Tilapia are among the most farmed fish with very high reproductive rates and wide phenotypic variance, a combination that makes mass selection and hybridization for attaining different fish attributes (e.g. large market size, fast growth rate, disease resistance, salt tolerance etc) an easy task. Hybridization and selection are the principle means of fish improvement. Brooders of ♀ O. niloticus and ♂ O. urolepis hornorum were kept in separate plastic tanks for one week while fed 40% of crude protein. Brooders were fed 5% of their body weight, the ready to spawn were carried to spawning tanks and allowed to breed naturally. Hybrids obtained in the cross were moved to rearing plastic tanks with varying salinities (2, 15, 25 and 35). Hybrids of O. niloticus (♀) and O. urolepis hornorum (♂) weighing 1.71 ± 0.04, 1.84 ± 0.09, 1.61 ± 0.01 and 1.59 ± 0.04 (g) for the respective salinity were grown for 84 days to investigate sex ratio, final body weight (FBW), weight gain (WG) specific growth rate (SGR), average daily weight gain (ADG) and survival rate. Growth performance in fresh water at salinity 2 was used as a control and the hybrid sex ratio was established when fingerlings attained 40 grams with genital papilla being distinguishable. Growth performance was assessed in four sets of three 1000L plastic tanks, each stocked with five fingerlings. It was found that all the resultant hybrids were males and they all survived in the media salinities used. The highest and lowest FBW, WG, SGR and ADG were observed in fingerlings reared at salinities of 2 and 35 respectively. Values for the FBW, WG, SGR and ADG at salinities of 15 and 25 were however not significantly different (p>0.05). The lowest values were recorded for hybrids reared at 35 with no significant differences from that of 15 and 25 (p>0.05). The significant difference was observed between the salinity of 35 and control treatment (p≤0.05). It appears that mating O.niloticus ♀ and O.urolepis hornorum ♂ produced all male fingerlings capable of surviving the whole range of salinities. The cross may be useful in producing desired all male fingerlings for farming in inland, estuarine and marine