

sug-h 001 MASFAVSGA--RLGVVRAGGGGG--GGGGPAAARSGGVDLPSVLFRRKDSFSRQVIVSCAGAP
WT 001 MASFAVSGA--RLGVVRAGGGGG--GGGGPAAARSGGVDLPSVLFRRKDSFSRQVIVSCAGAP
Maize 001 MASFAVSGA--RLGVVRAGGGAR--SGGE--RRS-----AVDLESGLTVLSCAGAP
Sorghum 001 MASFAVSGAGARLGVVREGGSSAR--SGGG--RRRSRGGVDLPSVLFRRKDAISRTVLSAGAP
Barley 001 MAIFAVSGA--TLGVVRAAGG--ALPRSSERRGGDLPSLLLRKDKDSRAVLSCAAP
Wheat 001 MAIFAVSGA--TLGVVRAEAGAGGGLLPRSSERRGGVDLPSLLLRKDKDSRAVLSCAASP

sug-h 058 GKVLPVGGGSDLLSSAEPDVEVTEQEQPEESQIPDDNKVKPFEFEFEIIPAVAEASIKVVAE
WT 058 GKVLPVGGGSDLLSSAEPDVEVTEQEQPEESQIPDDNKVKPFEFEFEIIPAVAEASIKVVAE
Maize 045 GKVLPVGGGSDLLSSAEPVVDVTEQPEELQIPDAEQVVEEKAYSSAAQATSAAAEESGV
Sorghum 058 GKVLPVGGGSDLLSSAEPVVDVTEQPEELQIPDAEQVVEEKAYSSAAQATSAAAEES--
Barley 056 GKVLPVGGGSDLLSAAEPQPEELQVPEDEIEEMAEVNMVGGAAEKLESSEPTQGIET--
Wheat 059 GKVLPVGGGSDLLSAAEPQPEELQVPEDEIEEQTAEVNMTGGTAEKLESSEPTQGIET--

sug-h 118 EKLESSEVIQDIEN----VTEGVIKDADEPTVEIDKPRVIPPVGGDQKIYQIDPMLGEF
WT 118 EKLESSEVIQDIEN----VTEGVIKDADEPTVEIDKPRVIPPVGGDQKIYQIDPMLGEF
Maize 103 EAEERPELSEVIGVGGTGGTKIDGAGIKAKAPVVEEKPRVIPPVGGDQKIYQIYEDPMLGEF
Sorghum 116 -----SEVDAAIKAKAPVVEEKPRVIPPVGGDQKIYQIYEDPMLGEF
Barley 114 -----ITDGVTKGVKELVVGKEKPVVPPKPGDQKIYQIYEDPMLKDF
Wheat 116 -----ITDGVTKGVKELVVGKEKPRVIPPVGGDQKIYQIYEDPMLKDF

E_set_GBE_euk_N

sug-h 173 RNHLDYRYSEYKRMRAAIDQHEGGLDAFSRGEKLGFTRSAEGITYREWAPGASAAALVG
WT 173 RNHLDYRYSEYKRMRAAIDQHEGGLDAFSRGEKLGFTRSAEGITYREWAPGASAAALVG
Maize 163 RGHLDYRYSEYKRRRAAIDQHEGGLDAFSRGEKLGFTRSAEGITYREWAPGASAAALVG
Sorghum 156 RGHLDYRYSEYKRMRAAIDQHEGGLDAFSRGEKLGFTRSAEGITYREWAPGASAAALVG
Barley 154 RSHLDYRYSEYKRRRAAIDQHEGGLDAFSRGEKLGFTRSAEGITYREWAPGASAAALVG
Wheat 156 RSHLDYRYSEYKRRRAAIDQHEGGLDAFSRGEKLGFTRSAEGITYREWAPGASAAALVG

sug-h 233 DFNNWNPNADTMTRNEYGVWEISLFPNNADGSPAIPHGSRVKIRMDTPSGVKDISPAWIKF
WT 233 DFNNWNPNADTMTRNEYGVWEISLFPNNADGSPAIPHGSRVKIRMDTPSGVKDISPAWIKF
Maize 223 DFNNWNPNADAMARNEYGVWEIFLFPNNADGSPAIPHGSRVKIRMDTPSGVKDISPAWIKF
Sorghum 216 DFNNWNPNADAMTRNEYGVWEIFLFPNNADGSPAIPHGSRVKIRMDTPSGVKDISPAWIKF
Barley 214 DFNNWNPNADTMTRDIIYGVWEIFLFPNNADGSPAIPHGSRVKIRMDTPSGVKDISPAWIKF
Wheat 216 DFNNWNPNADTMTRDIIYGVWEIFLFPNNADGSPAIPHGSRVKIRMDTPSGVKDISPAWIKF

