Chatchai Tippayarat 2014: Design and Development of Water Hyacinth Collecting Machine at Floodgate. Master of Engineering (Agricultural Engineering), Major Field: Agricultural Engineering. Department of Agricultural Engineering. Thesis Advisor: Assistant Professor Siwalak Pathaveerat, Ph.D. 119 pages.

The purpose of this research was to design and test efficiency of the water hyacinth collecting machine appropriately designed for collect the water hyacinth in the front of water gate area. The machine composes of the machine base, main body, arm boom, grapple and the stabilizing branch. The Finite Element Analysis in Solid Works Simulation (Solid Work) was used to analyze the strength of designed machine model. All parameters derived from strength analysis were considered to design the water hyacinth collecting machine prototype. The length, width and height of Prototype was 7.7 m, 2 m and 3 m respectively. The length of the back hoe boom should be 12.8 m It can lift up 5.8 m and down to 7.5 m. The proper dimensions of grapple were 1.4 m in width and 1.6 m in length for carry the 200 kg of Hyacinth. The efficiency of the Water Hyacinth Collecting Machine was calculated by finding the volume of water hyacinth collecting and fuel consumption rate. The result showed that the machine could collect water hyacinth about 131.4 kilograms per time and the collecting rate was 5,036.56 kilograms per hour. The result of fuel consumption rate was 3.55 L/hr.

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