

Research Title	Energy Accounting and Energy Conservation At Thammasat University, Rangsit Campus,
Researchers	Assistant Professor Chiaranai Lek-Utai
Year	1985

ABSTRACT

This research studies and analyzes the electrical power consumption at Thammasat University, Rangsit Campus, based on the electrical power consumption in 10 of the selected buildings in order to find the means of conserving such energy. An energy account was created to record details of the amount and cost of electrical power consumed and to study the amount of lighting and the amount of heat exchange in the buildings.

The study found that Thammasat University, Rangsit Campus, consumed an average of 375,671.51 kilowatts-hour of electricity at a cost of 646,060.82 baht monthly with the peak demand for electricity standing at 1,335.86. The study found that the air conditioning system, on the average, accounted for 29.41% of the electrical power consumption while lighting and uses of other electrical equipment accounted for 31.51% and 39.08% respectively. The average amount air conditioning system was 1,142.73 BTU per square meter, and the average lighting consumption of electricity was 16.03 watt per square meter.

On the heat exposure of the building it was found that the heat exchange on the building's outer frame (OTTV) was 57.88 watts per square meter. The similar value on the roofs of the building averaged 9.39 watts per square meter.

The study concluded that it was possible to conserve energy by merging some of the electrical transformers. This would save 20,464.24 kilowatts-hours, thus saving the cost of 33,766 baht per year. The study also suggested that, if the energy saving electrical lights were used for all of the mentioned building's lighting, the annual saving would have amounted to 85,624.32 kilowatts-hours per year at the saving of 141,280.13 baht per year.

Research Title	Preliminary Studies of Treatment of Textile Industrial Waste Water at Ransit by means of Water Hyacinths (<i>Eichhornia crassipes</i> (Mart.) Solms.), Cattails (<i>Typha augustifolis</i> L.) and Pond Weeds (<i>Najas graminea</i> Del.)
Researchers	Assoc. Prof. Mookda Sooksmarn (MS), Team leader Mrs. Natha Hungsreug (PhD), deputy team leader Mr. Bundit Anurugsa (MS), team member Miss. Pronnapa Lumliengpol (MS), team member Miss Siripun Taweesuk (MS), team member
Year	1989

ABSTRACT

The Study is aimed to investigate a tendency of various species of aquatic plants during the treatment of wastewater from textile industry at Rungsit district. In particular, it considers the capability and efficiency of water hyacinths (*Eichhornia crassipes* (Mart.) Solms), cattails (*Typha augustifolis* L.) and pond weeds (*Najas graminea* Del), used for such comparison purposes. Parameters studied include chemical oxygen demand (COD), biochemical oxygen demand (BOD), dissolved oxygen (DO), temperature, pH, conductivity, color, total suspended solid, phosphate, nitrate and biomass. The analysis was carried out once a week for a total duration of 8 weeks.

The results of the study indicate that all three species of aquatic plants are capable of treating wastewater but with different efficiency. Water hyacinths and pond weeds were shown to be capable of treating wastewater well in the first few weeks but began to die later in the 4th and 5th weeks respectively. Cattails, on the other hand, could treat wastewater and survive throughout the total period of 8 weeks of the study. Also, in terms of treatment efficiency, cattails were shown to be most efficient, thanks to continual reduction in COD and BOD. However, reduced efficiency was found in other aquatic plants due to decay of the dying material, leading to increased COD and BOD. The biomass of each aquatic plant was also recorded at the end of the study. Cattails showed an increase in biomass by 12.5 percent whereas water hyacinths and pond weeds showed their biomass reduced by 57.5 percent and 75 percent respectively.

Research Title An Application of Mathematical
 Technology to Garment Design
 Researcher MR Panchai Suksawad
 Year 1990

ABSTRACT

Garments are used with an assumption that the rate of wear and tear of the back side is generally higher than that of the front one. If both sides are specially (identically) designed and if a user knows which side is back or front and places one side of the garment, whether back or front, at random, the garment will last longer than normally designed. In other words, the life of utilization will increase.

According to the theory about random variable having binomial distribution, the life of utilization (measured by length of time) of such garments can be estimated by their durability as follows:

1. The cloth can be used B times on the back side.
2. The cloth can be used kB times on the front side.

Under the above condition the garment will have its life of utilization n times.

