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Dr. NGP INSTITUTE OF TECHNOLOGY

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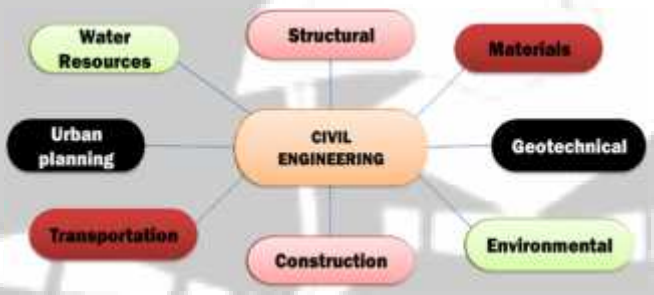


Engineering has been an aspect of life since the beginnings of human existence. Civil engineering might be considered properly commencing between 4000 and 2000 BC in Ancient Egypt and Mesopotamia when humans started to abandon a nomadic existence, thus causing a need for the construction of shelter.This engineering discipline has developed strong links with the design, construction, industry, academic and maintenance of the physical and naturally built environment, including works like roads, bridges, canals, dams, and buildings. The academic activities of the Department emphasizes deep understanding of fundamental principles, development of creative ability to handle the challenges of Civil Engineering and the analytical ability to solve problems which are interdisciplinary in nature.

Chief Patron

Our Chairman, Dr. Nalla. G. Palaniswami is a Doctor, Educationalist and Philanthropist has made renowned services in the Health Care Sector and Educational activities in Health Sciences, Arts and Science, Engineering and Technology field, which made him an icon of Tamil Nadu. Perhaps even more important is his unceasing commitment to our students, helping them learn, grow, develop and achieve their goals, whether it is becoming an industrialist, an entrepreneur, or educator. He also represents collective commitment to excellence in teaching, learning, research and service.

Dr.Thavamani D Palaniswami, Secretary and Managing Trustee, who is a Pediatrician and Adolescent care specialist, have wide experience in the field of Medicine and Education. It was her vision to start educational institutions, on par with the best in the world, with the latest infrastructure and instructional facilities. Her distinguished services is performed with utmost sincerity and commitment to the society with a centre of higher learning, providing long-term socio economic benefits by discovering and advancing new knowledge, high quality technical education, creative research, industry relevant innovations, medical education, academic leadership and curriculum development.

Our Chief Executive Officer Dr. O. T. Buvaneswaran is very responsible and leads for the development of our Institutions. He is well known for his leadership activities and ultimately takes responsibility for all day-to-day management decisions and for implementing them in the institutions long and short term plans. He has got enormous experience in academics and administration.

Our principal *Dr. K. Porkumaran* is known for his virtues as a wise mentor, friendly teacher, visionary leader, innovative administrator and an active researcher. He not only professes the values of culture in institution but he himself practices many of the fundamental principles of humanity and society, while dedicating himself to the cause of technical education, meaningful science and research.

Our Department HoD, *Dr.T.Senthil Vadivel* has rich experience in the field of civil engineering, made a best commitment to dedication for preparing the graduates for challenges in science, engineering, technology, management and the society. He is a strong proponent of an educational process that nurtures creativity, innovation and entrepreneurship while providing the students with strong fundamentals.

CONTENTS:

Association Inauguration:

Inauguration of Civil Engineering Association

Chief Guest: Dr. E.B. Perumal Pillai, Principal, R.M.K. College of Engineering & Technology, Tiruvallur Dt. on 26.08.2013.

The Civil Engineering Association Inaugural function "Archidianz" 2013-2014 is organised by our department on 26.08.2013 in the "D"-Block Seminar hall. The function was graced by the presence of chief guest Dr. E.B. Perumal Pillai, Principal, R.M.K. College of Engineering & Technology, our principal Dr. K. Porkumaran and the Head of our Department Dr. T. Senthil Vadivel. The function started with the Innovation by Ms. M. Mithula from third year Civil Engineering. The gathering was welcomed by our Head of the department Dr. T. Senthil Vadivel. Following the welcome address, Our Principal Dr. K. Porkumaran felicitated the gathering. Preceding our Academic Coordinator Ms. K. Kavitha introduced the chief guest Dr. E.B. Perumal Pillai, Principal, R.M.K. College of Engineering& Technology and he inaugurated the Association and addressed the gathering. Our president installed the office bearers of the Association.

