生物圏科学
Biosphere Sci.
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Information

Hiroshima University has granted the Doctor's degree to the following researchers. The list is only concerned with the Graduate School of Biosphere Science.

DEPARTMENT OF BIORESOURCE SCIENCE

March 1, 2018
Doctor of Agriculture — Atushi TAKENOUCHI

March 1, 2018
Doctor of Philosophy — SAID MAJDOOD RAIHAN

March 1, 2018
Doctor of Agriculture — Takashi UMEHARA

March 1, 2018
Doctor of Agriculture — Atsushi TSUYUKI

March 1, 2018
Doctor of Agriculture — DANG HOANG LAM

March 1, 2018
Doctor of Agriculture — Guang-Min YU

September 3, 2018
Doctor of Philosophy — Riski Agung LESTARIADI

September 3, 2018
Doctor of Philosophy — Juri HORI

DEPARTMENT OF BIOFUNCTIONAL SCIENCE AND TECHNOLOGY

March 1, 2018
Doctor of Agriculture — Hiroko KAIKIRI

March 1, 2018
Doctor of Agriculture — Jinmin MU

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March 1, 2018
Doctor of Philosophy — SUWALEE FONGIN

March 1, 2018
Doctor of Agriculture — Marina SUEKAWA

September 3, 2018
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September 3, 2018
Doctor of Agriculture — Tomoka KUROTOBI

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September 3, 2018
Doctor of Agriculture — Tsuyoshi KAMEDA
September 3, 2018
Doctor of Agriculture — Chinami ISHIBASHI

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March 1, 2018
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March 1, 2018
Doctor of Philosophy — Wahdatullah KHPALWAK
September 3, 2018
Doctor of Philosophy — Ikuo NAKATANI
September 3, 2018
Doctor of Philosophy — SUNDAY, OLUWATOYIN MICHAEL
September 3, 2018
Doctor of Philosophy — ADESINA, ADENIYI OLUFEMI
September 3, 2018
Doctor of Philosophy — RUSSEL CHRISPINE GARVIN CHIDYA

DISSERTATION PhD

December 25, 2017
Doctor of Agriculture — Eriko NAITO
March 1, 2018
Doctor of Agriculture — Yohei NIINO
September 3, 2018
Doctor of Agriculture — Hiroya KITASAKA

\ú M J ¶
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Exhaustive analyses for late-feathering gene structures and feathering phenotypes to improve feather-sexing technique in chicken industry

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Studies on the Regulation of Agonistic Behavior in Chickens

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yy $JRQLVWLF EHKDYLRU LV D W\SH RI VRFLDO EHKDYLRU ZKLFK
VSHFLHV $JRQLVWLF EHKDYLRU LV VXSSRVHG WR EH DQ LQÀXH
LQWHQWLRQ RI VHOI SURWHFWLRQ RU DFFHVV WR UHVRXUFHV WI
+RZHYHU H[FHVVLYH DJJUHVVLRQ UHVXOWV LQ LQMXU\ DQG V
LQFUHDVH PRUWDOLW\ LQ WKH SRXOWU\ IDUPV $JRQLVWLF EHK
EXW LV DOVR YHU\ LPSRUWDQW LVVXH IRU DQLPDO ZHOIDUH 6
ZHOIDUH UHTXLUHV NQRZOHGJH RI FKLFNHQ DJRQLVWLF EHKDY
PHFKDQLVPV RI FKLFNHQ DJRQLVWLF EHKDYLRU DQG ¿QG D ZD\ V
WKH SRXOWU\ LQGXVWU\ 7KLV GRFWRU GLVVHUWDWLRQ WKI
DJRQLVWLF EHKDYLRU RI FKLFNHQV

1. Screening of the behavioral test for monitoring agonistic behavior of layer chicks

yy &KLFNHQ DJRQLVWLF EHKDYLRU LV RQH RI WKH VHULRXV SU
PHDVXUHV KRZHYHU KDYH EHHQ WDNHQ EHFDXVH WKHUH DUH
WKH PHFKDQLVPV RI FKLFNHQ DJRQLVWLF EHKDYLRU 7KH SXUSR
WKH EHKDYLRUDO WHVWV DYDLODEOH IRU PRQLWRULQJ FKLFNHQ
LQWUXGHU 5 , DQG VRFLDO LQWHUDFWLRQ 6, WHVW ZHUH SH
FKLFNV DW DQG GD\V RI DJH DQG WRWDO DJRQ
PHDVXUHG 7KH VLJQLILFDQW GLIIHUHQFHV RI 7$) DQG ODWHQF
EHKDYLRUDO WHVWV ,Q WKH 5 , WHVW WKH 7$) RI DJJUHVVRUV
DQG ODWHQF\ RI WKRVH VLJQL¿FDQWO\ GHFUHDVHG IURP WR
DJJUHVVRUV VLJQL¿FDQWO\ LQFUHDVHG DQG ODWHQF\ RI WKRVH
DJH :KHQ WKH FULWHULRQ RI DJJUHVVLYH EHKDYLRU ZDV GH¿Q
WKDQ WLPHV DQG WKH RSSRQHQWV GLG OHVV WKDQ RQH WK
KLJKHU LQ WKH 5 , WHVW WKDQ LQ WKH 6, WHVW 7KHVH UHVXO
DQ HIIHFWLYH WRRO IRU PRQLWRULQJ DJRQLVWLF EHKDYLRU RI

2. Agonistic behavior of male and female Japanese large game (Oh-Shamo) chicks monitored by the R-I test

yy ,Q WKLV FKDSWHU WKH SXUSRVH RI WKH VWXG\ ZDV WR FRPS
6KDPR FKLFNV E\ WKH 5 , WHVW 7KH 5 , WHVW ZDV SHUIRUPHG I
RI IHPDOH 2K 6KDPR FKLFNV DW DQG GD\V RI

PHDVXUHG 7KHVH UHVXOWV VXJJHVW WKDW WKH 5 , WHVW L
EHKDYLRU RI 2K 6KDPR FKLFNV DQG LQLWLDWLRQ RI DJRQLVW
IHPDOHV

3. Localization of aggression-induced c-Fos immunoreactivities in the brain of male layer chicks

yy ,Q WKLV FKDSWHU WKH DLP RI WKH UHVHDUFK ZDV WR H[DPLQ
LPPXQRUHDFWLYLW\ LQ WKH EUDLQ RI PDOH DJJUHVVRU FKLFNV
KLJKHU DQG ODWHQF\ ZDV VLJQL¿FDQWO\ ORZHU LQ WKH DJJUH
LQGXFHG F)RV LPPXQRUHDFWLYLWLHV ZHUH PDLQO\ REVHUYHG
FKLFN EUDLQ 7KHVH UHVXOWV VXJJHVW WKDW WKH ORFDOL]DW
LQ FKLFN EUDLQ FRUUHVSRQGHG DSSUR[LPDWHO\ WR WKH EUDL
SUHYLRXVO\ UHSRUWHG RQ URGHQWV

CONCLUSION

yy 7KHVH ILQGLQJ VXJJHVW WKDW WKH 5 , WHVW DV FRPSDU
PRQLWRULQJ DJRQLVWLF EHKDYLRU RI PDOH FKLFNV ,W DOVR V
IHPDOH FKLFNV DJRQLVWLF EHKDYLRU 0RUHRYHU LW VXJJHVWV WKD
F)RV LPPXQRUHDFWLYLWLHV LQ FKLFN EUDLQ H[FHSW LQ WKH
WKH EUDLQ DUHD LQ ZKLFK WKH LPPXQRUHDFWLYLWLHV KDG EHH

Key words: $JRQLVWLF EHKDYLRU /D\HU FKLFNV 2K 6KDPR 5HVLGHQ
c-Fos

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A study on the role of Neuregulin 1 in female fertility

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Migratory behavior of the black sea bream Acanthopagrus schlegelii **based on acoustic telemetry in the oyster farm**

Atsushi TSUYUKI

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Nutritional Studies on Utilization of Silages Based on Local-Grown Plants in Ruminants

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DOWHUQDWLYH IRUDJH VRXUFHV IRU UXPLQDQW SURGXFWLRQ 7
SURSHUWLHV DQG QXWULHQW XWLOL]DWLRQ LQ ZLOG SODQW D
EXLOG IHHGLQJ VWUDWHJLHV EDVHG RQ WKHVH IRUDJHV RQ UXP
WKH IDFWRUV DIIHFWLQJ QXWULWLRQDO SURSHUWLHV RI NXG]
FDVVDYD IROLDJH &) VLODJH LQ UXPLQDQWV
yy ,Q FKDSWHU WKH HIIHFWV RI KDUYHVWLQJ PRQWK DQG HQV
HQVLOHG NXG]X YLQH ZHUH LQYHVWLJDWHG +DUYHVWLQJ PRQW
PDWWHU '0 FRQWHQW +RZHYHU WKH QHXWUDO GHWHUJHQW ,
FDUERK\GUDWH 1)& DQG SKRWRV\QWKHWLF SLJPHQWV ZHUH
(QVLOLQJ LQFUHDVHG WKH $E% and ... IUDFWLRQ RI %SURWHLQ
IUDFWLRQ ZDV WKH KLJKHVW IRU -XQH DQG ORZ ZKLOH IRU $XJXV
-XQH DQG ZDV VLPLODU EHWZHHQ $XJXVW DQG 2FWREHU FXW
WUHDWPHQW LQKLELWHG WKH HQVLOLQJ ... $%% ...
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yy ,Q FKDSWHU WKH HIIHFWV RI HQVLOLQJ WUHDWPHQW RQ FK
VLODJH DQG 639 VLODJH ZHUH LQYHVWLJDWHG 7KH)$ WUHDWHG
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RI $ IUDFWLRQ 1DQG FRQFHQWUDWLRQ IRU 639 ZKHUHDV LW GLG QR
VLODJH
yy ,Q FKDSWHU QXWULHQW XWLOL]DWLRQ RI VKHHS IHG WKH I
)LUVW , LQYHVWLJDWHG WKH HIIHFW RI UHSODFLQJ DOIDOID KD
&63 RQ D '0 EDVLV RQ UXPLQDO DQG LQWHVWLQDO QXWULH
UXPLQDO DQG GXRGHQDO FDQQXOD ZHUH IHG WKH FRQWURO GL
FRQWDLQLQJ RU RI WKH &63 DV VXEVWLWXWH IRU $+
PHWDEROL]DEOH HQHUJ\ UHTXLUHG IRU PDLQWHQDQFH ,QFUH
LQWDNH ZKHUHDV LW OLQHDUO\ LQFUHDVHG WKH LQWDNH RI D
WKH &63 VXEVWLWXWLRQ OLQHDUO\ GHFUHDVHG UXPLQDO '0 DQG
DIIHFW QLWURJHQ 1 LQWDNH DQG GXRGHQDO WRWDO 1 ÀRZ ZK
and decreased ruminal NH_3-1 FRQFHQWUDWLRQ DQG LQWHVWLQDO DQG WRWD

