaUSDA123Hbt3	AVVDHFSDAVVKNNAVVGQKSKNPQLREWHTKNLKRPLGKFMRTLWVCDV
MyctubHbtC2	AIVSRFYAQVAEDEVLRVYPED-----DLAGAEERLRFMFLEQY
BurphySTM815Hbt1	NIRELVYAFYDRVRADALIGPVF-----EKKLVGRWDEHLPKMCFV
MycaviHbtC3	ALLRRFYGRALDDEVLAEPPARLR-----ATGLDDHVPTMCDP
BraelkWSM1741Hbt1	TLVDDIVEAHMSNPTIKARFLPYR-----EDPDRLAKVKQHLRNLFLGAG
BacsubGCS	NIVDAFYKNLDHESSLMDIINDHS-----SVDRLKQTLKRHIQEMFAG

2/2-folding helix	-B-----] [-C-] [-----E-----
3/3-folding helix	-----B-----] [---C---] [-----E-----

	310	320	330	340	350
BraelkUSDA3254Hbt	WSSVALMTGRYH---GTPMVKHMPLP-IDAAHFDRWLELFEATAAELCP-				
BraelkUSDA3259Hbt	WSSVALMTGRYH---GTPMVKHMPLP-IDAAHFDRWLELFEATAAELCP-				
BraelkUSDA176Hbt2	WSSVALMTGRYH---GTPMVKHMPLP-IDAAHFDRWLELFEATAAELCP-				
Braelk587Hbt1	WSSVALMTGRYH---GTPMVKHMPLP-IDAAHFDRWLELFEATAAELCP-				
BraelkUSDA94Hbt2	WSSVALMTGRYH---GTPMVKHMPLP-IDAAHFDRWLELFEATAAELCP-				
BraelkWSM2783Hbt	WSSVALMTGRYH---GTPMAKHLPLP-VDAGHFDRWLELFEQTAQELCP-				
BraelkWSM1741Hbt2	WSSVALMTGRYH---GTPMAKHLPLS-VDAAHFDRWLALFEATAREICP-				
BrajaUSDA4Hbt1	WSSVVLMSGRYH---GSPMRAHLPLS-LVGDFHFRWLDFEQTAREVCP-				
BrajaWSM2793Hbt1	WSSVVLMSGRYH---GSPMRAHLPLS-LVGDFHFRWLDFEQTAREVCP-				
BrajaUSDA123Hbt1	WSSVVLMSGRYH---GSPMRAHVPLS-LVGDFHFRWLDFEQTAREVCP-				
BrajaUSDA6-8372Hbt1	WSSVVLMSGRYH---GSPMRAHVPLS-LVGDFHFRWLDFEQTAREVCP-				
BrajaUSDA6-7488Hbt1	WSSVVLMSGRYH---GSPMRAHVPLS-LVGDFHFRWLDFEQTAREVCP-				
BrajaUSDA38Hbt1	WSSVVLMSGRYH---GSPMRAHVPLS-LIGNHFDRWLDFEQTAREVCP-				
BrajaPin8p8Hbt1	WSSVVLMSGRYH---GSPMRAHLPLS-LAGDHFDRWLDFEQTAREVCP-				
BrajaPin5Hbt1	WSSVVLMSGRYH---GSPMRAHLPLS-LAGDHFDRWLDFEQTAREVCP-				
BrajaUSDA135Hbt1	WSSVVLMSGRYH---GSPMRAHLPLN-LVGDFHFRWLDFEQTAREVCP-				
BrajaUSDA122Hbt1	WSSVVLMSGRYH---GSPMRAHLPLG-LVGDFHFRWLDFEQTAREVCP-				
BrajaUSDA124Hbt1	WSSVVLMSGRYH---GSPMRAHLPLS-LVGGHFDRWLDFEQTAREVCP-				
BrajaWSM1743Hbt1	WSSVVLMSGRYH---GSPMRAHLPLS-LVGGHFDRWLDFEQTAREVCP-				
Braja22Hbt1	WSSVVLMSGRYH---GSPMRAHLPLG-LAGDHFDRWLDFEQTAREVCP-				