Guest Lecture Organized:

The Department of Civil Engineering has organised a Guest Lecture in "Recent Advancements in Civil Engineering" on 26.08.2013 in the "D"- Block Seminar hall of our college. The function was graced by the presence of our principal Dr. K. Porkumaran and the Head of the Department Dr. T. Senthil Vadivel. The chief guest Dr. E. B. Perumal Pillai, Principal, R.M.K. College of Engineering & Technology has delivered a guest lecture on Recent Advancements in Civil Engineering.

Guest Lecture: Recent Advancements in Civil Engineering, Dr. E.B. Perumal Pillai, Principal, R.M.K. College of Engineering & Technology, Tiruvallur Dt. on 26.08.2013.

Workshop Organized:

Two Days Workshop on Strategies for Advanced Surveying

Chief Guest: Dr. E.B. Perumal Pillai, Principal, R.M.K. College of Engineering & Technology, Tiruvallur Dt. on 26.08.2013.

A workshop has been organised by Department of Civil Engineering in the topic "Strategies for Advanced Surveying" on 21.02.2014 and 22.02.2014. The training has been given in GIS & GPS to the students by Dr. S. Arunachalam, Assistant Professor & Geospatial Expert K.P.R. Institute of Engineering & Technology, Coimbatore.

Geographical Information System is a System indeed to Capture, Manipulate store, Analyse & Manage all types of Geographical data. All the students have received the knowledge in GIS by merging of cartography, Statistical Analysis and Database Technology. They also know how to apply GIS in many operations in Planning, Measurement, Transport /Logistics and analysis. The students gained knowledge in GPS i.e, Global Positioning System which gives us accurate geographic position for land surveying they know how to use this GPS and find horizontal and vertical measurements in terms of Latitude and Longitude.

Symposium Organized:

The National level symposium “Henosis-14” Organized by our Civil Engineering Department and students have enthusiastically participated from various parts of Tamil Nadu and Won many prizes. Nearly 80-students registered and participated in all technical & non technical events

Our secretary madam and principal has viewed theSuspension bridge model done by Civil Engineering Students.

Our HoD Dr. T. Senthil Vadivel have Explained about Pyramid and Modern City Model Done by our Civil Students to Our Secretary Madam and Principal

Students from Other Institution has participated and won in Various Events Receiving Cash Prize and Certificate from our HoD

Participants from Various Institutions

FACULTY AWARDS AND ACHIEVEMENTS

Our Head of the Department

Dr. T. Senthil Vadivel has received P.K**. Das Memorial Best Faculty Award** instituted by Nehru Group of Institutions, Coimbatore.

Best faculty award received from Nehru group of Institution

Guest Lecture Delivered By the Faculty

1. Dr. T. Senthil Vadivel delivered an Invited Lecture on 28.08.2013 at Ranganathan Polytechnic, Coimbatore, entitled **"Special Concretes"** in a National Level Workshop on Advancements in Construction and Concrete Technology.
2. Dr. T. Senthil Vadivel delivered a Guest Lecture on 07.09.2013 in the topic of **Railways & Airport Engineering** in King College of Technology, Thanjhavur.
3. Dr. T. Senthil Vadivel delivered a Guest Lecture on 08.03.2014 in the topic of **Environmental Engineering** in King College of Technology, Thanjhavur.
4. Dr. T. Senthil Vadivel delivered a invited Lecture & acted as Jury in a National Conference Organised by Info Institute of Engineering, Coimbatore on 29.03.2014.

PUBLICATION IN JOURNALS: INTERNATIONAL AND NATIONAL

DEPARTMENT OF CIVIL ENGINEERING			
Name of Faculty	**Title of Paper**	**Journal International/National**	**Publication Details (Issue, Volume)**
Dr. T. Senthil Vadivel	Evaluating Organizational Effectiveness of Construction Industry – Using Artificial Neural Network	Asian Review of Civil Engineering	Vol.2, No.1, Jan – June 2013
Dr. T. Senthil Vadivel	Experimental Behaviour of Waste Tyre Rubber Aggregate Concrete under Impact Loading	Iranian Journal of Science & Technology – Transactions of Civil Engineering	Vol. 38, No. 1, C1^{+}, March 2014
Dr. T. Senthil Vadivel	Experimental Study on Crumb Rubber Hollow Concrete Block	i-manager's Journal on Civil Engineering	Vol. 3, No. 4, Sept – Nov 2013

FDP Organised / Attended

- Mr. K. Maruthi Venkatesh, Mr. G. Ramesh Kumar, Ms. S. Sanchita & Mr. P. Vinod have attended a FDP on Instructional Design & Delivery organized by NITTTR, Chennai from 11.11.2013 to 15.11.2013.
- Ms. C. Sri Akilam & Ms. S. Sanchita have attended three days FDP organized by Hope Factory, Coimbatore.