AmyAc_bac_euk_BE

sug-h 293 AVQAPGEIPYNGIYYDPPEEEKYVFQHPQKRPNSLRITYESHIGMSSPEPKINTYANFRD
WT 293 AVQAPGEIPYNGIYYDPPEEEKYVFQHPQKRPNSLRITYESHIGMSSPEPKINTYANFRD
Maize 283 SVQAPGEIPYNGIYYDPPEEEKYVFKHPQKRPKSLRITYESHIGMSSPEPKINTYANFRD
Sorghum 276 SVQAPGEIPYNGIYYDPPEEEKYVFKHPQKRPKSLRITYESHIGMSSPEPKINTYANFRD
Barley 274 SVQAPGEIPYNGIYYDPPEEEKYVFQHPQKRPNSLRITYESHIGMSSPEPKINTYANFRD
Wheat 276 SVQAPGEIPYNGIYYDPPEEEKYVFQHPQKRPNSLRITYESHIGMSSPEPKINTYANFRD

sug-h 353 EVLPRIKRLGYNNAVQIMAIQEHSHYASFGYHVTNFFAPSSRFGTPEDLKSLIDKAHELGL
WT 353 EVLPRIKRLGYNNAVQIMAIQEHSHYASFGYHVTNFFAPSSRFGTPEDLKSLIDKAHELGL
Maize 343 EVLPRIKRLGYNNAVQIMAIQEHSHYASFGYHVTNFFAPSSRFGTPEDLKSLIDKAHELGL
Sorghum 336 EVLPRIKRLGYNNAVQIMAIQEHSHYASFGYHVTNFFAPSSRFGTPEDLKSLIDKAHELGL
Barley 334 EVLPRIKRLGYNNAVQIMAIQEHSHYASFGYHVTNFFAPSSRFGTPEDLKSLIDKAHELGL
Wheat 336 EVLPRIKRLGYNNAVQIMAIQEHSHYASFGYHVTNFFAPSSRFGTPEDLKSLIDKAHELGL

sug-h 413 LVLMDIVHSHASNNTLDGLNGFDGTDTHYFHGGPRGHMWD SRLFNYSWEVLRLLSN
WT 413 LVLMDIVHSHASNNTLDGLNGFDGTDTHYFHGGPRGHMWD SRLFNYSWEVLRLLSN
Maize 403 LVLMDIVHSHASNNTLDGLNGFDGTDTHYFHGGPRGHMWD SRLFNYSWEVLRLLSN
Sorghum 396 LVLMDIVHSHASNNTLDGLNGFDGTDTHYFHGGPRGHMWD SRLFNYSWEVLRLLSN
Barley 394 LVLMDIVHSHASNNTLDGLNGFDGTDTHYFHGGPRGHMWD SRLFNYSWEVLRLLSN
Wheat 396 LVLMDIVHSHASNNTLDGLNGFDGTDTHYFHGGPRGHMWD SRLFNYSWEVLRLLSN

sug-h 473 ARWWLEEKYKFDGFRFDGVTSMYTHHGLQVAFVTFGNNGEYFGFATDVAVVYLMVNDLIIH
WT 473 ARWWLEEKYKFDGFRFDGVTSMYTHHGLQVAFVTFGNNGEYFGFATDVAVVYLMVNDLIIH
Maize 463 ARWWLEEKYKFDGFRFDGVTSMYTHHGLQVAFVTFGNNGEYFGFATDVAVVYLMVNDLIIH
Sorghum 456 ARWWLEEKYKFDGFRFDGVTSMYTHHGLQVAFVTFGNNGEYFGFATDVAVVYLMVNDLIIH
Barley 454 ARWWLEEKYKFDGFRFDGVTSMYTHHGLQVAFVTFGNNGEYFGFATDVAVVYLMVNDLIIH
Wheat 456 ARWWLEEKYKFDGFRFDGVTSMYTHHGLQVAFVTFGNNGEYFGFATDVAVVYLMVNDLIIH

