Crossbreeding between al-gabali and new zealand white rabbits in the north coast-belt of the egyptian western desert

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a crossbreeding study was carried out in the rabbitry of maryout experimental station, located 35 km to south-west of alexandria (in a newly reclaimed area), desert research center, ministry of agriculture and land reclamation, egypt. the study lasted for jive consective production years started in september, 1991 and ended in august, 1996. a local breed (gabali, gab) and an exotic one (new zealand white, nzw) were used to study direct heterosis, maternal additive effect and direct additive effect in addition to the effects of some non-genetic factors on some economic traits in rabbits (e.g. doe litter, doe reproductive, milk production, progeny and carcass traits), results obtained could be summarized as follows:i. doe litter traits : actual means of doe litter traits (lsb, lwb, mbwb, ls21, lw21, mbw21, lsw, lww, mbwv, m21, p:n[and others) indicate that litterperformance of local gab rabbits is, on the average, comparable to that ofnzw rabbits raised in egypt, estimates of cv% of doe litter traits increasedfrom kindling to weaning, year-of-kindling effect was significant (p<o.05) on some doe litter traits and non-significant on some others. doe litter traits, in most, varied significantly (p<o.05, p<o.oi or p<o.ooi) with season of kindling andsummer-born litters tended to have the largest size and the heaviest weightat different ages. parity effect on all these traits was not significant.differences in litter traits due to mating group were not significant and the linear contrasts showed that nzw and gab purebred litters were significantly (p<o.05 or p<o.ooi) different for lwb and mbww only, crossbreeding between nzw and. gab rabbits was associated with 208 non-significant positive heterotic effect on most doe litter traits and heterosis percentage ranged from 0.49 to 15.75%.maternal additive effect on all litter traits was non-significant. in spite of that, the performance of rnast doe litter traits was in favour of litters darned by local gab does as compared to those darned by nzw ones. direct additive effect on all doe litter traits was non-significant and the linear contrasts showed minor differences between litters sired by nzw bucks and those sired by gab ones.ii. doe reproductive traits (nsc, gl, do alod ki), actual means of nsc and gl are within the range reported in the literature while those of do and ki are relatively higher than most of those cited from the literature. values of cv% of these doe reproductive traits are relatively low, year-of-kindling effect was significant (p<o.oi or p<o.ooi)on nsc and gl while non-significant on do and ki. season of kindling exerted significant effect (p<0.05, p<o.oi or p<o.ooi)on nsc, do and ki and nonsignificant effect on gl. at the same time, parity contributed significantly (p<o.ooi) to the variance of nsc and non-significantly to the variance of gl, do and ki, mating group did not contribute significantly to the variance of doe reproductive traits of the stud.y. do and ki did not differ significantly between nzw and gab rabbits. grossbreeding between nzw and gab rabbits did not improve gl, do and ki but improved nsc and heterosis percent of for the latter trait was -2.31%.maternal additive effect on doe reproductive traits was low in magnitude and non-significant but in favour of gab as a doe breed for gl, do and ki. ditect additive effect on gl, do and ki were non-significant but in favour ofnzw rabbits as,a buck breed for do and ki.actual mean was 1375.51 gm for my21, 1997.18 gm for my35, 0.85for lme21 , 1.02 for lme35 and 1.94 for me up to 35 days. cv% estimatesfor the same traits in the same order were 19.18, 19.19,33.84,29.56 and19.170/0,respectively, year-of-kindling effect on all milk production traits was notsignificant. season of kindling constituted a significant (p<o.05 or