Braelk587Hbt2	FGGPRFYTERYGG--YRRMVSQHTIGKEIRPEQRALWAAVMVQSADDAGLP
BraelkUSDA94Hbt1	FGGPRFYTERYGG--YRRMVSQHTIGKEIRPEQRALWATYMVQSADDAGLP
MescicCMG6Hbt	FGGPKTYSEQFGG--HREMVMHHLGKHLSEEQRRRWISLLADAADAVGLP
MescicWSM1271Hbt	FGGPKTYSEQFGG--HREMVMHHLGKHLTEEQRRRWISLLADAADAVGLP
MescicWSM4083Hbt	FGGPKTYGEQFGG--HREMVMHHLGKHLSEEQRRRWISLLADAADAVGLP
MeslotR7AHbt	LGGPKTYSEKFGG--HREMVMHHLGKHLTEEQRRRWINLLADAADAVGLP
MeslotMAFF303099Hbt	FGGPKTYSEKFGG--HREMVMHHLGKHLTEEQRRRWINLLADAADAVGLP
MeslotNZP2037Hbt1	FGGPKIYSEKFGG--HREMVMHHLGKHLTEEQRRRWINLLADAADAVGLP
MeslotR88bHbt	FGGPKTYSEKFGG--HREMVMHHLGKHLTEEQRRRWINLLADAADTVGLP
MeslotCJ3symHbt	FGGPKTYSEKFGG--HREMVMHHLGKHLTEEQRRRWINLLADAADTVGLP
MeslotUSDA3471Hbt2	FGGPKTYSEKFGG--HREMVMHHLGKHLTEAQRRRWINLLADAADAVGLP
BurphySTM815fHb	EQLEQLGGLVS-----QIVNKHVALNILPEHYPIVGTCLLRAIREVLGP
CupnecHPC_L_fHb	DELEALAGALP-----RIVQKHAALGVQPEHYPIVGCLLQAIRDVLG-
CupnecN1fHb2	EDPSSLLAVLK-----NIANKHASLGVRPQYPIVGEHLLAAIKEVLG-
Sinmel1021fHb	ENPESLSAVLK-----DIAHKHASIGVRPEQYPIVGEHLLASIKEVLG-
BacsubfHb	DQLGTIIPVVK-----QIGHKHSRIGIKAEHYPIVGKYLIIAIDVLG-
VitSDgb	ENLPAILPAVK-----KIAVKHCQAGVAAAHYPIVGQELLGAIKEVLG-
EsccolfHb	ENLPALLPAVE-----KIAQKHTSFQIKPEQYINIVGEHLLATLDEMFS-
RhilegUPM1137fHb	ESLAALGPAVE-----RIAQKHIGYAILPDHYPHVATALLGAIEEVLG-
CupnecN1fHb1	DNAALGPVLE-----RIVHKHAAVGLTPAHYPIVGRHLLGAISAVLG-
CupnecJMP134fHb	DNANALAPVVE-----RIVHKHAAVGLKPAHYPIVGRHLLGAISAVLG-
SaccerfHb	DDLSVLMDHVK-----QIGHKHALQIKPEHYPIVGEYLLKAIKEVLG-
BrajapUSDA110SDgb1	SNLDSILPAAS-----ALAKRHVAYGAKAEHYPVVGATLLWTLEKGLG-
BrajapUSDA122SDgb1	SNLDSILPAAS-----ALAKRHVAYGAKAEHYPVVGATLLWTLEKGLG-
Brajapin8p8SDgb	SNLESILPAAS-----ALAKRHVDYGAKAEHYPVVGATLLWTLEKGLG-
Brajapis5SDgb	SNLESILPAAS-----ALAKRHVDYGAKAEHYPVVGATLLWTLEKGLG-
BrajapUSDA135SDgb1	SNLESILPAAS-----ALAKRHVAYGAKAEHYPVVGATLLWTLEKGLG-
BrajapWSM1743SDgb	SNLETILPAAS-----ALAKRHVAYGATAEHYPVVGATLLWTLETGLG-
BrajapUSDA124SDgb1	SNLETILPAAS-----ALAKRHVAYGAKAEHYPVVGATLLWTLEKGLG-
Brajap22SDgb	SNLDSILPAAS-----ALAKRHVAYGAPEHYPVVGATLLWTLEKGLG-
BrajapUSDA6-7488SDgb1	SKLETILPAAS-----ALAKRHVAYGAKAEHYPVVGATLLWTLEKGLG-
BrajapUSDA6-8372SDgb2	SKLETILPAAS-----ALAKRHVAYGAKAEHYPVVGATLLWTLEKGLG-
BrajapUSDA123SDgb1	SKLETILPAAS-----ALAKRHVAYGAKAEHYPVVGATLLWTLEKGLG-
BrajapUSDA38SDgb1	SKLETILPAAS-----TLAKRHVAYGAKAEHYPVVGATLLWTLEKGIG-
BrajapUSDA4SDgb1	SNLETVLPAAAS-----ALAKRHVAYGATAEHYPVVGATLLWTLEKGLG-
BrajapWSM2793SDgb1	SNLETILPAAS-----ALAKRHVAYGATAEHYPVVGASLLWTLEKGLG-
BraelkUSDA3254SDgb4	SNLDTILPAAS-----ALAKRHVGYGAKAEHYPVVGALLWTLEKGLG-
BraelkUSDA3259SDgb1	SNLDTILPAAS-----ALAKRHVGYGAKAEHYPVVGALLWTLEKGLG-
BraelkUSDA94SDgb1	SNLDTILPAAS-----ALAKRHVGYGAKPEHYPVVGALLWTLEKGLG-
Braelk587SDgb1	SNLDTILPAAS-----ALAKRHVNYGARPEHYPVVGALLWTLEKGLG-
BraelkUSDA76SDgb1	SNLDTILPAAS-----ALAKRHVNYGARPEHYPVVGALLWTLEKGLG-
BraelkWSM2783SDgb1	SNLQSVLPAAAS-----ALAKRHVSYGTKAEHYPVVGALLWTLQKGLG-
AzodoeUFLA1-100SDgb	TKLEVIVPAAQ-----TLARRHVAYGVRPEHYAPVGAALLWTLEQGLG-
BraelkWSM1741SDgb1	DDLPSLIPTLE-----ILGRNHTRYGVEDRHYDTVGALLWTLEQGLK-
BraelkWSM2783SDgb2	PAQDQLSPAIIH-----DLALRHVEYGVKLEDYDAMREALLWTLEQALG-
BraelkUSDA3254SDgb2	DERPIFQSLIT-----LSGHKHARLGVQLSHYVAMGEALMWSLERKLG-
BraelkUSDA3259SDgb2	DERPIFQSLIT-----LSGHKHARLGVQLSHYVAMGEALMWSLERKLG-
BraelkUSDA3254SDgb3	DERPMFQSLIA-----ISGHKHAILGVQPSHFVAMGEALMWSFERKFG-
BraelkUSDA3259SDgb4	DERPMFQSLIA-----ISGHKHAILGVQPSHFVAMGEALMWSFERKFG-
Braelk587SDgb2	DERPMFQSLIT-----LSGHKHARLGVQPSHFVAMGEALMWSFERKFG-
BraelkUSDA76SDgb2	DERPMFQSLIT-----LSGHKHARLGVQPSHFVAMGEALMWSFERKFG-
BraelkUSDA94SDgb2	DERPMFQSLIT-----LSGHKHARLGVQPSHFVAMGEALMWSFERKFG-
BrajapUSDA135SDgb2	DETTGLLSGAD-----ILGRNHLYRGVRPEHYPVVAEALIWSFARGLG-
BraelkUSDA3254SDgb1	GERRGHFRLIE-----SEVFSHDAYGTPRELFVFAFFAVIADSLREILG-
BraelkUSDA3259SDgb3	GERRGHFRLIE-----SEVFSHDAYGTPRELFVFAFFAVIADSLREILG-
BraelkUSDA94SDgb3	GERRGHFRLIE-----SEVFSHDAYGTPRELFVFAFFAVIADSLREILG-
BraelkUSDA76SDgb3	GERRGHFRLIE-----SEVFSHDAYGTPRELFVFAFFAVIADSLREILG-
Braelk587SDgb3	GERRGHFRLIE-----SEVFSHDAYGTPRELFVFAFFAVIADSLREILG-
BraelkWSM2783SDgb3	GERRGNFRMIE-----CEVASHDAYGTPRDLFVFAFFAVIAGTLQEIILG-
BraelkWSM1741SDgb2	GQRTGHFRLIA-----SEVSSHDSYGTPRELFVFAFFGIIAQTLREIVG-
BrajapUSDA110SDgb2	GTRSGHFRLIA-----CEVSSHDAYGTPRELFIAFFAVIRDTLRDLG-
BrajapUSDA122SDgb2	GTRSGHFRLIA-----CEIVSSHDAYGTPRELFIAFFAIIRDTLRDLG-
BrajapUSDA4SDgb2	GMRHGHFRLIA-----CELASHDAYGTSRQLFTAFTTIIIRDTLRDLG-
BrajapWSM2793SDgb2	GMRHGHFRLIA-----CEVASHDAYGTSPQLFTAFTTIIIRDTLRDLG-
BrajapUSDA6-7488SDgb2	GERRGHFRLIA-----CEVASHDGYGTPRELFIAFFVIVIRDALRDLG-
BrajapUSDA6-8372SDgb1	GERRGHFRLIA-----CEVASHDGYGTPRELFIAFFVIVIRDALRDLG-
BrajapUSDA38SDgb2	GERRGHFRLIA-----CEFASHDGYGTPRELFIAFFAVIRDTLRDLG-
BrajapUSDA123SDgb2	GERRGHFRLIA-----CEVASHDGYGTPRELFIAFFAVIRNALRDLG-