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sug-h 533 GLYPEAVSIGEDVSGMPTFCIPVQDGGVGFYRLHMAVPDKWIELLKQSDSEYWKMGDIVH
WT 533 GLYPEAVSIGEDVSGMPTFCIPVQDGGVGFYRLHMAVPDKWIELLKQSDSEYWKMGDIVH
Maize 523 GLYPEAVSIGEDVSGMPTFCIPVQDGGVGFYRLHMAVPDKWIELLKQSDSEYWKMGDIVH
Sorghum 516 GLYPEAVSIGEDVSGMPTFCIPVQDGGVGFYRLHMAVPDKWIELLKQSDSEYWKMGDIVH
Barley 514 GLYPEAVSIGEDVSGMPTFCIPVQDGGVGFYRLHMAVPDKWIELLKQSDSEYWKMGDIVH
Wheat 516 GLYPEAVSIGEDVSGMPTFCIPVQDGGVGFYRLHMAVPDKWIELLKQSDSEYWKMGDIVH

sug-h 593 TLTNRRWSEKCVTYAESHDQALVGDKTIAFWLMDKDMYDFMALDRPSTPRI DRGIALHMK
WT 593 TLTNRRWSEKCVTYAESHDQALVGDKTIAFWLMDKDMYDFMALDRPSTPRI DRGIALHMK
Maize 583 TLTNRRWLEKCVTYAESHDQALVGDKTIAFWLMDKDMYDFMALDRPSTPRI DRGIALHMK
Sorghum 576 TLTNRRWLEKCVTYAESHDQALVGDKTIAFWLMDKDMYDFMALDRPSTPRI DRGIALHMK
Barley 574 TLTNRRWLEKCVTYAESHDQALVGDKTIAFWLMDKDMYDFMALDRPSTPRI DRGIALHMK
Wheat 576 TLTNRRWLEKCVTYAESHDQALVGDKTIAFWLMDKDMYDFMALDRPSTPRI DRGIALHMK

Alpha-amylase_C

sug-h 713 ADYLRYRGMQEFDQAMQHLEEKYGFMTSEHQYVSRKHEEDKVIIFERGLVVFVNFHWSN
WT 713 ADYLRYRGMQEFDQAMQHLEEKYGFMTSEHQYVSRKHEEDKVIIFERGLVVFVNFHWSN
Maize 703 ADYLRYRGMQEFDQAMQHLEEKYGFMTSEHQYVSRKHEEDKVIIFERGLVVFVNFHWSN
Sorghum 696 ADYLRYRGMQEFDQAMQHLEEKYGFMTSEHQYVSRKHEEDKVIIFERGLVVFVNFHWSN
Barley 694 ADYLRYRGMQEFDQAMQHLEEKYGFMTSEHQYVSRKHEEDKVIIFERGLVVFVNFHWSN
Wheat 696 ADYLRYRGMQEFDQAMQHLEEKYGFMTSEHQYVSRKHEEDKVIIFERGLVVFVNFHWSN

sug-h 773 SYFDYRVGCIKPGKYKIVLDSDDGLFGGFSRLDHDAEYFTADWPHDNRPCSFVYTPSRT
WT 773 SYFDYRVGCIKPGKYKIVLDSDDGLFGGFSRLDHDAEYFTADWPHDNRPCSFVYTPSRT
Maize 763 SYFDYRVGCIKPGKYKIVLDSDDGLFGGFSRLDHDAEYFTADWPHDNRPCSFVYTPSRT
Sorghum 756 SYFDYRVGCIKPGKYKIVLDSDDGLFGGFSRLDHDAEYFTADWPHDNRPCSFVYTPSRT
Barley 754 SYFDYRVGCIKPGKYKIVLDSDDGLFGGFSRLDHDAEYFTADWPHDNRPCSFVYTPSRT
Wheat 756 SYFDYRVGCIKPGKYKIVLDSDDGLFGGFSRLDHDAEYFTADWPHDNRPCSFVYTPSRT

sug-h 833 AVVYALTEFDZ--
WT 833 AVVYALTEFDZ--
Maize 823 AVVYAPAGAEDE
Sorghum 816 AVVYAPAGAEDE
Barley 814 AVVYALTEFDZ--
Wheat 816 AVVYALTEFDZ--