

wzef -!

\*Xi @'e'lb, 70D40»mgú0l/2AAyžž0i u lgp~šāÁVáC:l[ glzšá lz... ~i 0'lgzl''lwze  
 %\$cg»yÁiÆuÈgzl má lz ä WDT • Nflak»l0l/2~gll f oDzZÁ[ z! á lz ä W~VÇ;Š&  
 pVoi Xi μAA± ÝJc, 50~ÖÁV" 0l/2gzlk»DzZÁtÝluš~ ~šWÁ\*šJcY2050Xi Bæ°»~  
 æ'gXšèlq[~ ] ášlylx • i gYK ] ášl³ , gñ" a ÆtÝl~gzlaÁwzem<lk»l0l/2Z  
 ÁVzgP»ÆwzeÆ´~k5'Fžž0i International Program on Rice Biotechnology (IPRB)»c&fÁ  
 iÁVzgLšl0lá lz ä™i 6wzegzL+CaÆwzeÆxš6kXi ;gm'èššælaà{pS{aÆi CQD1984  
 Xi CYÁèššælaà•Æxš6

~T álfD ] IŠxA~ð;šÁ(80)i li ,W»] Y. \_0l' lá lz äYKĐáljÆ~g»Áwzef -!  
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 Agrobacterium gzlparticle bombardment Xá šcšmi ,Wl xj»i šZ Æ8 CŠCQ ~gzšKXá šH  
 žL>Cm0šgaÉ gzl(gfp) á" z6glÖ! gzl(gusA)m[čzgY%g0gÖÆáR7gÁ~ptumefaciens-mediated  
 Xá šCwDf aÆá3š S-IAlgzlz

wzef -!3\* ĐV-gFgzVzQ

äàyvĀ` Áwzež@šHg»wzef -!~Æb0gzlÄcgšÁá3š ĐVzQ•Æxš6IPRB  
 VxÆwzeXnYÁè0Đ sheath blightgzl0S0bacterial blightVzgÁ>0yellow stem borer, á lz  
 f#ÿ` B, 30ã1/2DzZÁkzgl i كءا»„ nh" Á` ~lñÆ&m<I~i0lñgzl] 0ÁVzOÆVà~  
 šžñ0š ÁZgšdlì 0Ā~pool ÆáÆwzežVyi x»Ā q10š ĐVzOÆVàa ÆVzgP»Xi CY  
 aÆ0š ĐVzQ lepidopteran ~VfVšgñ" Xi ;gx»gl\*gl0q1á " hĀ0š {z`Ækĭ 7  
 ÁwzeK! 60500Xi Ág»xi l0ÉCB (cry1Ab, 1Ac 1Aa, 2A, 1B, or combination of these genes)K!  
 Æ2009X`ðž™7Sg" ~gliInđÁwzeK! 6gî äätJc[ lèB 0X`Á~1998 ~ui š«öaiWály  
 } (Ákl~2012 ~T~š•´-lĀ Bt Shanyou 63gzlBt rice Huahui No.1 ä®gi ] glizÁu ~yglz  
 Xäi šyk»š»äe



†Yl~á½

gzl(+e~Wgzl0b»0 ŽĚĪ0ēš 0ēš 0kg` Ā0ēšW) ] \*n0ð~gZlā# " z60(\$Ā)V3g0f-gà;1g»wze  
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 b) °»~bĪĀVfzšj ] gZlĪG½°YXì CyfµzŋĀZĪgzšÑ0~0} lðWz~VĀúnqz&paZäö  
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 ) gfĀE†Yl~gĀE" z6kZ0i Cf: xa ĀEVāšVzgaYgzlVāšl" z6àlz äfYqÐVzš7~«ĀE  
 Xì µĀĀfi Xēlq½\*š

Biopharming ÐWze

àzä3àzäYĀg»ÐwzeXì i ĩ Ī ē z~Tì @YHwE l ~~g»Ā] cšZĀXĪ LZ Āwze  
 yX• DYf! ~] Yx4zhĀE^ Ā5qĀEYžž0i cholera toxin B subunit (CTB) XĀlqĪ~ē z  
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 Ā klgz Cf 7 [ b6] gĪwzšĀE} #JĀá²ZĪ Ðw, |ĪeCTB {š™g»Ðwze {z~ĀEkl 28XnY  
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q{ZĀa ĀŠĀlā z• g ~ ˘ 7k5 1FĐzĀäf: t0• C- s@ĀV-gFàz äf ~ 5lgĀ ÷, gzläv  
Xī Cf{Sci] gzcā V;žVY• ŠfU

laØk ~ žL>ŠgpZá z äYñ0 ~ VâĀlgzlvwñ0VzġŌV2%wE L{SciĐu} cšLŠ-!A  
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wgzlvzef -!

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ìl4l 6 q1XŠ cz™ Sg" ~ xn Agrobacterium tumefaciens strain CP4  
žŽĀĀā á lz äfwE la ĀgZlaĀ ^ h}Ā 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS)  
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w »xnf -!

### xn3& ĐVzhc} Q

(Tilletia Āí x-àz• ~ V[ gzl ŽSA0(Puccinia graminis), P~ Tì əfo, »Āí ĀxI lFĀxn  
žŽì Āí [ lyĐƒ ŽSA ~ ð; ylx • DY' Đ~! ~ ` Āxn~ i ŠŽñĀ&t • i ĀĀí tritici)  
la 7 äŠÌ ÇIQc• Dfla äŠ Lgð• l~ # • ~ ĒĀKl0• سن » head blight & crown rot  
0° 0...Ā• z » 1/2ĀVzgāYcVāc{lZ>gzl• DfYCiQc• D- Ą+IĀāžD>%oĀ ŽSAXDf  
1āHqzĀx»6" μĀä™g»xn3& Đ ŽSAä SyngentaX • سن » V-gF-uzŠgzl! ly~ yiĀĒyñg;  
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Š~xn) gfĀE] Y. \_{e{eä > Ā6'W4lyYgzl^kXlYBĒĒöi†~ cg-i ~ Y2009  
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