yy 1H[W , LQYHVWLJDWHG WKH HIIHFWV RI)$ WUHDWPHQW IRU H
QXWULHQW GLJHVWLRQ 1 XWLOL]DWLRQ DQG XUHD PHWDERO
HLWKHU XQWUHDWHG RU)$ WUHDWHG &) VLODJH RU 639 VLODJH
ZHWKHUV ¿WWHG ZLWK UXPLQDO DQG· GXRGHQDO ; FDQQXODV
2 IDFWRULDO DUUDQJHPHQW 7KH GLHWV FRQWDLQHG '0 RI &)
RI 639 VLODJH XQWUHDWHG RU)$ WUHDWHG DQG RI FRQFHQ
ZHUH SURYLGHG ZLWK GLHWDU\ '0 DW RI ERG\ ZHLJKW &RPS
WUHDWHG VLODJH GLHWV KDG KLJKHU 1 & FRQWHQW DQG 7'
QRW DIIHFW '0 LQWDNH EXW WKH WRWDO WUDFW '0 GLJHVWLEL
EDUOH\ EDVHG GLHWV 7KH UXPLQDO DQG WRWDO WUDFW GLJH
WKDQ IRU WKH EDUOH\ EDVHG GLHWV DQG KLJKHU IRU WKH)$
diets. The ruminal NH3 1 FRQFHQWUDWLRQ ZDV ORZHU IRU WKH)$ WUHDWH
VLODJH GLHWV 7KH LQWDNH DQG WRWDO GLJHVWLRQ RI 1 ZHUH
EDVHG GLHWV EXW QHW UXPLQDO 1 ORVV DQG UXPLQDO PLFURE
8UHD 1 SURGXFWLRQ ZDV WKH ORZHVW IRU WKH EDUOH\ EDVHG)

yy ,Q VXPPDU\ WKH HQVLOLQJ NXG]X YLQH KDUYHVWHG LQ 2FWR
GXH WR WKH KLJKHVW SKRWRV\QWKHWLF SLJPHQWV DQG 1)& F
HQVLOLQJ NXG]X YLQH UHGXFHG WKH 1)& FRQWHQW DQG LQFU
ZLOWLQJ FRXOG LQFUHDVH 1)& FRQWHQW DQG GHFUHDVH VROXE
VLODJH DQG 639 VLODJH FRXOG SDUWO\ VXEVWLWXWH ZLWK $+
7KH)$ WUHDWPHQW RI &) DQG 639 VLODJH LPSURYHG 1)& GLJHVV
FRUQ JUDLQ HQKDQFHG 1)& GLJHVWLRQ ZKLOH WKH FRPELQDWL
GXFWLRQ LQ PDWXUH VKHHS 7KH FRPELQDWLRQ RI OR-FDO IRUD
¿FLHQF\ RI QXWULHQW XWLOL]DWLRQ LQ UXPLQDQWV

Key words: 6ZHHW SRWDWR YLQH &DVVDYD IROLDJH .XG]X YLQH 'LH

Studies on the Utilization of Melatonin for Livestock Production

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yy 7KH RYHUXVH RI DQWLELRWLFV WKUHDWHQV ERWK WKH GHY
KHDOWK 7KH XVH RI DQWLELRWLFV LQ DQLPDO IRRG SURGXFWLF
IXWXUH 3URYLVLRQ RI DSSURSULDWH SKDUPDFHXWLFDO VXFK
HIIHFWV LQ WKH H[SHULPHQWDO DQLPDOV 7KH VWXG\ DLPHG WR
OLSRSRO\VDFFKDULGH /36 VWLPXODWHG ERYLQH PDPPDU\
JUDQXORVD FHOOV in vitro DQG WKH SRWHQWLDO HIIHFWV RI PHODWRQLQ RQ
FHOOV RI WKH -DSDQHVH TXDLO

7KH DQWL LQÀDPPDWRU\ DQG DQWLR[LGDQW HIIHFWV RI PHODW
yy 7R HYDOXDWH WKH WKHUDSHXWLF SRWHQWLDO RI PHODWRQL
E0(&V IURP WKH KDUPIXO HIIHFWV RI /36 ZDV H[DPLQHG E0(&V L
ZLWK RU ZLWKRXW PHODWRQLQ RU —J P/ IRU K DQG W
SUHVHQFH RI QJ P/ /36 7KH UHVXOW VKRZV WKDW PHODWRQL
7/5 VLJQDOLQJ SDWKZD\ LQ E0(&V ZKLFK KDG RSSRVLQJ H
LQÀDPPDWRU\ PHGLDWRUV 0HODWRQLQ GHFUHDVHG /36 LQGXFH
FKHPRNLQHV DQG SRVLWLYH DFXWH SKDVH SURWHLQV LQFOXGLQJ interleukin
(IL) IL-6, granulocyte-monocyte colony-stimulating factor, chemokine CC motif ligand (CCL)2,
CCL5, serum amyloid A, haptoglobin, C-reactive protein, ceruloplasmin, and . DQWL, and
LQFUHDVHG H[SUHVVLRQ RI WKH IL-1Ra DQG LQKLELWRU\ Ibrotalloproteinase
DGGLWLRQ PHODWRQLQ LQFUHDVHG GLW\URVLQH OHYHOV E
H[SUHVVLRQ RI nuclear factor E2-related factor (Nrf2) and heme oxygenase-1 LQ WKH 1UI DQWLR[L
GHIHQVH SDWKZD\ )LQDOO\ PHODWRQLQ DGPLQLVWUDWLRQ LQ
7KH UHVXOWV FRQ¿UP WKH K\SRWKHVLV WKDW PHODWRQLQ FD
GDPDJH

2. Protective effect of melatonin on LPS-stimulated granulosa cells in the Japanese quail

yy 7R HYDOXDWH WKH SRWHQWLDO RI PHODWRQLQ WR SURWHFW
/36 LQ WKH -DSDQHVH TXDLO *UDQXORVD FHOOV LVRODWHG IU
ZLWKRXW PHODWRQLQ RU —J P/ IRU K DQG WKHQ LQFXE
QJ P/ /36 %HQH¿FLDO HIIHFWV ZHUH REVHUYHG ZKHQ PHODW
FXOWXUHG JUDQXORVD FHOOV RI WKH -DSDQHVH TXDLO 0HODW
IL-6, IL-8

DGGLWLRQ PHODWRQLQ DGPLQLVWUDWLRQ LQFUHDVHG WKH Y
7KHVH UHVXOWV VXJJHVW WKDW PHODWRQLQ SURWHFWV FXOWX
DQG R[LGDWLYH VWUHVV GDPDJH DQG SURYLGH HYLGHQFH WK
RYDULDQ IROOLFOH LQIHFWLRQ LQ WKH -DSDQHVH TXDLO

3. Melatonin does not affect progesterone basal secretion but suppresses the luteinizing hormone receptor expression in granulosa cells of the Japanese quail

yy :KHWKHU H[SRVXUH RI JUDQXORVD FHOOV RI WKH -DSDQHVH
SURJHVWHURQH SURGXFWLRQ HZ[SUHVVLRQ LQ JUDQXORVD FHOOV

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Developing Risk Management Framework for Small-scale Shrimp Farming - A Case Study in East Java, Indonesia -

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WRQV PDGH XS IURP FDSWXUH ¿VKHULHV SURGXFWLRQ 7KXV V
DTXDFXOWXUH SURGXFHU LQ WKH ZRUOG ,QGRQHVLDQ H[SRUW F
WXQD FUDE DQG SHDUO $PRQJ WKRVH FRPPRGLWLHV VKULPS
FRXSOH RI \HDUV
yy ,QGRQHVLD H[SRUWV WZR SULPDU\ VSHFLHV RI VKULPS F Penaeus
monodon DQG SDFL¿F ZKLWH Penaeus vannamei VKULPS &RPPRQ SDUH WR WKH Penaeus vannamei QW EODFN
FRQWULEXWHV WZR WKLUG PLOOLRQ WRQV RI WKH WRWDO
WKH SURGXFWLRQ RI vannamei LQFUHDVHG FRQVLVWHQWO\ E\ DQ DYHUDJH RI
RI ,QGRQHVLDQ VKULPS SURGXFWLRQ KDV FDXVHG PDQ\ FK
GHJUDGDWLRQ VKULPS SULFH ÀXFWXDWLRQ DQG SURGXFW UHM
IHZ LVVXHV WKDW DIIHFWHG ,QGRQHVLDQ VKULPS SURGXFWL
IDUPLQJ WRGD\ LV EHLQJ LQFUHDVLQJO\ H[SRVHG WR ULVN DQG
DFWLYLWLHV LQ WKHLU EXVLQHVV $OO WKRVH ULVNV DUH SRV
PDQDJHG LQ D V\VWHPDWLF ZD\ IRU VXVWDLQDELOLW\ RI VKU
IUDPHZRUN LV PXFK QHHGHG IRU ,QGRQHVLDQ VKULPS LQGXVWU\
yy 7KH SXUSRVH RI WKLV VWXG\ LV WR GHYHORS D ULVN PDQDJ
VKULPS IDUPLQJ 7ZR VSHFLILF REMHFWLYHV DUH SURSRVHG
IDUPHUV¶ DWWLWXGH DQG SHUFHSWLRQ RI ULVNV DQG ULVN PDQDJH
IDUPLQJ WR GHYHORS D ULVN PDQDJHPHQW IUDPHZRUN W
PDQDJHPHQW VWUDWHJLHV DV ZHOO DV HYDOXDWH WKH HIIHF
VWXG\ ZDV FDUULHG RXW LQ WZR DUHDV RI (DVW -DYD ,QGRQ
-DYD DQG %DQ\XZDQJL 1RUWK FRDVW RI (DVW -DYD GLVWULF
PDLQ VKULPS SURGXFLQJ DUHDV LQ (DVW -DYD 3XUSRVLYH UDQ
ZDV FRQGXFWHG WR VHOHFW WKH VDPSOH RI VPDOO VFDOH VK
VPDOO VFDOH VKULPS IDUPHUV ZHUH VHOHFWHG %HIRUH VWDU
H[WHQVLRQ RI¿FHUV DFDGHPLD DQG KHDG RI VKULPS IDUPHU
UHOHYDQW LQIRUPDWLRQ