p<o.001)source of variance for lme21 and lme35 but did not influence any of milkyield traits and milk coefficient up to weaning. parity effect neithercontributed significantly to all milk production traits nor showed anyconsistent pattern of effect on these traits, milk production traits were not affected significantly by mating group, differences in milk production traits between nzw and gab rabbits were mostly non-significant but were in favour of nzw rabbits for my35 lme35 and milk coefficient. crossbreeding between nzw and gab rabbits resulted in small non-significant heterotic effects on all of these traits.maternal additive effect was not sie:nificant on all milk production traits. the same finding was observed for direct additive effect which was in favour of the crossbred litters sired by nzw bucks, iv. progeny (body weight, daily gain and livability) traits : actual means of all body weight traits increased with advance of age, while post-weaning daily gain traits and post-weaning livability traitsdecreased with advance of age. estimates of cv% ranged from 12.1 to30.20/0for body weight and daily gain traits and from 19.2 to 41.5%. for postweaning livability traits. cv% of body weight and daily gain traits,decreased with advance of age year of birth influenced significantly (p<o.os,p<o.oi and p<o.ool) body weight at most ages studied •from 5 to 16 weeks, post-weaning daily gain at different intervals and on livability from 5 to 16 weeks of age. season of birth and parity showed significant (p<o.05, p<o.ol or p<o.ooi)effect on most body weight traits studied and on most daily gain traits from 8 to 16 weeks while did not influence significantly post-weaning livability from 5 to 16 weeks. sex was found to exert no significant effect and body weight and daily gain traits but significant (p<o.oi) effect on livability from 5 to 16weeks of age. sex differences in livability were limited, breed group was found to be mostly nnn-significant on body weight traits and non-significant on daily gain and livability traits. linear contrasts between nzw and gab rabbits evidenced the presence of significant (p<0.05, p<o.oi or p<o.ooi) differences for most body weight traits, nonsignificant ones for daily gain traits and for most post-weaning livability traits. these differences were in favour of gab rabbits for body weight but for nzw rabbit for post-weaning livability. crossbreeding between nzwand gab rabbits was associated, in most, with improvement in body weight,daily gain and livability from 5 to 16 weeks of age. heterotic effect wasmostly positive, significant (p<0.(j5 or p<o.oi) on body weight at 50% of theages under study positive but non-significant on post-weaning daily gain and livability traits studied maternal additive effect was mostly significant (p<0.05 or p<o.oi) on body weight traits and non-significant on daily gain and livability traits, contrasts of that effect were in favour of gab rabbits for body weight andlivability from 5 to 16 weeks of age. direct additive effect was mostly nonsignificant on body weight traits, non-sign:lficant on daily gain traits and significant (p< 0.05) on livability from 5 to 16 weeks of age. direct additive contrasts were generally in favour of nz'v rabbits for body weight andlivability traits, v. carcass traits : carcass perfonnance traits and their cv.% increased with age from 14 to 16 weeks, year-of-birth effect on carcass traits were non-significant when rabbits were slaughtered at 14 weeks but significant (p<0.05, p<o.ol or p<o.ool) when the rabbits were slaughtered at 16 weeks of age. season of birth contributed non-significantly to the variance of all carcass trait except viscera weight at 14 weeks of age and significantly (p<0.05, p<o.ol orp<o.oo1) on most carcass traits at 16 weeks of age. summer-born rabbitsrecorded, in general, the best perforamcne for carcass traits. parity and sex constituted non-significant sources of variation on all and most carcass traitsat 14 and 16 weeks of age respectively. parity effect on different carcasstraits fluctuated without any consistent trend. sex effects were mostly in favour of males, carcass traits varied non-significantly among breed groups at both, ages except dressing percent and lw at 16 weeks of age. linear contrasts of the two pure breeds were significant (p<o.001) for head weight at 14 weeksand also for weight at slaughter., fore legs weight, loin weight and headweight at 16 weeks of age . differences in this respect are in favour ofnzwrabbits at 14 weeks and of gab ones at 16 weeks of age. crossbreedingbetween nzw and gab rabbits resulted in positive heterotic effect but withrelatively low magnitude in most carcass traits at both ages, i.e.crossbreeding slightly improved carcass traits, maternal additive effect was non-significant on most carcass traits at either 14 or 16 weeks of age and was mostly in favour of gab rabbits at either ages. also, direct additive effect was non-significant on most carcass traits at both ages but was infavour of nzvi at both ages for most of these traits.