Kulachart Nakchantuk 2011: Transformation of Glyphosate Resistance Gene into Cassava (*Manihot esculenta* Crantz.) via *Agrobacterium*. Master of Science (Agronomy), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Associate Professor Sontichai Chanprame, Ph.D. 65 pages.

The parameters for *Agrobacterium*-mediated gene transferred into cassava, *Manihot esculenta* Crantz, were optimized. *Agrobacterium* strain EHA105, harboring the pCAM1304-EPSPS containing glyphosate resistance gene (*aroA*) and *gus* reporter gene was used. Parameters were concurrently studied including 1) inoculation periods of 15, 30, 45 and 60 minutes, 2) co-cultivation periods of 1, 3 and 5 days. The GUS histochemical assay was performed on each explants after co-cultivation to determine transient expression of *gus* gene. The results demonstrated that the best result was obtained by using *A. tumefaciens* strain EHA105 activated by 100 mM acetosyringone, 60 min inoculation period and 5 days co-cultivation period. The results after transformation for 7 days using such technique revealed that all tissue pieces were transformed and the GUS histochemical assay showed the highest score of 9 from 10 scores. Whereas the inoculation time of 30 min combined with 3 days co-cultivation time gave 100% of transformed tissue with the highest GUS histochemical assay scored of 5 from 10 scores after 14 days of transformation. After selection on selective medium containing 5 μM glyphosate, 8 of putative transformed calli were obtained. However, the result of PCR analysis and Southern PCR hybridization for the transgenes revealed that 4 out of 8 calli contained *aroA* gene.

_____ _____ ___ / ___ / ___

Student's signature Thesis Advisor's signature