7KLV VWXG\ XVHG ([SORUDWRU\ )DFWRU $QDO\VLV ()$ DQG PXO
RI VRFLRHFRQRPLF FKDUDFWHULVWLFV RI IDUPHUV RQ WKHLU SH
RQ IDFWRU DQDO\VLV WKH UHVXOWV VKRZHG WKDW WKH IDUPHUV
production, personal, harvesting and marketing, weather and environment, policy and institutional and
business environment. ZHUH PDMRU VRXUFHV RI ULVNV LQ VKULPS IDUPLQJ
WKDW WKH SHUFHSWLRQV ZHUH LQÀXHQFHG E\ YDULRXV IDFWRUV
OHYHO DYDLODELOLW\ RI RII IDUP LQFRPH DQG ORFDWLRQ R
IDUPHUV SURFHSWLRQ RI ULVN DQG ULVN PDQDJHPHQW VWUDWHJLH
WKH VKULPS IDUPHUV GHYHORS D UDQJH RI VWUDWHJLHV DQG F
WR PLWLJDWH GLIIHUHQW W\SHV RI ULVN VRXUFH
yy 5HGXFLQJ GHYHORSLQJ WKH ULVN PDQDJHPHQW IUDPHZRUN
1=6 ,62 VWDQGDUG DV WKH IRXQGDWLRQ RI WKH IUDPHZ
RI ,QGRQHVLDQ VKULPS LQGXVWU\ ZKLFK PDLQO\ DW WKH VPD
VWDQGDUG FRQVLVW RI VHYHQ VWHS ULVN PDQDJHPHQW SURFHV
(VWDEOLVKLQJ WKH FRQWH[W 5LVN LGHQWLILFDWLRQ
WUHDWPHQW DQG 0RQLWRULQJ DQG UHYLHZ 0RUHRYHU %X
H[SOLFLWO\ XVHG LQ WKH WKLUG VWHS WR LGHQWLI\ WKH VRXU
%DVHG RQ WKH UHVXOWV WKLV VWXG\ IRXQG WKDW WKH IDUPH
ULVNV LQ WKHLU VKULPS IDUPV 7KH IUDPHZRUN DOORZV WKH I
VWUDWHJLHV EDVHG RQ WKH GHJUHH RI HI¿FDF\ RI PDQDJHPHQ
WKH VKULPS IDUPHUV WR PHDVXUH UDQN DQDO\VHV DQG SULR

Key words: 6KULPS)DUPLQJ 6PDOO VFDOH 5LVN 0DQDJHPHQW ,QGR

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The structure of human well-being related to ecosystem services in coastal areas - Possible psychological-factors affecting to design the sustainable society facing harmony with nature -

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Study on novel functional substances produced by lactic acid bacteria

+ L U R Ak R .

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Biosphere Sci.
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Biochemical Study on Lectins from Calcareous Green Algae of the Genus Halimeda

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LQIRUPDWLRQ LV NQRZQ FRQFHUQLQJ WKH VWUXFWXUH
LQYHVWLJDWHG WKH IRU GHYHORSLQJ QHZ XVHIXO OHFWLQV
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Key words: / H F W L Q Halimeda borneensis F D U E R K \ G U D W H E L Q G L Q J
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Biosphere Sci.
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7UDQVJHQLF PLFH VSHFL¿FDOO\ H[SUHVVLQJ in white adipose tissue showed less adipose tissue mass.

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},¬C±w(í·qÊëtSZ" "3&(qÚ«éÑ•"´ITqw ÈQwrs
yô·qïÛYwÚ¢µ Rw^å*"(í·qÊëtSMo AREG|S'|Ú«éÑ•"´ITÚ"§"
pK" Emr1•Ú«éÑ•"´ITw!ø|S'| kt)b"-Þ§ ïpK" CCL2/Mcp-1wCqr
s›ælh{fwAL| AREG Cq"q Emr-1S'| Mcp-1wCqxYtì `oM"\qUÌ'Tqsl
h{‡h|Ú¢µwG< T' 7o©•›s)`| M-CSF •p F`h™| LPS S'| IFN- ›;M
o M1 7Ú«éÑ•"´IT› ‹`hMt| AREG mRNA wCq ‹UÝŠ'•h{

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}(í·qÊëtSZ”"3&(aÒCqÚ¢µw^a|S‘|íwrs
y(í·qÊë›Ÿ$tCq›‹b” aP2¨; promoter–¬qÚ¢µ R AREG¨; ›ÈA^dh
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(í·qÊëtSMo¨; wCq!ˆtmMors`hq\–| TNF-. mRNA S‘| PGC1-. mRNA U
™tÿC`| leptin mRNA x ™tn—`h{

}"3&(¨; ›ôCq^dh¨;Q,¬EC EC Ú¢µw^a|S‘|íwrs
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q$Q $5(* 7Ú¢µ›¦ ^d| aP2-AREG¨; › b” db/+ Ú¢µ›˜h™| db/+ Ú¢µ›6S
¦ ^d| aP2-AREG¨; › b”¨;Q,¬¢ AREG-db/db£ Ú¢µ›ýht^Z`h{ AREG-db/db
Ú¢µ í›rs`hq\–| AREG-db/dbÚ¢µw.O•(í·qÊëO”U ™tn—`|(í·qI
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}"3&(5HÚ¢µ›;Mh%44 ‹QGÎ ÞÃçÚ¢µw^a|S‘|íwrs
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GÎ C± 7ÔtSMo| $5(* 7Ú¢µx¯ïÄé”çÚ¢µqz±`o|GÎ w¦ªq`owB(•
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T’+“+tí`hGÎ T’wsî8tSMo $5(* 7Ú¢µw.Ow ™tn—UÝŠ’•h{^’
t| $5(* 7Ú¢µtSMo^å*“• *“(í·qÊëO”t ™sn—UÝŠ’•h{°M|G
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ßyo
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Effect of Maltodextrin on the Glass Transition Properties of Freeze-Dried Mango Powder

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FKDQJHV DW D JODVV WUDQVLWLRQ WHPSHUDWXUH DOVR RFFXU
FRQWHQW RU aZ DWHU DFWLYLW\ FRQVWDQW WHPSHUDWXUH
GHFUHDVHV ZLWK DQ LQFUHDVH LQ ZDWHU FRQWHQW DQG
LVRWKHUP ZDWHU aZ FRQWHQW FXUYH LV LPSRUWDQW FULWHULD I
IUXLWV Mangifera indica L LV RQH RI WKH PRVW LPSRUWDQW DJULF
UHJLRQV %HFDXVH PDQJR FRQWDLQV D ODUJH DPRXQW RI ORZ P
JOXFRVH JODVV WUDQVLWLRQ RFFXUV UHDGLO\ ZLWK ZDWHU V
FDNLQJ RI SRZGHU 0DOWRGH[WULQ 0' KDV D PROHFXODU ZHLJKW KLJKHU
KDV EHHQ XVHG DV D SK\VLFDO PRGL¿HU RI GULHG IUXLWV 7KH
on the T_g RI GULHG IUXLWV EXW QR V\VWHPDWLF GDWD DV \HW IRU
WKLV VWXG\ ZDV WR XQGHUVWDQG V\VWHPDWLFDOO\ WKH HIIH
WUDQVLWLRQ DQG FDNLQJ SURSHUWLHV RI IUHH]H GULHG PDQJR
yy 7KH ZDWHU VRUSWLRQ LVRWKHUPV IRU WKH IUHH]H GULHG
VLJPRLGDO VKDSH W\SH ,, DQG WKH EHKDYLRU ZDV DQDO\]HG
HTXDWLRQ 7KH T_g (T_gas) LQFUHDVHG ZLWK DQ LQFUHDVHG 0' FRQWHQ
KLJKHU WKDQ PDQJR SXOS 0' V\VWHP
EHKDYLRU ZLWK DQ LQFUHDVHG DQG 0' FRQWHQ
VXJJHVWV WKDW WKH DPRUSKRXV PL[WXUHV KDYH D KLJKHU JODVV
LQFUHDVHG ZDWHU FRQWHQW EHFDXVH RI ZDWHU SODVWLFL]LQ
7D\ORU HTXDWLRQ 7KH FULWLFDO aZ
DQG ZDWHU VRUSWLRQ LVRWKHUP Wc and aZF
IRU VDPSOHV ZLWK 0' LQFUHDVHG aZ FRQGLWLRQ
could correspond to aZF ,W ZDV IRXQG WKDW FDNLQJ SURSHUW\ FRXOG EH
yy)RU WKH IUHH]H GULHG PDQJR VROXWH 0' PL[WXUHV WKH
VDPSOH VKRZHG D W\SH ,, VLPLODU WR WKDW IRU WKH PDQJR
PDQJR VROXWH ZLWK 0' H[KLELWHG ... VKDUS HQGRWKHUP
ZDV VOLJKWO\ ORZHU WKDQ WKDW IRU PDQJR SXOS ... 7KLV VXJJ
PDQJR ... LQFUHDVHG ZLWK LQFUHDVHG ZDWHU FRQWHQW EHF
addition, T_g LQFUHDVHG ZLWK LQFUHDVHG 0' FRQWHQW 7KHVH UHV
PDQJR SXOS 0' PL[WXUHV $V Wc and aZF LQFUHDVHG ZLWK LQFUHDVH