PAPERS PRESENTED AT NATIONAL SEMINARS AND CONFERENCES

Name of Faculty	Title of Paper	Seminar/Conference	Organiser	Date
Dr. T. Senthil Vadivel	An Experimental Study on Waste Plastic Aggregate Concrete	National Conference on Applications of Innovative Civil Engineering Techniques in Structures	SNS College of Engineering & Technology, Coimbatore	03.03.2014
Dr. T. Senthil Vadivel	Behavioural Study on Waste Tyre Rubber Aggregate Concrete	National Conference on Applications of Innovative Civil Engineering Techniques in Structures	SNS College of Engineering & Technology, Coimbatore	03.03.2014
Ms. K. Kavitha	Experimental Study on Geopolymer Concrete	National Conference on Recent Advance in Civil Engineering Research.	Karunya University, Coimbatore	12.04.2014
Mrs.C.SriAkilam	Ground water Modelling for Coimbatore City Using GIS	National Conference on Focussing advancements in Civil Engineering	Sri Krishna College of Engineering and Technology	11.04.2013
Mr. M. Senthil Rajan	Energy Conservation with Eco-Friendly System	International Conference on Innovations and Advances in Civil Engineering towards Green and Sustainable System	Coimbatore Institute of Technology, Coimbatore	29.04.2014
G. Ramesh Kumar	Experimental investigation on Durability Characteristics of high Performance Concrete using mineral admixtures.	Modern Trends in Civil Engineering	JCT College of Engineering and Technology	16.04.2013

EXTENSION ACTIVITY

The underlying theme of the extension activity is to enhance and empower the quality of life for students and community. Helping learners become volunteer educators has at least two significant effects. For the learner, it reinforces learning and encourages leadership development; for Extension, it multiplies the outreach and impact of the Extension professional.

The Extension Work is a social service program undertaken by the Department of Civil Engineering, Dr N.G.P Institution of Technology. The activity by the students and staff members gives an exposure to various social issues as well as Education Programmers. The Department with its specific mandate to work for the less privileged sections of the society and our efforts are to extend educational programmes that will enhance and improve the quality of life of such groups in par with today's socio economic changes taking place with the technology driven knowledge based competitive economy drive.

Family and Youth Programs

Children's Home

The Department of Civil Engineering staffs and student had extended their hands of service on children in providing a fund, food and clothing in KINGS KID HOME, 32/51, Pattaramitteri Road, Ondipudur (P.O), Coimbatore – 641016. The total numbers of children were about 65 with age respective of about 3 to 18 with total of both girls and boys. The childerns were also encouraged and shared their precious movement of their life with all the members.

Staff members and students in KINGS KID HOME, on 15/4/2014

Senior citizen's Home

The Department of Civil Engineering had also made a notice to the senior citizen. In, ST.THOMAS HOME, Alvernia M. H. S. School Campus, Ramanathapuram, Coimbatore – 641016. The total numbers of senior citizen were about 35. They were provided funding for food. They were engaged and entertained with fun, games and cultural by the student. They also shared their golden memorial memories with the student .

Staff members and students in St. THOMAS HOME, on 16/4/2014.

STUDENTS ACHIEVEMENTS

Sports Activity

Sports and physical activity participation are generally promoted for their positive impact on student's physical and mental health which lead to enhancement of cognitive functioning, memory, concentration, behaviour and academic achievement. The link between physical activity and academic achievement is of increasing interest in the field of education and sports.

The Department of Civil Engineering has a fine tradition in sport. We have earned a reputation for success in intercollegiate competitions and tournaments, sometimes teaming up with other department students also.

Dr. N. G. P. Institute of Technology has organized an Alumni Cricket Trophy for the period of March – April'2014. The students of Civil Engineering has participated and won the Runners up in the Alumni Trophy conducted by Alumni Association.