BrajapUSDA6-7488Hbt1	--PPAAALFIDKARRIADSFEMASATIAGRIAAPRHVLR-----
BrajapUSDA38Hbt1	--PPAAALFIDKARRIADSFEMASATIAGRIAAPRHVLR-----
Brajapin8p8Hbt1	--PTAAALFIDKARRIADSFEMASATVAGRIASPRHVLR-----
Brajapis5Hbt1	--PTAAALFIDKARRIADSFEMASATVAGRIASPRHVLR-----
BrajapUSDA135Hbt1	--PAAAALFIDKARRIADSFEMASATVAGRIASPRHVLR-----
BrajapUSDA122Hbt1	--PAAAALFIDKARRIADSFEMASATVAGRIASPRHVLR-----
BrajapUSDA124Hbt1	--PPAAALFIDKARRIADSFEMASATVAGRIASPRHVLR-----
BrajapWSM1743Hbt1	--PAAAALFIDKARRIADSFEMASATVAGRIASPRHVLR-----
Brajap22Hbt1	--PPAASLFIDKARRIADSFEMASATVAGSIAAPRHVLRP-----
AzodoeUFLA1-100Hbt1	--PEVAAQFDARAERIADSLKAGLFFNPSPRPAR-----
MeslotNZP2037Hbt2	--PEIAAVFVDRAERIATSLKLMFFRLGDRA-----
MeslotUSDA3471Hbt1	--PDTAAVFVARAERIAKSLRLAMFFRLGPPDVGQCHPGDGAL-----
RhietlCIAT652Hbt2	--PEAKAWFMATAERIAKSLTSLFYNPALDDPAKKAG-----
RhietlCNPAF512Hbt	--PEAKAWFMATAERIAKSLTSLFYNPALDDPAKKAG-----
RhietlBrasil5Hbt	--PEAKAWFMAPAERIAKSLTSLFYNPALDGPAAKKAG-----
RhietlCFN42Hbt2	--PEAKVWFMATAERIAKSLTSLFYNPALDDPAKKVG-----
Rhileg3841Hbt2	--PEAKAWFMATAERIAKSLILSLFYNPALDDPARKPA-----
RhilegWSM1455Hbt2	--PEAKAWFMATAERIAKSLILSLFYNPALDDPARKPA-----
RhilegVF39Hbt1	--PEAKAWFMATAERIAKSLILSLFYNPALDDPARKPA-----
RhilegWSM1481Hbt2	--PEAKAWFMATAERIAKSLILSLFYNPALDDPARKPA-----
RhilegUPM1131Hbt2	--PEAKAWFMATAERIAKSLTSLFYNPALDDPARKLA-----
Rhileg248Hbt2	--PEAKAWFMATAERIAKSLTSLFYNPALDDPARKLA-----
RhilegTOMHbt2	--PEAKAWFMATAERIAKSLTSLFYNPALDDPARKLA-----
Rhileg128C53Hbt1	--PEAKAWFMATAERIAKSLVLSLFYNPALDDPKRKP-----
RhilegPs8Hbt2	--PEAKAWFMATAERIAKSLVLSLFYNPALDDPTRKPA-----
RhilegGB30Hbt2	--PEAKAWFMATAERIAKSLTSLFYNPALDDPKRKP-----
RhilegUPM1137Hbt2	--PEAKAWFMATAERIAKSLVLSLFYNPALDDPKRKP-----
RhilegVc2Hbt2	--PEAKAWFMATAERIAKSLVLSLFYNPALDDPTRKPA-----
RhilegVh3Hbt1	--PEAKAWFMATAERIAKSLVLSLFYNPALDDPARKPA-----
Sinmel1021Hbt2	--EEAKAWFMATAERIAKSLTSLFYNPALDDPALKRS-----
RhilupHPC_L_Hbt1	-----AERTTGLWKPLNASPEA-----
RhilupHPC_L_Hbt2	-NPKLREIIWPPIERLAFHMQNREADSQ-----
AgriumHbtC2	-NPKLREIIWTPVERLAFHMQNQEADSQ-----
SinfreUSDA257Hbt	-HPQLRQVILEPITRLAHHMQNKE-----
SinfreHH103Hbt	-HPQLRQVILEPITRLAHHMQNKE-----
SinfreGR64Hbt	-HPQLREIILEPITRLAHHMQNKE-----
Sinmel1021Hbt1	-HPKLREIILEPITRLAHHMQNKE-----
RhilegUPM1137Hbt1	-SQALRDLIWAPVERLAYHMQNKAPDHKEQP-----
Rhileg128C53Hbt2	-SQALRDLIWAPVERLAYHMQNRPADHKEQP-----
RhilegVc2Hbt1	-SQALRDLIWPPVERLAYHMQNKASDNKEQP-----
RhilegVh3Hbt2	-SQALRDLIWPPVERLAYHMQNKASDNKEQP-----
RhilegGB30Hbt1	-SQALRDLIWPPVERLAYHMQNKASDNKEQP-----
RhilegPs8Hbt1	-SQALRDLIWAPVERLAYHMQNKE-----
Rhileg3841Hbt1	-SQELRDLIWAPVERLAYHMQNKAPDDKEQP-----
Rhileg248Hbt1	-SQALRDLIWAPVERLAYHMQNKAPDNKEQP-----
RhilegWSM1455Hbt1	-SQALRDLIWAPVERLAYHMQNKATDNKEQS-----
RhilegWSM1481Hbt1	-SQALRDLIWAPVERLAYHMQNKATDNKEQS-----
RhilegVF39Hbt2	-SQALRDLIWAPVERLAYHMQNKATDNKERS-----
RhilegTOMHbt1	-SQALRDLIWAPVERLAYHMQNKATDNKEQS-----
RhilegUPM1131Hbt1	-SQALRDLIWAPVERLAYHMQNKAPDNREQP-----
RhietlKIM5Hbt	-TQALRDLIWAPVERLAYHMQNKEQP-----
RhietlCFN42Hbt1	-SQALRDLIWAPVERLAYHMQNKAPDEEQP-----
Rhietl8C3Hbt	-SQALRDLIWAPVERLAYHMQNKAPDTEEQP-----
RhietlCIAT652Hbt1	-SQALRDLIWAPVERLAYHMQNKAPDTEEQP-----
RhietlCIAT894Hbt	-----
RhietlIE4771Hbt	-ASTARSHLG-----
AzodoeUFLA1-100Hbt2	-DAEARQSIDDAMTKLADWMRNTAGNPHDTGHGHRP-----
Brajap22Hbt2	-DEAARGELDAALTKLADWMRNQAGNPHDARGRHG-----
BrajapUSDA110Hbt	-DAAARQDLKALSGLADWMRNR-----
BrajapUSDA122Hbt2	-DAAARQDLKALSGLADWMRNR-----
BrajapUSDA124Hbt2	-DSAARKDLDSAISGLADWMRNRT-----
BrajapWSM1743Hbt2	-DSAARRDLDNALSGLADWMRNRP-----
BrajapUSDA6-8372Hbt2	-DSAARQDLDRASGLADWMRNRS-----
BrajapUSDA6-7488Hbt2	-DSAARQDLDRASGLADWMRNRS-----
BrajapUSDA38Hbt2	-DAAARQDLDRASGLADWMRNRS-----
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RhietlCFN42Hbt2	-----
Rhileg3841Hbt2	-----
RhilegWSM1455Hbt2	-----
RhilegVF39Hbt1	-----
RhilegWSM1481Hbt2	-----
RhilegUPM1131Hbt2	-----
Rhileg248Hbt2	-----
RhilegTOMHbt2	-----
Rhileg128C53Hbt1	-----
RhilegPs8Hbt2	-----
RhilegGB30Hbt2	-----
RhilegUPM1137Hbt2	-----
RhilegVc2Hbt2	-----
RhilegVh3Hbt1	-----
Sinmel1021Hbt2	-----
RhilupHPC_L_Hbt1	-----
RhilupHPC_L_Hbt2	-----
AgrtumHbtC2	-----
SinfreUSDA257Hbt	-----
SinfreHH103Hbt	-----
SinfreGR64Hbt	-----
Sinmel1021Hbt1	-----