The W_c and a_{ZF} ZHUH ORZHU IRU WKH PDQJR VROXWH 0' VDPSOHV WKD
VXJJHVWLQJ WKDW SXOS FDQ LPSURYH WKH SK\VLFDO VWDELOLW
yy)URP WKHVH UHVXOWV ZLWK SUHYLRXV UHVXOWV LQ OLWHUDW
HIIHFW RI ZDWHU T_J RQH SUHYLRXV IRXQG FDNLQJ ZDV SURSRVH
XQGHUVWDQGLQJ WKH SK\VLFDO VWDELOLW\ RI GULHG IUXLWV E

Key words:

Physiological functions and gene expression mechanism of aldo-keto reductase in tomato

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Physicochemical study on molecular compound formation in OPO/OPO binary system for rapid cooling and isothermal crystallization processes

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6WXG\ RQ WKH LQÀXHQFH RI WH[WXUH DQG À
on physical properties of strawberry jam

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1XWULWLRQDO VWXG\ RQ WKH LQÀXHQFH RI GL $_6$ on colon luminal environment and heart

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Introduction

yy 9LWDPLQ B$_6$ (B$_6$) LV DQ HVVHQWLDO ZDWHU VROXEOH YLWDPLQ UHTXL LQ PDPPDOV 3/3 LV WKH ELRORJLFDOO\ DFWLYH IRUP RI B$_6$ YHU UHDFWLRQV %H\RQG LWV WKH UROH DV D FRHQ]\PH IRU PRUH ... FRORQ GLVHDVHV DQG KHDUW GLVHDVHV +RZHYHU WKH XQGHU are still unclear.

Effect of dietary supplemental vitamin B$_6$ and gender difference on colon luminal environment

yy $FFXPXODWLQJ VWXGLHV KDYH VXJJHVWHG B$_6$ in colon diseases. It has been UHSRUWHG WKDW B$_6$ LV WKH FDWDO\VW RI PDQ\ JHQGHU GLIIHUHQFH 7KHUH LQFLGHQFH RI FRORQ GLVHDVHV LV DIIHFWHG E\ JHQGHU GLIIHUHQ HIIHFWV RI JHQGHU RQ FRORQ GLVHDVHV DUH VWLOO XQFOHDU LV HVVHQWLDO WR UHYHDO WKH JHQGHU GLIIHUHQFH RQ FRORQ GL K\SRWKHVL]HG WKDW JHQGHU GLIIHUHQFH PRGXODWHV WKH FRO B$_6$ VWDWXV 7R LQYHVWLJDWH WKLV K\SRWKHVLV PDOH DQG IHPD PJ UHFRPPHQGHG RU PJ KLJK S\ULGR[LQH +&O NJ GLHW VLJQL¿FDQWO\ LQFUHDVHG IHFDO PXFLQ DQG WKH HIIHFW ZDV S PXFLQ OHYHOV ZHUH VLJQL¿FDQWO\ FRUUHODWHG ZLWK FRORQ RI FRORQ 08& LPSO\LQJ WKDW WKH FRPELQHG HIIHFW RI B$_6$ DQ PHGLDWHG E\ WKH DOWHUDWLRQ LQ WKH OHYHOV RI VXFK DPLQ VKRZHG WKH VLJQLILFDQW HIIHFWV RI JHQGHU GLIIHUHQFH RUQLWKLQH DVSDUDJLQH DVSDUWDWH UDWLR JOXWDPLQH JOX DEXQGDQFH DQG FRORQ JHQH H[SUHVVLRQV RI 08& DQG 7/5 GLHWDU\ B$_6$ DQG JHQGHU GLIIHUHQFH PD\ KDYH DQ LPSDFW RQ FRORQ

Effect of dietary supplemental vitamin B$_6$ on the levels of anti-disease metabolites in heart

yy 6HYHUDO HSLGHPLRORJLFDO VWXGLHV to heart diseases. The WKH S VXJJHVWHG PHFKDQLVPV UHVSRQVLEOH B$_6$ LQ WKH SUHYHQWLRQ RI K\ KRPRF\VWHLQH SXULQHUJLF UHFHSWRUV VLJQDOLQJ LQIODPP H[DFW PHFKDQLVPV B$_6$ RI WKH HIIHFW RI B$_6$,Q WKLV VWXG\ , LPSURYHV KHDUW G\VIXQFWLRQ E\ PRGXODWLQJ DPLQR DFLG PH

WR LQYHVWLJDWHG FRQFHQWUDWLRQV RI PHWDEROLWHV RI WKH
PJ KLJK S\ULGR[LQH 31 +&O NJ IRU VL[ZHHNV
yy $V D UHVXOW WKHUH ZHUH RYHU PHWDEROLWHV GHWHFWH
$B6 WKH ¿UVW JURXS DIIHFWHG WKH PHWDEROLWHV
anserine, homocarnosine, and D O DQLQH 7KH VHFRQG JURXS ZDV WKH DPLQR
LVROHXFLQH OHXFLQH YDOLQH PHWKLRQLQH 7KH WKLUG JUR
F\FOHV VXFK DV PDOLF DFLG IXPDULF DFLG DUJLQLQRVXFFLQ
RWKHU PHWDEROLWHV VXFK DV JDPPD DPLQREXW\ULF DFLG *
acid, EXW\UREHWDLQH FDUQLWLQH DGHQLQH DQG)$' 7KHV
VLJQL¿FDQWO\ LQFUHDVHG ZKHUHDV JKR
metabolites, carnosine, anserine, D O DQLQH *$%$ KLVWDPLQH IXPDULF DFLG
DGHQLQH DUH NQRZQ WR KDYH KHDUW SURWHFWLYH HIIHFWV 7
WKH KHDUW SURWHFWLYH HIIHFWV RI
WKH UHDVRQ ZK
Conclusion
yy 7KHVH VWXG\ GHPRQVWUDWHG WKDW
PDQQHU 7KH PHFKDQLVP RI
E\ PRGXODWLQJ FRORQ IUHH WKUHRQLQH DQG VHULQH DQG JH
IRXQG WKH JHQGHU GLIIHUHQFH PRGXODWHG VHYHUDO SDUDPH
PLFURÀRUD DQG H[SUHVVLRQV RI 08& DQG 7/5 LPSRUWDQW
WKH HIIHFWV RI JHQGHU RQ FRORQ GLVHDVHV DUH PHGLDWHG
IRXQG WKH LQFUHDVHG OHYHOV RI VHYHUDO KHDUW SURWHFWL
KLVWDPLQH HWF LQ WKH KHDUWV
FDUQRVLQH DQVHULQH *$%$ DQG
LPSO\ WKH QRYHO PHFKDQLVPV RI DQ
metabolites.

Key words: YLWDPLQ %12 JHQGHU GLIIHUHQFH PXFLQ

%HQH¿FLDO Aspergillus-derived protease preparations on colonic luminal environment

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yy 6HYHUDO Aspergillus VSHFLHV KDYH EHHQ ZLGHO\ XVHG LQ WUDGL
SKDUPDFHXWLFDOV GXH WR WKHLU HQ]\PH Aspergillus oryzae (A. oryzae) DELOLW
ZLGHO\ XVHG IRU WKH ODUJH VFDOH SURGXFWLRQ RI WUDGLWLR
DQG ULFH YLQHJDUV 7KH A. oryzae DUH FXOWLYDWHG EHQ]LPHV PD\ KHOS WR LG
DQG IXQFWLRQDO FKDUDFWHUV RI YDULRXV IRRGVWXIIV ,Q RUG
SRWHQWLDOO\ EHQH¿FLDO HIIHFWV RQ KHDOWK LQ Aspergillus FDPH WKH
SURWHDVH SUHSDUDWLRQV RQ WKH FRORQLF OXPLQDO HQYLURQ
yy ,Q WKH FKDSWHU , IRXQG WZR HQ]\PH SUHSDUDWLRQV
Aspergillus oryzae DQG 2ULHQWDVH Aspergillus niger WKLV FRXOG H[HUW
EHQH¿FLDO HIIHFWV RQ FRORQLF HQYLURQPHQW $PDQR SURWHD
RI FHFLO BifidobacteriumDQG Lactobacillus WKH ZHOO NQRZQ KHDOWK SURPRWLQJ
FRQFHQWUDWLRQV RI FHFDO Q EXW\UDWH SURSLRQDWH DQ
LPSRUWDQW UROHV LQ JXW KHDOWK ZHUH LQFUHDVHG E\ WKH
7RWDO VKRUW FKDLQ IDWW\ DFLGV 6&)$V FRQFHQWUDWLRQV Z
DQG 2ULHQWDVH JURXSV FRPSDUHG WR WKH FRQWURO JURXS ,
LPPXQRJOREXOLQ $,J$ DQG PXFLQV ZKLFK DUH UHVSRQVLEOH
7DNHQ WRJHWKHU WKH Aspergillus VSHFLHV GHULYHG SURWHDVH SUHSDUDWLR
PRGLI\ WKH FRPSRVLWLRQV RI FHFDO PLFURÀRUD 6&)V ,J DQ
yy 7KH $PDQR SURWHDVH SUHSDUDWLRQ FRQWDLQV VHYHUDO
DONDOLQH SURWHDVH DP\ODVH HWF ,Q WKH FKDSWHU ,
SURWHDVH SUHSDUDWLRQ DUH UHVSRQVLEOH IRU WKH ELILG
LQYHVWLJDWLQJ ZKHWKHU Bifidobacterium OHYHOV DUH HOHYDWHG E\ WKH DGGL
SURWHDVH $F3 DW WKH GRVH HTXLYDOHQW WR WKH OHYHO IR
ZKLFK LV FRQVLGHUHG DV WKH HIIHFWLYH GRVH IRU JHQHUDWLQ
FHFDO Bifidobacterium QXPEHUV ZHUH QRW DIIHFWHG E\ WKH VXSS
SXUL¿HG $F3 DW WKH OHYHO HTXLYDOHQW WR WKH $F3 DPRXQW
LQWULJXLQJO\ , IRXQG WKDW WKH GLHW FRQWDLQLQJ IROG KL
WKDW IRXQG LQ WKH $PDQR SURWHDVH Bifidobacterium VLJQLILFD
Lactobacillus QXPEHUV DQG %LILGREDFWHULXP LQ UDWV 7KLV EL¿GRJHQ
REVHUYHG LQ WKH UDWV IHG WKH LQDFWLYDWHG $F3 LPSO\LQJ
NH\ IDFWRU XQGHUO\LQJ WKH EL¿GRJHQLF HIIHFW ZKLFK ZDV EH