The Third year Civil Engineering student Mr. P. Saravana Kumar Played a good roll for his team and he got a Best player award of the Alumni Trophy tournament. Mr. P. Kalaiyarasan of Third year civil hit the most number of sixes from his bat and he got an award.

Runner up in ALUMNI TROPHY

Sports Activities:

The Civil Engineering Students have participated in the Anna University Tournaments like Badminton, Hockey and athletics at State and Zonal and Inter Zonal level.

Name of the Student	Nature of the Sports Event	Organizer	Date	Prize Won
Mr. S. Alagunagaraj Mr. M. Kalaiarasan	Badminton	Anna University, Chennai	26.08.2013	II
Mr. P. Jeyakanth	Hockey	Inter Zone - Anna University, Chennai	04.09.2013	III
Mr. P. Jeyakanth Mr. S. Amir Rasul Musthafa	Hockey	Zone III - Anna University, Chennai	27.09.2013	III
A.Aswin Kumar	Kovai Marathon	KMCH Groups, Coimbatore	15.12.2013	15th Place

PAPER PRESENTATION AT NATIONAL / INTERNATIONAL CONFERENCE

Name of the Student	Nature of the Event	Organizer	Date	Prize Won
R.Vinu Prasanna	Paper Presentation	Dr. NGPIT, Coimbatore	26/08/2013	I
R. Nageswaran	Paper Presentation	Dr. NGPIT, Coimbatore	26/08/2013	I
Subin Philip George	Paper Presentation	Dr. NGPIT, Coimbatore	26/08/2013	II
A.Aswin Kumar	Paper Presentation	Dr. NGPIT, Coimbatore	26/08/2013	II
Sathish	Paper Presentation	Dr. NGPIT, Coimbatore	26/08/2013	II
Arun G	Paper Presentation	Dr. NGPIT, Coimbatore	26/08/2013	III
Elavarasan G	Paper Presentation	Dr. NGPIT, Coimbatore	26/08/2013	III

B.Jenisha	Paper Presentation	Ranganathan Engineering College, Coimbatore	02.09.2013	II
M.Mithula	Paper Presentation	Ranganathan Engineering College, Coimbatore	02.09.2013	II
K.Sampath Kumar	Paper Presentation	Info Institute of Technology, Coimbatore	09.10.2013	II
S. Sabin Thomas	Paper Presentation	Info Institute of Technology, Coimbatore	09.10.2013	II
B. Jenisha M. Mithula	Paper Presentation	Dr. Mahalingam College of Engineering & Technology, Pollachi	20.02.2014	III

ARTICLES

Advanced Software Solutions for Civil Engineering Industry

Ms .K. KAVITHA, AP/CIVIL

Technology and Software Solutions have today revolutionized the world. Name any field and you will find a plethora of software developed to ease out the work and transfer one's vivid imaginations onto paper. The same holds true for the engineering and construction fraternity also where a number of sophisticated computer software have today led to swift solutions, interesting brainstorming sessions and fascinating outputs. Computer software should be rightly treated as a tool to conceive our creative ideas.

India's construction industry is such an important part of the economy which has led to a need of good software to solve construction related issues. India remains as one of the major focuses of the Engineering Software vendors where apart from the need for Indian projects, many Indian design and outsourcing firms work with foreign designs and drawing jobs also where software are essentially required.

Software's in the Market

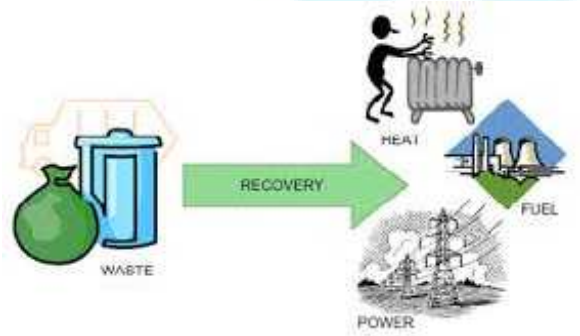
Today's engineering and construction responsive environment has varied software right from Project management (for the planning and updating on the project development) to design and detailing software programs (for metal trusses, walls and floors), software for civil works (for optimizing quantities and reducing wastage in cement, steel and concrete blocks), and software used in Environmental, Geotechnical, Hydraulic, Structural, Transportation, and Wind engineering.