The value of n is calculated according to the values of B from 100 to 1024 while those of k from 3 to 9 are shown briefly in the following table.

level of confidence	k	B	N
95%	3	100	138
	3	1024	1498
	9	100	160
	9	1024	1776
99%	3	100	135
	3	1024	1486
	9	100	155
	9	1024	1757
99.98%	3	100	129
	3	1024	1464
	9	100	144
	9	1024	1720

Research Title	Computer Program for Comparison the Pattern of the Movement of Protein in Electric Field : Development Program for Calculation the Area of a Complicate Curve
Researchers	Mr. Manu Fuangfung Mr. Chainarong Faculty of Science and Technology Thammasat University
Year	1990

ABSTRACT

This research used turbo pascal to develop a program to measure intensity of light from a simple intensitometer. The result is then displayed by graph. The program can display two graphs on a screen, one for standard, the other for a sample, so that it easy to compare between them. This program can measure an area of the complicated curve as well as a distance between two positions on the graph. It was found that the result of distance is a difference between 0.15% and 2.68% from the real value. All data on screen can be printed out by a dot metric printer.

Research Title	An Ecological Study on Distribution of Algae (only diatom) at Thammasat University, Rungsit Campus
Researcher	Assist. Prof. Dr. Natha Hungspreug
Year	1993

ABSTRACT

An ecological study was carried out on algae, in particular, diatom and its diversity at Thammasat University, Rungsit campus. The water samples were collected from 8 stations of the water body on the campus. The data collection was made at 5 intervals over a total period of 10 months (March-December, 1991). Altogether 120 samples were collected and analyzed to identify the diversity of diatom and water quality. The results of the study revealed 16 genera of diatom with 60 species. Of these, 8 species were found at every station, compared with only 5 species found at a single station. The richness of diversity, by Margalef's index, was moderately high. A similar result was obtained by the Shannon-Weiner diversity's index. The evenness index of diversity, by Peilou's index, is not observed due to the variation of diversity at each station and to the period of sampling. The correlation among species is moderately high, with more than 50 % (30 species) having relations with other species. The relation between water quality (especially dissolved oxygen) and species diversity of diatom is higher than other water quality parameters such as nutrients (nitrate and phosphate). The water quality itself is classified as mesotrophic. It is also interesting to notice that some brackish and saline water diatoms were found at almost every station. It is possible that this area used to be either under brackish or sea water.

Research Title	A Study on Quality and Quantity of Domestic Waste Water at Thammasat University, Rangsit Campus
Researcher	Usa Viseshsumana
Year	1993

ABSTRACT

The objective of this project is to study the quality and quantity of domestic wastewater at Thammasat University, Rangsit Campus. The data will form a basis for further preventive and problem-solving measures for water contamination at the university and the surrounding area. The study indicates that the quantity of wastewater generated from 12 buildings was averaged at 1,000 cubic m/day. The 50% probability value of the major parameters after the wastewater passing through the septic tank shows BOD = 35 mg/l, NO₃-N = 0.32 mg/l and PO₄ = 0.08 mg/l. It was also found that the wastewater pumps were out of operation for several months. Therefore, there was no wastewater flowing into one of the two treatment ponds. The author proposes some recommendations to solve such problems.

Research Title	Protozoan Ecology and Dispersion at Thammasat University, Rungsit Campus
Researcher	Assoc. Prof. Mookda Sooksmarn
Year	1993

ABSTRACT

Free-living protozoa appear to have a cosmopolitan distribution and appear wherever and wherever suitable ecological conditions exist. The research on Protozoan ecology and dispersion at Thammasat University, Rungsit Campus, was undertaken to identify dispersion of protozoa in freshwater ponds around the campus. Collection of protozoa data was made by using polyurethane foam as artificial substrate, and water was chemically analyzed at the same time.

A total of 120 protozoan samples from the campus of Thammasat was collected from March to December 1991 and classified into 75 genera. Among these are 13 genera of mastigophra, 10 genera of Sercodina, and 52 genera of Ciliata. Most of the protozoa were found in mesosaprobic bacteria-feeding habitat. The dispersion of protozoa was calculated by Shannon diversity index. The average of species diversity was from 0.11 to 0.34

The analysis of water quality of the Thammasat campus was based on 16 common species of protozoa as biological indices, indicating that water was mesosaprobic.

The analysis of water by physical, chemical and biological methods showed a low level of water quality around the campus. The University needs to improve the quality of water as soon as possible to improve the quality of life of students and people that live at Thammasat University, Rungsit Campus.