yy $FFXPXODWLQJ HYLGHQFH LQGLFDWHV WKDW YDULRXV NLQ
FUXFLDO URОHV LQ WKH LQWHVWLQDO KRPHRVWDVLV ,Q WKH FI
LQ WKH $PDQR SURWHDVH SUHSDUDWLRQ PD\ VXFFHVVIXOO\ SDV
WKHQ LQÀXHQFH WKH SURWHLQV DQG DPLQR DFLGV PHWDEROLV
7KXV , LQYHVWLJDWHG FKDQJHV LQ SUR¿OH RI IUHH DPLQR DF
$PDQR SURWHDVH VXSSOHPHQWHG GLHW $V D UHVXOW WKH $P
DPLQR DFLGV ZKLFK ZHUH YDOLQH F\VWLQH WKUHRQLQH DOD
taurine, DPLQREXW\ULF DFLG *$%$ DQG RUQLWKLQH 7KHVH DPL
SRVLWLYH DQG SURWHFWLYH HIIHFWV RQ LQWHVWLQDO KHDOWK
VXSSUHVVLQJ R[LGDWLYH VWUHVV DQG LQIODPPDWLRQ 7KXV
SURWHDVH KDV D EHQHILFLDO LPSDFW RQ JXW KHDOWK E\ LQF
PHQWLRQHG DERYH)XUWKHUPRUH WKH OHYHOV RI WKH DPLQ
PRVWO\ DVVRFLDWHG ZLWK WK% L¿GREDFWHULXP DQG Lactobacillus. Thus, the H RI FHF
HOHYDWLRQ RI ¿GREDFWHULXP DQG Lactobacillus E\ WKH $PDQR SURWHDVH LQWDNH
to the increased amino acids in the cecal contents.
yy ,Q FRQFOXVLRQ WKHVH VWXGLHV VXJJHVW WKDW A. oryzae SURWHDVH GLHWDU\
SUHELRWLF OLNH DQG EHQHILFLDO HIIHFWV RQ JXW KHDOWK Bifidobacterium and
Lactobacillus, YDULRXV JXW SURWHFWLYH DPLQR DFLGV 6&)V ,J
Aspergillus SURWHDVH SUHSDUDWLRQV KDYH EHHQ ZLGHO\ XVHG IR
GLJHVWLYH HQ]\PH SUHSDUDWLRQV DOO RYHU WKH ZRUOG 0\
DSSOLFDWLRQ RI Aspergillus SURWHDVH DQG WKH QRYHO EHQHILWV RI IHU
Aspergillus spp)XUWKHU VWXGLHV DUH QHFHVVDU\ WR FODULI\ WKH
HIIHFWV RI Aspergillus protease preparations.

Key words: Aspergillus SURWHDVH FRORQ %L¿GREDFWHULXP, IgA

Food nutritional studies on the fermented soybeans prepared with the fungus of the genus Rhizopus

7 V X \ R

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Rhizopus

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Physicochemical study on nucleation and polymorphic transformation of fat crystals and their controlling

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Nutritional and physiological studies on improvement of productivity and grain quality in wheat (Triticum aestivum L.) under drought stress condition

MOHAMMAD SAFAR NOORI

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DYDLODELOLW\ DQG TXDOLW\ 7KH REMHFWLYHV RI WKLV VWXG\
DQG SRWDVVLXP 13. IHUWLOL]DWLRQ DQG FRPELQHG DSSOLFD
SURGXFWLYLW\ JUDLQ PLQHUDOV VWDUFK FUXGH SURWHLQ V
DQG SK\WDWH 3 3K\ 3 FRQWHQW RI ZKHDW XQGHU GURXJKW VV
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yy 7KH WKLUG H[SHULPHQW KLJKOLJKWHG WKH FRPELQHG HIIHFV
ZKHDW XQGHU GURXJKW VWUHVV FRQGLWLRQ 0LQDPLQRNDRUL
VXEMHFWHG WR OHYHOV RI . IHUWLOLWLHU DQG ZHHG FRQWURO
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Biosphere Sci.
57 • 43 µ 44 (2018)

Root growth plasticity and phosphorus remobilization in rice DV DGDSWLYH PHFKDQLVPV WR SKRVSKRUXV

'LVVDQD\DND 0XGL\DQVHODJH 6DPDQWKD %DQGDUD ' DISSANAYAKA

*UDGXDWH 6FKRRO RI %LRVSKHUH 6FLHQFH +LURVKLPD
+LJDVKL +LURVKLPD -DSDQ

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Introduction:

yy $PRQJ WKH FHUHDO FURSV JURZQ LQ WKH ZRUOG Oryza sativa ULFH LV WKH PRV
IHHGLQJ D ODUJH 'VKDUH RI WKH ZRUOG 5LFH FXOWLYDUV ZLWK HQ
HIILFLHQF\ DUH LQFUHDVLQJO\ LPSRUWDQW IRU VXVWDLQDEOH
FRQVWUDLQW WR JOREDO ULFH SURGXFWLRQ $OWHUQDWLYH
DJULFXOWXUH WR UHGXFH GHSHQGHQFH RQ 3 IHUWLOL]HUV

Research Objectives:

yy $LPV RI WKH VWXG\ ZHUH WR H[DPLQH ORZ 3 WROHUDQFH
3 GH¿FLHQW FRQGLWLRQV PROHFXODU PHFKDQLVPV WKDW G
DFTXLUHG 3 DPRQJ GLIIHUHQW YHJHWDWLYH DQG UHSURGXFW
JHQRW\SHV JHQRW\SLF GLIIHUHQFHV RI \LHOG FRPSRQHQW
WROHUDQW DQG VHQVLWLYH ULFH JHQRW\SHV DQG JHQRP
Japonica rice

Research Methodology:

yy 7KH HQWLUH VWXG\ FRPSULVHG RI WZR H[SHULPHQWV ZLWK
ORZ 3 VHQVLWLYH FXOWLYDUV GRQH LQ SRWV ZLWK 5HJRVRO
SRSXODWLRQ RULJLQDWHG IURP FURVVLQJ $NDPDL ZLWK .RVKLK
PJ 3 ^{1} soil Ca(H$_2$PO$_4$)$_2$ + 2 3 DQG ZLWKRXW 3 3 DGGLWLRQ %LRPD
GLIIHUHQW SODQW RUJDQV OHDI 3 UHPRELOL]DWLRQ HI¿FLHQF
LQYHVWLJDWHG ,Q VXSSRUWLQJ K\GURSRQLF H[SHULPHQW SOD
OLSLG FRPSRQHQWV RI GLIIHUHQW OHDYHV ZHUH VHSDUDWHG E\
7/& 4XDQWLWDWLYH WUDLW ORFL 47/ VHTXHQFH ZDV SHUIR
3 GH¿FLHQW $QGRVRO WR LGHQWLI\ WKH JHQRPLF UHJLRQV DVVR

Results and Discussion:

yy /RZ 3 WROHUDQW $NDPDL LV FDSDEOH RI DFTXLULQJ PRUH 3
ORZ 3 VHQVLWLYH .RVKLKLNDUL $W DOO KDUYHVWLQJ WLPHV
VLPLODU WR WKDW RI .RVKLKLNDUL LQ D 3 VXSSOLHG FRQGLWLR
LQ WHUPV RI WKH WRWDO 3 XSWDNH 0RUH SODVWLF QDWXUH RI

