Sudanun Chantanop 2010: The study of Pattern and materials for Vertical climbing plants trellis. Master of Architecture (Building Innovation), Major Field: Building Innovation, Department of Technology Building. Thesis Advisor: Associate Professor Pasinee Sunakorn, M.Arch. 167 pages.

This research presents the study of pattern and materials for vertical climbing plants trellis. Different pattern and materials were investigated and growth of plants were followed up by plant weighing, leaf counting and image processing. The research starts from studying the plants selection based on the fast growing qualification and the proper size that fits the plants trellis. *Mandevilla sp.* was then selected. After that 4 plants trellis are constructed using diagonal, vertical, horizontal, and matrix slant tested under the same environment facing south, using photographic method to record the data. The fundamental result found that leaves could cover all kinds of trellis, but the most effective one is the vertical type which the plants could climb higher and give more leaf coverage comparing to other kinds of trellis. Next step is to compare the distance of the pattern ,10cm and 15cm , in the trellis and compare materials between natural and synthetic materials. Natural materials are bamboo and coated hyacinth. Synthetic materials are stainless steel rope and tendon. The result is: *Mendevilla sp*. could climb and give maximum leave coverage on the coated hyacinth with the 15cm interval trellis. In the last step of the experiment, the comparison of the plant growth, leaf counting, weighing, and image processing was done and found that all three observation are relevant.

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