Research Title	A Study on Monitoring and Survey of the Flora Distribution and Afforestation Plan at Thammasat University, Rangsit Campus
Researcher	Miss Siripan Taweasuk Faculty of Science and Technology, Thammasat University
Year	1994

ABSTRACT

The study on monitoring and survey of the flora distribution and an afforestation plan at Thammasat University, Rangsit campus, Klong Nung sub-district, Klongluang district, Pathumthani Province, province was undertaken from 1990 to 1993. There were three parts in this study: survey of the flora distribution in the university area, 50 plant species collection by small arboretums and afforestation by fast-growing trees (Eucalyptus camaldulensis, Acacia mangium, Acacia auriculiformis, Casuarina junghuhniana and Azadirachta indica) and local tree species (Tectona grandis, Dalbergia cochinchinensis, Azizia xylocarpa, Pterocarpus macrocarpus and Peltophorum dasyrachis) on Rangsit soil series. The simple experiment in randomized complete block design (RCV) having 3 block, 5 treatments and 30 units was employed from August 1992 to August 1993. Diameters at root collars, total heights and survival rates were measured every 3 months. The analysis of variance, Duncan's new multiple-range test techniques and coefficient of variation were used for statistical interpretation.

The results showed that the families and species numbers of natural flora distribution were 28 and 92 respectively. family was found to have maximum species diversity. The Gramineae, Cyperaceae and Leguminosae families were of 21,14 and 10 species respectively. Fifty rare, economic, local and exotic plant species (19 families) were planted in a small arboretum.

A field trial of fast-growing and local trees species was assessed for diameters at root collars and total height increment and survival at twelve months after planting. Result to date indicate the importance attached to Acacia auriculiformis, Acacia mangium, Casuarina Junghuhniana and Eucalyptus camaldulensis on Rangsit soil series at Thammasat University Rangsit Campus. For local species planting, it was found that Tectona grandis, Azizia xylocarpa, Peltophorum dasyrachis, Pterocarpus macrocarpus and Dalbergia onchinchinensis could grow well on Rangsit soil series.

Research Title	Effect Soil Mulching with Cattail (<i>Typha Augustifolia</i> L.) Stems on Watering Rates in the Mungbean Plot.
Researcher	Assist. Prof. Dr. Bun Bunhong Chongkid
Year	1995

ABSTRACT

The experiment on the effect of soil mulching with cattail (*Typha angustifolia* L.) stems on watering rates in the mungbean plot was conducted from November 1995 to January 1996 at Thammasat University Rasngsit Campus. The two planting methods, soil mulching with cattail stems and soil non-mulching, were arranged in main plots while sub-plots consisted of three watering rates i.e. watering everyday (high rate), watering every two days (moderate rate) and watering every three days (low rate). The Split-Plot in RCB with 4 replications was utilized in this study.

The result showed that the soil mulching treatment with 3 rates of watering had no statistical effect on the mungbean seed yield as compared to the soil non-mulching one. However, when the two planting methods were analyzed within each rate of watering, using the **RCB ANOVA**, it revealed that the soil mulching treatment within the low rate of watering gave the 59.62 kg/rai, giving a significantly higher yield than that of the soil non-mulching one. The pod length, seed number per pod and 100-seed weight from the soil mulching treatment were significantly higher than those from the soil non-mulching one. The pod number per plant, the most important seed yield complement, from the soil mulching treatment was 3.75 significantly higher than that from the soil non-mulching one.

This study revealed that the use of cattail stems for the soil mulching could improve the mungbean seed yield under the drought or water deficiency condition.

Research Title	Analysis Program on Physics Data
Researcher	Mr. Tawee Chim-Oy and Mr. Manu Fuanfung Faculty of Science and Technology, Thammasat University
Year	1998

ABSTRACT

Research work depends mainly on experiment results, and one of the most important processes is a data analysis. If the data are fast and accurately evaluated, it can be used to improve the subsequent experiments. In this research, a computer program has been developed to analyze the experiment data in physics. This program is easy to use since it can be worked on a windows system and its menu shown in Thai and English. There are 8 different equations to choose from. Raw data and the fitting curve can be displayed on a screen and easily printed out through a printer. The program was tested, using results from physical experiments. It is found that the analytical results from the program are consistent with those from the graphical methods.

Research Title: Development of Thai Grammar Software with UNIX System
Researchers: Duangkaew Sawamipakdi
Faculty of Science and Technology, Thammasat University
Year: 1990

ABSTRACT

TAWSUN (Thai Word Separator for the UNIX-Based Systems) is designed and developed through the application of the UNIX language processing development tool. The system analyzes Thai grammar with the Lex system and checks the result against the dictionary constructed with the utility of the relational database system. The research emphasizes the application of the software tool in order to reduce the program's burden, thus enabling the designer and developer to concentrate on the design and analysis of the result efficiently. In addition TAWSUN is a word separator system whose output can be conveniently applied to the processing of various languages such as the language translation tool.

Note: In 1989 the research title was "Application of the UNIX Language Processing Development Tool to Develop Software for the Analysis of Thai Grammar"