$NDPDL WR H[SORUH JUHDWHU YROXPHV RI VRLO DQG DFTXLULQJ
yy 5HVXOWV DOVR FRQILUP WKDW $NDPDL JURZQ XQGHU 3 G
UHPRELOL]DWLRQ HI¿FLHQF\ WKDW VXSSRUWV UHGLVWULEXWLRQ
VHJPHQWV ZLWKLQ WKH SODQW $W PDWXULW\ $NDPDL LQ 3 DF
JURZQ LQ 3 FRQGLWLRQ ZKLFK FRXOG UHVXOW IURP PHP
SKRVSKROLSLGV ZLWK OLSLGV WKDW GR QRW FRQWDLQ 3 $PRQ
UHSODFHPHQW VWURQJO\ RQO\ LQ ORZHU OHDYHV ZKHQ LW LV J
$NDPDL SKRVSKROLSLGV ZHUH PDLQO\ UHSODFHG E\ JDODFWR
XQGHU 3 GH¿FLHQW FRQGLWLRQV $NDPDL PDLQWDLQV ORZHU O
QRW FRQWDLQ 3 LQVWHDG LQ ORZHU OHDYHV ZKLOH LQYHVWLQ
ZKHUH OHDI HPHUJHQFH DQG H[SDQVLRQ RFFXU
yy 7KH KLJKHVW JUDLQ \LHOG ZDV SURGXFHG E\ .RVKLKLNDUL
ZKHQ LW LV JURZQ LQ 3 $NDPDL UHFRUGHG DQG JUHDWH
UHVSHFWLYHO\ WKDQ WKRVH RI .RVKLKLNDUL XQGHU 3 FRQG
DSSHDUHG WR EH WKH NH\ \LHOG FRPSRQHQW GHWHUPLQLQJ W
WZR 3 WUHDWPHQWV 3 GH¿FLHQF\ KDG D VWURQJHU LPSDFW RQ
SHUFHQWDJH RI .RVKLKLNDUL XQGHU 3 ZDV ORZHU E\ WKDQ
ZDV RQO\ ORZHU
yy *HQRPLF UHJLRQ DVVRFLDWHG ZLWK ORZ 3 WROHUDQFH F
FKURPRVRPH LQ WKH UHJLRQ IURP 0E WR QTL for Low-P ORZHU H
Tolerance1 (qLPT1 1RYHO JHQHV UHVSRQVLEOH IRU qLPT1 DQG 3 WUDQVSRUWHUV
PROHFXODU H[SHULPHQWV WR FODULI\ WKRVH QRYHO JHQHV DVVRFLD
$NDPDL

Conclusions:
yy ,Q UHVSRQVH WR 3 GH¿FLHQW FRQGLWLRQV ORZ 3 WROHUDQW
V\VWHP DQG H[SORUHV JUHDWHU YROXPHV RI VRLO WR DFTXLU
7KLV GHYHORSPHQW DQG H[SORUDWLRQ KHOSV $NDPDL WR VXSS
UHPRELOL]H SDUW RI WKH 3 LQ ORZHU PDWXUH OHDYHV WR XSSH
(I¿FLHQW OHDI 3 UHPRELOL]DWLRQ RI $NDPDL LV SDUWO\ UHODW
ZKLFK SKRVSKROLSLGV ZHUH PDLQO\ UHSODFHG ZLWK JDODFWRO
JUDLQ \LHOG GLIIHUHQFH EHWZHHQ WZR FXOWLYDUV LV WKH QX
WUDLW RI $NDPDL QTL for Low-P Tolerance1 (qLPT1) located in chromosome 12. P
HI¿FLHQW ULFH JHQRW\SHV FRXOG EH DFKLHYHG E\ L GHYHOR
DFTXLUH PRUH VRLO 3 XQGHU 3 GH¿FLHQF\ DQG LL SURGXFLQ
FRQFHQWUDWLRQV RU E\ LQFUHDVLQJ WKH UHGLVWULEXWLRQ R
ELRPDVV DOORFDWLRQ WR WKH GHYHORSLQJ RUJDQV

Key words: 5RRW JURZWK SODVWLFLW\ 3 DFTXLVLWLRQ 3 XVH H
4XDQWLWDWLYH 7UDLW /RFL

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Effects of Polycyclic Aromatic Hydrocarbons (PAHs) and Acid Mist on Plants and Their Mitigation

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FDUFLQRJHQV DQG PXWDJHQV 7KH\ DUH JHQHUDOO\ IRUPHG DV
LQFRPSOHWH FRPEXVWLRQ RI RLO JDV ZRRG FRDO DQG RWK
HQYLURQPHQW WKURXJK WZR PDLQ VRXUFHV DQWKURSRJHQL
$IWHU GHSRVLWLQJ RQ WKH SODQW OHDYHV WKH\ FDXVH VWUHV
VSHFLHV 526 7KLV VWXG\ ZDV FDUULHG RXW WR FKDUDFWHUL
3$+V DQG XQGHUVWDQG WKH UROH RI 526 LQ JHQHUDWLQJ R[LGD

yy &KDSWHU SURYLGHV JHQHUDO LQWURGXFWLRQ RI 3$+V I
GHSRVLWLRQ DQG WR[LFLW\ RQ KXPDQV DQG SODQWV JHQHUD
SODQWV DQG PLWLJDWLQJ WKHLU QHJDWLYH HIIHFWV XVLQJ 526
REMHFWLYHV RI RXU VWXGLHV WKURXJKRXW WKH WKHVLV

yy &KDSWHU GHVFULEHV D VWXG\ FDUULHG RXW WR FKDUDFWHU
VWUHVV LQGXFHU ZLWK DQG ZLWKRXW VXOIXULF DFLG 6 $FLG
VFDYHQJLQJ DFWLYLW\ RI PDQQLWRO DVFRUELF DFLG DQG ZKH
JUHHQKRXVH DQG IXPLJDWHG ZLWK ÀXRUDQWKHQH)/8 SKHQDQ
DQG LQ YDULRXV FRPELQDWLRQV IRU GD\ 9DULRXV SK\VLF
RWKHUV ZHUH DQDO\]HG XVLQJ VWDQGDUG PHWKRGV 7KH UHV
R[LGDWLYH VWUHVV WR WKH SODQWV YLD 526 JHQHUDWLRQ OHD
VDWXUDWLQJ)/8 GHQDWXUDWHG DQG LQWHUQDO FDUERQ GLPLQLVH FRQ
ZDWHU UHODWLRQV DQG FKORURSK\OO SKRWRV\QWKHWLF FDQW
DV ZHOO DV SHU FHQW UHGXFWLRQ LQ FKORURSK\OO D &
7RW &KO FRQWHQWV ZHUH UHFRUGHG LQ)/8 IXPLJDW
&RPELQDWLRQ RI 0DQQ ZLWK)/8 VFDYHQJHG 526 DQG VXEVWDQ
SODQWV DQG KHQFH DOO WKH PHDVXUHG SDUDPHWHUV ZHUH
IXPLJDWLRQ KDG YDULHG HIIHFWV RQ PDULJROG SODQWV DQ
IXPLJDWLRQ RI 6 $FLG ZLWK ERWK WKH 3$+V KDG VLJQL¿FDQW
SRVLWLYH HIIHFW RQ IUHVK DQG WXUJLG ZHLJKW RI WKH SO
SDUDPHWHUV 7KH ORZHVW SUROLQH FRQWHQWV DQG KLJKHVW
IXPLJDWHG SODQWV IXUWKHU FRQ¿UPHG WKDW 526 JHQHUDWLRQ

UHVXOWV DOVR UHYHDOHG WKDW 0DQQ FRXOG EH DQ HIILFL
PDULJROG SODQWV 2YHUDOO WKH UHVXOWV RI FKDSWHU V
GHOHWHULRXV WKDQ ORZ PROHFXODU 3$+ 3+(DQG 0DQQ ZDV
HIIHFWV RI KHDY\ PROHFXODU 3$+V WKDQ ORZHU PROHFXODU RQ

Measures against global warming by taking advantage of administrative

SXEOLF LQIRUPDWLRQ DQG WKH YHUL¿FDWLRQ RI WK

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Û á = • 9 † = 0 f • \ b ” r w w 4 • Ä À w … M o | ¿ n › ú æ • \ b ” r w q] w • ' | A Ý ¶ ¦ © ³ Û á ï Ä £ } • 0 f › M o | ± ` | {

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Measurement, Dynamics and Roles of Lipid Hydroperoxide, Singlet Oxygen and OH Radical in Natural Waters

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yy ,Q FKDSWHU RQH D EULHI LQWURGXFWLRQ WR OLSLGV DQG V
OH radical (2+ DQG VLQJOHW R[\JHQ $^1O_2$) ZHUH LQWURGXFHG 'HVSLWH WKH SUHV
ZDWHU DQG WKH DYDLODELOLW\ RI FRQGLWLRQV QHFHVVDU\ WR F
/+3V KDYH QRW \HW EHHQ UHSRUWHG SHUKDSV GXH WR ODFN
WKHP +HQFH WKH QHHG WR VHOHFWLYHO\ TXDQWLI\ OH and /+3V ZDV S
$^1O_2$ LQ YDULRXV QDWXUDO ZDWHUV LQ -DSDQ ZDV GLVFXVVHG 7KH
RI DQDO\WLFDO PHWKRG WR VHOHFWLYHO\ GHWHUPLQH /+3V LQ
the $^1O_2$ JHQHUDWLRQ LQ QDWXUDO ZDWHUV LQ 2+ CXAX... D@pÀ H[SHULPHQWV
addressed.

yy &KDSWHU WZR UHSRUWV WKH GHYHORSPHQW RI D VHOHFWLYH
ZDWHUV $ PHWKRG ZDV GHYHORSHG WR VHOHFWLYHO\ GHWHU
SUREH /LSHUÀXR GLSKHQ\OSKRVSKDQ\O SKHQ\O WK
ď'ě' C@ GLLVRTXLQROLQH WHWUDRQH 7KH FRQGLWLRQV DQ
VHOHFWLYLW\ CXAX€0 /+3V RYHX€0 RWKHX€0 QDWXUDO ZDWHX€0 K\GU
K\GURSHUX... °Àp€0 DQG HWK\O K\GURSHUX... °Àp€ 07KH PHWKRG
GHWHUPLQDWLRQ RI /+3V LQ ZDWHU IX... 0WKH .XURVH 5LYHU -D
GHWHFWLRQ OLPLW WR nM 7KH DYX...P@pÀ Q@pÀ 0RI /+3 VSLNHG ULY
simulator resulted in an increased H_2O_2 FRQFHQWUDWLRQ O_2 CXAX...H@pÀ LQ JRWK EWH +D SR
VLQN CXAX€0 ð°0`0À 0PÀ•€P0 @p€P

yy 7KH VSDWLDO GLVWULEXWLRQ RI $^1O_2$ LQ 6HWR ,QODQG 6HD ZKLFK ZDV KL
UHSRUWHG LQ FKDSWHU)XUIXU\O DOFRKRO $^1O_2$ JHQ)$ ZDV XVHG 7KH VW
VWDWH FRQFHQWUDWLRQ RI $^1O_2$ >$^1O_2$]ss ZDV CXDFWRU 0RI ^{14} RI ^{14} WR [
0 LQ 2VDND ED\ ,Q DGGLWLRQ WKH FKURPRSKRULF GLVVR
FKDUDFWHULVWLF VXFK DV a_{300} DEVRUSWLRQ FRHIILFLHQW DW
GHWHUPLQHG $ VWURQJ SRVLWLYH FRUUHODWLRQ $^1O_2$]ss and a_{300} ZDV REWDLQHG EHWZHHQ >
FRUUHODWLRQ ZDV HYHQ VWURQJHU U 3 ZLWKLQ 2VD
>$^1O_2$]ss DQG &'20 FRQFHQWUDWLRQ LQ 2VDND ED\ ZDV GHULYHG 3UH
JRRG DJUHHPHQW ZLWK H[SHULPHQWDOO\ REWDLQHG YDOXHV
PRGHO IRU WKH >$^1O_2$]ss in Seto Inland Sea based on CDOM data.