RhilegUPM1137Hbt1	-----
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RhilegVh3Hbt2	-----
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Rhileg3841Hbt1	-----
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RhilegWSM1481Hbt1	-----
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RhilegUPM1131Hbt1	-----
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RhietlCFN42Hbt1	-----
Rhietl8C3Hbt	-----
RhietlCIAT652Hbt1	-----
RhietlCIAT894Hbt	-----
RhietlIE4771Hbt	-----
AzodoeUFLA1-100Hbt2	-----
Brajap22Hbt2	-----
BrajapUSDA110Hbt	-----
BrajapUSDA122Hbt2	-----
BrajapUSDA124Hbt2	-----
BrajapWSM1743Hbt2	-----
BrajapUSDA6-8372Hbt2	-----
BrajapUSDA6-7488Hbt2	-----
BrajapUSDA38Hbt2	-----
BrajapUSDA123Hbt2	-----
BrajapWSM2793Hbt2	-----
BrajapUSDA135Hbt2	-----
BrajapUSDA4Hbt3	-----
Brajap22Hbt3	-----
Brajapin8p8Hbt2	-----
Brajapis5Hbt2	-----
CupnecHPC_L_Hbt	-----
CupnecJMP134Hbt	-----
CupnecN1Hbt2	-----
BurphySTM815Hbt2	-----
BraelkUSDA76Hbt1	-----
Braelk587Hbt2	-----
BraelkUSDA94Hbt1	-----
MescicCMG6Hbt	-----
MescicWSM1271Hbt	-----
MescicWSM4083Hbt	-----
MeslotR7AHbt	-----
MeslotMAFF303099Hbt	-----
MeslotNZP2037Hbt1	-----
MeslotR88bHbt	-----
MeslotCJ3symHbt	-----
MeslotUSDA3471Hbt2	-----
BurphySTM815fHb	HSD--KPLVLISGGVGITPTLAMLNAAALQT--SRPIHFHATRHHGGVHAF
CupnecHPC_L_fHb	PAADERPLVLVTGGVGITPAISMLEAAAAPA--GRPIQFIHAARHGGVHAF
CupnecN1fHb2	VNAR-TPIVLISGGVGLTPMISMLKNALQE-PPRKVVVFVHGARN SAVHAM
Sinmel1021fHb	VSAT-TPIVLISGGVGLTPMVSMKKALQT-PPRKVVVFVHGARN SAVHAM
BacsubfHb	ASSQ-KDLVLISAGVGITPMISMLKTSVSK-QPKRQILFIHAAKNSEYHA
VitSDgb	-----
EsccolfHb	VADD-TPVTLISAGVGQTPMLAMLDTLAKAGHTAQVNWFFHAAENGDVHAF
RhilegUPM1137fHb	DPPQ-RPVVLLSGGVGLTPMVSI LEALAEKHAGHPTFYIHGTASRATHAF
CupnecN1fHb1	LDGR-RPLVLLSAGIGITPMLS VLR TLAAQGSQRQVLF AHAARDGRHHAH
CupnecJMP134fHb	LDNH-RPIVLLSAGIGITPMLS VLR TLAAQGSRR EILFAHAARDGRHHAH
SaccerfHb	IHQNEVPLVLLSSGVGVTPLLAMLEE QVKCNP NRPIYWIQSSYDEKTQAF
BrajapUSDA110SDgb1	-----
BrajapUSDA122SDgb1	-----
Brajapin8p8SDgb	-----
Brajapis5SDgb	-----
BrajapUSDA135SDgb1	-----
BrajapWSM1743SDgb	-----

BrajapUSDA124SDgb1	-----
Brajap22SDgb	-----
BrajapUSDA6-7488SDgb1	-----
BrajapUSDA6-8372SDgb2	-----
BrajapUSDA123SDgb1	-----
BrajapUSDA38SDgb1	-----
BrajapUSDA4SDgb1	-----
BrajapWSM2793SDgb1	-----
BraelkUSDA3254SDgb4	-----
BraelkUSDA3259SDgb1	-----
BraelkUSDA94SDgb1	-----
Braelk587SDgb1	-----
BraelkUSDA76SDgb1	-----
BraelkWSM2783SDgb1	-----
AzodoeUFLA1-100SDgb	-----
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BrajapUSDA6-7488SDgb2	-----
BrajapUSDA6-8372SDgb1	-----
BrajapUSDA38SDgb2	-----
BrajapUSDA123SDgb2	-----
BrajapUSDA124SDgb2	-----
Brajapin8p8GCS	AAQRIGDVVELINTIAAQTNLLALNATIEAARAGEAGRGFAVVASEVKAL
Brajapis5GCS	AAQRIGDVVELINTIAAQTNLLALNATIEAARAGEAGRGFAVVASEVKAL
BraelkWSM2783GCS	AAQQIGTIVGLITDIAGQTNLLALNATIEAARAGDAGRGFAVVAQEVKSL
RhilegWSM1481GCS2	SAEKIGQIIIGAIDEIAFQTNLLALNAGIEAARAGDSGRGFAVVAQEVRL
Rhileg248GCS2	SAEKIGQIIIGAIDEIAFQTNLLALNAGIEAARAGDSGRGFAVVAQEVRL
RhilegTOMGCS2	SAEKIGQIIIGAIDEIAFQTNLLALNAGIEAARAGDSGRGFAVVAQEVRL
RhilegUPM1131GCS	SAERIGQIIIGAIDEIAFQTNLLALNAGIEAARAGDSGRGFAVVAQEVRL
RhilegVF39GCS2	SAEKIGQIIIGAIDEIAFQTNLLALNAGIEAARAGDSGRGFAVVAQEVRL
RhietlCIAT894GCS	SAEKIGQIIIGAIDEIAFQTNLLALNAGIEAARAGDSGRGFAVVAQEVRL
RhilegVh3GCS2	SAEKIGQIIIGAIDEIAFQTNLLALNAGIEAARAGDSGRGFAVVAQEVRL
Rhileg128C53GCS2	SAEKIGQIIIGAIDEIAFQTNLLALNAGIEAARAGDSGRGFAVVAQEVRL
RhilegPs8GCS2	SAEKIGQIIIGAIDEIAFQTNLLALNAGIEAARAGDSGRGFAVVAQEVRL
RhilegGB30GCS2	SAEKIGQIIIGAIDEIAFQTNLLALNAGIEAARAGDSGRGFAVVAQEVRL
RhilegUPM1137GCS2	SAEKIGQIIIGAIDEIAFQTNLLALNAGIEAARAGDSGRGFAVVAQEVRL
RhilegWSM1455GCS2	SAEKIGQIIIGAIDEIAFQTNLLALNAGIEAARAGDSGRGFAVVAQEVRL
Rhileg3841GCS2	SAEKIGQIIIGAIDEIAFQTNLLALNAGIEAARAGDSGRGFAVVAQEVRL
RhilegVc2GCS2	SAEKIGQIIIGAIDEIAFQTNLLALNAGIEAARAGDSGRGFAVVAQEVRL
Rhietl8C3GCS	SAEKIGQIHRGRSTRSPFQTQSSGAECRHRSGA-----
RhietlCIAT652GCS2	SAEKIGQIIIGTIDEIAFQTNLLALNAGIEAARAGDSGRGFAVVAQEVRL
RhietlCFN42GCS2	SAEKIGQIIIGAIDEIAFQTNLLALNAGIEAARAGDSGRGFAVVAQEVRL
SinfreGR64GCS	SAEKIGQIIIGVIDEIAFQTNLLALNAGIEAARAGESGRGFAVVAQEVRL
SinfreHH103GCS	SAEKIGQIIIGVIDEIAFQTNLLALNAGIEAARAGESGRGFAVVAQEVRL
SinfreUSDA257GCS	SAEKIGQIIIGVIDEIAFQTNLLALNAGIEAARAGDSGRGFAVVAQEVRL
Sinmel1021GCS	SAEKIGQIIIGVIDEIAFQTNLLALNAGIEAARAGESGRGFAVVAQEVRL
RhietlCIAT652GCS1	SSTEISKIIGVIDEIAFQTNLLALNAGVEAARAGDAGKGFAVVAQEVRL
RhietlCNPAF512GCS	SSTEISKIIGVIDEIAFQTNLLALNAGVEAARAGDAGKGFAVVAQEVRL
RhietlGR56GCS	SSTEISKIIGVIDEIAFQTNLLALNAGVEAARAGDAGKGFAVVAQEVRL