Complex structures, forms, frames and fabrication details of materials have today been made easier by the array of 3D and 4D models that can be made. Building Information Modeling (BIM) (by Autodesk), is one of the most used software solutions today for engineers, architects, planners etc and as rightly said is 'not just a model but a process that helps customers use the information inherent in the model to design, visualize, Analyze and simulate a project.' Still to penetrate fully into the Indian Market, BIM solutions include AutoCAD civil 3D and AutoCAD Map 3D software for transportation, land development and water projects and Autodesk Revit-based software for the building industry including solutions for architecture, structural and MEP engineering.

New software for Roofing design like the Applicad Roof Wizard software features automatic roof design in full 3D calculates all material and labor quantities and automatically inserts all information into pre-defined reports. For quantity estimation work, a number of software like FORMULATOR have ready to use objects like beams, slabs, columns, retaining walls, staircase, and water tanks in which the user has to enter only the dimensions along with sketches. Other software for estimation include BUILD-QUANT, Bar-Be-Que, Rate-Anly, QE-Pro etc.

For Structural analysis and design, there exists software like STRUDS, ESR-GSR, RISA-3D. Then there are software catering to specific materials like ADAPT-ABI (a collection of fully integrated design and analysis tools for all types of concrete floor systems, foundations, and beam structures), or NISA/CIVIL (for the analysis and design of reinforced concrete and steel structures), SCADDS/Nucleus 3D (for the planning, load estimation, analysis, design, optimization, detailing, estimation and costing, rendering, walkthrough and documentation of RCC Multi-storey Buildings and structures) and StruM.I.S.NET (which brings the steel fabrication industry up-to-date with the very latest processing, tracking, planning and reporting facilities). Software for geotechnical design of shallow and deep foundations and retaining structures are also present. SAFE P/T is used for analysis and design of flat slabs and mat foundations with/without post tensioning.

The software market in the construction and engineering industry has boomed due to the amelioration in construction activities, which will sustain for the next 2-3 decades. Software solutions need to be periodically updated to be able to meet the challenges faced by the Industry. Work is on for more innovative solutions and possibilities in the field of structural analysis and designing, which not only will improve the quality and life span of the constructs but will also provide protection from man-made and natural calamities.



Every year, about 55 million Tonnes of municipal solid waste (MSW) and 38 billion liters of sewage are generated in the urban areas of India. In addition, large quantities of solid and liquid wastes are generated by industries. Waste generation in India is expected to increase rapidly in the future. As more people migrate to urban areas and as incomes increase, consumption levels are likely to rise, as are rates of waste generation. It is estimated that the amount of waste generated in India will increase at a per capita rate of approximately 1-1.33% annually. This has significant impacts on the amount of land that is and will be needed for disposal, economic costs of collecting and transporting waste, and the environmental consequences of increased MSW generation levels.

Most wastes that are generated, find their way into land and water bodies without proper treatment, causing severe water pollution. They also emit greenhouse gases like methane and carbon dioxide, and add to air pollution. Any organic waste from urban and rural areas and industries is a resource due to its ability to get degraded, resulting in energy generation. The problems caused by solid and liquid wastes can be significantly mitigated through the adoption of environment-friendly waste-to-energy technologies that will allow treatment and processing of wastes before their disposal. These measures would reduce the quantity of wastes, generate a substantial quantity of energy from them, and greatly reduce environmental pollution. India's growing energy deficit is making the government central and state governments become keen on alternative and renewable energy sources. Waste to energy is one of these, and it is garnering increasing attention from both the central and state governments. While the Indian Government's own figures would suggest that the cost of waste to energy is somewhat higher than other renewable sources, it is still an attractive option, as it serves a dual role of waste disposal and energy production.

India Waste to Energy Potential

According to the Ministry of New and Renewable Energy (MNRE), there exists a potential of about 1700 MW from urban waste (1500 from MSW and 225 MW from sewage) and about 1300 MW from industrial waste. The ministry is also actively promoting the generation of energy from waste, by providing subsidies and incentives for the projects. Indian Renewable Energy Development Agency (IREDA) estimates indicate that India has so far realized only about 2% of its waste-to-energy potential.