yy &KDSWHU UHSRUWV WKH SKRWRJHQHUDWLRQ RI $^1O_2$ and 2+ IRU FKDUDFWHULV
ZDWHUV LQ -DSDQ 7KH VDPSOHG ULYHUV LQFOXGH .XURVH ULYH

2VDND DQG .RNXEX ULYHU LQ &KLED SUHIHFWXUH 7KHVH R'20
GHWHUPLQHG 7KH D UDQJH RI VPWKH ULYHU ZDWHUV ZLWK W
YDOXHV REWDLQHG LQ 2KWD DQG .XURVH ULYHU ZDWHU UHSHFW
yy 7KH UDQJH RI RRWRIRUPDWLRQ V2+ REWDLQHG LQ WKH VDPSOHV
DQG ZHUH LQ WKH UDQJ DQG [0[UHSHFWLYHO\ ZLWK 2KW
.RNXEX ULYHU KDYLQJ WKH ORZHVW DQG KLJKHVW YDOXHV UHVS
yy For $ GHWHUPLQDWLRQ WKH DYHUDJH ZDWHU REWDLQHG IRU
0 s UHVSHFWLYHO\ 7KH VLJQL¿FDQW YDULDWLRQ LQ W
LQÀXHQFH GLIIHUHQW UDWHV RI SKRWRFKHPLFDO UHDFWLRQV L
OH and $ FDQ FRQWULEXWH WR OLSLG SHUR[LGDWLRQ LQ ULYHU ZD
yy ,Q FKDSWHU WKH LQÀXHQFH RI WKH WZR 526 RQ SROOXWDQ
UDWH FRQVWDQW DQG WKH GLD]LRQ ZHUH GHWHUPLQHG 7KH[UHDFWI
10 M s UHVSHFWLYHO\ LV DERXW VL[RUGHUV KLJKHU WKDQ LWV UHDFWLRQ
&DOFXODWHG KDOI OLYHV REWDLQHG IURP WKH UHDFWLRQ UDW
VHDZDWHU DQG ULYHU ZDWHU VDPSOHV UHVSHFWLYHO\ 7KH GLDW
GLD]LQRQ LQ QDWXUDO ZDWHUV
yy ,Q FKDSWHU D VLPSOH LQH[SHQVLYH VHW XS ZDV GHVLJQHG
SKDVH $ ILOWHU PDWHULDO W\SLFDOO\ HPSOR\HG LQ WKH DL
%HQJDO SKRWRVHQVLWL]HU DQG LUUDGLDWHG LQ WKH SUHVHQF
LWV GHJUDGDWLRQ ZDV PRQLWRUHG 7KH GHJUDGDWLRQ RI))$ S
about $ IURP WKH WUHDWHG ILOWHUV $ PRQLWRULQJ VWXG\ RI
REVHUYHG 7KH VXFFHVVIXO LPSOHPHQWDWLRQ RI WKLV WHFK
EH LQFRUSRUDWHG LQWR VXFK ¿OWHUV IRU RQZDUG DSSOLFDWL

Key words: /LSLG +\GURSHUR[LGHV 6LQJOHW R[\JHQ +\GURO[\O UDGLF

Photochemical Generation of Reactive Species in Seawater: Analyses, Kinetic Considerations, and Environmental Implications

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yy 3KRWRFKHPLFDO UHDFWLRQV ZKLFK JHQHUDWH VHYHUDO UH
VXUIDFH ZDWHUV 7KHUHIRUH WKLV VWXG\ ZDV FDUULHG RXW
LQYROYHPHQW RI UDGLFDO UDGLFDO LQWHUDFWLYH UHDFWLRQ
and O_2^- UDGLFDOV LQ VHDZDWHU XVLQJ FKHPLFDO NLQHWLFV SDUD
SKRWRFKHPLFDOO\ JHQHUDWHG 12 DQG DFFRXQW IRU VLQNV RI S
and O_2^- UDGLFDOV LQ VDPSOHV IURP WKH 6HWR ,QODQG 6HD -D
H[SHULPHQW WR $_2$SKRWRFKHPLFDO JHQHUDWLRQ RI +2 JDV SKDVH XVLQJ DQ DSSUR

yy &KDSWHU SUHVHQWV SHUVSHFWLYHV RQ SKRWRFKHPLFDOO\
ZLWK SDUWLFXODU HPSKDVLV RQ WKH K\GURVSKHUH E\ GLVFXV
HQYLURQPHQWDO LPSOLFDWLRQV

yy &KDSWHU UHSRUWV DERXW FRQFXUUHQW SKRWR JHQHUDWLR
12 DQG VXSHUR[LGH UDGLFDOV LQ VHDZDWHU VDPSOHV REWDLQHG G
 DQG IURP WKH 6HWR ,QODQG 6HD -DSDQ 3KRWR JHQHUD $\times 10^{-12}$
Ms^{-1}@ DQG WKRVH RI 12 $\times 10^{-12}$ Ms^{-1}@ 7KH DYHUDJH VWHDG\ VWDWH FR
WKUHH UHDFWLYH VSHFLHV $\times 10^{-18}$ M), O_2^- (3.79 $\times 10^{-12}$ +0 DQG 12 $\times 10^{-10}$ M). Based
RQ NLQHWLF FRQVLGHUDWLRQ HVWLPDWHG PXWXDO O_2^- and FRQVXPSW
12 UDGLFDOV DUH ¿YH WR QLQH RUGHUV RI PDJQLWXGH KLJKHU
VWXG\ +HQFH WKH UDGLFDO UDGLFDO UHDFWLRQ IRU O_2 SHUR[
(ONOO$^-$) ZDV SUHGLFWHG WR GRPLQDWH DQG O_2 +2 VLQNV

yy &KDSWHU LV D UHSRUW RQ GHYHORSPHQW RI D QRYHO ÀXRU
LQ VHDZDWHU XVLQJ EHQ]RS\UDQ \O ERURQLF DFLG &%$
VWRLFKLRPHWULF UHDFWLRQ ZLWK ÀXRUHVFHQW K\GUR[\FRXPDULQ &
GXULQJ LUUDGLDWLRQ RI VHDZDWHU ZLWK &%$ SUREH ZDV G
SHUIRUPDQFH OLTXLG FKURPDWRJUDSK\ +3/& ZLWK IOXRUHV
HPLVVLRQ ZDYHOHQJWKV RI QP DQG QP UHVSHFWLYHO\
Q0 LQ VHDZDWHU 7KH GHWHFWLRQ OLPLW GHILQHG DV WKUHH
SKRWRIRUPDWLRQ UDWHV 'PHDVXUHG ZLWK $\times 10^{-12}$ M s^{-1} 7KLV PHWKRG LV TX
SUHFLVH DV FRHIILFLHQWV RI YDULDQFH LV D PD[LPXP RI I

IRUPDWLRQ UDWHV ([SHULPHQWDO SURFHGXUHV ZHUH RSWLPL]HG

yy &KDSWHU UHSRUWV PHDVXUHPHQW RI SKRWRFKHPLFDO JHQHUDWLRQ 2
6HWR ,QODQG 6HD -DSDQ 7KH IRUPDWLRQ 2 UDWH VWHDG\ VWDWH
LQ WKRVH VDPSOHV ZHUH (2.26 × 10^{-12} 0 DQG VHFV UHVSHFWLYHO
SKRWRFKHPLFDO JHQHUDWLRQ UDWHV (2.3 × 10^{-10} M s^{-1}) and (6.1
× 10^{-12} 0 UHVSHFWLYHO\ ZHUH PHDVXUHG LQ 2VDND %D\ 2Q WKH
6HWR ,QODQG 6HD KDV SKRWRFKHPLFDO 10^{-10} M s^{-1} 2 VWHDG\ VWD
concentrations (1.58 × 10^{-12} 0 &RQVLGHUDWLRQ RI ERWK HPSLULFDO HYLGHQ
WKDW OHVV WKDQ $_2^{-}$ DQG SKRWRFKHPLFDO 2 DUH SKRWR
VXJJHVWLQJ WKDW LQWHUDFWLYH $_2$ DQG LQ DQG UDGLFDO UHDFWLRQ
SKRWRIRUPHG 12 UDGLFDO LQ VHDZDWHU

yy &KDSWHU GHVFULEHV KRZ FDWHFKLQ JO\FHURO LPSUHJQDW
OLJKW VRXUFH FDQ EH $_2$ XVHG WR 10^{11} M s^{-1} m^{-2} LQ WKH 2DV SKDVH ZL
R[\JHQ JDV VWUHDP PDLQWDLQ^{1} HG UDWH RI 2 UHDFWLRQ WKLV
FRQGLWLRQV IRU WKLV SKRWRJHQHUDWLRQ DUH UHODWLYHO\
V\VWHP FDQ EH IXUWKHU RSWLPL]HG IRU WHFKQRORJLFDO DSSOL
R[LGDWLRQ RU SKRWRPLFURELFLGDO GLVLQIHFWLRQ PLJKW EH U

yy &KDSWHU KLJKOLJKWV WKH IDFW WKDW VX^{-}FFHVVIXOO\ GHWHUP
QRYHO ERURQDWH EDVHG ÀXRUHVFHQFH DQDO\WLFDO PHWKRG
and O$_2^{-}$ ZRXOG UHDFW WRJHWKHU WR IRUP 12 2 2PLOLHX &RQVLGHU
ZLWK H[SHULPHQWDO YDOXHV REWDLQHG LQ WKLV VWXG\ OHG W
QRW D PDMRU VLQN IRU ERWK$_2^{-}$ SKRWRFKHPLFDO 2 DQG WKH F[
FUHGHQFH WR HDUOLHU SUHGLFWLRQV DQG UHFHQW ¿QGLQJV
ZRXOG EH D PDMRU VLQN RI SKRWRIRUPHG 12 LQ VHDZDWHU 7K
ZDWHUV LV EHLQJ SURSRVHG DV D QRQ DQWKURSRJHQLF FRQWUL$_x$ concentrations.
)XWXUH UHVHDUFK HIIRUW LV H[SHFWHG WR €P•wÐ` PW 0 O 0SK

