



VIETNAM VETIVER NETWORK _ VNVN

NEWSLETTER

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Welcome to our annual newsletter. Our goal for these pages is to highlight activities and developments of Vietnam Vetiver Network during the year of 2016. It also brings into focus the progress in the field of research which paved a way for better understanding of the Vetiver's fundamentals and applications alike.

We would hereby like to take this opportunity to express our profound sense of gratitude to The Vetiver Network International and Vietnamese Vetiver experts, our partners and sponsors for your all generous and extra helps with accelerating application of Vetiver Grass System in Vietnam.

We would welcome your comments and suggestions in respect of our endeavors and expect your continuous supports.

With profound regards,

Vietnam Vetiver Network

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BAC ME Hydropower dam _ slope protection

From March to July, 2016; Vietnam Vetiver Network, SBTV Construction and Advanced Technology Company designed and implemented Vetiver plantation for 7,433 sq.m of the Bac Me Hydropower Dam in a mountainous Northern Region of Vietnam. Cement grids are used as a solution to prevent erosion of the dam wall. But these grids are often washed away during heavy rain periods and typhoons. So Vetiver was planted to stabilize these grids. Despite the harsh weather with constant droughts and storms and very poor soil condition of the site, Vetiver System established well after only 5 months thanks to an enormous effort of the whole team.



During plantation



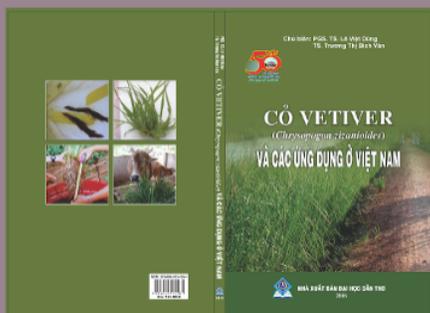
After 01 month



After 05 months

Can Tho University _ The book titled "Vetiver Grass (*Chrysopogon zizanioides*) and Its Applications in Vietnam"

On March 31 st 2016, to celebrate Can Tho University's 50th anniversary; Assoc.Prof, Dr.Le Viet Dung published the book titled "**Vetiver Grass (*Chrysopogon zizanioides*) and Its Applications in Vietnam**". The book summarizes the latest Research and Development knowledge and hands-on experiences, the results from the laboratory and fieldworks in Mekong Delta led by Prof.Le Viet Dung for the last 15 years. Besides, the authors listed a wide range of Vetiver applications, ranging from slope stabilization, erosion protection, soil and water conservation to phytoremediation (cleaning of contaminated lands and water), especially, the book also introduced the technology of Vetiver propagation by Tissue Culture in Vietnam.



Potential Application of Vetiver for Remediation of "Agent Orange" contaminated soils in Vietnam

The Vietnam Institute of Geosciences And Mineral Resources (VIGMR) held an international workshop on October 25-26, 2016. "**Heavy metals, Dioxins and Persistent Organic Pollutants POPs - their impact and the potential use of Vetiver Grass for remediation**". The workshop aimed to provide researchers with a forum for presenting and discussing research on pollution from heavy metals, dioxins and persistent organic compounds; effectiveness of Vetiver System for pollution treatment; difficulties and challenges in adopting and implementing this technology for practices. The Seminar was chaired by Assoc.Prof. Dr.Tran Tan Van – Director of Vietnam Vetiver Network, Keynote speakers included Dr. Paul Truong - Director, Vetiver Network International, responsible for Asia and Oceania; Scientists of Environment, Geology and Biotechnological applications; DAAD scholarship Alumni, and delegates from other departments and institutes and universities

The highlight of the Seminar was the report of results of the "*Study on the potential use of Vetiver grass (*Chrysopogon zizanioides* L) in mitigating soil contaminated by toxic chemicals and dioxins – A case study at Bien Hoa airbase*". Mitigating the very negative long term impact of defoliant chemicals containing dioxins that were applied during the Vietnam War is very important to the Government of Vietnam and to the Vetiver Network International. The research carried out over the past few years at the Bien Hoa airbase has shown very encouraging results to the extent that "Vetiver can be widely applied in treating the contaminated environment in Vietnam, especially dioxin contamination and heavy metals. The results of this project will be used as the scientific basis of treatment of these contaminations"



Vetiver growth on dioxin polluted soil

ANNOUNCEMENT

On September 06, 2016, Chairman of Danang's People Committee signed the Decree No. 6064/QĐ-UBND to establish Danang Vetiver Development Foundation (DVDF) and recognize its Operation Charter. DVDF has legal status, red stamp and bank accounts, guarantee self-funding and means of operation. The Foundation has two functions (1) an umbrella for VNVN established in 1999, and (2) to provide development and technical support for Vetiver System applications in VietNam.