Rhileg128C53GCS1	SSTGISKIIGVIDEIAFQTNLLALNAGVEAARAGDAGKGF	610	620	630	640	650
RhilegUPM1137GCS1	SSTGISKIIGVIDEIAFQTNLLALNAGVEAARAGDAGKGF					
RhilegGB30GCS1	SSTGISKIIGVIDEIAFQTNLLALNAGVEAARAGDAGKGF	-----	-----	-----	-----	-----
RhilegPs8GCS1	SSTGISKIIGVIDEIAFQTNLLALNAGVEAARAGDAGKGF	-----	-----	-----	-----	-----
RhilegVc2GCS1	SSTGISKIIGVIDEIAFQTNLLALNAGVEAARAGDAGKGF	-----	-----	-----	-----	-----
RhilegVh3GCS1	SSTGISKIIGVIDEIAFQTNLLALNAGVEAARAGDAGKGF	-----	-----	-----	-----	-----
RhilegVF39GCS1	SSTGISKIIGVIDEIAFQTNLLALNAGVEAARAGDAGKGF	-----	-----	-----	-----	-----
Rhileg3841GCS1	SSTGISKIIGVIDEIAFQTNLLALNAGVEAARAGDAGKGF	-----	-----	-----	-----	-----
RhilegWSM1455GCS1	SSTGISKIIGVIDEIAFQTNLLALNAGVEAARAGDAGKGF	-----	-----	-----	-----	-----
RhilegWSM1481GCS1	SSTGISKIIGVIDEIAFQTNLLALNAGVEAARAGDAGKGF	-----	-----	-----	-----	-----
Rhileg248GCS1	SSTGISKIIGVIDEIAFQTNLLALNAGVEAARAGDAGKGF	-----	-----	-----	-----	-----
RhilegTOMGCS1	SSTGISKIIGVIDEIAFQTNLLALNAGVEAARAGDAGKGF	-----	-----	-----	-----	-----
RhietlCFN42GCS1	SSTEISKIIGVIDEIAFQTNLLALNAGVEAARAGDAGKGF	-----	-----	-----	-----	-----
AgrtumGCS	SSQKITQIISVIDEISFQTNLLALNAGVEAARAGEAGKGF	-----	-----	-----	-----	-----
MyctubHbtC1	-----	-----	-----	-----	-----	-----
CupnecN1Hbt1	-----	-----	-----	-----	-----	-----
BrajapUSDA4Hbt2	-----	-----	-----	-----	-----	-----
BrajapWSM2793Hbt3	-----	-----	-----	-----	-----	-----
MyctubHbtC2	-----	-----	-----	-----	-----	-----
BurphySTM815Hbt1	-----	-----	-----	-----	-----	-----
MycaviHbtC3	-----	-----	-----	-----	-----	-----
BraelkWSM1741Hbt1	-----	-----	-----	-----	-----	-----
BacsubGCS	IAQQIEKIFGIVTGIAEQTNLLSLNASIESARAGEHGKGF	-----	-----	-----	-----	-----
BraelkUSDA3254Hbt	-----					
BraelkUSDA3259Hbt	-----					
BraelkUSDA76Hbt2	-----					
Braelk587Hbt1	-----					
BraelkUSDA94Hbt2	-----					
BraelkWSM2783Hbt	-----					
BraelkWSM1741Hbt2	-----					
BrajapUSDA4Hbt1	-----					
BrajapWSM2793Hbt1	-----					
BrajapUSDA123Hbt1	-----					
BrajapUSDA6-8372Hbt1	-----					
BrajapUSDA6-7488Hbt1	-----					
BrajapUSDA38Hbt1	-----					
Brajapin8p8Hbt1	-----					
Brajapis5Hbt1	-----					
BrajapUSDA135Hbt1	-----					
BrajapUSDA122Hbt1	-----					
BrajapUSDA124Hbt1	-----					
BrajapWSM1743Hbt1	-----					
Brajap22Hbt1	-----					
AzodoeUFLA1-100Hbt1	-----					
MeslotNZP2037Hbt2	-----					
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RhietlCIAT652Hbt2	-----					
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RhietlCFN42Hbt2	-----					
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RhilegVF39Hbt1	-----					
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RhilegUPM1131Hbt2	-----					
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RhilegUPM1137Hbt2	-----					
RhilegVc2Hbt2	-----					
RhilegVh3Hbt1	-----					
Sinmel1021Hbt2	-----					
RhilupHPC_L_Hbt1	-----					