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Occurrence, dynamics, spatio-temporal variations and risk assessment of pesticide residues in Kurose river and Seto Inland Sea, Japan

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yy 3HVWLFLGHV DUH QDWXUDO RU V\QWKHWLF DJHQWV FRPPRQO
KRPHV 7KH\ DUH XVHG DV PL[WXUHV FDOOHG IRUPXODWLRQV WK
3HVWLFLGHV DUH JHQHUDOO\ FODVVL¿HG EDVHG RQ WDUJHW SH
IXQJL IXQJLFLGHV 6RPH SHVWLFLGHV OLNH GLXURQ DQG LU
DQWLIRXOLQJ DJHQWV :KHQ ÀXVKHG LQWR DTXDWLF HFRV\VWHP
RWKHU DTXDWLF RUJDQLVPV 7KH\ FDQ DOVR EH WR[LF DQG KDU
DW WUDFH OHYHOV
yy -DSDQ LV RQH RI WKH GHYHORSHG FRXQWULHV WKDW XVH OD
WR WKH DQQXDO WRQQDJH UDQJHV UHFRUGHG IRU IHQ
GLXURQ GLD]LQRQ DQG IHQLWURWKLRQ ZHUH
UHVSHFWLYHO\ 7KHVH FRPSRXQGV DUH OLVWHG XQ
LQ -DSDQ 9DULRXV SHVWLFLGH JURXSV LQFOXGLQJ WULD]LQHV
,QODQG 6HD DQG PDU\ VXUURXQGLQJ ULYHUV OLNH .XURVH LQ -
FRQWLQXHG XVH RI SHVWLFLGHV LQ -DSDQ LW LV LPSRUWDQW WR
DQG HYDOXDWH WKHLU HFRWR[LFRORJLFDO DQG KXPDQ KHD
RFFXUUHQFH G\QDPLFV VSDWLR WHPSRUDO YDULDWLRQV DQG
ULYHU DQG 6HWR ,QODQG VHD -DSDQ 3HVWLFLGHV ZHUH VHOHI
SURSHUWLHV FKHPLFDO SURSHUWLHV FRPSDWLELOLW\ ZLWK
/LTXLG &KURPDWRJUDSK\ 8OWUDYLROHW YLVLEOH 63(+3/& 89 9
DQG HOVHZKHUH 7KLV ZRUN 7KHVLV LV GLYLGHG LQWR FKDS
DQG VLJQL¿FDQFH RI WKH VWXG\
yy **Chapter 2** ZDV DLPHG DW FRQGXFWLQJ DQ 63(+3/& 89 9LV PHWKRG
SHVWLFLGH UHVLGXHV LQ YDULRXV QDWXUDO ZDWHU PDWU
TXDQWL¿FDWLRQ QJ / DW OHYHOV UHTXLUHG E\ 86 (3$
DQG -DSDQ 0LQLVWU\ RI (QYLURQPHQW ZHUH REWDLQHG *HQHUD
UREXVWQHVV DQG VSHFL¿FLW\ IRU DQDO\VLV RI ZLGHU JURXSV
VDPSOHV ZLWKRXW FKURPDWRJUDSKLFDO DQG PDWUL[LQWHUIHU
yy **Chapter 3** VXPPDUL]HV WKH VSDWLR WHPSRUDO YDULDWLRQV RI
IHQDULPRO LVRSURWKLRODQH DQG GLD]LQRQ LQ WKH .XURVH
)HEUXDU\ WR 0DUFK 6DPSOHV ZHUH FROOHFWHG IUR
7RNXPDVD . ,]XPL . 2FKLDL . .QHNL\R %DVKL . 7 +
%DVKL . DQG DQDO\]HG IRU SHVWLFLGHV DQG JHQHUDO ZDWH

GHWHFWHG n RI VDPSOHV **SOOH** RZHG E\ VLPHWU\Q DQG GLD]LQR
IUHTXHQWO\ GHWHFWHG LQ VSULQJ 0D\ -XQH DQG JHQHUDOO\
QJ / DQG LVRSURWKLRODQH QJ / ZHUH FRQVLVWHQW ZLWK
7KH PDMRULW\ RI SHVWLFLGHV VLJQL¿FDQWO\ FRUUHODWHG ZLW
EXW QRW ZLWK RWKHU SDUDPHWHUV K^+, Ca^{2+}, NH_4^+, NO_3^-, Cl^-, and SO_4^{2-}.
yy **Chapter 4** GHVFULEHV WKH HFRORJLFDO DQG KXPDQ KHDOWK ULVN
DQG WKHLU UHVLGXHV WRS QRQ WDUJHW DTXDWLF RUJDQLVPV
(*Audouinella* sp) and diatoms (*Cocconeis placentula*) 6LJQL¿FDQW HFRORJLFDO ULVNV Z
IRU GLD]LQRQ F\DQD]LQH VLPHWU\Q DQG IHQDULPRO ZHUH +RZHYHU
LQ VSULQJ DQG VXPPHU 0D\ -XQH DQG ORZ LQ ZLQWHU '
DOO SHVWLFLGHV SRVH LQVLJQLILFDQW QRQ FDUFLQRJHQLF DQ
WKHUH LV QR FDXVH IRU DODUP DV WKH ZDWHU LQ WKLV ULYHU
yy **Chapter 5** VXPPDUL]HV ZRUN RQ FRQWDPLQDWLRQ G\QDPLFV DQG
PDULQH VDPSOHV VHDZDWHU VHGLPHQWV SODQNWRQV HGLEO
-DSDQ (LJKW SHVWLFLGHV F\DQD]LQH VLPHWU\Q
IHQLWURWKLRQ GLXURQ DQG LUJDURO ZHUH GHWHFWHG LQ
%LVDQ 6HWR +DULPD QDGD $NL QDGD 2VDND ED\ DQG .
FRQWDPLQDWHG WKH KLJKHVW EHLQJ LQ 2VDND ED\ DWWULEX
LQGXVWU\ ZKHUH VRPH DUH XVHG DV DQWLIRXOLQJ DJHQWV DQ
%LRFRQFHQWUDWLRQ)DFWRUV ^{3}-10^4 &) ZHUH 10^3-10^6 ¿VK DQG PDULQH
DQLPDOV GHSLFWLQJ KLJK K\GURSKRELFLW\ RI WKH SHVWLF
GHWHFWHG LQ ¿VK DQG PDULQH DQLPDOV EG QJ J GZ FDXJ
yy **Chapter 6** JLYHV D JHQHUDO GLVFXVVLRQV DQG FRQFOXVLRQ
DJULFXOWXUH XUEDQ DFWLYLWLHV DQG PDULQH LQGXVWU\ DFW
.XURVH ULYHU DQG 6HWR ,QODQG 6HD 7KLV VWXG\ JHQHUD
HQYLURQPHQWDO VDPSOHV 7KHLU GHWHFWLRQ LQ VHGLPHQWV
FRQWDPLQDQWV 7KH GDWD JHQHUDWHG LV LPSRUWDQW IRU PRQ
IDWH RI SHVWLFLGH UHVLGXHV LQ WKH HQYLURQPHQW SROLF\ I
SUDFWLFHV &RQFHUWHG HIIRUWV DUH WKHUHIRUH QHHGHG LQ P
PDQDJHPHQW SUDFWLFHV WR HQVXUH VDIHW\ RI QRQ WDUJHW DT

Key words: SHVWLFLGHV .XURVH ULYHU 6HWR ,QODQG VHD -DSDQ
KHDOWK ULVN DVVHVVPHQW

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Phase behavior of a binary mixture of triacylglycerols formed D PROHFXODU FRPSRXQG LQ VROXWLRQ V\VWHP D on crystallization of a molecular compound in bulk and solution systems.

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s TAG p K ” G L S D O P L W ◆ \ D O \ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ = ù ú ¢ Molecular Compound MC £ q
M O › Ã $ s • ^ › Ô b \ q U Œ ’ • o M ” { MC q x | 2 ¨ w TAG U1:1 w z p p R b ” ù ú p K “ |
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R ` h { A L T ’ 7 †  Ý 6 › Ô b ì $ S ‘ |  2 Æ min p ¬ k ` h ^ $ ì $ › ^ R ` | 9 ÷ Þ Ã ç p ‹
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\ú M J ¶
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in and around Hiuchi-Nada, central Seto Inland Sea, Japan

Yohei NIINO

Graduate School of Biosphere Science, Hiroshima University,
Higashi-Hiroshima 739-8528, Japan

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Fibronectin is important to induce the luteinization and oocyte maturation during ovulation process

+LURVD ITASAKA

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