Biological and Histological Studies in the Progeny of Gamma Irradiated Cotton Leafworm, (Spodoptera

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The preaent work is a biological SAd histological atLldyOD the etfects of J substerllizing doses ot gamma radiationUO, 15 and 20 krad)on the cotton leaf worm, Spodopter,littoralis (Boi.Btl), to induce inherited sterility. Specialattentioll was g;Lvento the effects OD reproductive b101o&yand inherited s·terility throughout thre. generations and thehistological chlanges 1n the gonads of the adulis.The ooiai.n,ed result s can be su.mmar1zed in the follQw1Ag:- ~tect of GSWD8 Irradiation on Reproduction of PI' '1' P2and FJ:1- The 6%"eatest redu.ctj.on ill the nwnber ot eggs laid perfemale occurred 1n b~1generation among the three testeddoses applied to PI males. Alai, the reductioll illfecundi ty 1llc:reased as the dose applied to PI males wasincreased.2- There was aD. adverse relationship between the dose appliedto Pl males lwd the percent egg hatch among the par_taladults and tbeir following three generations. Also, thegreatest redLLction in egg hatch occLlrred BIIlOng1"1aDd "2senerat1ons. However, gJgeneration demonstrated a higbdegree of rec:overy from the reduction treat.eat.J- the ••.•erage lJ~waberot speraatop.b.ores per aated ftBal.was not attee ted at &n3dose level tested amoag P1, '1''2 and '3 gen,erations.4- The inberlt8d del,eteriou8 effects bad their greatestexpression in PI and F2 generation , tbe higher the doeeapplied to PI males, tbe lower was the ~ larvae surv! ved to adl1lt stag,e.5- The increase :L11developmental time for both msles and female. amo~ the three successive glUlerations waspositively co:rrelated .i~h tbe dose given to PI males.6- The average PIJ.pal wei&ht for botll males and females ofFl and 'a generatlo118 was significantly reduc,d at BAYdose level tested compared with the untreated control.!lU.s reductl0.n was directly related to the dose givento PI male.7- The sex ratio amon~ tile progeny of irradiat ed malesseemed aboutnor.mal. It was nearly 1 : 1 wbieh wasnormally obtained in the control treatmeni._ h~fect of Substerilizing Doses on tbe Ketin, gompetltlve- , 4$4 4.ness ot Parent Males and their Fl, ;'2 &Ad'3 Prog.en,t:1- Males 1rradlated by low doses of 10, 15 aDd 20 krad weretully competitive.2- The i'l' F2 an,dP3 male8 were also tl11l.y compeilt i ve agaillstuntreated males in mat1Q6 with normal i_ales : Effect ot GEDlla Radiation on the Internal .,tiP' ot theReproductive ~,staa:1- The •• ~.s o,f the testes of the first. .8OoM aA4 thirdgenerations 1lrere significantly affected. bye- ..-rad1ai1ondOllea ~pp~1o~1 'Go paren"5al males •2-The lengths (llt the ovar101es were greatly reduoed at thef1rst and sec;Ol1d generation especially at 15 and 20 krad.The third gez:Leration was not greatly affected.3- Damage in ttLe testis and ovar1es was the highest among)11' and was DliJ:l1m1zed in the two other generations.