RhilupHPC_L_Hbt2	-----
AgrtumHbtC2	-----
SinfreUSDA257Hbt	-----
SinfreHH103Hbt	-----
SinfreGR64Hbt	-----
Sinmel1021Hbt1	-----
RhilegUPM1137Hbt1	-----
Rhileg128C53Hbt2	-----
RhilegVc2Hbt1	-----
RhilegVh3Hbt2	-----
RhilegGB30Hbt1	-----
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Rhileg3841Hbt1	-----
Rhileg248Hbt1	-----
RhilegWSM1455Hbt1	-----
RhilegWSM1481Hbt1	-----
RhilegVF39Hbt2	-----
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RhilegUPM1131Hbt1	-----
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RhietlCFN42Hbt1	-----
Rhietl8C3Hbt	-----
RhietlCIAT652Hbt1	-----
RhietlCIAT894Hbt	-----
RhietlIE4771Hbt	-----
AzodoeUFLA1-100Hbt2	-----
Brajap22Hbt2	-----
BrajapUSDA110Hbt	-----
BrajapUSDA122Hbt2	-----
BrajapUSDA124Hbt2	-----
BrajapWSM1743Hbt2	-----
BrajapUSDA6-8372Hbt2	-----
BrajapUSDA6-7488Hbt2	-----
BrajapUSDA38Hbt2	-----
BrajapUSDA123Hbt2	-----
BrajapWSM2793Hbt2	-----
BrajapUSDA135Hbt2	-----
BrajapUSDA4Hbt3	-----
Brajap22Hbt3	-----
Brajapin8p8Hbt2	-----
Brajapis5Hbt2	-----
CupnecHPC_L_Hbt	-----
CupnecJMP134Hbt	-----
CupnecN1Hbt2	-----
BurphySTM815Hbt2	-----
BraelkUSDA76Hbt1	-----
Braelk587Hbt2	-----
BraelkUSDA94Hbt1	-----
MescicCMG6Hbt	-----
MescicWSM1271Hbt	-----
MescicWSM4083Hbt	-----
MeslotR7AHbt	-----
MeslotMAFF303099Hbt	-----
MeslotNZP2037Hbt1	-----
MeslotR88bHbt	-----
MeslotCJ3symHbt	-----
MeslotUSDA3471Hbt2	-----
BurphySTM815fHb	RD A I D E L A A R H P Q L K R F V Y E K P R Q Q D D A H H A E G -- F I D E D R L I E W M P A T
CupnecHPC_L_fHb	R E R V D A I A A N Y D N V S V C Y V Y D T P R D - G D N P H A V G -- F V T R E L L A S R L P A D
CupnecN1fHb2	R D R L R E A A K A Y E N F D L F V F Y D Q P L S E D V Q G R D Y D Y P G L V D V K L I E K S I L L
Sinmel1021fHb	R D R L K E A S R T Y P D F K L F I F Y D E P L P T D I E G R D Y D F A G L V D V E N V K D S I L L
BacsubfHb	L R H E V E E A A N H S S V K T A F V Y R E P T E E D R A G D L Q F H E G Q I D Q Q F L K E L I A N
VitSDgb	-----
EsccolfHb	A D E V K E L G Q S L P R F T A H T W Y R Q P S E A D R A K G Q F D S E G I M D L S K L E G A F S D
RhilegUPM1137fHb	D S H V K I L A A R Q Q A T S V A T F Y D ---- Q S S D E A E V H S G Y I S F E W L L A N T P F
CupnecN1fHb1	R A D L Q W A R E R L P Q L R T H I S Y E T P Q A G D V A G R D Y D H A G T M P V A E L L R Q P D L
CupnecJMP134fHb	R A D V A W A R E R L P Q L R T H I S Y E Q P Q A A D V A G R D Y D H A G T M P V A A L L D A P D N
SaccerrfHb	K K H V D E L L A E C A N V D K I I V H T D T E P ----- L I N A A F L K E K S P A

BrajapUSDA110SDgb1	-----
BrajapUSDA122SDgb1	-----
Brajapin8p8SDgb	-----
Brajapis5SDgb	-----
BrajapUSDA135SDgb1	-----
BrajapWSM1743SDgb	-----
BrajapUSDA124SDgb1	-----
Brajap22SDgb	-----
BrajapUSDA6-7488SDgb1	-----
BrajapUSDA6-8372SDgb2	-----
BrajapUSDA123SDgb1	-----
BrajapUSDA38SDgb1	-----
BrajapUSDA4SDgb1	-----
BrajapWSM2793SDgb1	-----
BraelkUSDA3254SDgb4	-----
BraelkUSDA3259SDgb1	-----
BraelkUSDA94SDgb1	-----
Braelk587SDgb1	-----
BraelkUSDA76SDgb1	-----
BraelkWSM2783SDgb1	-----
AzodoeUFLA1-100SDgb	-----
BraelkWSM1741SDgb1	-----
BraelkWSM2783SDgb2	-----
BraelkUSDA3254SDgb2	-----
BraelkUSDA3259SDgb2	-----
BraelkUSDA3254SDgb3	-----
BraelkUSDA3259SDgb4	-----
Braelk587SDgb2	-----
BraelkUSDA76SDgb2	-----
BraelkUSDA94SDgb2	-----
BrajapUSDA135SDgb2	-----
BraelkUSDA3254SDgb1	-----
BraelkUSDA3259SDgb3	-----
BraelkUSDA94SDgb3	-----
BraelkUSDA76SDgb3	-----
Braelk587SDgb3	-----
BraelkWSM2783SDgb3	-----
BraelkWSM1741SDgb2	-----
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BrajapUSDA122SDgb2	-----
BrajapUSDA4SDgb2	-----
BrajapWSM2793SDgb2	-----
BrajapUSDA6-7488SDgb2	-----
BrajapUSDA6-8372SDgb1	-----
BrajapUSDA38SDgb2	-----
BrajapUSDA123SDgb2	-----
BrajapUSDA124SDgb2	-----
Brajapin8p8GCS	AEQTARATGEIGQQVLSIQEATTESVGIIRQIGETIAAVDEVATAIAAAV
Brajapis5GCS	AEQTARATGEIGQQVLSIQEATTESVGIIRQIGETIAAVDEVATAIAAAV
BraelkWSM2783GCS	AEQTTKATADIAAQIGDMQQSTTESTSAIGDIVGVIRSMGEVSNAIASAV
RhilegWSM1481GCS2	AQRSAEAAREIKTLVTTTKAQVDAGVQMVGRQTQDSIGSIVRQVTDINAAI
Rhileg248GCS2	AQRSAEAAREIKTLVTTTKAQVDAGVQMVGRQTQDSIGSIVRQVTDINAAI
RhilegTOMGCS2	AQRSAEAAREIKTLVTTTKAQVNAGVQMVGRQTQDSIGSIVRQVTDINAAM
RhilegUPM1131GCS	AQRSAEAAREIKTLVTTTKAQVNAGVQMVGRQTQDSIGSIVRQVTDINAAI
RhilegVF39GCS2	AQRSAEAAREIKTLVTTTKAQVDAGVQMVGRQTQDSIGSIVRQVTDINAAI
RhietlCIAT894GCS	AQRSAEAAREIKTL-----
RhilegVh3GCS2	AQRSAEAAREIKTLVTTTKAQVDAGVQMVGRQTQDSIGSIVRQVTDINAAI
Rhileg128C53GCS2	AQRSAEAAREIKTLVTTTKAQVDAGVQMVGRQTQDSIGSIVRQVTDINAAI
RhilegPs8GCS2	AQRSAEAAREIKTLVTTTKAQVDAGVQMVGRQTQDSIGSIVRQVTDINAAI
RhilegGB30GCS2	AQRSAEAAREIKTLVTTTKAQVDAGVQMVGRQTQDSIGSIVRQVTDINAAI
RhilegUPM1137GCS2	AQRSAEAAREIKTLVTTTKAQVDAGVQMVGRQTQDSIGSIVRQVTDINAAI
RhilegWSM1455GCS2	AQRSAEAAREIKTLVTTTKAQVDAGVQMVGRQTQDSIGSIVRQVTDINAAI
Rhileg3841GCS2	AQRSAEAAREIKTLVTTTKAQVDAGVQMVGRQTQDSIGSIVRQVTDINAAI
RhilegVc2GCS2	AQRSAEAAREIKTLVTTTKAQVDAGVQMVGRQTQDSIGSIVRQVTDINAAI
Rhietl8C3GCS	-----
RhietlCIAT652GCS2	AQRSAEAAREIKTLVTTTKAQVDAGVQMVGRQTQDSIGSIVRQVTDINAAI
RhietlCFN42GCS2	AQRSADAAREIKTLVTTTKAQVDAGVQMVGRQTQDSIGSIVRQVTDINAAI
SinfreGR64GCS	AQRSGEAAREIKQLVNGTKTQVEAGVEIVGQTQNAISNIVDQVISINAAV