Vetiver System Promotion in Highlands of Central Vietnam

IN KONTUM

KonTum is one of provinces of Vietnam's Central Highlands. Challenges the Province has faced are: (1) Steep slopes plus with the unfavorable weather including rainy season with too much rainfall and dry season with too much winds lead to continuous erosion. (2) Cassava is the main income source of the local ethnic minorities. Deforestation, encroachment of forest land for planting cassava is an alarming issue which has made 75% of land source degraded and barren. (3) Most population is ethnic minorities who don't care about soil improvement, soil and water conservation and sustainable agricultural practices.

In June, 2016, Kon K'Tu Village, Dak Rơ Wa Commune of KonTum Province was selected for the project "Sustainable crop production on slopping land in KonTum Province". VNVN got Kon Tum Department Agriculture and Rural Development, Dak Ro Wa Commune People's Committee, University of Da Nang - Kon Tum together for this project. Beside a training session, five households owning about 5ha of cassava crop lands volunteered to plant Vetiver under agreement that for every plant supplied they would return the same number or more after two years. A small nursery also was granted and managed by the local Vetiver team. The program at present is going for the 2nd stage which is evaluating and scaling up.



Right after being planted



After 01 month and 04 months

IN DAKLAK



DakLak is the second Province of Vietnam's Central Highlands selected. Farmers of the Province have suffered water stress in dry season. While there is no water for farms, they have to water for wild grass to feed livestock. Therefore, once Vetiver manifest its capability of water conservation and drought tolerance, Vetiver will be very favorable and useful for this region. The demonstration was a farm of dragon fruits in Cư Êbur commune, DakLak Province. The land owner was provided with 5,000 slips for 800 sq.m.

Farmers in the Commune are very close, so Vetiver is hoped to be scaled by word of mouth. The program at present is going for the 2nd stage which is evaluating and scaling up.

2016 International Seminar _ Water for Livable Cities

On October 4th 2016, VNVN joined in 2016 International Seminar titled "Water for livable cities" held by DaNang Institute for Socio-Economic Development and Vietnam Water Cooperation Initiative.

The Seminar was attended by the Australian Ambassador in Vietnam, Vice-president of the DaNang city as well as many of international and Vietnamese managers, policy makers and scientists. At the Seminar, VNVN revised an article "Vetiver System for Prevention and Treatment of Contaminated Water and Land" for its proceedings, played a video of Vetiver's effects in treating urban contaminated water and had an Exchange Information Booth for participants.



An Experimental Model of Vetiver Green Wall

In December 2016, Dr. Tran Minh Thao implemented an experimental model of Vetiver Green Wall to treat contaminated water in locations and factories that have limited land area for conventional treatment method. The result so far is very positive as shown below:

HRT=7h

Parameter	Value (mg/L)		Treatment Effectiveness (%)
	Input	Output	
BOD	400-420	120-130	65-70
TN	40-46	14-17	65-70
TP	12-16	4.6-5.3	60-67

HRT=24h

Parameter	Value (mg/L)		Treatment Effectiveness (%)
	Input	Output	
BOD	400-420	17-26	94-97
TN	40-46	4 - 8	83-90
TP	12-16	2.1-2.5	81-85



Organic Products from Vetiver Essential Oil

VNVN in collaboration with Tara - a trademark of the natural healthcare of Green Belt Technology and Environment Company, under the instruction of Dr. Dang Duc Long publiced organic products containing Vetiver Essential Oil such as mosquito repellent, hand sanitizer. This is considered a new application of Vetiver in Vietnam.