The high volatility in fuel prices in the recent past and the resulting turbulence in energy markets has compelled many countries to look for alternate sources of energy, for both economic and environmental reasons. With growing public awareness about sanitation, and with increasing pressure on the government and urban local bodies to manage waste more efficiently, the Indian waste to energy sector is poised to grow at a rapid pace in the years to come. The dual pressing needs of waste management and reliable renewable energy source are creating attractive opportunities for investors and project developers in the waste to energy sector. The environmental benefits of waste to energy, as an alternative to disposing of waste in landfills, are clear and compelling. Waste to energy generates clean, reliable energy from a renewable fuel source, thus reducing dependence on fossil fuels, the combustion of which is a major contributor to GHG emissions. These measures would reduce the quantity of wastes, generate a substantial quantity of energy from them, and greatly reduce pollution of water and air, thereby offering a number of social and economic benefits that cannot easily be quantified. Broadly, waste can be classified as urban waste, industrial waste, biomass waste and biomedical waste. Basic Techniques of Energy Recovery from Waste are Bio-methanation, Thermal, Thermo-chemical and Biochemical methods.

A brief description of the commonly applied technologies for energy generation from waste is as follows,

Anaerobic Digestion/Biomethanation

In this process, the organic fraction of the waste is segregated and fed into a closed container (biogas digester). In the digester, the segregated waste undergoes biodegradation in presence of methanogenic bacteria and under anaerobic conditions, producing methane-rich biogas and effluent. The biogas can be used either for cooking/heating, for generating motive power or electricity through dual-fuel or gas engines, low-pressure gas turbines, or steam turbines. The sludge from anaerobic digestion, after stabilization, can be used as a soil conditioner. It can even be sold as manure depending upon its composition, which is determined mainly by the composition of the input waste.

Combustion/Incineration

In this process, wastes are directly burned in presence of excess air (oxygen) at high temperatures (about 800°C), liberating heat energy, inert gases, and ash. Combustion results in transfer of 65%–80% of heat content of the organic matter to hot air, steam, and hot water. The steam generated, in turn, can be used in steam turbines to generate power.

Pyrolysis/Gasification

Pyrolysis is a process of chemical decomposition of organic matter brought about by heat. In this process, the organic material is heated in absence of air until the molecules thermally break down to become a gas comprising smaller molecules (known collectively as syngas).

Gasification can also take place as a result of partial combustion of organic matter in presence of a restricted quantity of oxygen or air. The gas so produced is known as producer gas. The gases produced by pyrolysis mainly comprise carbon monoxide (25%), hydrogen and hydrocarbons (15%), and carbon dioxide and nitrogen (60%). The next step is to 'clean' the syngas or producer gas. Thereafter, the gas is burned in internal combustion (IC) engine generator sets or turbines to produce electricity.

Landfill Gas recovery

The waste dumped in a landfill becomes subjected, over a period of time, to anaerobic conditions. As a result, its organic fraction slowly volatilizes and decomposes, leading to production of 'landfill gas', which contains a high percentage of methane (about 50%). It can be used as a source of energy either for direct heating/cooking applications or to generate power through IC engines or turbines.

The Ministry is promoting all the Technology Options available for setting up projects for recovery of energy from urban wastes. In developed countries, environmental concerns rather than energy recovery is the prime motivator for waste-to-energy facilities, which help in treating and disposing of wastes. Energy in the form of biogas, heat or power is seen as a bonus, which improves the viability of such projects. While incineration and biomethanation are the most common technologies, pyrolysis and gasification are also emerging as preferred options. A common feature in most developed countries is that the entire waste management system is being handled as a profitable venture by private industry or non-government organizations with tipping fee for treatment of waste being one of the major revenue streams. The major Advantages for adopting technologies for recovery of energy from urban wastes is to reduce the quantity of waste and net reduction in environmental pollution, besides generation of substantial quantity of energy.

- **Physical Problems** - Water hyacinth mats clog waterways, making boating, fishing and almost all other water activities impossible. Water flow through water hyacinth mats is greatly diminished, an acre of water hyacinth can weigh more than 200 tons; infestations can be many acres in size.
- **Ecological Impacts** - Water hyacinth mats degrade water quality by blocking photosynthesis, which greatly reduces oxygen levels in the water. This creates a cascading effect by reducing other underwater life such as fish and other plants. Water hyacinth also reduces biological diversity, impacts native submersed plants, alters immersed plant communities by pushing away and crushing them, and also alter animal communities by blocking access to the water and/or eliminating plants the animals depend on for shelter and nesting.
- **Economic Impacts** - In Florida, millions of dollars a year used to spent on water hyacinth control; finally getting the plant under "maintenance control" has greatly reduced that expenditure.

Center for Aquatic and Invasive Plants