SinfreHH103GCS
SinfreUSDA257GCS
Sinmel1021GCS
RhietlCIAT652GCS1
RhietlCNPAF512GCS
RhietlGR56GCS
Rhileg128C53GCS1
RhilegUPM1137GCS1
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Rhileg248GCS1
RhilegTOMGCS1
RhietlCFN42GCS1
AgrtumGCS
MyctubHbtC1
CupnecN1Hbt1
BrajaPUSDA4Hbt2
BrajaPWSM2793Hbt3
MyctubHbtC2
BurphySTM815Hbt1
MycaviHbtC3
BraelkWSM1741Hbt1
BacsubGCS

[illegible]

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RhilegVc2Hbt2	-----
RhilegVh3Hbt1	-----
Sinmel1021Hbt2	-----
RhilupHPC_L_Hbt1	-----
RhilupHPC_L_Hbt2	-----
AgrtumHbtC2	-----
SinfreUSDA257Hbt	-----
SinfreHH103Hbt	-----
SinfreGR64Hbt	-----
Sinmel1021Hbt1	-----
RhilegUPM1137Hbt1	-----
Rhileg128C53Hbt2	-----
RhilegVc2Hbt1	-----
RhilegVh3Hbt2	-----
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RhilegVF39Hbt2	-----
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RhietlCFN42Hbt1	-----
Rhietl8C3Hbt	-----
RhietlCIAT652Hbt1	-----
RhietlCIAT894Hbt	-----
RhietlIE4771Hbt	-----
AzodoeUFLA1-100Hbt2	-----
Brajap22Hbt2	-----
BrajapUSDA110Hbt	-----
BrajapUSDA122Hbt2	-----
BrajapUSDA124Hbt2	-----
BrajapWSM1743Hbt2	-----
BrajapUSDA6-8372Hbt2	-----
BrajapUSDA6-7488Hbt2	-----
BrajapUSDA38Hbt2	-----
BrajapUSDA123Hbt2	-----
BrajapWSM2793Hbt2	-----
BrajapUSDA135Hbt2	-----
BrajapUSDA4Hbt3	-----
Brajap22Hbt3	-----
Brajapin8p8Hbt2	-----
Brajapis5Hbt2	-----
CupnecHPC_L_Hbt	-----
CupnecJMP134Hbt	-----
CupnecN1Hbt2	-----
BurphySTM815Hbt2	-----
BraelkUSDA76Hbt1	-----
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BraelkUSDA94Hbt1	-----
MescicCMG6Hbt	-----
MescicWSM1271Hbt	-----
MescicWSM4083Hbt	-----
MeslotR7AHbt	-----
MeslotMAFF303099Hbt	-----
MeslotNZP2037Hbt1	-----
MeslotR88bHbt	-----
MeslotCJ3symHbt	-----
MeslotUSDA3471Hbt2	-----
BurphySTM815fHb	---RDVDVYFLGPKPFMKAVKRHLKAIGVPEKQSRFEFFGPAAALD---
CupnecHPC_L_fHb	---RDVDVYLLGPKAFMRAVHADGRALGIAPERLRFEFFGPLEDLQAA---
CupnecN1fHb2	---PDADYYICGPIPFMRMQHDALKKLGVHEGCIHYEVFGPDLFAE----
Sinmel1021fHb	---DDADYYICGPVPFMRMQHDKLLGLGITEARIHYEVFGPDLFAE----
BacsubfHb	---TDADYYICGSSSFITAMHKLVELGSAPESIHVELFGPQLSMAQSV---