DR. PAUL TRUONG'S TRIP TO VIETNAM'S CENTRAL REGION



From October 27th to 30th 2016, Dr. Paul Truong - Director, Vetiver Network International, responsible for Asia and Oceania visited and met ethnic farmers in Vietnam's Highland Centrals. His visit strengthened farmers' belief in Vetiver.

In DaNang, he had a meeting with executive board of Wastewater treatment plant for Dien Nam-Dien Ngoc Industrial Zone to consult them on using Vetiver to remove heavy metals from industrial wastewater.

After the meeting, he had another meeting with members of the new Vetiver Foundation to discuss on continuing direction of the Vietnam Central projects and introduce innovatory technologies in treating pollution by Vetiver.



Seminar on “Vetiver System: Empowering Sustainable Development”

On the morning of November 1st 2016, Dr. Paul Truong had a meeting with Director of Center for Consultancy on Sustainable Development – DaNang Institute for Socio-Economic Development. The two discussed some oncoming cooperative programmes to apply and promote Vetiver in DaNang and its neighbor provinces.

Also in the meeting, representatives of DaNang Vetiver Development Foundation and DaNang Institute for Socio-Economic Development signed Memorandum of Understanding on Cooperation.



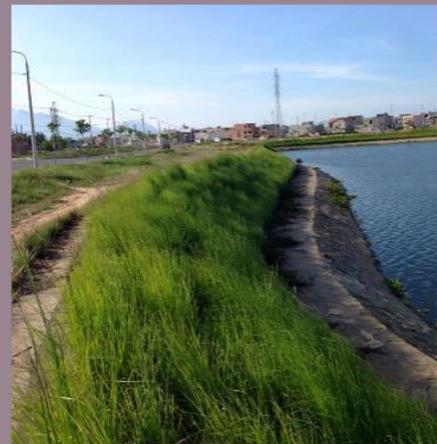
In the afternoon of the same day, a seminar on “**Vetiver System: Empowering Sustainable Development**” was held in DaNang Administrative Center. During the Seminar, Vetiver experts presented keynote speeches, including applications of the Vetiver System: a review and update from the world to Vietnam and DaNang, Notices in the research and application of Vetiver in Vietnam’s Central, and Ways to empower farmers and Vetiver planters for extra income. The Seminar was believed to influence greatly to attendees who were from Danang’s municipal and provincial departments, International organizations based in Danang, and some private companies.



In early November 2016, Dr. Paul Truong had a surveying trip to some places in DaNang in order to investigate the possibility of using Vetiver as an eco-solution for various environmental issues of this city.

The first stop was Bo Bo Mountain - a cluster of four small hills located 15km in south-west of DaNang City centre. In stead of finding Vetiver grass (*Chrysopogon zizaionides*) as local people said, we discovered a look-alike species named 'De' grass (*Chrysopogon nemoralis*) growing vigorously and dispersing wildly. Since two species shares some similar morphological characteristics, there has been a confusion when De grass is being exploited and used to prevent erosion and landslide in several sites, which will generate unexpectedly reverse impacts. The differences between Vetiver grass and De grass was detailedly described in a paper published in ICV6 conference. These scientific basis should be popularized in local community to avoid adverse consequences afterwards.

Another place we visited was a small lake located beside Bo De Monastery whose bank is covered by a species of grass interleaved with concrete embankment. However the grass is not Vetiver as we expected but De grass. This lake is also a potential place for applying phytoremediation, so that we suggest replacing gradually De grass by Vetiver grass to promote some additional functions of the lake.



Chrysopogon nemoralis is used to the aim of embankment protection

In the frame of a city project to purify polluted water in all the lakes in Danang, we visited Khue Trung Lake. This urban lake plays an important role in water control, receiving waste water from residential areas nearby before pouring directly to Cam Le River. It is currently surrounded by a concrete embankment system to prevent bank of the lake from erosion but in fact this measure has showed some disadvantages. The lack of vegetation makes this system ineffective every when heavy rain comes with a large amount of surface water pour into the lake causing a strong flow.

We proposed using Vetiver in this case with two main aims: (1) stabilizing the lake bank and (2) diminishing the contaminants and nutrients in water. Besides, various types of phyto-applications, such as wetland, floating island or embankment-combined type should be considered in order to improve the effectiveness of treatment as well as create a beautiful landscape which matches with the development orientation of the city.



Thank for your reading!