

+ L J K<sub>SPD</sub> & R Q F H Q W U O'6` TM 1 R Y<sub>TM</sub> ZHUR YQFOXGHG DV FROUROV VOLFH DING LPPXQF

, QWURGXFWLRQ

%UHDVW FDQFHU LV D PDOLJQDQW FDQFHURXV JURZWK EHJLQV LQ W  
WLVVXHV RI WKH EUHDVW DQG WKH PRVW FRPPRQ FDQFHU LQ ZRPHQ EXW  
DOVR DSSHDU LQ PHQ %UHDVW FDQFHU LV VWDJH ELRORJLFDO SURFHVV  
PXOWLSOH JHQHWLF DQG HSLJHQHWLF FKDQJHV LQ WKH HSLWKHOLD  
EUHDVW RYHU D<sub>H</sub> FDQFHU LV EGVHIGURQWRKDNW RI QFRQWLQH WR  
EUHDVW FDQFHU LV EGVHIGURQWRKDNW RI QFRQWLQH WR

LQKLELWLRQ XQFRQWUROOHG JURZWK WKH DELOLW\ WR PLJUDWH LQYDVL  
DQJLRJHQHV LV PHWDVWDVLV DQG WKH DELOLW\ WR DYRLG LPPXQH FRQWURO  
WXPRU FHOOV

%UHDVW FDQFHU WXPRU FHOOV JHQHODO\ UHWDLQ WKH PRUSKRORJLFDO DQG  
IXQFWLRQDO FKDUDFWHULVWLFV RI QRUPDO WLVVXH FHOOV > @ ,Q 6XGDQ EUH  
FDQFHU DQG FHYLFDO FDQFHU DFFRXQW IRU DERXW LQ ZRPHQ 5RXWLQH  
VFUHHQLQJ IRU WKHVH FDQFHUV KDV PDUNHGO\ UHGXFHG WKH PRUWDOLW\ LQ W  
GHYHORSHG ZRUOG EXW LQ GHYHORSLQJ FRXQWULHV ZKLFK ODUJHO\ ODFN  
VFUHHQLQJ SURJUDPV WKHVH WZR FDQFHUV UHPDLQ WKH SULPDU\ FDXVH RI  
GHDWK > @ 6HUXP WXPRU PDUNHUV KDYH EHHQ ZLGHO\ XVHG DV QRQ  
LQYDVLYH WRROV IRU PHDXULQJ WUHDWPHQW UHVSQVH HDUO\ GLDJQRVLV  
UHFNUUHQFH DQG SUHGLFWLQJ SURJQRVLV ,Q EUHDVW FDQFHU WKH PRVW ZLGH

0DWHULDOV DQG 0HWKRGV

(WKLFDO FRQVLGHUDWLRQ

(WKLFDO DSSURYDO RI WKH VWXG\ FRPPLWWHH RI WKH 6XGDQ \$FDGHP\ RI

6WXG\ GHVLJQ

LVVWXG\ ZDV D FURVV VHFWRQDO VVWDQWU RI HTXDO WR

3DWLHQWV

&OLQLFDO DVVHVVPHQW ZDV FDUULHG\ RXW LQ IHPDOH )HPDOHV ZHUH KLVWRORJ\ JURXS RI WKURXJK -DQXDU\ DW WKH %UHVW &OLQLF DW .KDUWRXP 7HFKQLFDO +RVSLWDO DQG \$O \$PDO +RVSLWDO

\$OO %UHDVW FDQFHU SDWLHQWV ZHUH EDVHG RQ GDWD RI 710 FRQFHUQLQJ 3DWLHQWV DFFRUGLQJ WR VWDQGDUG FULW DV 0HWDVWDVHV DQG 8QLRQ IRU ,QWHUQDWLRQDO &DQFHU &RQWURO 8,& > @ 'DWD IRU HDFK SDWLHQW ZHUH FRQFHU WHG\ WKLURXJK FOLQLFDO FKDUUV FRQWURO JURXS FRQVLVWHG RI KHDOWK\ IHPDOHV VXEMHFWV ZLWK QR KLVWRRI EUHDVW FDQFHU DJH JURXS \HDUW %ORRG VDPSOHV ZHUH FROOHFWHG IURP SDWLHQWV DQG KHDOWK\ FRQWUROV LQ PO JODVV WXEHV ZLWKRXW DGGLWLYH VHUXP ZDV VHSDUDWHG E\ FHQWULIXJDWLRQ USP PLQ DQG VWRUHG DW r& IRU DQDO\VLV \*UDGH RI WXPRU

\$VVD\VV

+LJK

6HUXP & ZDV PHDVXUHG E\ WKH FRPPHUFLDOO\ DYDLODEOH &DQ\$J /RZ & (\$ NLWV )XMLUHELR 'LDJQRVWL F6WDJQ RI WXPRU V ZHUH XVHG IRU WKH TXDQWLWDWLYH GHWHUPLQDWLRQ RI WKH FDQFHU DVVRFLDWG DQWLJHQV LQ V H PDUNHUV & ZHUH DQDO\]HG E\ GLQFW VDQGZLFK WHFKQLTXH E\ WZR PRQRFORQDO DQWLERGLHV :KHQ WKH UHDQWLRQ ZDV WHUPLQDWG E\ D VWRSS VROXWLRQ O K\GURFKORUL DFGL WKH DEVRUEDQFH RSWLFDO GHQVLW\ DW QP ZDV PHDVXWIDQG ZDQFH GEDQFH UDQFHU FXUYH ZDV SUHSUHG EDVHG RQ FDQFHU WHG\ WKLURXDO \*UDGH WKDQ

6WDWLWLFDO DQDO\VLV

1RGDO VWDWV

6WDWLWLFDO DQDO\VLV ZDV SHUIRUPHG E\ 7 7HVW 3DLUHG 6DPSOHV 7HVW ZLWK FRQ}GHQFWH UYDOV ZHUH K\WHRQWGR FRQYH\ WKH FDOFXODWH WKH 3FRDOXADMLRQ ZDV 3FRQMLYQHUG DV VLJQL}FDQW

5HVXOWV

2XU VWXG\ H[DPLQHG IHPDOHV RI WKH VHUXP VDPSOHV ZHUH IURP SDWLHQW\ RI WKH VVWDQWU RI WKH 7DEOH ZDV \HDUW UDQJH \$QG VHUXP VDPSOHV IURP KHDOWK\ VXEMHFWV ZLWK QR KLVWRU\ RI EUHDVW FDQFHU WKH PHQ DJH ZDV \HDUW UDQJH &DQFHU DQWLJHQ & W XPRU PDUNHU FRQFHQWUDWLRQV ZDUH VLJQL}FDQWU LQ SDWLHQWV ZLWK EUDVW FDQFHU 7DEOH VHURORJLFDO OHYHOV RI & ZDV s 8 PO LQ EUHDVW FDQFHU SDWLHQWU 3X P OHYHOV LQ QRUPDO FRQWUROV ZDV s 8 PO FRQ}GHQFWH UYDOV RI WKH GLVHUVQFHV 3 ZKHQ 7 7HVW SDLUHG VDPSOHV VWDWLWLFV ZDV XWHUGZDV QR VVGDWHLVWQW\ 010Q VHUXP OHYHOV RI

HDUO\ GLDJQRVLV RI EUHDVW FDQFHU ,Q RXU VWXG\ WKH HOHYDWLRQ RI &\$ VHURORJLFDO OHYHOV ZDV GHWLHVFDW\HSHLHQW EUHDVW FDQFHU SDWLHQWV