Rhileg3841GCS2	SGIATRTGEHAASLDSVTS	SDVKGLGSEVADSAGLAERSAEGADHLHTVIL			
RhilegVc2GCS2	AGIATRTGEHAASLDSVTS	SDVKGLGGEVADSAGLAERSAEGADHLHTVIL			
Rhietl8C3GCS	-----	-----			
RhietlCIAT652GCS2	SGIATRTGEHAASLDGVT	AEVKGLGAEVADSAGFAGRSADGADDLHTVIV			
RhietlCFN42GCS2	SGIATRTGEHAACLDGVA	ADV KELGAEVADNAGLAERSAEDADHLHTVIL			
SinfreGR64GCS	SGIARDAETQVNDLAAAT	SEIGGISKAMTRSATLAAEAASTEDLRGTIL			
SinfreHH103GCS	SGIARDAETQVNDLAAAT	SEIGGISKAMTRSATLAGEAASTEDLRGTIL			
SinfreUSDA257GCS	SGIAREAESQVGDIAAA	ASDIGGISKAMSRSAALAGEAASTEDLHGTIL			
Sinmel1021GCS	TGIAREAECQVNDLASAT	SEIGGVAQAMNRSAAALAGAALASTDDLHGVIV			
RhietlCIAT652GCS1	ADIAAAARDQATGVNEVS	VAIRSMGEITQQNSGMVEHTSAETRRLKDEVE			
RhietlCNPAF512GCS	ADIAAAARDQATGVNEVS	VAIRSMGEITQQNSGMVEHTSAETRRLTDEVE			
RhietlGR56GCS	ADIAAAARDQATGRQRR	SAWRSAA-----			
Rhileg128C53GCS1	ADIAAAARDQATGVNEVS	VAVRNMGAITQQNSDMVEQSSAETRRLKDEVE			
RhilegUPM1137GCS1	ADIAAAARDQATGVNEVS	VAVRNMGAITQQNSDMVEQSSAETRRLKDEVE			
RhilegGB30GCS1	ADIAAAARDQATGVNEVS	LAVRNMGAITQQNSDMVEHSSAETRRLKDEVE			
RhilegPs8GCS1	ADIAAAARDQATGVNEVS	LAVRNMGAITQQNSDMVEHSSAETRRLKDEVE			
RhilegVc2GCS1	ADIAAAARDQATGVNEVS	VAVRNMGAITQQNSDMVEHSSAETRRLKDEVE			
RhilegVh3GCS1	ADIAAAARDQATGVNEVS	VAVRNMGAITQQNSDMVEHSSAETRRLKDEVE			
RhilegVF39GCS1	ADIAAAARDQATGVNEVS	VAVRNMGAITQQNSDMVEHSSAETRRLKDEVE			
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RhilegWSM1455GCS1	ADIASAARDQATGVNEVS	LAVRNMGAITQQNSDMVEHSSAETRRLKDEVE			
RhilegWSM1481GCS1	ADIASAARDQATGVNEVS	LAVRNMGAITQQNSDMVEHSSAETRRLKDEVE			
Rhileg248GCS1	ADIAAAARDQATGVNEVS	IAVRNMGAITQQNSDMVEHSSAETRRLKDEVE			
RhilegTOMGCS1	ADIAAAARDQATGVNEVS	LAVRNMGAITQQNSDMVEHSSAETRRLKDEVE			
RhietlCFN42GCS1	ADIAAAARDQATGVNEVS	VAIRSMGEITQQNSGMVERTSAETGRLKEEVD			
AgrtumGCS	TSLTKAAQE	QSVGIQEISAAINSMDNLTQKNAAMVEETNAATHNLSVSA			
MyctubHbtC1	-----	-----			
CupnecN1Hbt1	-----	-----			
BrajapUSDA4Hbt2	-----	-----			
BrajapWSM2793Hbt3	-----	-----			
MyctubHbtC2	-----	-----			
BurphySTM815Hbt1	-----	-----			
MycaviHbtC3	-----	-----			
BraelkWSM1741Hbt1	-----	-----			
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	710	720	730	740	750
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Braelk587Hbt1	-----	-----	-----	-----	-----
BraelkUSDA94Hbt2	-----	-----	-----	-----	-----
BraelkWSM2783Hbt	-----	-----	-----	-----	-----
BraelkWSM1741Hbt2	-----	-----	-----	-----	-----
BrajapUSDA4Hbt1	-----	-----	-----	-----	-----
BrajapWSM2793Hbt1	-----	-----	-----	-----	-----
BrajapUSDA123Hbt1	-----	-----	-----	-----	-----
BrajapUSDA6-8372Hbt1	-----	-----	-----	-----	-----
BrajapUSDA6-7488Hbt1	-----	-----	-----	-----	-----
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Brajapin8p8Hbt1	-----	-----	-----	-----	-----
Brajapis5Hbt1	-----	-----	-----	-----	-----
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BrajapUSDA122Hbt1	-----	-----	-----	-----	-----
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BrajapWSM1743Hbt1	-----	-----	-----	-----	-----
Brajap22Hbt1	-----	-----	-----	-----	-----
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MeslotUSDA3471Hbt1	-----	-----	-----	-----	-----
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Rhileg128C53Hbt1	-----
RhilegPs8Hbt2	-----
RhilegGB30Hbt2	-----
RhilegUPM1137Hbt2	-----
RhilegVc2Hbt2	-----
RhilegVh3Hbt1	-----
Sinmel1021Hbt2	-----
RhilupHPC_L_Hbt1	-----
RhilupHPC_L_Hbt2	-----
AgrtumHbtC2	-----
SinfreUSDA257Hbt	-----
SinfreHH103Hbt	-----
SinfreGR64Hbt	-----
Sinmel1021Hbt1	-----
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Rhileg128C53Hbt2	-----
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BrajapUSDA38Hbt2	-----
BrajapUSDA123Hbt2	-----
BrajapWSM2793Hbt2	-----
BrajapUSDA135Hbt2	-----
BrajapUSDA4Hbt3	-----
Brajap22Hbt3	-----
Brajapin8p8Hbt2	-----
Brajapis5Hbt2	-----
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CupnecJMP134Hbt	-----
CupnecN1Hbt2	-----
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MeslotMAFF303099Hbt	-----
MeslotNZP2037Hbt1	-----
MeslotR88bHbt	-----
MeslotCJ3symHbt	-----

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CupnecN1fHb2	-----
Sinmell1021fHb	-----
BacsubfHb	-----
VitSDgb	-----
EsccolfHb	-----
RhilegUPM1137fHb	-----
CupnecN1fHb1	-----
CupnecJMP134fHb	-----
SaccerfHb	-----
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BraelkWSM1741SDgb2	-----
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BrajapUSDA6-7488SDgb2	-----
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BrajapUSDA38SDgb2	-----
BrajapUSDA123SDgb2	-----
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Brajapin8p8GCS	ELSGQTDVLRSEVEGFFAAIRAA-----
Brajapis5GCS	ELSGQTDVLRSEVEGFFAAIRAA-----
BraelkWSM2783GCS	ELSRQSELLRNEVSKFLATVKAA-----
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Rhileg248GCS2	ELGQTIREFRIARENATAGRPAPVRVTSPRAVEGATRPAPVVDEYENDDF
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RhilegPs8GCS2	ELGQTIREFRIARENATAGRPAPVRVTPPRAIEVAARPALTEDGYENDDF
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RhietlCFN42GCS2	ELGQTIREFRIARENNAHSGRLGSRVATPSRGIETAGR-PAVEDEYENEDF
SinfreGR64GCS	ELGQTIRRRFRFERQAGLRASTFSPPPALLPQVED-EAAMPFSDDAALGRH
SinfreHH103GCS	ELGQTIRRRFRFERQAGLRASTFSPPPALLPQVED-EAAMPFSDDAALGRH
SinfreUSDA257GCS	ELGQTIRRRFRFERQAGLRASTFALPPALPPQIDEEAAMPFSDDAASGRQ
Sinmel1021GCS	ELGETIRRFHLDQARSAASFAPRMRIEAPEDETTSPFG----EVTSERH
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RhietlCNPAF512GCS	KLIELLLRRFRARPEGRSVAATTRAA-----
RhietlGR56GCS	-----
Rhileg128C53GCS1	TLIELLLRRFRARPEGRSTGAARRAA-----
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Rhileg248GCS1	TLIELLLRRFRARPEGRSAGAARQAA-----
RhilegTOMGCS1	TLIELLLRRFRARPEGRSAGAARRAA-----
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AgrtumGCS	NLAALVSRFSVSATRAHVERTYRAA-----
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BurphySTM815Hbt1	-----
MycaviHbtC3	-----
BraelkWSM1741Hbt1	-----
BacsubGCS	E-----

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Braelk587Hbt1	-----	
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Brajapis5Hbt1	-----	
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RhilegVh3Hbt1	-----
Sinmel1021Hbt2	-----
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RhilupHPC_L_Hbt2	-----
AgrtumHbtC2	-----
SinfreUSDA257Hbt	-----
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BrajapUSDA4Hbt3	-----
Brajap22Hbt3	-----
Brajapin8p8Hbt2	-----
Brajapis5Hbt2	-----
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CupnecN1fHb2	-----
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VitSDgb	-----
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CupnecN1fHb1	-----
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RhietlCFN42GCS2	GLPQSLASVGGGRNVY
SinfreGR64GCS	VAGWRR-----
SinfreHH103GCS	VAGWRR-----
SinfreUSDA257GCS	VAAWRR-----
Sinmel1021GCS	LAGWRR-----
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AgrtumGCS	-----
MyctubHbtC1	-----
CupnecN1Hbt1	-----
BrajapUSDA4Hbt2	-----
BrajapWSM2793Hbt3	-----
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BurphySTM815Hbt1	-----
MycaviHbtC3	-----
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BacsubGCS	-----