Genetical and cytological studies on some crosses between wheat and

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The present investigation was carried out through the fivesuccessive seasons 1988/1989, 1989/1990, 1990/ 1991, 1991/1992 and / 1993 to investigate the following pointsii)crossabi1ity ofwheat with rye, ii)To Synthesize pri_ry triticale, iii)to studythe cbrODOSoaal instability of the studied _terials and, iv)toevaluate the studied .aterials on the basis of c-banding teeJmique.The materials used for this study were 11 hexaploid wheatvarieties ,4 tetraploid durumwheat varieties, and 2 diploid ryevarieties.Plants weregrownandcrossed underfield conditions- For eachcross coabination. the nuaber of florets pollinated and seed setwas recorded 18 days post pollination . The developed seeds werereooovedand...myos were rescued and culture on artificialJaedia toproduce haploid plants, then treated with 0.05'& colchicine + 1.5'&DMSO for 5 hours.The obtained results could be summarizedas follows:I) crossabi1ity of 1Ibeat vi1:b rye :Wheatvarieties exhibit significant differences with respect totheir crossability' with rye, furtberaore the salle wheat varietyshOWS different crossability percentages with the s8Ji8rye variety.seed set for hexaploid wheatvarieties rangedfro. 2-3t to 15tin the case of rye Prolific whereas it ranged froa 1.6'& to 11.1'&for rye ~rial. The variety Giza 163 displays the highest seedset with both rye varieties i.e. 15 with pcolific and 11.1 with~rial. lIhi.lethe variety sakba 69 gave the lowest seed setpercentage with both rye varieties i.e. 2.3% with prolific and 1.6% with Imperial. Tetraploid wheat varieties show lower seed set percentage than the hexaploid wheat varieties. Seed set percentages ranged from 2% to %.3% for rye prolific and fro. 1.2% to 6% with rye Imperial •The variety Suhag 1 exhibits the highest seed set percentage 6%with rye Imperial, since the variety Beni-suief 1 showS the lowestseed set percentage 1.2% with rye IJDperial. These data indicate that the genotype of the variety Giza 163could be KrlKr1kr2kr2 whereas the rest of wheat genotypes could beKrlKr1Kr2Kr2 II) Dle synt:beBisof prJ.a1Y tritica1e : it has been observed that ,there is a wide variation in numberof seeds having well-differentiated embryos. The cross suhag 1 Xprolific displays the lowest percentage 30%, while the cross Suhag3 X Iaperial shows the highest percentage 59%. with respect to haploid plants, the different crosses showclear differences in percentage of resulted haploid plants. Thesepercentages ranged frOll 53% to 71%. sinlarly , the differentcrosses exhibit clear differences in their response to colchicinetreataent, the percentages of successfully doubled plants rangedfro. 50% to 80% .The crosses ,also, show different ntmbers ofhybrid seeds or obtained fro_ doubled plants, the cross Beni -suief1 X I.perial exhibits the highest seed nu.ber ,11.5 seeds/plant.on the other hand , the cross Suhag 3 X prolific gave the lowestnuaber 4.5 seeds/plant.XXX)-au:c.-~1 inStabi1ity : i) Mitotic instability :Thedifferent crosses display different degrees of cbro instability as .".pressed bY the percentage of aneuploids. TheSe percentages ranqed frOll 17'1;to 31.7'1;. the ••••jority of these plants ...,re hypoplOids.(2,.".40.41.41 +telo.) • Theoverall - of aneuploidS••as 21'1; • In the salle ti- the c~l stability expressed byeuploid plants .it ranqed fr<Dl69.4'1; to 83'1; in the crOSses Suhag 1X~rial and Suhag 2 X I~ial. respectivelYii) Meiosis abnormalitieS :number of cells having univalents• lagqing chrOJlOSOI•l8ScbrQllatid bridges. and .icronuclei ...,re recorded· There are. alSo. condensation probl-. _inly sickness occurred at high freqUencies••ith varYinq intensities in triticale _terials • These freqUenciesranged from 21.5% to 35.3%.Thepercentages of cellS having univalents ••ere exu-ly linthe parental_tsrials and c<mIlOnin triticale _terialS.siJdlarly • the occurrenc" of la<J9inqc)lr<mOsowoaensd chr<mBtid

bridges ••as very 1- in the parental aater ialS• since it ••as on in triticale aaterials. Also the frequencies of abnoraahaving -.icronuclei) ...,re very 1- in the parentalaaterials • >lhereasthey ...,re very =-'" in triticale aaterialS •XV)- e-tJaIM'i ag t:;eebnique :Thepresent teebJlique enables to identifying easily differentcbrOaosoae& in different genoae& •In general. rye ~.as _ large tel.-r99andweat chrOllOsoaeshave centroaeric (interstitial) heterochro--tin bands. Although, there are somevariations in banding patternof the two chroaosQJl88 belonged to the salle pair, particularly inrye varieties. Ho_jar differences in c-baDdingpatterns could·beobserved betweentetraploid wheat varieties,Suha9 1 and Beni-suief1. In general, The seven pairs of rye chrOmosomes were present inall triticale lines and accurately distinguished.