In the last decade, the production of maize has gone down because of biotic and abiotic constraints, and this has resulted to prevalent famine. Of the abiotic stresses, drought is the most important stress affecting productivity of maize in Africa leading to up to 70% crop loss and in certain cases total crop loss. Conventional breeding, molecular marker assisted breeding and genetic engineering have already had, and will continue to have, important roles in maize improvement. The rapidly expanding information from genomics and genetics combined with improved genetic engineering technologies offer a wide range of possibilities for enhanced maize production. Genetic engineering of plants has been achieved through direct uptake of naked DNA into target cells and via *Agrobacterium* mediated transformation. *Agrobacterium* mediated transformation is increasingly becoming the method of choice due to its ability to generate transformed events containing low copy insertions. However this mode of maize transformation is dependant on genotype, age and physiological condition of the target explant and the infecting strain of *A. tumefaciens.* For every successful transformation protocol a reproducible regeneration system and transformation by a reporter gene is a necessity. The optimal regeneration condition for the shoot tips and immature zygotic embryos was observed to be 9µM 2, 4-D, 8.88µM BAP supplemented with 296µM adenine and 9µM 2, 4-D respectively for calli maintenance and shoot induction. Root induction in case of shoot apices was alleviated by the use of 1.97µM indole-3- butyric acid while immature zygotic embryos readily formed roots on MS without hormone after a maturation step. Transient expression of GUS was used to assay the explants for transformation frequency considering embryogenic calli formation, shoot induction and root formation had been optimized in the regeneration step. In these experiments, 10 days old seedlings shoot apex derived calli exhibited GUS activity at a transformation frequency (TF) of 0-4.2% while the 15 days old immature zygotic embryos derived calli exhibited a higher TF of 613% GUS activity making immature zygotic embryos better explant for transformation of the selected genotypes. Immature zygotic embryos were thus preferably transformed for drought with a gene that codes for an upstream transcription signal factor MAPKKK cascade (NPK1) triggered under drought stress (DS). The transformation efficiency for the four genotypes was TL08 0.79%, DHO1 4.87%, DLC1 2.64% and PTL001 5.35%. The seeds of the transgenic events were harvested, planted and both DNA and RNA extracted from the T1 events for southern, northern, and RT-PCR analysis to check on copy numbers and expression levels of the NPK1 gene. The T_1 plantlets of tropical inbred TL08-(2)4, single hybrid cross of a PTL001, a multiple cross hybrid DHO1 and a dry land cultivar DLC 1 genotypes were planted in the green house and assessed for morphological and physiological changes associated with increase in DS tolerance when under water stress condition. The results showed that NPK1 effectively enhanced drought tolerance in TL08-(2)4 and PTL001, and there was no significant morphological difference between transgenic controls (well watered) and transgenic tests (subjected to moderate drought stress) using Turkeys Kramer HSD ($p<0.05$). Overall, there was between 20-35% enhancements of yield on comparison of the transgenic stressed events with non-transgenic stressed control